



DRAFT  
ENVIRONMENTAL IMPACT REPORT

**DAVIS FAMILY ESTATES**  
FRIESEN VINEYARD PROJECT

**AUGUST 2015**

LEAD AGENCY:

California Department of  
Forestry and Fire Protection  
P.O. Box 944246  
Sacramento, CA 94244-2460



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# ***SECTION 1.0***

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## **INTRODUCTION**

# SECTION 1.0

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## INTRODUCTION

This Davis Family, LLC Friesen Vineyards Project (Proposed Project) Draft Environmental Impact Report (Draft EIR) was prepared in accordance with the California Environmental Quality Act (CEQA) of 1970, as amended, and the CEQA *Guidelines* (CEQA, 2012). The California Department of Forestry and Fire Protection (CAL FIRE) is the Lead Agency for the environmental review of the Proposed Project evaluated herein and has the principal responsibility for evaluating the Proposed Project. The timber conversion is evaluated in this Draft EIR to facilitate the consideration by CAL FIRE of a Timberland Conversion Permit (TCP) application. Additionally, the County of Napa (County) must consider an Erosion Control Plan (ECP) for the planting of the vineyard to finalize the conversion from timberland to agricultural use. Napa County is therefore a Responsible Agency and will use this Draft EIR in evaluating its decision on the ECP. As required by CEQA *Guidelines* § 15121, this Draft EIR will: (a) inform public agency decision-makers, (b) identify possible ways to minimize any potential adverse environmental effects of the Proposed Project, and (c) describe reasonable and feasible project alternatives.

In addition, a Timber Harvest Plan (THP) has been prepared concurrently with the development of this EIR for the harvest of the same area and will be processed separately by CAL FIRE. The THP will be evaluated by CAL FIRE through a CEQA equivalent process consistent with the Forest Practice Rules, and the environmental impacts of the THP are considered in that process. The Proposed Project would not proceed until the THP is implemented, and therefore the outcomes and relevant findings of the THP are discussed in the EIR.

The TCP, ECP, and THP are attached to this Draft EIR to facilitate readers and decision makers in their reviews.

### 1.1 PROJECT SUMMARY

The Proposed Project will occur within Napa County assessor's parcel numbers (APNs) 018-060-012 and 018-060-013, a 38.7-acre property located roughly two miles northwest of the town of Angwin in northern Napa County, California. Approximately 10.0 acres of the property are forested and would be harvested for timber as a result of implementing the Proposed Project. These 10.0± acres are the subject of the TCP and are herein referred to as the "TCP Area." The total area of disturbance would be the gross vineyard area of 13.6± acres, which would include the TCP area and an additional 3.6± acres of brush (Manzanita and chaparral)

and ruderal land; the 13.6± acre gross area of disturbance is herein referred to as the “project site.” The project site would be divided into four vineyard blocks and would include 10.5± net acres of wine grape vines as well as 3.1± acres of internal farm avenues and space for vineyard maintenance operations.

Prior to the forestland conversion and vineyard development, timber would be harvested on 10.0± acres within the project site and the brush and ruderal areas would be cleared. All harvested timber would be processed on-site at a temporary mill. A THP has been prepared for the 13.6± acres, which are herein referred to as the “THP Area.”

The actions making up the Proposed Project are as follows:

1. The timber harvest of the 13.6± acres (THP Area) will occur first under a separate CAL FIRE approval process;
2. The conversion of the 10.0± acres (TCP Area) from timber land to agricultural use will be processed under a TCP under the authority of CAL FIRE; and
3. The County will process the ECP for the 13.6± acres (project site) that may allow the subsequent planting of the vineyard and erosion control measures on the project site.

The TCP and ECP are the enabling documents for the respective components of the Proposed Project and trigger the preparation of a CEQA document. Given the potential for environmental impacts, this Draft EIR has been prepared. The environmental impacts of the actions of the Proposed Project, which include the THP, TCP, the ECP, and the development of the vineyard on the project site, are evaluated against the CEQA baseline of the project site.

In general, agricultural activities are not subject to County discretionary approval under CEQA due to a statutory exemption. However, projects involving grading, earthmoving, or land disturbance activities on slopes greater than five percent require preparation and approval of an ECP, which is subject to review under CEQA by the County to ensure protection of waterways such as the Napa River, which is a 303(d) listed impaired waterway for sediment by the U.S. Environmental Protection Agency (EPA) and State Water Resources Control Board (SWRCB). Since the vineyard development portion of the Proposed Project qualifies under County requirements for an ECP, the ECP for the Proposed Project (#P13-00373-ECPA) will be reviewed using this CEQA document and is included as **Appendix B** to this Draft EIR. The property is zoned for agricultural use, and the proposed vineyard is consistent with the Napa County General Plan (2008) designation Agriculture Watershed district.

## 1.2 PURPOSE OF THE EIR

As described in CEQA *Guidelines* § 15121(a), an EIR is an informational document that assesses potential environmental impacts of a proposed project, as well as identifies mitigation

measures and alternatives to the proposed project that could reduce or avoid adverse environmental impacts. As the CEQA Lead Agency for this Proposed Project, CAL FIRE is required to consider the information in this EIR along with any other available information in deciding whether to approve the Proposed Project. The basic requirements for an EIR include discussions of the environmental setting, environmental impacts, mitigation measures, alternatives, growth-inducing impacts, and cumulative impacts. The EIR is an informational document used in the planning and decision-making process; it is not the intent of an EIR to recommend either approval or denial of a project.

### 1.2.1 TYPE OF DOCUMENT

This Draft EIR is a “Project EIR” pursuant to CEQA *Guidelines* § 15161. A Project EIR examines the environmental impacts of a specific project. This type of EIR focuses on the changes in the environment that would result from implementation of the project, including construction and operation.

This EIR describes the environmental impacts of the various components of the Proposed Project and suggests mitigation measures to avoid or reduce impacts to less-than-significant levels. The impact analyses in this report are based on a variety of sources, including agency consultation, various technical reports prepared by others, and field surveys.

### 1.2.2 ENVIRONMENTAL BASELINE

The property as it existed at the time of the Notice of Preparation (June 24, 2014) is considered the baseline condition for analyzing the effects of the Proposed Project (**Appendix A**). **Section 4.0** includes detailed descriptions of the existing environmental baseline by resource area, as well as other relevant historical land use information.

### 1.2.3 EIR DESIGN

This Draft EIR considers the entirety of the Proposed Project, which includes approval of all documents that would authorize the conversion of timberland to vineyard. In addition, the Draft EIR analyzes the effectiveness of the erosion control measures as designed in # P13-00373-ECPA to control short- and long-term erosion and attenuate runoff as a result of the Proposed Project. The Proposed Project as described in **Section 3.0** is designed to avoid significant impacts wherever possible, and **Section 4.0** includes mitigation measures in addition to those found in the THP, TCP, and ECP to reduce any impacts to less-than-significant levels.

Potential cumulative effects of the Proposed Project, when combined with other past, present, or probable future projects, are also considered in this Draft EIR (**Section 6.0**). Specific project elements considered in the review of cumulative effects of the Proposed Project are described in **Section 3.0** and include the timber harvest and site-specific THP for the proposed cleared

13.6± acre area of the property; the conversion from timberland to vineyard for 10.0± acres within the cleared portion of the property; and the installation of erosion control measures as part of the ECP for the cleared area of 13.6± acres. These elements are cumulative effects of the Proposed Project and are analyzed in **Section 6.0**.

## 1.3 EIR PROCESS

### 1.3.1 LEAD AGENCY

In accordance with CEQA *Guidelines* § 15050 and 15367, CAL FIRE is the Lead Agency, which is defined as the “public agency which has the principal responsibility for carrying out or approving a project.” The Lead Agency is also responsible for determining the scope of the environmental analysis, preparing the EIR, and responding to comments received on the Draft EIR. Prior to making a decision on whether to approve a project, the Lead Agency is required to certify that the EIR has been completed in compliance with CEQA, that the decision-making body reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of the Lead Agency.

### 1.3.2 NOTICE OF PREPARATION

In accordance with CEQA *Guidelines* § 15082, a Notice of Preparation (NOP) was circulated to the public, local, State, and federal agencies, and other known interested parties for a 30-day public and agency review period from June 24, 2014 to July 24, 2014 (**Appendix A**). A Correction Notice Memorandum was released on June 25, 2014 to correct two administrative errors (CAL FIRE website address and email address to submit comments were both incorrect) (**Appendix A**). The purpose of the NOP was to provide notification that an EIR for the Proposed Project was being prepared and to solicit public input on the scope and content of the document.

Comments from agencies and the public submitted in response to the NOP are included within **Appendix A**. Issues raised in these comments on the NOP are summarized in **Section 1.4**.

### 1.3.3 DRAFT EIR AND PUBLIC REVIEW

This Draft EIR is being circulated for public review and comment for a period of 45 days. During this period, the general public, organizations, and agencies can submit comments to the Lead Agency on the Draft EIR's accuracy and completeness. Release of the Draft EIR marks the beginning of a 45-day public review period pursuant to CEQA *Guidelines* § 15105.

### 1.3.4 FINAL EIR AND EIR CERTIFICATION

Upon completion of the public review period, a Final EIR will be prepared that will include the written comments on the Draft EIR received during the public review period and responses to

those comments. The Final EIR will address any revisions to the Draft EIR made in response to public comments. The Draft EIR and Final EIR together will comprise the EIR for the Proposed Project. Before CAL FIRE can approve the Proposed Project, it must first certify that the EIR has been completed in compliance with CEQA, that the Lead and Responsible Agencies have reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of CAL FIRE. CAL FIRE also will be required to adopt Findings of Fact and, for any impacts determined to be significant and unavoidable, adopt a Statement of Overriding Considerations.

## 1.4 COMMENTS ON THE NOTICE OF PREPARATION

CAL FIRE received five comment letters on the NOP. These comment letters were considered during preparation of the Draft EIR and are presented in **Appendix A**. The following is a list of commenting agencies and organizations, a summary of the concerns raised, and the corresponding section of the EIR where these concerns are addressed.

- Native American Heritage Commission (NAHC) – the NAHC reviewed the Sacred Lands File for information about historic or cultural resources within the project site. The NAHC also provided a list of Native American contacts that may have more information about the project site and vicinity. This is discussed further in **Section 4.5**.
- San Francisco Bay Regional Water Quality Control Board (RWQCB) – this letter requested minor clarifications and corrections to the NOP text. In addition, the San Francisco Bay RWQCB raised issues regarding sedimentation and erosion from the proposed vineyard blocks, which is addressed in **Sections 4.6** and **4.9**.
- Land Trust of Napa County – the Land Trust of Napa County requested to be added to the interested parties list for future communication regarding the EIR.
- Napa County – the County requested the Draft EIR describe the full impact area of all project components (addressed in **Section 3.0**) and provide analysis of impacts related to geology and soils (addressed in **Section 4.6**), hydrology and water quality (addressed in **Section 4.9**), biological resources (addressed in **Section 4.4**), land use and planning (addressed in **Section 4.10**), transportation and circulation (addressed in **Section 4.12**), and cultural resources (addressed in **Section 4.5**).
- California Department of Fish and Wildlife – this letter requested the Draft EIR contain an assessment of potential impacts to habitats, flora, and fauna on and adjacent to the project area, including special status species, and appropriate mitigation if warranted as well as an assessment of impacts related to the water courses on the property and downstream (all addressed in **Section 4.4**).

## 1.5 SCOPE OF THE EIR

In accordance with CEQA *Guidelines* § 15063 and in conjunction with comments received on the NOP (**Appendix A**), the issues discussed within this Draft EIR are those that have been identified as having potentially significant impacts. The following environmental issue areas were found to have the potential to be significantly affected by implementation of the Proposed Project and are therefore addressed in greater detail in this Draft EIR:

- Aesthetics
- Agriculture and Forestry Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Transportation and Circulation

## 1.6 EFFECTS NOT FOUND TO BE SIGNIFICANT

CEQA *Guidelines* § 15128 states that an “EIR shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR.” Potential impacts of the Proposed Project to the following environmental resource areas were identified as being less than significant and therefore are not evaluated in this Draft EIR: Mineral Resources, Population and Housing, Public Services, Recreation, and Utilities and Service Systems. The Proposed Project would result in either no impact or a less-than-significant impact to these issue areas for the following reasons:

**Mineral Resources:** Mineral resources have not been identified within the property (USGS, 2013). No impact would occur.

**Population and Housing:** The Proposed Project does not involve the construction of new homes or businesses. Existing roads will be used during construction, project operation activities, and for fire/emergency equipment access to the property as needed. The Proposed Project would not induce substantial population growth either directly or indirectly or create a significant need for additional housing. While an average of approximately 15 seasonal workers on the property are anticipated for the timber harvest phase and construction of the vineyard

and up to 10 seasonal workers are anticipated during certain phases of operation of the vineyard (e.g. harvesting), this will not impact the housing supply in the area by causing an increased need for additional housing. Therefore, no new housing would be required as a result of the Proposed Project. Also, no residences or people would be displaced by the Proposed Project. Therefore, impacts to population and housing are considered less than significant.

**Public Services:** The Proposed Project would not result in substantial growth that would require additional public services. The Proposed Project would not adversely impact the County's ability to provide fire and police protection or impact the maintenance of schools, parks, or other public facilities. No impact would occur.

**Recreation:** The Proposed Project would not result in substantial population growth or the associated increased use of recreational facilities and does not include the construction or expansion of recreational facilities. The Proposed Project would also not adversely impact recreational opportunities or prohibit the maintenance of existing recreational opportunities. No impact would occur.

**Utilities and Service Systems:** The Proposed Project would not require and therefore not exceed water treatment requirements or result in the construction of new water or wastewater treatment facilities. The Proposed Project would rely on groundwater to establish the proposed vineyard from an existing well on the property and would not require additional water supplies, such as connection to a public water supply. The proven capacity of the well is sufficient to meet all anticipated project demand, even during the first establishment years of the vineyard (refer to **Section 4.9**). To the degree needed during the timber harvest or peak periods of vineyard labor use, portapotties would be used on site, so no impacts to public wastewater systems would occur. Construction and operation of the Proposed Project would generate a minimum amount of construction waste or other solid waste; therefore, a less-than-significant impact is expected on the landfill capacity in the area. The Proposed Project would not conflict with any statutes or regulations related to solid waste. No significant increase in energy demand, which would cause an impact on public services, is anticipated from the Proposed Project. Impacts to utilities and service systems are considered less than significant.

**Energy Conservation:** The Proposed Project will require the combustion of fossil fuel during both the construction and operation phases. During construction of the Proposed Project, heavy equipment listed in **Table 3-3** of this Draft EIR will be used. Given the limits to equipment idling time and other equipment efficiency measures in **Mitigation Measure 4.3-1**, it is not anticipated that there would be unnecessary or inefficient consumption of energy during construction of the Proposed Project. Therefore, this mitigation measure would reduce fuel combustion, consistent with Public Resources Code § 21100(b)(3). Operation of the vineyards would require worker vehicle transport to the property and limited use of large trucks, as discussed in **Impact 4.12-2**. The use of fossil fuels associated with worker trips would be

minimized with implementation of fuel combustion measures such as the new Corporate Average Fuel Economy (CAFE) standards. In addition, the Proposed Project will not require the long-term use of electricity, as the vineyards will not require connection to the Pacific Gas & Electric (PG&E) electrical grid. Impacts due to fossil fuel use in both the construction and operation phases have been reduced, there would be no impacts to the region's energy grid, and therefore an additional analysis per CEQA *Guidelines* Appendix F is not necessary.

## 1.7 TERMINOLOGY USED IN THE EIR

This EIR uses the following terminology to describe environmental effects of the Proposed Project and Alternatives:

- **Significance Criteria:** A set of criteria used by the Lead Agency to determine at what level or “threshold” an impact would be considered significant. Significance criteria used in this Draft EIR include factual or scientific information; regulatory standards of local, State, and federal agencies; and/or guiding and implementing goals and policies identified in local or state plans.
- **Less-Than-Significant Impact:** A less-than-significant impact would cause no substantial change in the environment (no mitigation required).
- **Less-Than-Significant Level:** The level below which an impact would cause no substantial change in the environment (no mitigation required).
- **Potentially Significant Impact:** A potentially significant impact may cause a substantial change in the environment; however, it is not certain that effects would exceed specified significance criteria. For CEQA purposes, a potentially significant impact is treated as if it were a significant impact. Mitigation measures and/or project alternatives are identified to reduce project effects to the environment.
- **Significant Impact:** A significant impact would cause a substantial adverse change in the physical conditions of the environment. Significant impacts are identified by the evaluation of effects using specified significance criteria. Mitigation measures and/or project alternatives are identified to reduce or avoid project effects to the environment.
- **Significant and Unavoidable Impact:** A significant and unavoidable impact would result in a substantial change in the environment that cannot be avoided or mitigated to a less than significant level if the project is implemented.
- **Cumulative Significant Impact:** A cumulative significant impact would result in a substantial change in the environment from effects of the project, as well as surrounding projects and reasonably foreseeable development in the surrounding area. To be considered significant, a project's impact must make a cumulatively considerable contribution to a substantial change in the environment.
- **Mitigation:** Mitigation includes measures recommended in the Draft EIR and imposed as condition of approval by the Lead Agency that:

- Avoid the impact altogether by not taking a certain action or parts of an action;
- Minimize impacts by limiting the degree or magnitude of the action and its implementation;
- Rectify the impact by repairing, rehabilitating, or restoring the affected environment;
- Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the project (for example, the onsite enhancement of oak woodland is proposed in **Section 4.4**); and
- Compensate for the impact by replacing or providing substitute resources or environments.

This Draft EIR uses the following project-specific terminology to describe the various components of the Proposed Project:

- **Proposed Project:** Approval by CAL FIRE of the TCP, which will allow the conversion of the timberland within the *TCP area* (see below), and approval of the ECP by Napa County for the *ECP area* (see below), as defined in **Sections 1.2** and **3.0**.
- **Property:** The entire property owned by the project applicant, which is made up of two parcels totaling approximately 38.7 acres.
- **Project site:** The 13.6± acre area that requires a THP and ECP and would be developed as vineyard. This area will have 10.5± acres net vineyard, with the balance made up of internal farm avenues.
- **THP Area:** Timber harvest plan area. The 13.6± acres that includes brush (chaparral and Manzanita) and ruderal land as well as timberland. The timber will be harvested consistent with the THP under a CEQA-equivalent process led by CAL FIRE separately from this TCP/ECP process. Within this THP area, 10.0± acres are timberland with the balance consisting of Manzanita, chaparral, and ruderal lands.
- **TCP Area:** Timber conversion plan area. Describes the 10± acres of actual timberland within the *THP area* that will be removed from future timber uses upon conversion into vineyard.
- **ECP Area:** Erosion control plan area. The area where the erosion control measures will be installed; occurs primarily within the same 13.6± acres of the THP area. Some erosion control measures may occur outside the disturbed area, as shown in the ECP (**Appendix B**).

## 1.8 EIR ORGANIZATION

**Section 1, Introduction and Scope of the Draft EIR** - Provides an introduction and overview of the EIR, describes the intended use of the EIR, and describes the review and certification process.

**Section 2, Executive Summary** - Summarizes the elements of the Proposed Project and the environmental impacts that could result from implementation of the Proposed Project, and provides a table which lists impacts, describes proposed mitigation measures, and indicates the level of significance of impacts after mitigation.

**Section 3, Project Description** - Provides a detailed description of the Proposed Project, including its location, background information, major objectives, and technical characteristics.

**Section 4, Environmental Setting, Impacts, and Mitigation Measures** - Describes the baseline environmental setting and provides an assessment of impacts for each issue area presented in **Section 1.5**. Each section is typically divided into three sub-sections: Existing Environmental Setting, Regulatory Framework, and Impacts and Mitigation Measures.

**Section 5, Alternatives** - Describes and compares alternatives to the Proposed Project and associated environmental consequences.

**Section 6, Other CEQA-Required Sections** - Provides discussions required by CEQA regarding impacts that would result from the Proposed Project, including a summary of cumulative impacts; secondary impacts, including potential impacts resulting from growth inducement; and significant irreversible changes to the environment.

**Section 7, Report Preparation** - Lists report authors and agencies consulted for technical assistance in the preparation and review of the EIR.

**Appendices** - Includes various documents and data directly related to the analysis presented in the Draft EIR.

## REFERENCES

California Environmental Quality Act (CEQA), 2012. California Environmental Quality Act (CEQA) Statue and Guidelines. Public Resources Code, Sections 21000-21177 and California Code of Regulations, Sections 15000-15387.

Napa County, 2008. Napa County General Plan. June 2008. Available online at: <http://www.countyofnapa.org/GeneralPlan/>. Accessed July 24, 2014.

United States Geological Survey (USGS), 2013. Mineral Resources Data System. Last updated July 15, 2013. Available online at: <http://mrddata.usgs.gov/mineral-resources/mrds-us.html>. Accessed July 24, 2014.

## ***SECTION 2.0***

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### EXECUTIVE SUMMARY

# SECTION 2.0

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## EXECUTIVE SUMMARY

### 2.1 INTRODUCTION

This Draft Environmental Impact Report (EIR) assesses the potential environmental impacts of the Davis Family, LLC Friesen Vineyards Project (Proposed Project). The California Department of Forestry and Fire Protection (CAL FIRE) is the Lead Agency. Napa County is the Responsible Agency for the California Environmental Quality Act (CEQA) review and approval of the Erosion Control Plan (ECP) required prior to conversion to vineyard. Inquiries about the project and the CEQA process should be directed to:

CAL FIRE, Resource Management  
Attn: William Solinsky, Forester III  
P.O. Box 944246  
Sacramento, CA 94244-2460  
Email: [SacramentoPublicComment@fire.ca.gov](mailto:SacramentoPublicComment@fire.ca.gov)

### 2.2 PROJECT DESCRIPTION

#### 2.2.1 PROJECT LOCATION

The Proposed Project is located on located at 1875 Friesen Drive in the town of Angwin, roughly six miles north of the City of Saint Helena in northern Napa County (County), California. The property is situated within the northwest quarter of Section 25, Township 9 North, Range 6 West of the Mount Diablo Baseline and Meridian (MDBM) on the "Saint Helena, California," U.S. Geological Society (USGS) 7.5-minute quadrangle. The project site is located within County assessor's parcel numbers (APNs) 018-060-012 and 018-060-013. The property is located within the Bell Canyon Reservoir watershed (Calwater 2206.500202), a subunit of the Napa River watershed. On-site elevations range from approximately 2,000 to 2,150 feet above mean sea level. Existing slopes on the property generally range from 8 to 27 percent; less than 1 acre contains slopes of 30 percent or greater

Several small, man-made reservoirs are located to the southeast of the property, including Lake Orville and Lake Henne. These reservoirs are operated by the Howell Mountain Mutual Water Company and supply drinking water to approximately 400 residences in Angwin; collectively, these reservoirs are known as the Friesen Lakes. The property contains an unnamed reservoir

that is part of the Friesen Lakes, one Class III watercourse, and two blue line streams, but does not contain any wetlands.

### 2.2.2 TIMBER HARVEST AND TIMBER CONVERSION

Approximately 10.0± acres of timberland would be harvested on the property under a Timber Harvest Plan (THP) consistent with Forest Practice Rules and will be processed under a separate CEQA-equivalent process by CAL FIRE (**Appendix H**). Subsequent to the timber harvest, the Timberland Conversion Permit (TCP) must be approved for the 10.0-acre TCP area, which is the focus of this CEQA document. The County must also approve and authorize an ECP before planting of the vineyard to manage impacts from erosion and sedimentation. The TCP and ECP are the direct components through which discretionary actions by CAL FIRE and the County are subject to analysis in this Draft EIR.

### 2.2.3 EROSION CONTROL PLAN AND VINEYARD INSTALLATION

As described above, the timber harvest is the precursor action to the Proposed Project, which consists of two direct elements: the conversion of timberland to vineyard and implementation of the ECP. These actions effect the development of the Proposed Project on the property and would occur in the following order:

1. The separate harvest of 10.0± acres of timberland on the property and clearing of 3.6± acres of brush and ruderal lands, permitted separately under a THP approved by CAL FIRE;
2. the conversion of 10.5 net acres of vineyard within the 13.6. acre clearing limits; and
3. the implementation of a County-approved ECP, which is required per County guidelines for the vineyard development since onsite slopes exceed a five percent grade.

## 2.3 ALTERNATIVES TO THE PROPOSED PROJECT

CEQA *Guidelines* require EIRs to describe and evaluate a range of reasonable alternatives to a project, or to the location of a project, which would feasibly attain most of the basic project objectives and avoid or substantially lessen significant project impacts. Although there are no significant unmitigable project impacts identified for the Proposed Project, **Section 5.0** evaluates the alternatives considered to the Proposed Project. These include the No Project Alternative and No Timber Harvest Alternative, which are briefly described below. Refer to **Section 5.0** for a complete description of these alternatives.

### 2.3.1 NO PROJECT ALTERNATIVE

With the No Project Alternative, the property would continue to remain in its existing state as partially forested with areas of chaparral, manzanita, and ruderal/developed lands. No changes to the existing forested areas, access road, or open space areas would occur.

### 2.3.2 NO TIMBER CONVERSION ALTERNATIVE

The No Timber Conversion Alternative would result in the planting of vineyard on 4.0± acres of non-timberland on the property, including chaparral, manzanita, and ruderal/developed areas. No timber would be harvested as a result of this alternative; therefore, no THP or TCP would be needed and CAL FIRE would not have discretionary approval authority over the project. The 4.0± acres proposed for planting is situated on some areas with slopes greater than five percent, so a revised ECP would be required and Napa County would have approval authority over the No Timber Conversion Alternative. No trees would be removed as a result of this alternative and therefore no habitat mitigation would be needed. The existing Mixed Oak woodland would not be permanently preserved on the property in the area designated as the Habitat Retention Area. Further, no enhancement activities (e.g. removal of competing species, refer to **Section 4.4**) would occur the areas identified for enhancement of Mixed Oak woodland habitat. The ECP would be reduced in size and scope when compared to the Proposed Project ECP, and would not improve existing sedimentation conditions by the 27 percent reduction proposed.

## 2.4 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

**Table 2-1** presents a summary of impacts and proposed mitigation measures for the Proposed Project by resource area that would avoid or minimize potential project-related impacts identified in **Section 4.0** of this EIR. In the table, the level of significance of each environmental impact is indicated both before and after the application of the recommended mitigation measure(s). Refer to the environmental analysis sections in **Section 4.0** for detailed discussions of all project impacts and mitigation measures.

Additional mitigation measures specific to the timber harvest element of the Proposed Project are included in the THP, which is provided as **Appendix H** to this EIR. These measures are specifically designed to reduce impacts related to timber removal and harvest activities on the property conducted pursuant to the terms of the THP under California Forest Practices Rules.

The mitigation measures in **Table 2-1**, organized by resource area below, will be implemented with the TCP and ECP. The mitigation measures required throughout **Section 4.0** of this Draft EIR are binding to the THP process, and are included in the THP. Collectively, the mitigation measures included in **Table 2-1** and in the THP (**Appendix H**) would reduce potentially significant impacts of the Proposed Project to a less-than-significant level.

**TABLE 2-1**  
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<b>4.1 Aesthetics</b>  <b>Impact 4.1-1:</b> The Proposed Project would not have a substantial adverse effect on a scenic vista.	Less than Significant	<b>Mitigation Measure 4.1-1:</b> No mitigation is necessary.	Not Applicable
<b>Impact 4.1-2:</b> The Proposed Project would not substantially damage scenic resources, such as scenic highway corridors and scenic landscape units.	Less than Significant	<b>Mitigation Measure 4.1-2:</b> No mitigation is necessary.	Not Applicable
<b>Impact 4.1-3:</b> The Proposed Project could substantially degrade the existing visual character of the site and its surroundings. This would be a potentially significant impact. The project site would be viewable from a hunting lodge located to the west of the project site on the Preserve.	Less than Significant	<b>Mitigation Measure 4.1-3:</b> No mitigation is necessary.	Not Applicable
<b>Impact 4.1-4:</b> The Proposed Project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.	Less than Significant	<b>Mitigation Measure 4.1-4:</b> No mitigation is necessary.	Not Applicable
<b>4.2 Agriculture and Forestry</b>  <b>Impact 4.2-1:</b> The Proposed Project would result in the loss of forest land through conversion of forest land to non-forest use. Given the limited size of the Proposed Project, this will have a less-than-significant impact to the forest land of the State and region.	Less than Significant	<b>Mitigation Measure 4.2-1:</b> No further mitigation is required.	Not Applicable
<b>4.3 Air Quality</b>  <b>Impact 4.3-1:</b> During construction, the timber harvest, land clearing, earthmoving, movement of vehicles, and wind erosion of exposed soil associated with implementation of the Proposed Project would have the potential to cause nuisance related to fugitive dust and exceedance of applicable BAAQMD thresholds for criteria pollutants. This is a potentially significant impact.	Potentially Significant	<b>Mitigation Measure 4.3-1:</b> The Applicant shall implement a fugitive dust abatement program during the construction of #P13-00373-ECPA to further reduce PM <sub>10</sub> and PM <sub>2.5</sub> emissions, which shall include the following elements:  Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>Cover all exposed dirt stockpiles.</p> <p>Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent paved streets.</p> <p>Limit traffic speeds on unpaved roads to 15 miles per hour (mph).</p> <p>Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.</p> <p>In addition to the above measures, the Applicant shall also implement the required basic construction mitigation measures as recommended by the BAAQMD during the construction of the Proposed Project, which shall include the following elements:</p> <p>All exposed surfaces (e.g., parking areas, staging areas, and unpaved access roads) shall be watered as needed to ensure dust abatement.</p> <p>Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.</p> <p>All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.</p>	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.</p> <p>All heavy duty construction equipment shall be fitted with diesel particulate matter filters and use only aqueous diesel fuel.</p>	
<p><b>Impact 4.3-2:</b> Operation of the Proposed Project would attract additional vehicles to the property, resulting in new regional emissions; however, new emissions would not be substantial and a less-than-significant impact would result.</p>	Less than Significant	<p><b>Mitigation Measure 4.3-2:</b> No mitigation is required.</p>	Not Applicable
<p><b>Impact 4.3-3:</b> Construction of the Proposed Project would slightly increase traffic volumes and congestion levels on local roadways, resulting in changes to CO concentrations; however, changes in CO concentrations would not be substantial and a less-than-significant impact would result.</p>	Less than Significant	<p><b>Mitigation Measure 4.3-3:</b> No mitigation is required.</p>	Not Applicable
<p><b>Impact 4.3-4:</b> Project emissions have the potential to cause distress to sensitive receptors. However, project-related emissions would not be substantial and a less-than-significant impact would result.</p>	Less than Significant	<p><b>Mitigation Measure 4.3-4:</b> No mitigation is required.</p>	Not Applicable
<p><b>Impact 4.3-5:</b> Project operation could result in operational odors. However, odors from operation would not be substantial and a less than significant impact would result.</p>	Less than Significant	<p><b>Mitigation Measure 4.3-5:</b> No mitigation is required.</p>	Not Applicable
<p><b>4.4 Biological Resources</b></p> <p><b>Impact 4.4-1:</b> Development of the Proposed Project would convert 5.48± acres of Mixed Oak Alliance to vineyard, which could result in adverse impacts to biological resources. In addition, the Proposed Project may conflict with Napa County General Plan Goals CON-2 and CON-6 and Policies CON-17 and CON-24. This would be a potentially significant impact. However, with implementation of <b>Mitigation Measure 4.4-3</b> below, this impact would be reduced</p>	Potentially Significant	<p><b>Mitigation Measure 4.4-1:</b> A Habitat Retention Area (HRA) shall be created on the property that protects oak woodlands via two mechanisms: retention and enhancement. Mitigation for the 5.32 acres of oak woodland impacted by the project at a 2:1 ratio would necessitate 10.6± acres of high value woodland habitat be enhanced and maintained within the property. This HRA is shown in <b>Figure 4.4-3</b> (refer to <b>Section 4.4</b>) and discussed</p>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
to less than significant.		<p>further below.</p> <p>A total of 13.1 acres are included in the HRA; this acreage includes the 3.5± acres of oak woodland habitat that will not be impacted by the Proposed Project. The remaining 9.6± acres of the HRA is comprised of California Foothill Pine Alliance and Chamise Chaparral Alliance that contains scattered black and interior live oaks, and will be enhanced as discussed below. These areas will be protected by a <i>de facto</i> conservation easement due to Napa County Ordinance 1219 which adopts Section 18.108.027.</p> <p><i>Retention</i></p> <p>Avoidance measures would retain areas identified as high value oak woodlands that occur along riparian corridors. Furthermore, oak trees provide slope stability and reduced erosion, particularly on steep slopes (i.e., greater than 30 percent) and near the heads of drainages. A total of 3.5± acres of existing Mixed Oak Alliance within the property shall be retained by means of avoidance to the maximum extent feasible through project design.</p> <p>All avoided trees within 50 feet of ground-disturbing activities shall be protected with visible plastic fencing during all phases of construction activities. Visible fencing shall be placed at the outside edge of the dripline (edge of the tree canopy) to protect above- and below-ground tissues of these trees and shall be field verified by Napa County prior to the commencement of any grading or vegetation removal. The following shall not occur within the buffers of any retained tree(s): parking or storage of vehicles, machinery, or other equipment; stockpiling of excavated soils, rocks, or construction materials; or dumping of oils or other chemicals.</p> <p><i>Enhancement and Restoration</i></p> <p>The Oak Enhancement Areas shown in <b>Figure 4.4-3</b> contain oaks in the overstory canopy and in the understory canopy. The HRA proposes to reduce competition for the</p>	

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>oaks in the understory by removing competition associated with the non-oak trees in the overstory. This will entail removing California foothill pine (<i>Pinus sabiniana</i>) and/or chaparral [chamise (<i>Adenostoma fasciculatum</i>), manzanita (<i>Arctostaphylos</i> ssp.), etc.]. This reduction may be in the form of cutting pine into firewood and/or creating standing snags to improve wildlife habitat. This will be done on a site-specific basis as directed by a Registered Professional Forester. This reduction will be accomplished by the use of chainsaws to cut the manzanita and the pine trees. The manzanita will be left in place to provide protective habitat for birds and animals, while the pine will be removed if it can be accessed from the existing road. However, most of it will be felled and/or girdled. Girdling of the pine trees will create snag habitat presently lacking in some areas. No mechanical equipment is allowed in the HRA, except on the existing Friesen Drive. All chainsaw work to reduce overstory competition from the manzanita and pines shall be done during the month of November, with no exceptions. This will allow the operator to easily locate and protect the black oak, as leaves will have begun senescence and should be yellow by then. Operations are also limited to November with the creation of the pine snags. The cooler weather and late season will eliminate potential increases in insect populations associated with the pine. It is anticipated that about 30 percent of the pines will be affected.</p> <p>Reducing the overstory competition will allow the existing oak seedlings to grow; using naturally-established oaks rather than replanting will also ensure higher success rates of mature oaks. At a minimum, a total of 9.6 acres of Oak Enhancement Areas, as identified on <b>Figure 4.4-3</b>, shall receive the treatment described above. This treatment will improve habitat connectivity within the most fragmented habitat areas, thus enhancing the natural habitat and providing increased benefits for wildlife.</p>	
<p><b>Impact 4.4-2:</b> Development of the Proposed Project could result in impacts to waters of the U.S. and therefore may be inconsistent with Policy CON-26. However, with the stream buffers required by</p>	<p>Less than Significant</p>	<p><b>Mitigation 4.4-2:</b> No further mitigation is required.</p>	<p>Not Applicable</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
the ECP and the mitigation measures required in <b>Section 4.8 Hazardous Materials</b> , impacts are less-than-significant.			
<b>Impact 4.4-3:</b> Development of the Proposed Project would have the potential to affect habitat for special status plant species on the project site and could result in conflicts with Goal CON-2 that requires the maintenance and enhancement of existing levels of biodiversity. This is a potentially significant impact, but would be reduced to less-than-significant levels with implementation of <b>Mitigation Measure 4.4-3</b> .	Potentially Significant	<b>Mitigation Measure 4.4-3:</b> A seed bank retention strategy shall be utilized for the protection of Napa lomatium ( <i>Lomatium repostum</i> ) on the property. Prior to ground disturbing activities, a qualified biologist or botanist shall delineate the extent of the Napa lomatium populations within the clearing limits. All Napa lomatium plants shall be transplanted and the top inch of topsoil shall be skimmed at these locations. The plants and soil shall be moved to the 150-foot buffer zone surrounding the pond in an area that is ecologically suitable for Napa lomatium, as identified by the qualified biologist or botanist.	Less than Significant
<b>Impact 4.4-4:</b> Development of the Proposed Project would have the potential to affect northern spotted owl. The Douglas Fir Alliance on the southwestern portion of the property provides a small patch of potentially suitable breeding and foraging habitat for northern spotted owl. The THP includes harvest of trees within this habitat, which could potentially impact northern spotted owl breeding and foraging.	Less than Significant	<b>Mitigation Measure 4.4-4:</b> All information regarding northern spotted owl shall be submitted to CAL FIRE, and annual operations will not commence until CAL FIRE has determined that the project conforms to the USFWS Scenario 3. Protocol survey calling procedures shall follow the revised (January 9, 2012) Protocol for Surveying Proposed Management Activities that may Impact Northern Spotted Owl (USFWS, 2012).  The Applicant shall implement the following measures to avoid take of the northern spotted owl (USFWS, 2012): <ul style="list-style-type: none"> <li>▪ No timber operations shall occur until all surveys which follow the most current approved USFWS survey protocol for the current, or immediately preceding, survey period are complete; the results have been provided to CAL FIRE to be evaluated for consistency with the plan and protocol; and the results amended into the plan.</li> </ul>	Not Applicable
<b>Impact 4.4-5:</b> Development of the Proposed Project would have the potential to affect special status bird species and nesting and migratory bird species protected under the Migratory Bird Treaty Act. This is a potentially significant impact. After mitigation, impacts would be less than significant.	Potentially Significant	<b>Mitigation 4.4-5:</b> The Applicant shall implement the following measures to avoid disturbing any special status bird species nesting on the project parcel in accordance with the following CDFW-recommended measures:  If project activities are scheduled between February 15 and September 15, CDFW recommends surveys and avoidance measures for nesting birds. With respect to surveys for nesting bird and raptor species, CDFW	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>recommends that the project specifies: 1) nest surveys be conducted no earlier than 14 days prior to tree removal and/or breaking ground (surveys should be conducted a minimum of 14 days prior to disturbance), 2) in the event that nesting birds are found, the project applicant should consult with CDFW and obtain approval for nest-protection buffers prior to tree removal and/or ground disturbing activities, and 3) nest protection buffers will remain in effect until the young have fledged. All nest protection measures should apply to off-site impacts and within 500 feet of project activities. If a lapse in project-related work of 15 days or longer occurs, another focused survey and, if required, consultation with CDFW, will be required before project work can be reinitiated. If active nests are found during a preconstruction survey, 300-foot no-disturbance buffer zones shall be created around active raptor and songbird nests and shall be maintained until it is determined by a qualified biologist that all young have fledged. These buffer zones may be modified in coordination with CDFW based on existing conditions at the project site. Buffer zones shall be fenced with temporary construction fencing and remain in place until the end of the breeding season or until the young have fledged. If a 15-day or greater lapse of project-related work occurs during the breeding season, another bird preconstruction survey and consultation with CDFW will be required before project work can be reinitiated.</p>	
<p><b>Impact 4.4-6:</b> Development of the Proposed Project would have the potential to affect bat species of special concern and species that are candidates for listing by CDFW. This would be a potentially significant impact. After mitigation, impacts would be less than significant.</p>	<p>Potentially Significant</p>	<p><b>Mitigation 4.4-6:</b> A qualified biologist shall conduct a habitat assessment for potential suitable habitat (trees with suitable cavities) within the project site no more than three days before project activities commence. If the habitat assessment reveals any suitable cavities, a qualified biologist shall conduct a concentrated presence/absence survey during peak activity periods on each tree with suitable cavities. If bats are found to be present during peak activity periods, then the qualified biologist shall submit an avoidance plan to the County and CDFW for approval. The avoidance plan shall evaluate the length of time disturbance, equipment noise, and type of habitat present at the project site. In the event the bat avoidance measures required by CDFW result in a</p>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		reduction or modification of vineyard block boundaries, the ECP shall be revised by the applicant/engineer and submitted to the County.	
<b>Impact 4.4-7:</b> Development of the Proposed Project would not have the potential to affect the western pond turtle (WPT); therefore, this is a less-than-significant impact.	Less than Significant	<b>Mitigation Measure 4.4-7:</b> No mitigation is required.	Not Applicable
<b>Impact 4.4-8:</b> The Proposed Project would have the potential to impact the federally threatened California red-legged frog (CRLF; <i>Rana draytonii</i> ) because timber harvest operations will occur within 300 feet of the existing reservoir. After mitigation to incorporate the USFWS' take avoidance scenario, this is a less-than-significant impact.	Potentially Significant	<p><b>Mitigation Measure 4.4-8:</b> Consistent with Scenario IV of the USFWS's <i>California Red Legged Frog Take Avoidance Scenarios</i> (March 25, 2008), the Applicant shall implement the following measures for the protection of CRLF:</p> <ul style="list-style-type: none"> <li>▪ All suitable habitat must maintain a 30-foot no-cut buffer; no equipment within the no-cut buffer; trees felled away from suitable habitat;</li> <li>▪ Pile burning must be outside the 300-foot buffer of suitable habitat;</li> <li>▪ No herbicide use allowed within 300 feet of suitable habitat except for direct application to stumps;</li> <li>▪ Roads and landings, if constructed, must be at least 300 feet from suitable habitat, and construction must occur in the dry season;</li> <li>▪ Water drafting from suitable habitat (for dust abatement) must be done with a hose place in a bucket in a deep pool. The bucket must be covered by less than 1-inch mesh, and the mouth of the hose must be covered by 0.25-inch mesh.</li> </ul>	Less than Significant
<b>Impact 4.4-9:</b> Development of the Proposed Project could interfere with existing wildlife movement corridors and conflict with General Plan Policy CON-18 which requires vineyard development to be designed to minimize the reduction of wildlife movement to the maximum extent feasible. Based on the proposed design, the project impacts to wildlife movement would be less than significant.	Less than Significant	<b>Mitigation Measure 4.4-9:</b> No mitigation is required.	Not Applicable
<b>4.5 Cultural Resources</b>			
<b>Impact 4.5-1:</b> The project implementation could result in the disturbance of known cultural resources located at the project site. This would be a	Potentially Significant	<b>Mitigation 4.5-1:</b> A qualified archaeologist and Native American representative from the Mishewal-Wappo of Alexander Valley shall be present during ground disturbing	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
significant impact.		activities within the Friesen Site area (CA-NAP-1124) as recommended (Whatford, 2014). Monitors shall be present during work within the site area and up to 25 feet beyond the site boundaries. There is the possibility that potentially important discoveries could be made in this area. In the event that a discovery is made, work should temporarily halt at the place of discovery until the find is evaluated and a plan of treatment is implemented. Additionally, no collection of cultural materials by project personnel shall be allowed.	
<b>Impact 4.5-2:</b> The project implementation has the potential to negatively impact previously unknown cultural resources within the property. This is a potentially significant impact. However, with implementation of <b>Mitigation Measure 4.5-2</b> for inadvertent discovery, impacts are reduced to less-than-significant levels.	Potentially Significant	<b>Mitigation Measure 4.5-2:</b> There is a possibility that unanticipated subsurface archaeological deposits may exist within the proposed vineyard areas, as archaeological sites may be buried with no surface manifestation, or may be obscured by vegetation. In accordance with CEQA <i>Guidelines</i> Section 15064.5 (f), should any previously unknown prehistoric or historic resources, such as, but not limited to, obsidian and chert flaked-stone tools or toolmaking debris; shellfish remains, stone milling equipment, concrete, or adobe footings, walls, filled wells or privies, deposits of metal, glass, and/or ceramic refuse be encountered during onsite construction activities, earthwork within 100 feet of these materials shall be stopped and the Applicant shall consult with a professional archaeologist and tribal representatives, and the provisions of 14 CCR 929.3 shall be applied. Once the archaeologist has had the opportunity to evaluate the find he/she shall consult the local California Department of Forestry and Fire Protection (CAL FIRE) Archaeologist regarding the results of the evaluation and appropriate site treatment options, as necessary. Said measures shall be carried out prior to any resumption of related ceased earthwork. All significant cultural resource materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards and a copy of the draft report provided to the local CAL FIRE Archaeologist for review and approval prior to finalization of it.	Less than Significant
<b>Impact 4.5-3:</b> The project implementation could result in the discovery and disturbance of unknown	Potentially Significant	<b>Mitigation Measure 4.5-3:</b> In the event that human remains are discovered, the provisions of the California Health and Safety Code Section 7050.5 (b) shall be	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
human remains.		<p>followed, including contacting the Napa County Coroner within 24 hours of the find. Upon determining the remains as being Native American in origin, the Coroner would be responsible for contacting the NAHC within 24 hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant (MLD), who is designated by the NAHC.</p> <p>Implementation of this mitigation measure would reduce this impact to less than significant.</p>	
<p><b>4.6 Geology and Soils</b></p> <p><b>Impact 4.6-1:</b> Development of the Proposed Project would alter the rate of sediment erosion and yield onsite. This is a potentially significant impact. However upon implementation of the erosion control methods detailed in the ECP (<b>Appendix B</b>), the timber harvest and vineyard conversion would all be designed to create a decrease in sediment erosion and yield that would result in a less than significant impact to offsite receiving waters.</p>	Potentially Significant	<p><b>Mitigation Measure 4.6-1:</b> With full implementation of the ECP (<b>Appendix B</b>) and the implementation of the erosion control measures in the THP (<b>Appendix H</b>), no further mitigation is required to reduce erosion from vineyard blocks. To reduce the potential for erosion due to use of the rocked low-water crossing on Friesen Drive, the following measures shall be implemented:</p> <ul style="list-style-type: none"> <li>▪ Use of the low water crossing is limited to pickup trucks and or cars during the winter period.</li> <li>▪ No heavy equipment is allowed to use the crossing if there is water flow.</li> <li>▪ No material, vegetative or otherwise may be dragged through the crossing at any time, wet or dry.</li> <li>▪ All vegetation will be transported, if needed, by 10 wheel dump trucks to landings east of the low water crossing.</li> <li>▪ No modification of the existing crossing is permitted at any time.</li> </ul>	Less than Significant
<p><b>Impact 4.6-2:</b> Development of the Proposed Project would involve earthmoving and grading activities that would alter the existing topographic and geologic conditions at the property; however, conditions would not be altered such that significant damage to the property from excessive erosion, soil creep, catastrophic slope, or ground failure would occur nor would such hazards be likely to occur in</p>	Potentially Significant	<p><b>Mitigation Measure 4.6-2:</b> The recommendations found in the engineering geological and geological technical investigation shall be implemented, including:</p> <ul style="list-style-type: none"> <li>• On the rock disposal area typical detail, the note for the keyway should specify a minimum embedment of 12 inches into firm soil or bedrock.</li> </ul>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
the event of an earthquake. This impact is less than significant.			
<p><b>4.7 Greenhouse Gas Emissions</b></p> <p><b>Impact 4.7-1:</b> Construction of the Proposed Project would emit GHGs and would have the potential to exacerbate global climate change. Project sources of GHG emissions during construction would include the transport and delivery of construction equipment to the property; operation of construction equipment, including equipment used for the timber harvest, planting the vineyard, and installing the erosion control system; worker trips; fuel use; and material transport. This is a potentially significant impact; however, after mitigation, impacts would be considered less than significant.</p>	Potentially Significant	<p><b>Mitigation Measure 4.7-1:</b> The Applicant shall implement the following mitigation measures to reduce project-related GHG emissions during construction of the Proposed Project:</p> <ul style="list-style-type: none"> <li>▪ The Applicant shall maintain all construction equipment in accordance with manufacturers' specifications.</li> <li>▪ The Applicant shall limit construction equipment idling time to less than five minutes.</li> </ul>	Less than Significant
<p><b>Impact 4.7-2:</b> Operation of the Proposed Project would emit GHGs and would have the potential to exacerbate global climate change. Project operational sources of GHG emissions would include vehicles (produce, material, and worker transport) traveling to and from the Proposed Project, energy use, and limited water transport. As shown below, impacts would be considered less than significant.</p>	Less than Significant	<b>Mitigation Measure 4.7-2:</b> No mitigation is required.	Not Applicable
<p><b>4.8 Hazards and Hazardous Materials</b></p> <p><b>Impact 4.8-1:</b> There is potential for incidental leakage, rupture, or spillage when fueling timber harvest and agricultural equipment during construction and operation of the Proposed Project, which could result in hazards to the public or environment. If substantial quantities of diesel fuel or unleaded gasoline reach soil or on-site drainage areas, surface and/or groundwater quality may be degraded. This is a potentially significant impact.</p>	Potentially Significant	<p><b>Mitigation Measure 4.8-1:</b> In addition to the erosion control measures described in <b>Section 3.0</b>, personnel shall follow written BMPs for filling and servicing construction equipment and vehicles. The BMPs, which are designed to reduce the potential for incidents involving hazardous materials, shall include:</p> <ul style="list-style-type: none"> <li>▪ Refueling shall be conducted only with approved pumps, hoses, and nozzles.</li> <li>▪ Catch-pans shall be placed under equipment to catch potential spills during servicing.</li> <li>▪ All disconnected hoses shall be placed in containers to collect residual fuel from the hose.</li> <li>▪ Vehicle engines shall be shut down during</li> </ul>	Less than Significant

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<p>refueling.</p> <ul style="list-style-type: none"> <li>▪ No smoking, open flames, or welding shall be allowed in refueling or service areas.</li> <li>▪ Refueling and all construction work shall be performed outside of any onsite stream buffer zones to prevent contamination of water in the event of a leak or spill.</li> <li>▪ Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.</li> <li>▪ A spill containment kit that is recommended by the Napa County PBES or local fire department will be onsite and available to staff if a spill occurs.</li> </ul> <p>In the event that contaminated soil and/or groundwater or other hazardous materials are generated or encountered during construction, all work shall be halted in the affected area and the type and extent of the contamination shall be determined. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with federal, state, and local regulations. If containment and size of the spill is beyond the scope of the contractor, proper authorities shall be notified.</p> <p>The potential release of hazardous materials during construction of the Proposed Project is reduced to less than significant with the implementation of the mitigation measure above.</p>	
<p><b>Impact 4.8-2:</b> In the event IPM techniques are found to be inadequate for vineyard maintenance, the Proposed Project would include the use of pesticides for vineyard maintenance. Non-compliance with hazardous materials regulations including improper pesticide use, storage, or disposal can be hazardous to human health and the environment. Non-compliance would be considered a potentially significant impact.</p>	<p>Potentially Significant</p>	<p><b>Mitigation Measure 4.8-2:</b> In the event pesticides are used onsite, only a certified pest applicator shall apply the pesticides and personnel shall follow Standard Operating Procedures (SOPs) when applying chemicals to the vineyard. SOPs for pesticide use, shall include the following:</p> <ul style="list-style-type: none"> <li>▪ Purchase only enough pesticide that would be used per season.</li> <li>▪ All chemicals will be stored in their original containers. Labels on the containers will not be removed.</li> </ul>	<p>Less than Significant</p>

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
		<ul style="list-style-type: none"> <li>▪ Chemicals will be kept in a well-ventilated locked area.</li> <li>▪ Chemical storage areas will be 100 feet from any drainage area, stream, or groundwater well.</li> <li>▪ If a chemical must be disposed of, contact the Napa County Agricultural Commissioner to locate a hazardous waste facility for proper disposal.</li> <li>▪ Chemicals will never be poured down the sink, toilet, or stream.</li> <li>▪ Proper personal protection equipment will be utilized when working with chemicals.</li> </ul> <p>Implementation of the mitigation measure above reduces potential impacts from improper chemical use and storage to a less than significant level.</p>	
<p><b>Impact 4.8-3:</b> The potential release of hazardous materials into the environment may affect surface water or groundwater during operation and maintenance of the vineyard. This is a potentially significant impact.</p>	Potentially Significant	<p><b>Mitigation Measure 4.8-3:</b> In addition to <b>Mitigation Measures 4.8-1</b> and <b>4.8-2</b>, fuel loading and chemical mixing areas should be established outside the proposed setbacks and away from any areas that could potentially drain off-site or potentially affect surface and groundwater quality. When farm equipment is cleaned at the existing facility, only rinse water that is free of gasoline residues, pesticides and other chemicals, and waste oils should be allowed to diffuse back into vineyard areas. In the event pesticides, herbicides or fungicides are used, all rinse water from farm equipment and rinse water from application equipment used to apply chemicals should be collected and stored in containers that are of sufficient size to contain the water until a hazardous materials transporter can remove the rinse water. No rinse water shall be drained to a septic system or discharged to ground or surface water to prevent the release of hazardous materials into the environment during operation and maintenance of the Proposed Project. Impacts after mitigation would be less than significant.</p>	Less than Significant
<p><b>Impact 4.8-4:</b> Construction of the Proposed Project has the potential to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. With compliance with PRC § 4427 and 4428 and the Forest Practice Rules Article 8, this impact is less than significant.</p>	Less than Significant	<p><b>Mitigation Measure 4.8-4:</b> No mitigation is required.</p>	Not Applicable

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
<b>Impact 4.8-5:</b> Operation of the Proposed Project would reduce exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. This is a beneficial impact.	Less than Significant	<b>Mitigation Measure 4.8-5:</b> No mitigation is required.	Not Applicable
<b>4.9 Hydrology and Water Quality</b>  <b>Impact 4.9-1:</b> Development of the Proposed Project would alter the existing drainage pattern of the property. This is a potentially significant impact. However, with implementation of the ECP, a slight decrease in the volume and rate of runoff onsite would occur and therefore a less-than-significant impact on receiving waters would result.	Potentially Significant	<b>Mitigation Measure 4.9-1:</b> With implementation of the Erosion Control Plan, potential impacts are reduced to less than significant and no additional mitigation is required.	Less than Significant
<b>Impact 4.9-2:</b> Development of the Proposed Project has the potential to alter sedimentation levels in runoff flowing to off-site receiving waters. This is a potentially significant impact. However, as discussed in <b>Section 4.6</b> , there will be a decrease in sediment production from the parcel with implementation of the ECP and there will be a less-than-significant effect to receiving waters.	Potentially Significant	<b>Mitigation Measure 4.9-2:</b> With implementation of the Erosion Control Plan, potential impacts are reduced to less than significant and no additional mitigation is required.	Less than Significant
<b>Impact 4.9-3:</b> The Proposed Project would not be located in a FEMA flood zone. Development of the Proposed Project would not exacerbate flooding or expose people or structures to a risk of loss.	Less than Significant	<b>Mitigation Measure 4.9-3:</b> No mitigation is required.	Not Applicable
<b>Impact 4.9-4:</b> Development of the Proposed Project would not 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. This is a less-than-significant impact.	Less than Significant	<b>Mitigation Measure 4.9-4:</b> No mitigation is required.	Not Applicable
<b>Impact 4.9-5:</b> Development of the Proposed Project would not result in conflicts within Napa County Code Section 18.108.027. Napa County Code Section 18.108.027 requires the retention of a minimum of 60 percent of the tree canopy cover, or when vegetation consists of shrub and brush without tree canopy, a minimum of 40 percent of the shrub, brush, and associated annual and perennial herbaceous vegetation within sensitive domestic	Less than Significant	<b>Mitigation Measure 4.9-5:</b> No mitigation is required.	Not Applicable

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
supply watersheds. This is a less-than-significant impact.			
<b>4.10 Land Use</b> <b>Impact 4.10-1:</b> The Proposed Project will not physically divide an existing community. This is a less-than-significant impact.	Less than Significant	<b>Mitigation Measure 4.10-1:</b> No mitigation is required.	Not Applicable
<b>Impact 4.10-2:</b> The Proposed Project will not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. This impact would be less than significant.	Less than Significant	<b>Mitigation Measure 4.10-2:</b> No mitigation is required.	Not Applicable
<b>Impact 4.10-3:</b> The Proposed Project would not conflict with an applicable habitat conservation plan or natural community conservation plan. This impact would be a less than significant.	Less than Significant	<b>Mitigation Measure 4.10-3:</b> No mitigation is required.	Not Applicable
<b>4.11 Noise</b> <b>Impact 4.11-1:</b> Construction and operation of the Proposed Project would not expose persons to a temporary or substantial permanent increase in the ambient noise level or generate noise levels in excess of standards established in the General Plan or County noise ordinance, or applicable standards of other agencies. This impact is less than significant.	Less than Significant	<b>Mitigation Measure 4.11-1:</b> No mitigation required.	Not Applicable
<b>Impact 4.11-2:</b> The Proposed Project would not expose persons to or generate excessive groundborne vibration noise levels.	Less than Significant	<b>Mitigation Measure 4.11-2:</b> No mitigation is required.	Not Applicable
<b>Impact 4.11-3:</b> The Proposed Project is not located in the vicinity of a private airstrip. The nearest airport, Angwin-Parrett Field, is located within 3.25 miles to the southeast. The Proposed Project would not place residences in the vicinity of the airport; therefore, the Proposed Project would not expose people residing in the project area to excessive noise levels. Given the distance of the project site to the airport and the topography of the region; therefore, this is a less than significant impact.	Less than Significant	<b>Mitigation Measure 4.11-3:</b> No mitigation is required.	Not Applicable
<b>4.12 Traffic</b> <b>Impact 4.12-1:</b> The Proposed Project would	Potentially	<b>Mitigation Measure 4.12-1:</b> The following mitigation	Less than

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
increase traffic volumes on roadways in the area during construction phases (Timber Harvest and Vineyard Construction). This is a potentially significant impact, but it is reduced to less-than-significant levels with implementation of	Significant	<p>measures provided in the Timber Conversion Plan (<b>Appendix I</b>) shall be required for construction vehicles using off-site roadways during construction activities.</p> <ul style="list-style-type: none"> <li>▪ All oversized construction vehicles are advised to use extreme caution when transporting milled lumber along county roads, especially in areas of limited site visibility.</li> <li>▪ Oversized construction vehicles are to operate with headlights on for safety and are not to exceed 15 miles per hour on Friesen Drive, and 25 miles per hour while on rural county roads.</li> <li>▪ Oversized vehicles are not to use Jake brakes in the immediate vicinity of residential neighborhoods.</li> <li>▪ All construction activities are restricted to Monday through Saturday 7 am to 7 pm. No activities may take place on Sundays and holidays.</li> <li>▪ Heavy equipment and material delivery and removal will be limited to non-peak hours (9 AM to 4 PM) and will be maintained and/or stock piled onsite to avoid multiple in and out trips to the extent practical and feasible.</li> </ul>	Significant
<b>Impact 4.12-2:</b> The Proposed Project would increase traffic volumes on roadways in the area during operation of the vineyard development.	Less than Significant	<b>Mitigation Measure 4.12-2:</b> No mitigation is required.	Not Applicable
<b>Impact 4.12-3:</b> Construction and operational traffic generated by the Proposed Project will not result in inadequate emergency access. This is a less-than-significant impact.	Less than Significant	<b>Mitigation Measure 4.12-3:</b> No mitigation is required.	Not Applicable
<b>Impact 4.12-4:</b> Traffic generated by construction and operation of the Proposed Project does not have the potential to impact pedestrian, bicycle, and public transport in the vicinity of the project. This is a less-than-significant impact.	Less than Significant	<b>Mitigation Measure 4.12-4:</b> No mitigation is required.	Not Applicable
<b>Impact 4.12-5:</b> The temporary increase in traffic from construction worker vehicles and the import and export of materials could adversely affect traffic and transportation conditions in the project area, resulting in a conflict with applicable County General Plan policies establishing measures of effectiveness	Less than Significant	<b>Mitigation Measure 4.12-5:</b> No mitigation is required.	Not Applicable

Environmental Impact	Level of Significance Before Mitigation	Mitigation Measure	Level of Significance After Mitigation
for the performance of the circulation system. However, this impact is less than significant.			
<b>Impact 4.12-6:</b> Traffic generated by the Proposed Project does not have the potential to result in changes to air traffic patterns.	Less than Significant	<b>Mitigation Measure 4.12-6:</b> No mitigation is required.	Not Applicable

## ***SECTION 3.0***

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### PROJECT DESCRIPTION

# SECTION 3.0

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## PROJECT DESCRIPTION

### 3.1 PROJECT LOCATION

The Davis Family, LLC Friesen Vineyards Project (Proposed Project) is located at 1875 Friesen Drive in the town of Angwin, roughly six miles north of the City of Saint Helena in northern Napa County (County), California. The property is situated within the northwest quarter of Section 25, Township 9 North, Range 6 West of the Mount Diablo Baseline and Meridian (MDBM) on the “Saint Helena, California,” U.S. Geological Society (USGS) 7.5-minute quadrangle. The property is located within the Bell Canyon Reservoir watershed (Calwater 2206.500202), a subunit of the Napa River watershed, and encompasses County assessor’s parcel numbers (APNs) 018-060-012 and 018-060-013. **Figure 3-1** shows a map of the regional location of the property, and **Figure 3-2** shows the site and vicinity. An aerial photograph of the property is included as **Figure 3-3**.

### 3.2 SITE AND VICINITY

The 38.7-acre property is situated on a hill top and southwest-facing hillside. On-site elevations range from approximately 2,000 to 2,150 feet above mean sea level. Existing slopes on the property generally range from 8 to 27 percent; less than 1 acre contains slopes of 30 percent or greater. The property and all surrounding properties are zoned Agricultural Watershed (AW). Land uses in the vicinity of the property include vineyards, rural residences, and open space. The 3,030-acre Dunn-Wildlake Ranch Preserve, which is managed by the Land Trust of Napa County, is located to the west, south, and east of the property; the preserve is adjacent to the west and east borders of the property.

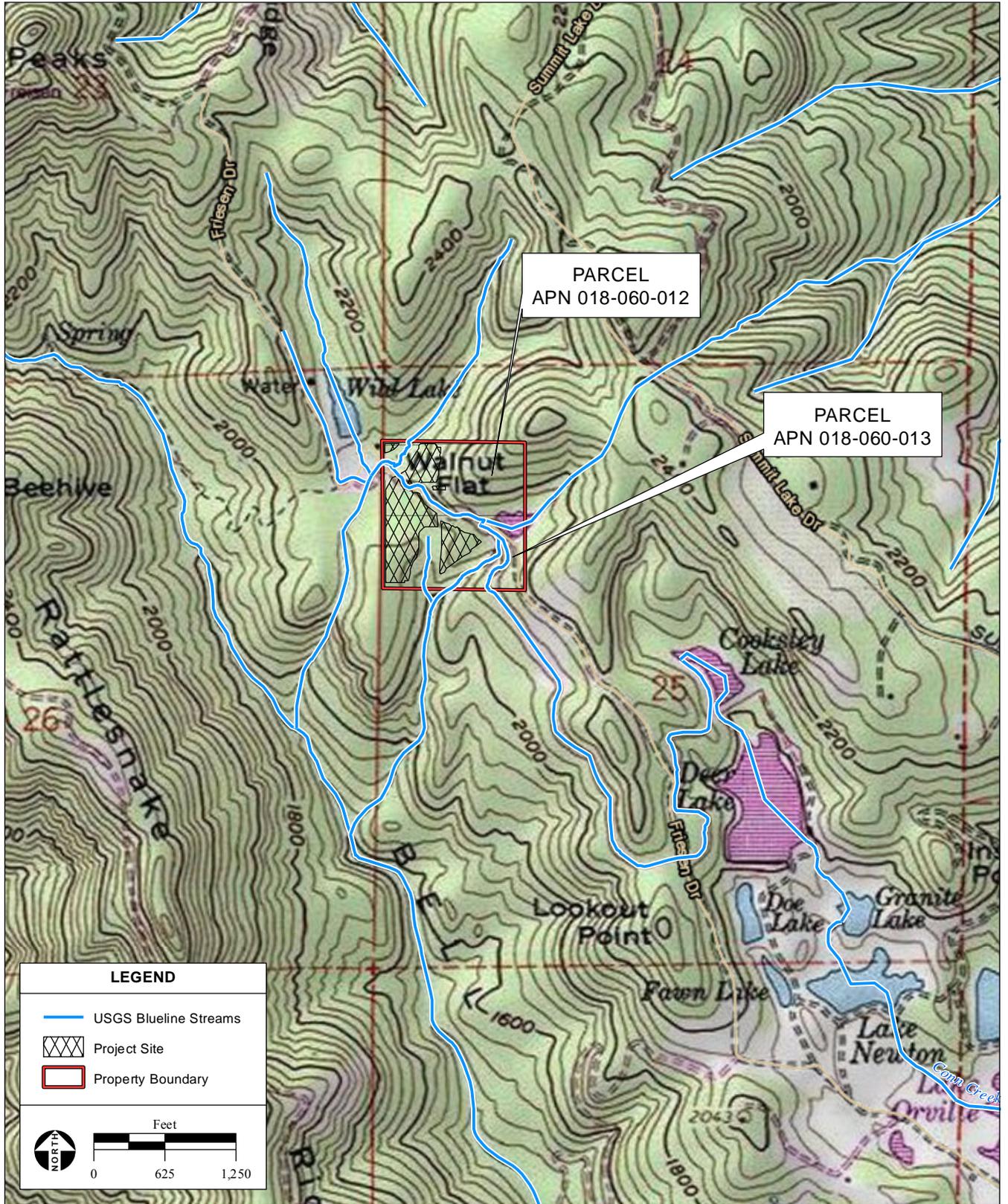
The property is located within the 6,825-acre Bell Canyon Reservoir watershed, which is composed agricultural land, which mostly consists of vineyards, and forested land that may be subject to timbering activities consistent with current zoning. Wild Lake is located to the northwest on the Dunn-Wildlake Ranch Preserve. Several small, man-made reservoirs are located to the southeast of the property, including Lake Orville and Lake Henne. These reservoirs are operated by the Howell Mountain Mutual Water Company and supply drinking water to approximately 400 residences in Angwin; collectively, these reservoirs are known as the Friesen Lakes. The property contains an unnamed reservoir that is part of the Friesen Lakes, one Class III watercourse, and two blue line streams. The two blue line streams are seasonal intermittent to ephemeral drainages that do not contain instream riparian vegetation. Additional discussion is provided in **Section 4.4 Biological Resources**. Under the Proposed



SOURCE: ESRI Data, 2013; AES, 2014

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

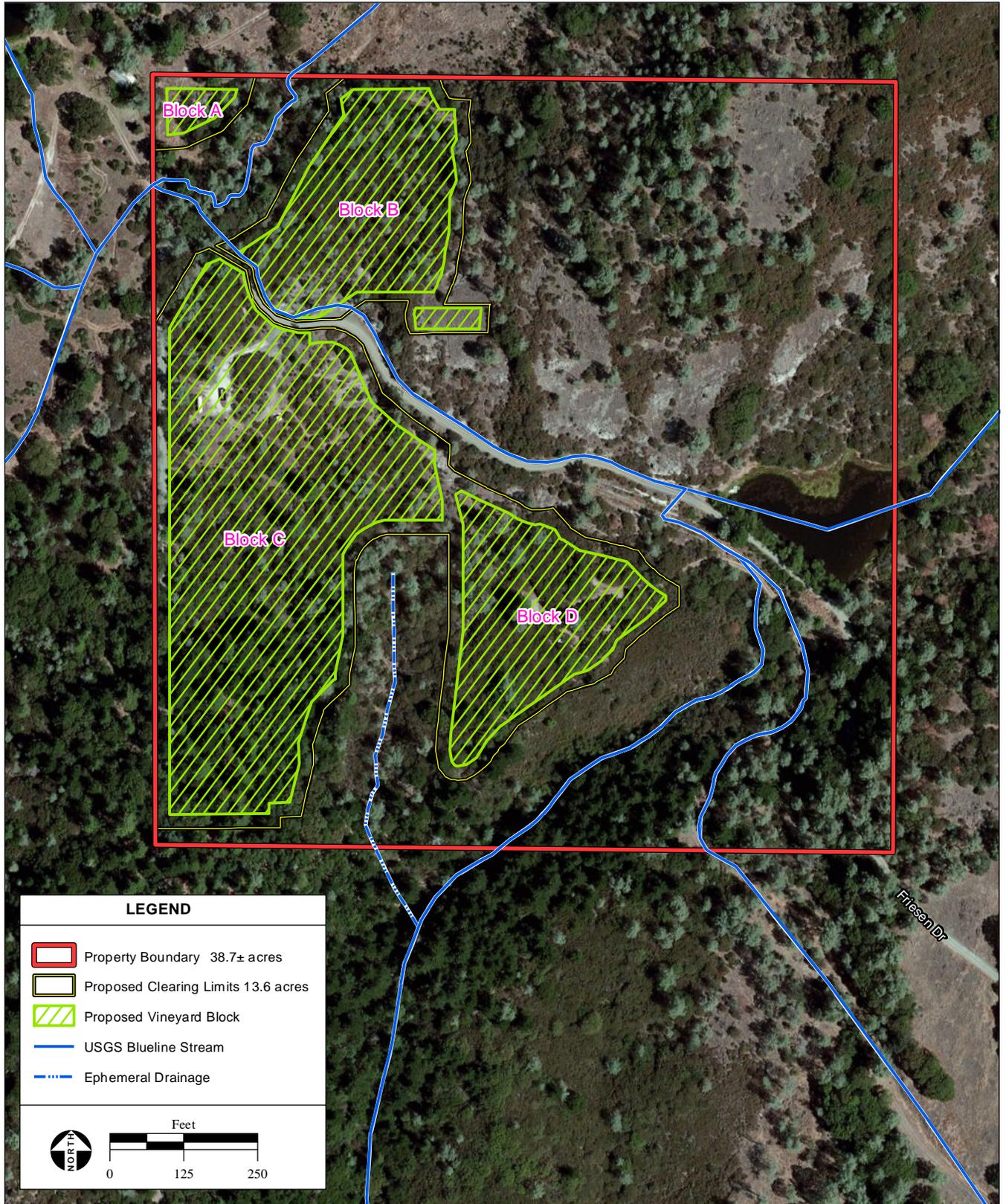
**Figure 3-1**  
Regional Location



SOURCE: "Saint Helena, CA" USGS 7.5 Minute Topographic Quadrangle, T9N, R6W, Section 25, Mt. Diablo Baseline & Meridian; ESRI Data, 2013; AES, 2014

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

**Figure 3-2**  
Site and Vicinity



SOURCE: Napa Valley Vineyard Engineering, 1/21/2015;  
 Microsoft aerial photograph, 11/2/2010; AES, 2015

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

**Figure 3-3**  
 Aerial Photograph

Project, these on-site water features would be protected by a Water and Lake Protection Zone (WLPZ) consistent with Forest Practice Rules and local Napa County ordinances.

### 3.2.1 HISTORICAL USES ON THE PROPERTY

The property was likely logged over 100 years ago, but has not been logged since. There is no evidence of redwood on the property, which was the primary tree species for logging during the twentieth century. Very hot wildland fires and some fire suppression practices are the major factors that have influenced the landscape in more recent years. Additional information about the site and vicinity is provided in **Section 4.0** of this Draft EIR.

### 3.2.2 PROJECT SITE

As discussed in **Section 1.7**, the project site is the total area (13.6± acres) within the property that will be disturbed. Of the 13.6± acre project site, approximately 10.0 acres are forested and would be harvested for timber as a result of implementing the Proposed Project. These 10.0± acres are the subject of the Timberland Conversion Permit (TCP) and are herein referred to as the “TCP Area.” The balance of the project site (the remaining 3.6± acres that would be cleared) consists of mazanita, chaparral, and ruderal land.

Within the 13.6 gross acres of disturbance, 10.5 net acres of vineyard would be developed, which would include the vineyard blocks, turnaround spaces, and existing roads. The project site would be divided into four vineyard blocks and would include 10.5± net acres of wine grape vines, as well as 3.1± acres of internal farm avenues and space for vineyard maintenance operations. **Figures 3-2** and **3-3** depict the project site in relation to the property. The project site does not include any of the water features on the property; the TCP and vineyard development are set back from these water features by buffer zones ranging from 55 to 125 feet, and no activities would take place within these setbacks. Slopes on the project site range from 5 to 27 percent. Additional details of the existing setting of the project site are provided in **Section 4.0**.

## 3.3 PROJECT OBJECTIVES

Approximately 10.0 acres of timberland would be harvested on the property under a Timber Harvest Plan (THP), consistent with Forest Practice Rules, and performed under a CEQA-equivalent process lead by the California Department of Forestry and Fire Protection (CAL FIRE). The total area of disturbance (13.6 acres) includes 10.0± acres of timberland, with the remaining 3.6± acres consisting of manzanita, chaparral, and ruderal. The timber harvest would occur before the installation of the on-site erosion control plan (ECP) and vineyard conversion elements of the Proposed Project, which are the components of the Proposed Project that trigger the preparation of this EIR under CEQA.

After the timber harvest occurs on the property, specific objectives associated with the Proposed Project are to:

- Convert the 13.6± acre project site, which includes the 10.0± acre TCP area with the balance of acreage including brush (chaparral and manzanita) and ruderal land to permanent uses other than timberland;
- Implement a 13.6± acre ECP for the overall project site;
- Develop 10.5± net acres of vineyard on the portions of the property that are suitable for the cultivation of high-quality wine grapes while ensuring the economic viability of the Proposed Project; and
- Provide opportunities for vineyard employment and economic development in the County.

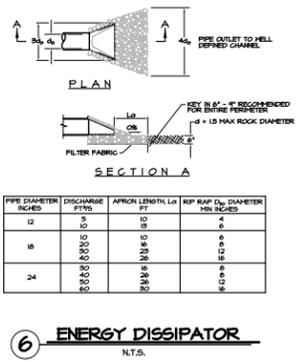
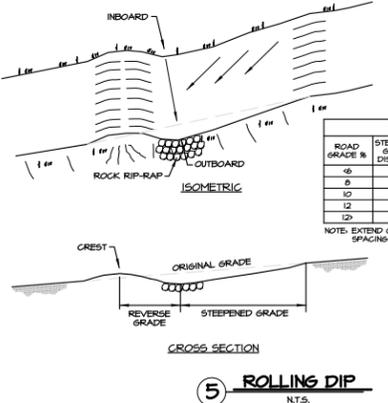
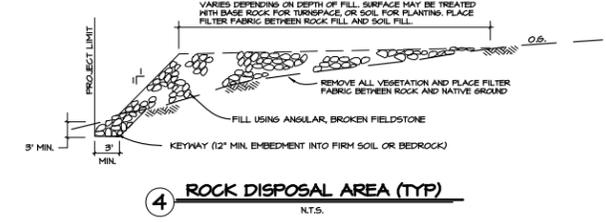
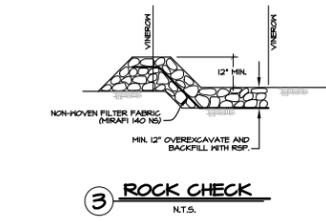
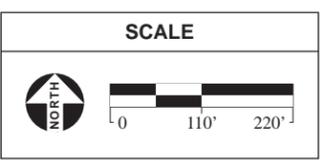
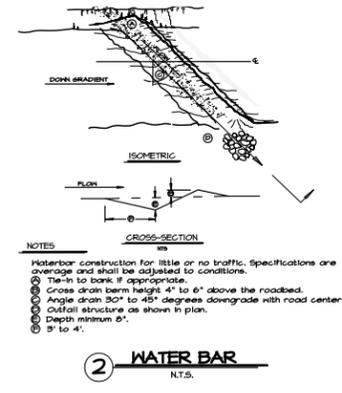
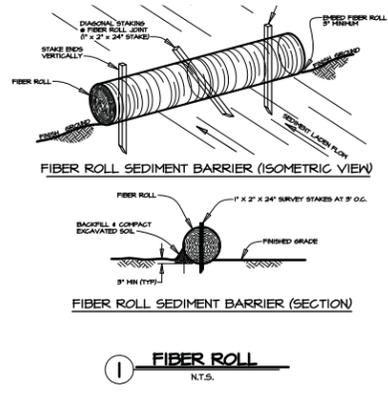
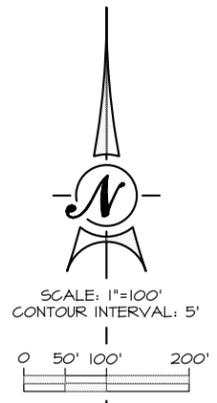
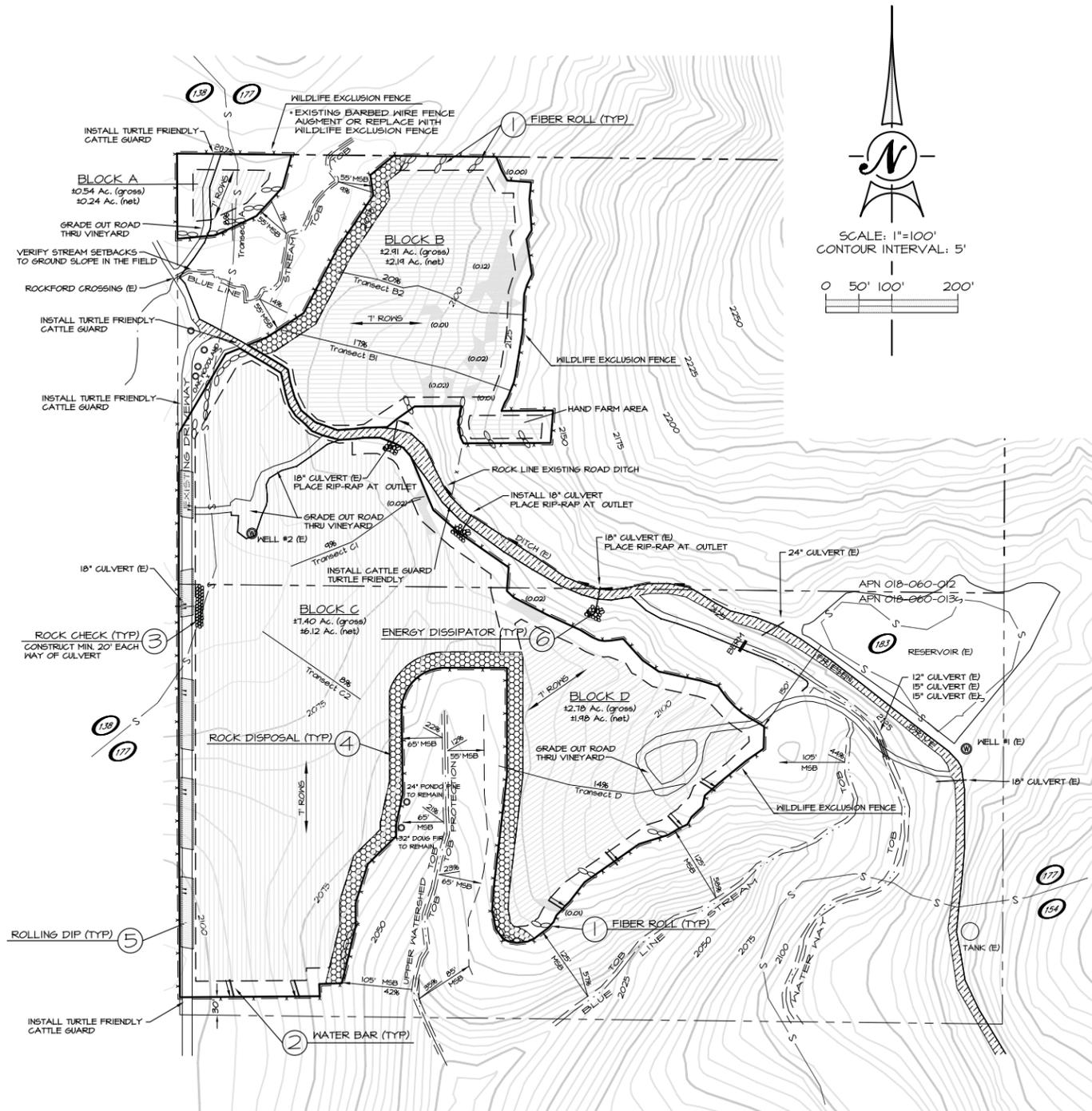
Sustainable project practices include:

- Minimization of soil erosion from vineyard development and operation through vineyard design that avoids erosion-prone areas and controls erosion within the vineyard rather than capturing soil after it has been displaced;
- Protection of water quality by protecting existing water features and streams to the maximum extent feasible through avoidance, buffers, and the implementation of various drainage features; and
- Use of integrated pest management practices, as discussed in **Appendix J**.

### 3.4 DESCRIPTION OF THE PROPOSED PROJECT

As described above, the precursor action to the Proposed Project includes the timber harvest and THP/TCP approvals, which are subject to Forest Practices Rules led by CAL FIRE. The Proposed Project consists of two direct elements: the conversion of a 13.6± acre area, including 10.0± acres of timberland, to vineyard, and implementation of the ECP, which is depicted in **Figure 3-4**. All of these actions affect the development of the Proposed Project and would occur in the following order:

- 1) The separate harvest of 10.0± acres of timberland on the property, permitted separately under a THP approved by CAL FIRE;
- 2) The conversion of the 13.6 acre project site to non-timber uses (which includes the 10.0± acres of timberland);
- 3) The development of a 10.5± acre vineyard within the 13.6± acre project site with the balance of acreage to accommodate internal farm avenues, equipment turnaround, and vineyard maintenance operations; and
- 4) The implementation of a County-approved ECP, which is required per County guidelines for the vineyard development since some on-site slopes exceed a five percent grade.



TOPOGRAPHIC MAPPING FROM NAPA COUNTY GIS DATABASE (2002)

REV.	DESCRIPTION	BY	DATE
5	REVISIONS PER NRCGD COMMENTS ON 2-2-15	DLA	3-13-15
4	REVISIONS PER HYDROLOGIST REPORT	DLA	1-27-15
3	REVISIONS PER NAPA COUNTY COMMENTS OF 10-14-14	DLA	11-26-14
2	REVISIONS PER NRCGD COMMENTS ON 5-22-14 AND NAPA COUNTY COMMENTS OF 8-3-14	DLA	10-23-14
1	REVISIONS PER NAPA COUNTY COMMENTS ON 11-22-13	DLA	1-21-14

This document and the ideas and designs incorporated herein, as an instrument of professional service, are the property of Napa Valley Vineyard Engineering, Inc., and are not to be used, in whole or part, for any other project without written authorization from Napa Valley Vineyard Engineering, Inc.

**Napa Valley Vineyard Engineering, Inc.**  
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DATE: 10-22-15  
 SCALE: AS SHOWN  
 DRAWN: JRJ  
 CHECKED: DLA  
 APPROVED: DREH L. ASPEGREN, PE  
 R.C.E. 31418

**DAVIS FAMILY ESTATE**  
**FRIESEN VINEYARD**

**EROSION CONTROL**  
**PLAN, DETAILS, NOTES**

SHEET  
**2**  
 OF 2

Therefore, the following items are analyzed in this Draft EIR and are discussed in detail below:

- 1) The precursor timber harvest phase, which is referenced and discussed in this document as a change from the baseline,
- 2) The implementation of the ECP during the vineyard development, and
- 3) The conversion of the THP area to 10.5± acres of net vineyard.

The anticipated timeframe for the Proposed Project is included in **Table 3-1**. The years identified in the table below begin on April 1 and end on March 31.

**TABLE 3-1**  
PROPOSED PROJECT TIMELINE

Year <sup>1</sup>	Action
P-1	Year before plant vineyard
P	Year plant vineyard
P+1	First year after vineyard is planted
P+forward	All years after vineyard is planted

<sup>1</sup> Year starts on April 1 and ends on March 31.

#### 3.4.1 TIMBER HARVEST ELEMENT

As stated above, 10.0± acres of the 13.6 acre project site contain timberland that would be harvested on the property under a THP consistent with Forest Practice Rules. The timber harvest would occur before implementation of the timber conversion and the vineyard installation consistent with the ECP, which are the two direct components of the Proposed Project subject to this Draft EIR.

The project site is not located within a Timberland Production Zone (TPZ); however, since the Proposed Project would result in the conversion of “non-TPZ timberland to a non-timber growing use” through timberland operations in which “future timber harvests will be prevented or infeasible because of land occupancy and activities thereon,” a TCP and approval is required from CAL FIRE consistent with the Z'berg-Nejedly Forest Practice Act (Division 4, Chapter 8, Public Resources Code) and California Forest Practice Rules (Title 14, California Code of Regulations).

CAL FIRE is the Lead Agency for the approval of both the THP and TCP for the harvest of timber resources and the conversion to non-timberland on the project site. The THP and TCP are included with this Draft EIR as **Appendix H** and **Appendix I**, respectively, to provide full disclosure of impacts and activities within this document. Due to the interrelated nature of these two CAL FIRE approvals and the overlap of impact areas on the property, the outcome of the THP and TCP will be discussed in this Draft EIR to ensure that cumulative and indirect impacts of the Proposed Project are fully analyzed (**Section 6.0**).

The THP Area is composed of the following species: 10 percent madrone (*Arbutus menziesii*), 2 percent live oak (*Quercus wislizenii*), 29 percent Douglas fir (*Pseudotsuga menziesii*), 18 percent foothill pine (*Pinus sabiniana*), 11 percent Ponderosa pine (*Pinus ponderosa*), and 29 percent black oak (*Quercus kelloggii*) (**Appendix H**). The forest age is estimated at 70 to 90 years and is probably the result of a hot forest fire early in the last century. Due to the young age of the existing vegetation, there are little structural characteristics associated with older forest age classes.

All harvested timber would be processed on the property under the THP using a portable mill. Once processed, the wood products leaving the property would be limited to transport on three axle trucks and would not require the use of logging trucks. No new roads would be built, except internal farm avenues within the proposed vineyard. All non-merchantable trees and vegetation will be chipped and/or burned onsite, consistent with County and Bay Area Air Quality Management District requirements. Erosion control measures and site stabilization approved by CAL FIRE would be incorporated into the precursor timber harvest phase to prevent erosion from the property until the ECP is implemented. For a full list of these temporary erosion control measures required for the timber harvest phase, please see the THP, provided in **Appendix H**. In addition, the mitigation measures required throughout **Section 4.0** of this Draft EIR are binding to the THP process, and are included in the THP.

In summary, the permanent conversion from timberland to other non-timberland uses on the property of 10.0± acres within the overall 13.6± acre clearing limit and the proposed 10.5± acres of vineyard with 3.1± acres of farm avenues is the Proposed Project analyzed in this document. This permanent conversion would result in the removal of this land from use as timberland and the conversion to use in agriculture. It should be noted that the County zoning designation for the property (Agricultural Watershed) is fully compatible with both the existing use as timberland (which includes timber harvesting practices), as well as the ultimate use of the parcel, which will include the 13.6± acre vineyard.

The total disturbed acreage will be 13.6± acres, with the net vineyard acreage comprising 10.5± acres and 3.1± acres accommodate internal farm avenues.

#### 3.4.2 EROSION CONTROL PLAN ELEMENT

An ECP (File #P13-00373--ECPA) has been prepared by a Licensed Civil Engineer (Napa Valley Vineyard Engineering) pursuant to Chapter 18.108 of the Napa County Code (Conservation Regulations). An ECP is required for agricultural projects involving grading and earthmoving activities on slopes over five percent in the County. Since County approval of an ECP is required, the ECP is therefore a part of the Proposed Project analyzed in this EIR. In order to maximize the erosion control elements for the Proposed Project, the proposed ECP features cover the entire 13.6± acre conversion site. The County action of approving the ECP element of the Proposed Project is subject to CEQA; therefore, the County is a Responsible

Agency for this EIR. As of July 10, 2015, the Napa County Resource Conservation District determined that the ECP meets all technical adequacy requirements. The complete ECP for the Proposed Project (File #P13-00373--ECPA) is included as **Appendix B**.

The basic philosophy for the design of the Proposed Project is to minimize environmental disturbance and control erosion on the property rather than to capture soil after it has been displaced. To help meet this goal, the ECP includes several different measures for prevention of erosion and control of sediment, as described below and further detailed in **Appendix B**.

#### *3.4.2-1 TEMPORARY EROSION CONTROL MEASURES*

Temporary erosion control measures in the ECP consist of the installation of fiber rolls and the application of straw mulch where seeding occurs. The installation of fiber rolls would be completed in accordance with the appropriate detail discussed in the ECP (**Appendix B**). Fiber rolls would be installed no later than September 15 in the year prior to planting (P-1) and would be left in place through the winter of the first year following after planting (P+1); they would be removed for subsequent years (P+forward). Additionally, a straw mulch cover would be applied over all open and/or disturbed and seeded areas at the rate specified in seeding requirements (refer to **Appendix B** for further details).

#### *3.4.2-2 PERMANENT EROSION CONTROL MEASURES*

Permanent erosion control measures include, but are not limited to, the following and are discussed in additional detail in the ECP (**Appendix B**):

- 1) Clean, repair, or replace existing drainage features as needed.
- 2) Construction and maintenance of water bars. Maintenance will follow protocols set forth in Napa County Code 18.108.135.
- 3) Construction of rock stabilization.
- 4) Grading of diversion ditches and installation of drop inlets and water spreaders.
- 5) Use of a winter cover crop for the year prior to planting (P-1) through the first year following after planting (P+1). At the end of the growing season of P+1, a permanent no-till cover crop would be planted within the entire vineyard area. Maintenance of the permanent cover crop shall occur as described in the ECP (**Appendix B**).
- 6) Implementation and adherence to an Annual Winterization program as presented in the ECP (**Appendix B**).

The ECP calls for a total of six waterbars along the southern boundary of Blocks C and D. These waterbars are part of the permanent ECP and not the temporary THP. A detailed description of these permanent waterbars can be found on page two of the ECP (**Appendix B**). The ECP is monitored by the County on an annual basis in accordance with Napa County code.

The location of these waterbars is on gentle ridges with no significant cuts and or fills. The outfall of all of the proposed waterbars is also rocked to dissipate concentrated runoff.

### 3.4.2-3 COVER CROP

Vegetative erosion control measures would consist of a temporary winter crop initially followed by a permanent cover crop in later years. The temporary winter cover crop would be planted prior to September 1<sup>st</sup> of years P-1, P, and P+1. Seeding and mulching of the winter cover crop would be completed by September 15<sup>th</sup> of each year. At the end of the growing season of P+1, a permanent, no-till cover crop would be planted across the entire vineyard area. The permanent cover crop may be mowed each spring after the seed has fully matured; a minimum mowing height of four inches would be maintained for all grasses. The cover crop could also be spot sprayed within six-inches of the bases of vines using a springtime application of post-emergent, contact sprays; no pre-emergent sprays would be used. The owner would be responsible for reseeding and maintenance to ensure that ground coverage of 80 percent or greater is maintained over the entire vineyard each winter. Maintenance of a vegetative cover crop would provide surface roughness to help prevent the concentration of runoff, collect moisture, and help prevent the loosening of soil that would be susceptible to erosion.

As a normal agricultural practice, no ripping or other tillage shall take place in or around the vineyard after planting. It is possible that every three to four years, it may be necessary to disk the vine rows in order to open the ground or reestablish proper ground cover. If this were to occur, the Resource Conservation District would be notified and work would be done as prescribed in the Napa County Planning, Building, and Environmental Services department guidelines entitled "Protocol for Replanting/Renewal of Approved Non-Tilled Vineyard Cover Crop" (April 2004).

Consistent with the ECP, all disturbed areas would be planted with a vegetative cover crop, using the Davis Estate Mix at 100 pounds per acre (45 percent barley, 45 percent annual rye grass, and 10 percent crimson clover). "Fawn" tall fescue would be added to the mix at five pounds per acre for use on internal farm avenues and turn around areas that are not rocked (**Appendix B**).

### 3.4.2-4 ROAD CONSTRUCTION AND MAINTENANCE

Approximately 3.1 acres of the project site are planned to be allocated to accommodate internal farm avenues for farm trucks, equipment turn around, and vineyard maintenance operations. New farm avenues would be located around a portion or the entire perimeter of vineyard blocks and within Vineyard Block D. The majority of new farm avenues will be built and maintained with crushed rock.

### 3.4.2-5 ANNUAL WINTERIZATION

The ECP requires annual winterization to prevent erosion during the rainy season. Winterization would be completed prior to the first rains but no later than September 15<sup>th</sup> of each year. Some of the winterization measures include, but are not limited to:

- 1) Seed and mulch all disked areas;
- 2) Evaluate the condition of the non-tilled cover crop;
- 3) Clean and reshape all diversion ditches and roadside ditches, as necessary;
- 4) Inspect, clean, and repair all retention ponds;
- 5) Seed, fertilize, and mulch all roads that are not rocked or paved;
- 6) Inspect and clean all existing erosion control features; and
- 7) After each storm event, inspect and repair all existing erosion control measures, as necessary. A storm event is described in the THP (Section 23: Winter Operations) as 1 inch of precipitation in 24 hours as recorded in Angwin, California.

### 3.4.2-6 IMPLEMENTATION SCHEDULE FOR THE ECP

After the 13.6± acres of timber, manzanita, and chaparral is cleared, and prior to installation of the vineyard, the ECP components would be installed on the property prior to the start of the rainy season (September 15) of the year following the timber harvest. The THP erosion control measures (Section 18 of **Appendix H**) will be implemented in the first winter prior to the implementation of the ECP and planting of the vineyard. Some planting year operations for the vineyard may be conducted over one or two growing seasons.

The rainy season is defined as September 16 through March 31; all ground disturbing activities should be completed by September 1 and all erosion control measures should be in place by September 15. Erosion control measures should be maintained throughout the year.

## 3.4.3 VINEYARD CONVERSION ELEMENT

### 3.4.3-1 LAYOUT AND INSTALLATION

The Proposed Project would result in the development of four vineyard blocks constituting approximately 13.6± acres (**Table 3-2**). The vine rows of Vineyard Blocks B, C, and D would run roughly up and down slope contours whereas Vineyard Block A would run roughly cross slope with the contours. All vine rows would be planted approximately seven feet apart. New vineyard avenues/turn around areas would be created to accommodate the row directions.

Ground preparation for vineyard installation would result in soil ripping, earthmoving, and grading activities; blasting may also be used to clear some rock areas. Vineyard avenues and turn-spaces shall be shaped during ground preparation.

**TABLE 3-2**  
VINEYARD BLOCK AND ACREAGES

Vineyard Block	Acres	
	Gross	Net
Block A	0.54	0.24
Block B	2.91	2.19
Block C	7.40	6.12
Block D	2.78	1.98
Total	13.63	10.53

Wildlife exclusion fencing is proposed to be installed to encompass the vineyard blocks with exit doors (gates) and/or cattle guards for safe removal of trapped wildlife. The existing barbed wire fence along the west boundary of the property will remain in place, with the possible exception of areas adjacent to proposed vineyard blocks which may be replaced with wildlife exclusion fencing. As summarized in the Biological Resources Report, no significant wildlife corridors would be impacted by the Proposed Project (refer to **Section 4.5; Appendix D**).

#### 3.4.3-2 VINEYARD OPERATION AND MAINTENANCE

The proposed vineyard would be hand farmed and non-tilled. Operation and maintenance of the vineyard would include: pruning; pest, disease and weed control; mowing; vine management; irrigation; fertilization; and harvesting activities. Practices would be employed that rely on integrated pest management techniques as described in the Integrated Pest Management Plan prepared for the proposed vineyard (**Appendix J**). The use of non-chemical and minimalist chemical practices would be the first line of defense against pests and diseases in the vineyard. Should the situation arise where a more intrusive technique or material is required, all other avenues for a non-chemical approach would be exhausted first. Any application of chemicals would be done in accordance with the registration and under the guidance of a pesticide control advisor (PCA).

Groundwater would be the irrigation water source for the Proposed Project. Groundwater would be obtained from the existing well on the property, which is located approximately 50 feet south of the reservoir and 150 feet from the nearest watercourse. The well is capable of a sustained yield of 50 gallons per minute (gpm). It is anticipated that approximately 7.6 acre-feet of water per year (afy) would be required for the first few years during the establishment of the vineyard. After establishment, the proposed vineyard would require  $3.8 \pm$  afy (NVVE, 2014). The vineyard would utilize a drip irrigation system. The groundwater well is 700 feet deep, and static water is located 200 feet below ground surface (bgs); the well casing is perforated at 280 feet bgs through the bottom of the well (DWR, 2013). Given the location of the well and the water drawn from 280 feet bgs, this well is not capturing subsurface flow from any watercourses.

### 3.4.3-3 CONSTRUCTION, EQUIPMENT, AND DURATION

Construction of the Proposed Project is anticipated to occur over one year, with ECP related construction and vineyard planting occurring only during the dry months. The typical construction hours would be 7 A.M. to 7 P.M. Monday through Saturday. Sufficient equipment, labor, and materials would be committed and transported to the property prior to the commencement of construction to complete construction during the dry season. Once equipment is transported to the property, it would remain there until implementation is completed.

The timber harvest and post-harvest site stabilization and erosion control under the ECP is anticipated to occur during the first half of the dry season. Most of the actual vineyard installation and planting would occur in the second half of the dry season. Construction will require about 15 workers during each phase of the project: the precursor THP phase, the installation of the ECP features, and the planting of the vineyard. Vineyard operation and maintenance would typically require 3 to 4 workers per day or less but would require up to 10 workers for short durations during certain operational tasks, such as pruning. The total equipment proposed and materials/equipment deliveries anticipated for the timber harvest, ECP installation, and vineyard installation is provided in **Table 3-3**.

**TABLE 3-3**  
TYPICAL CONSTRUCTION ELEMENTS AND EQUIPMENT

<b>Phase 1: Timber Harvest</b>	
<b>Equipment</b>	<b>Percent Usage</b>
2008 Caterpillar D8T	20%
2008 Caterpillar D5K	5%
2006 Caterpillar D6R	25%
2012 Caterpillar 316	20%
2008 Caterpillar 420E	5%
2003 Caterpillar 735	5%
2006 Freightliner M2 water truck	20%
<b>Total Hours</b>	<b>600 hours</b>
<b>Phase 2: Erosion Control Plan/ Vineyard Installation</b>	
<b>Equipment</b>	<b>Percent Usage</b>
2008 Caterpillar D5K	50%
2008 Caterpillar 420E	10%
2007 Caterpillar 430EIT	40%
<b>Total Hours</b>	<b>80 hours</b>
<b>Phase 3: Vineyard Operation</b>	
<b>Equipment</b>	<b>Percent Usage</b>
2012 John Deere 5 101-EN	N/A
2012 Yanmar T 80	N/A
Grape Trucks	9 trips per year
Employee Vehicle Trips	3 cars per day

## REFERENCES

Department of Water Resources (DWR), 2013. Well Completion Report No. e0183595 for Well Permit Number E1\*3-00413. Permit Date July 7, 2013.

Napa County (County) Planning Building, and Environmental Services Department, 2004. Protocol for Replanting/Renewal of Approved Non-Tilled Vineyard Cover Crop. April 8, 2004.

Napa Valley Vineyard Engineering (NVVE), 2014. Davis/Bercovich Erosion Control Plan File #P12-00373-ECPA Water Demand and Water Availability Analysis. January 14, 2014.

## ***SECTION 4.0***

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### **ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES**

# SECTION 4.0

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## ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

### 4.1 AESTHETICS

#### 4.1.1 INTRODUCTION

This section addresses the potential for the Davis Family, LLC Friesen Vineyards Project (Proposed Project) to result in impacts associated with aesthetics and visual resources. Following an overview of the visual resource setting in **Section 4.1.2** and the relevant regulatory setting in **Section 4.1.3**, project-related impacts and recommended mitigation measures are presented in **Section 4.1.4**.

#### 4.1.2 EXISTING SETTING

##### *4.1.2-1 REGIONAL*

Vineyards, rolling hills, lush forest, and mountains define the visual character of Napa County's (County) landscape and are important to the quality of life of residents and the tourist and agricultural economies. The majority of the County is composed of agricultural and rural lands, with urban development primarily concentrated within the incorporated cities. Vineyards represent a prominent visual feature of the County, covering over 49,657 acres of hills and valleys (Napa County, 2008). Additionally, many of the associated wineries are valued for their unique contribution to the aesthetic setting of the County.

##### *4.1.2-2 PROJECT SITE*

As described in **Section 3.0**, the 38.7-acre property is situated within the Bell Canyon Reservoir watershed roughly two miles northwest of the town of Angwin in northern Napa County, California on a mostly flat ridge. The property is located on slopes of five to 27 percent with habitat that includes forest or woodland and shrubland/chaparral within predominant Douglas Fir Forest, Foothill Pine Woodland, and Mixed Oak Vegetation Alliance types. Views within the property boundary primarily consist of surrounding rural land composed of brush, conifer, and deciduous forests. The trending ridge and gentle nature of the slope of the property, combined with the retained surrounding tree canopy, combine to block the Proposed Project from distant views. The lands to the west, east and to some extent the south, are owned by the Napa Valley Land Trust (Land Trust). The 3,030 acre Dunn-Wildlake Ranch Preserve Land Trust property (Preserve) is utilized for recreational hiking. Also, a hunting lodge is located on the Land Trust

west of the property from prior property ownership. The Preserve is accessed via Friesen Drive which runs through vineyards and rural landscape. The Land Trust did not provide any objections concerning the Proposed Project after being contacted by the forester and vineyard manager of the Proposed Project. Additionally, three residents found within a half of a mile of the project site are in adjacent watersheds and would not have a view of the Proposed Project (**Appendix I**). Views of the project site are provided in **Figure 4.1-1**.

### 4.1.3 REGULATORY FRAMEWORK

The 38.7-acre property is located in rural, unincorporated Napa County. The property is under the jurisdiction of the County; therefore, only the County's General Plan and Zoning Ordinance are applicable to development on the site. The surrounding lands are also under the jurisdiction of the County.

#### 4.1.3-1 STATE

##### **Scenic Highways**

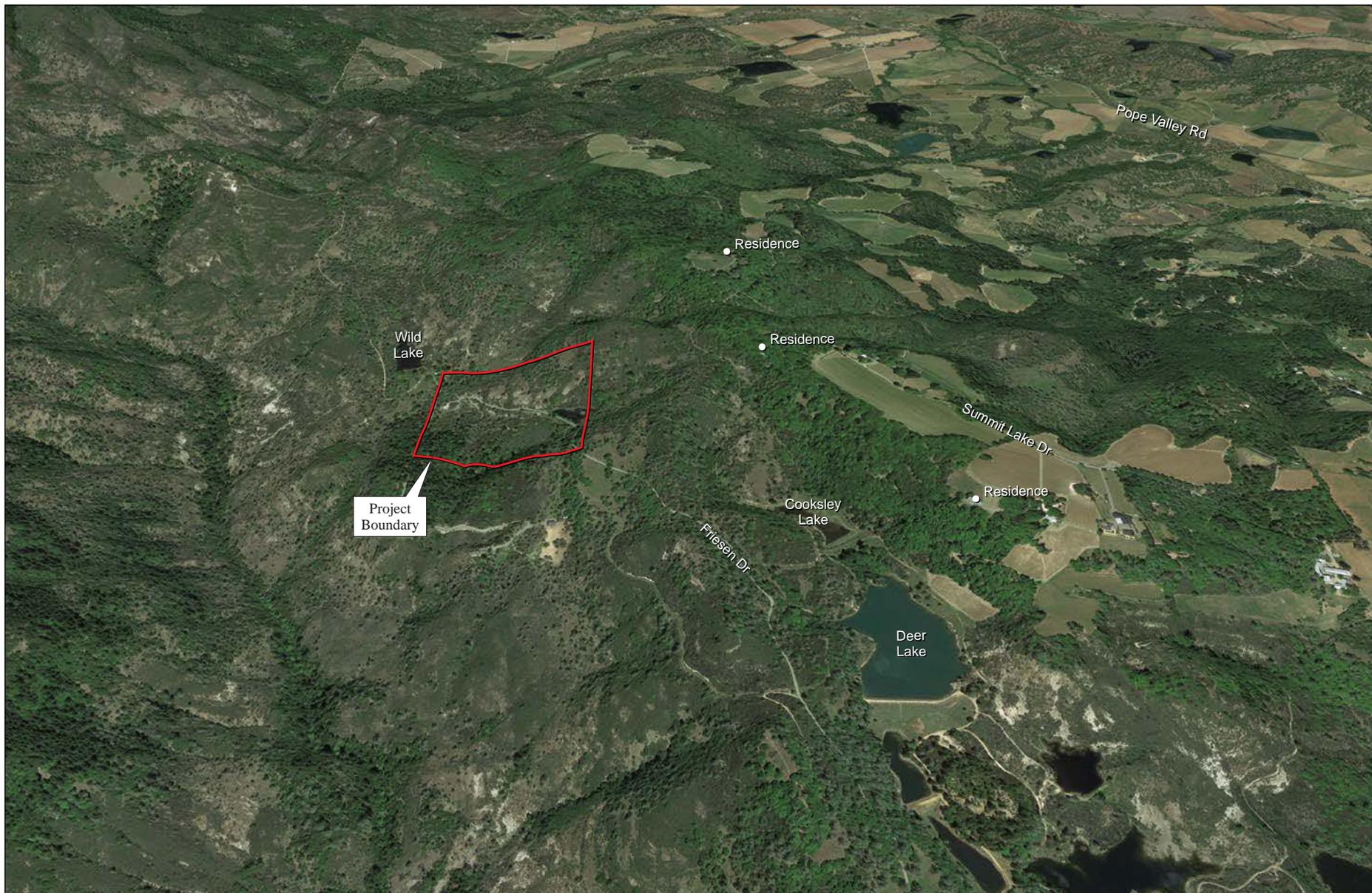
The State Scenic Highways program is administered by the California Department of Transportation (Caltrans) to preserve and protect scenic highway corridors from projects that would diminish the aesthetic value of lands adjacent to highways (California Streets and Highways Code § 260). The State Scenic Highway System includes a list of highways that are either eligible for designation as scenic highways or have been so designated. These highways are identified in Section 263 of the Streets and Highways Code.

There are currently no roadways within the County that are designated State Scenic Highways; however, State Route (SR) 29, SR-121, and SR-221 are considered eligible for scenic highway designation (Caltrans, 2005). These "eligible" roadways would become officially "designated" if the local jurisdiction adopts a scenic corridor protection plan, applies for scenic highway approval through Caltrans, and receives official notification from Caltrans that the highway has been designated as a scenic highway (Caltrans, 2005). The project site is not visible from these routes.

#### 4.1.3-2 LOCAL

##### **Scenic Highways Element**

The Scenic Highways Element of the Napa County General Plan designates a system of roadways within the County that are located in areas of "natural scenic beauty and recreational interest," including those that pass through vineyards, forested areas, and provide access to historic and recreation areas (Napa County, 2008). These designated roadways are valued for providing a scenic traveling experience for residents and tourists. Thirty-seven roadways have been included in the Scenic Highways Element of the Napa County General Plan; however, the project site would not be located in close proximity to any of these designated scenic roadways.



SOURCE: GoogleEarth aerial photograph, 4/16/2013; AES, 2014

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

**Figure 4.1-1**  
Project Viewshed

### **Napa County's 2001 Viewshed Protection Ordinance**

The Napa County Viewshed Protection Ordinance is intended to “protect the public health, safety, and community welfare and to otherwise protect the scenic quality of the County both for visitors to the County, as well as for its residents by ensuring that future improvements are compatible with existing land forms, particularly County ridgelines, and that views of the County's many unique geologic features and the existing landscape fabric of the County's hillside areas are protected and preserved” (Napa County Code 18.106.010).

### **Napa County General Plan Goals and Policies on Aesthetics**

The Community Character Element of the Napa County General Plan incorporates goals and policies pertaining to aesthetics, arts and culture, views, and scenic roadways that are applicable to the Proposed Project (Napa County, 2008):

- Goal CC-1: Preserve, improve, and provide visual access to the beauty of Napa County.
- Goal CC-2: Continue to promote the diverse beauty of the entire county since this beauty is intricately linked to the continued economic vitality of the region and benefits residents, businesses, and visitors.
- Policy CC-1: The County will retain the character and natural beauty of Napa County through the preservation of open space.
- Policy CC-5: Recognizing that vineyards are an accepted and attractive visual feature of Napa County, but that visual change can cause public concern, the County shall require the retention of trees in strategic locations when approving conversion of existing forested land to vineyards in order to retain landscape characteristics of the site when viewed from public roadways and shall require the retention of trees to screen non-agricultural activities and other proposed developments.
- Policy CC-6: The grading of building sites, vineyards, and other uses shall incorporate techniques to retain as much as possible a natural landform appearance. Examples include:
- The overall shape, height, and grade of any cut or fill slope shall be designed to simulate the existing natural contours and scale of the natural terrain of the site.
  - The angle of the graded slope shall be gradually adjusted to the angle of the natural terrain.
  - Sharp, angular forms shall be rounded and smoothed to blend with the natural terrain.

Policy CC-10: Consistent with the County's Viewshed Protection Program, new developments in hillside areas should be designed to minimize their visibility from the County's scenic roadways and discourage new encroachments on natural ridgelines.

#### 4.1.4 IMPACTS ANALYSIS

##### 4.1.4-1 SIGNIFICANCE CRITERIA

This section addresses potential project impacts to aesthetic resources. The impact criteria are based on guidance provided by CEQA regarding what constitutes a significant environmental effect (CEQA Guidelines §15065, §15126, and Appendix G). For this Draft EIR, a project is considered to have a significant impact on aesthetic resources if it would:

- Have a substantial adverse effect on a scenic vista;
- Substantially damage scenic resources, such as scenic highway corridors and scenic landscape units;
- Substantially degrade the existing visual character of the site and its surroundings; or
- Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Impairment of existing aesthetic resources may result from the degradation of a visual feature that has aesthetic significance, or from the introduction of objects or patterns that exhibit a relatively high degree of visual contrast with the existing objects and patterns on the site. Physical changes that may impair the quality of important views include changes in scale, form, color, and texture of natural features existing on the site. Such changes could result from new structures, grading and excavation, landscaping, or elimination of existing vegetation.

##### 4.1.4-2 ANALYSIS METHODOLOGY

Impacts to existing aesthetic resources resulting from construction and operation of the Proposed Project are discussed below. The impacts are considered for all project components, including both short-term construction and long-term operational phases. If significant impacts are likely to occur, mitigation measures are included to increase the compatibility and safety of the Proposed Project and reduce impacts to less-than-significant levels.

##### 4.1.4-3 IMPACTS AND MITIGATION MEASURES

**Impact 4.1-1:** The Proposed Project would not have a substantial adverse effect on a scenic vista.

The Proposed Project would be located on a gentle sloping ridge in a generally remote location that would be surrounded by forested vegetation and thus difficult to view. Due to the location of the project site, long distance views of the project are not available. Additionally, the

Proposed Project would provide similar views as found already in existence from the Preserve that is located adjacently west, south and east of the project site, as several other vineyards are located in the area. Therefore, a less-than-significant impact would occur.

**Mitigation Measure 4.1-1:** No mitigation is required.

**Impact 4.1-2:** The Proposed Project would not substantially damage scenic resources, such as scenic highway corridors and scenic landscape units.

Views from nearby roadways and nearby public access areas would not be significantly altered. There are no designated scenic corridors in the vicinity of the project site. Additionally, there are no public roads that access the property or are in close proximity. Friesen Drive provides access to the project site and is not designated as a scenic roadway under Napa County's Viewshed Protection Ordinance. The Proposed Project would not increase the vistas of the general public driving on country roads and the present views would remain the same along country roads in the area. This impact is less than significant.

**Mitigation Measure 4.1-2:** No mitigation is required.

**Impact 4.1-3:** The Proposed Project could substantially degrade the existing visual character of the site and its surroundings. This would be a potentially significant impact. The project site would be viewable from a hunting lodge located to the west of the project site on the Preserve.

Areas surrounding the project site are primarily characterized by low density rural development and agricultural production areas. None of the residents located within a half of a mile of the Proposed Project would be able to view the project site. The proposed conversion of 13.6± acres of second growth forest to a vineyard would be compatible with the existing visual character of the site and surrounding areas. The combination of vineyard and forest is compatible and similar to other ownerships in the area. The impact is less than significant.

**Mitigation Measure 4.1-3:** No mitigation is required.

**Impact 4.1-4:** The Proposed Project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

Surrounding land uses do not substantially contribute to nighttime lighting. Three residences that are located nearest to the project site are not within the same viewshed of the property. The Proposed Project does not propose any sources of lighting or glare. This impact is less than significant.

**Mitigation Measure 4.1-4:** No mitigation is required.

## REFERENCES

California Department of Transportation (Caltrans), 2005. California State Scenic Highway System. Available online at: <http://www.dot.ca.gov/hq/LandArch/scenic/cahisys.htm>. Accessed April, 2012.

Napa County, 2008. Napa County General Plan. Available online at: <http://www.countyofnapa.org/GeneralPlan/>. Accessed May, 2014.

## 4.2 AGRICULTURE AND FORESTRY RESOURCES

### 4.2.1 SETTING

As stated in **Section 3.0**, the property occurs within Napa County assessor's parcel numbers (APNs) 018-060-012 and 018-060-013. The property and all surrounding properties are zoned as Agricultural Watershed (AW). As stated in Chapter 18.20 the Napa County Code of Ordinances:

*"The AW district classification is intended to be applied in those areas of the county where the predominant use is agriculturally oriented, where watershed areas, reservoirs and floodplain tributaries are located, where development would adversely impact on all such uses, and where the protection of agriculture, watersheds and floodplain tributaries from fire, pollution and erosion is essential to the general health, safety and welfare."*

Agricultural use, such as timber harvesting and vineyard production, is a permitted use under this designation. Generally, permitted uses under the AW designation include, but are not limited to, the following:

- Agriculture is defined in Section 18.08.040 as: (a) growing and raising of trees, vines, shrubs, berries, vegetables, nursery stock, hay, grain, and similar food crops and fiber crops; and (b) sale of agricultural products grown, raised, or produced on the premises;
- One single-family dwelling unit per legal lot;
- A second unit, either attached to or detached from an existing legal residential dwelling unit, providing that all of the conditions set forth in Section 18.104.280 are met; and
- Wineries and related accessory uses which have been authorized by use permit and used in a manner set forth in Section 18.124.080 or any predecessor section; provided, that no expansion of uses or structures beyond those which were authorized by a use permit or modification of a use permit issued prior to the effective date of the ordinance codified in this chapter shall be permitted, except as may be authorized by a subsequent use permit issued pursuant to this title.

### 4.2.2 REGULATORY FRAMEWORK

#### 4.2.2-1 FEDERAL

##### **Farmland Protection Policy Act**

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It assures that federal programs are administered in a matter that is compatible with state and

local units of government, as well as private programs and policies to protect farmland (7 U.S.C. § 4201).

The Natural Resource Conservation Service (NRCS), responsible for the implementation of the FPPA, categorizes farmland in a number of ways. These categories include: prime farmland, farmland of statewide importance, and unique farmland. Prime farmland is considered to have the best possible features to sustain long-term productivity. Farmland of statewide importance includes farmland similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to retain soil moisture. Unique farmland is characterized by inferior soils and it generally requires irrigation depending on the climate.

#### **4.2.2-2 STATE**

##### **California Farmland Mapping and Monitoring Program**

The California Farmland Mapping and Monitoring Program (FMMP), which monitors the conversion of the State's farmland to and from agricultural use, was established by the California Department of Conservation, under the Division of Land Resource Protection. The program maintains an inventory of state agricultural land and updates its "Important Farmland Series Maps" every two years. The FMMP is an informational service only and does not constitute state regulation of local land use decisions.

The four categories of farmland defined under FMMP include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, which are considered valuable and any conversion of land within these categories is typically considered to be an adverse impact. The Department of Conservation provides the following definitions for the categories of farmland:

**Prime Farmland:** Farmland with the best combination of physical and chemical features able to sustain long-term agricultural production. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for irrigated agricultural production at some time during the four years prior to the mapping date.

**Farmland of Statewide Importance:** Farmland with a good combination of physical and chemical features but with minor shortcomings, such as greater slopes or a lesser ability to hold and store moisture.

**Grazing land:** Land on which the existing vegetation is suited to the grazing of livestock.

**Figure 4.2-1** shows the FMMP designations in the Proposed Project vicinity. The project site is designated as “Other Land,” which means it is not considered farmland or grazing land (Department of Conservation, 2009).

### **Williamson Act**

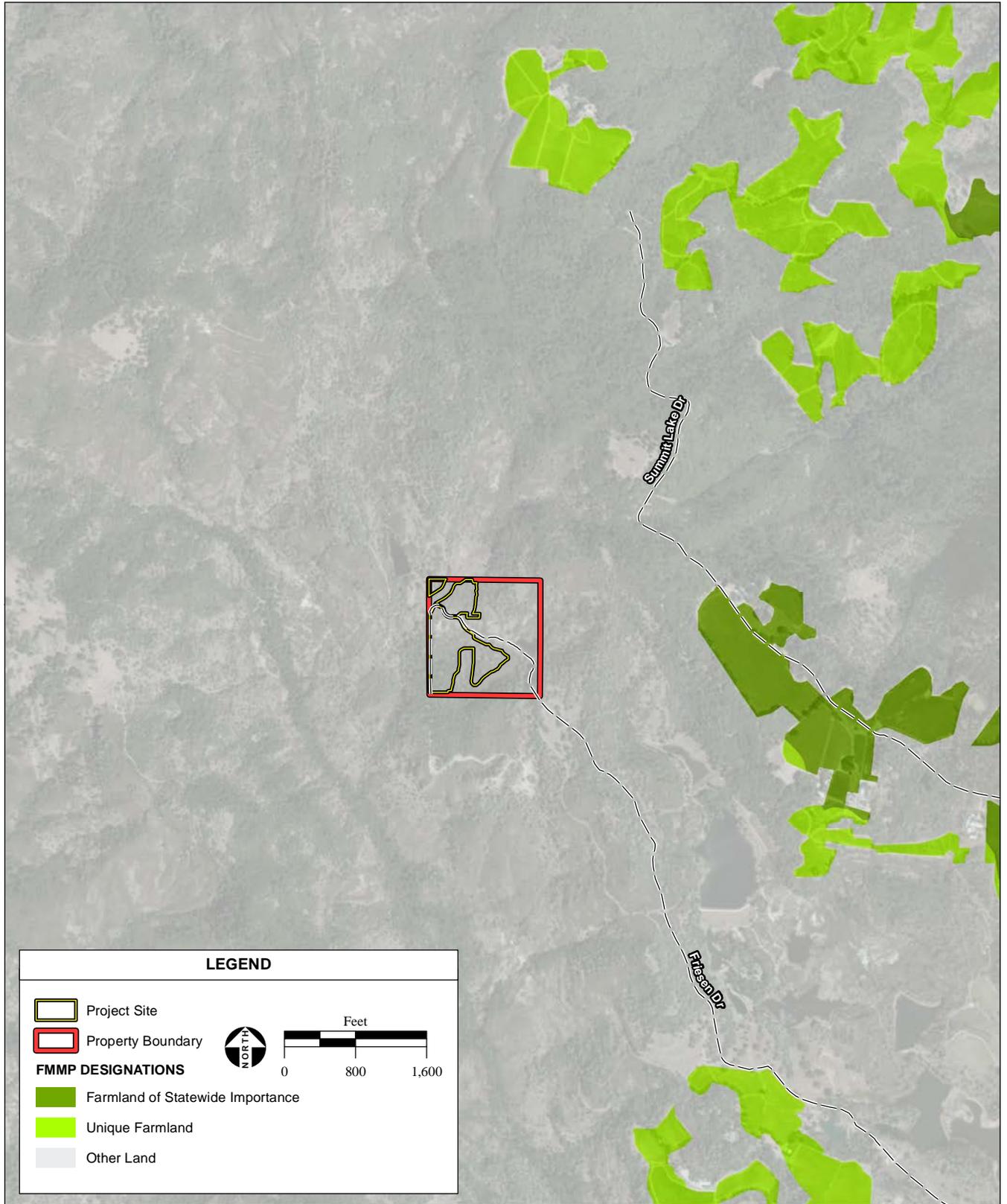
The Williamson Act is a state program that was implemented to preserve agricultural land. Under the provisions of the Williamson Act (California Land Conservation Act 1965, Section 51200), landowners contract with the county to maintain agricultural or open space use of their lands in return for reduced property tax assessments. The Williamson Act contract is self-renewing; however, the landowner may notify the county at any time of intent to withdraw the land from its preserve status. Withdrawal from a Williamson Act contract involves a ten-year period of tax adjustment to full market value before protected agricultural/open space land can be converted to urban uses. In extraordinary situations, immediate termination is sometimes granted. No portion of the subject property for the Proposed Project is under Williamson Act contract.

### **California Land Evaluation and Site Assessment**

The California Land Evaluation and Site Assessment (LESA) is a numeric rating system to evaluate the relative value of agricultural land resources. The LESA is composed of two separate sets of factors, the Land Evaluation and Site Assessment. Land Evaluation measures the natural quality of the soil in the area in relation to agricultural suitability, while Site Assessment measures social, economic, and geographic attributes in relation to agriculture. These specific factors include soil resource quality, project size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands (Department of Conservation, 1997).

### **Z'berg-Nejedly Forest Practice Act**

The Z'berg-Nejedly Forest Practice Act (Forest Practice Act) was enacted in 1973 to ensure that logging is conducted in a manner that will preserve and protect fish, wildlife, forests, and streams (CAL FIRE, 2014). The California Department of Forestry and Fire Protection (CAL FIRE) has enforcement responsibility for the Forest Practice Act. Additionally, CAL FIRE has enacted Forest Practice Rules. The purpose of the Forest Practice Rules is to implement the provisions of the Forest Practice Act in a manner consistent with other laws, including, but not limited to, the Timberland Productivity Act of 1982, CEQA, the Porter Cologne Water Quality Act, and the California Endangered Species Act (CAL FIRE, 2014).



SOURCE: Microsoft aerial photograph, 11/2/2010; CA Dept. of Conservation FMMP, 2010; AES, 2014

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

**Figure 4.2-1**  
Farmland Mapping and Monitoring Program (FMMP) Designations

### 4.2.2-3 LOCAL

#### **Napa County**

Agriculture and agricultural production are prevalent land uses in Napa County. Fertile valley and foothill areas have been identified by the County as areas where agriculture should continue to be the predominant land use. The Napa County General Plan provides the goal of planning for agriculture and related activities as the primary land uses in the County while concentrating urban uses within existing cities and urban areas (Goals 1 and 2) (Napa County, 2009). The County considers the development of urban uses outside of urbanized areas as detrimental to agriculture and the maintenance of open spaces, which are uses defined as economic and aesthetic attributes and assets of the County (Napa County, 2009).

The Agricultural Preservation and Land Use Element of the Napa County General Plan provides the following policies related to agricultural practices:

Policy AG/LU-1: Agriculture and related activities are the primary land uses in Napa County.

Policy AG/LU-3: The County's planning concepts and zoning standards shall be designed to minimize conflicts arising from encroachment of urban uses into agricultural areas.

Policy AG/LU-4: The County will reserve agricultural lands for agricultural use, including lands used for grazing, except for those lands which are shown on the Land Use Map as planned for urban development.

Additionally, as stated in the Napa County General Plan, the County has approximately 40,000 acres of land that contains commercial timber species (Napa County, 2009). Most of the County's timberland is located in five areas (in descending order): the Western Mountains, the Eastern Mountains, Livermore Ranch, Pope Valley, and Angwin. Most timber harvesting in the County is a one-time cutting of forests and the conversion of timberlands into other uses, such as vineyards. However, a limited amount of sustainable yield timber harvesting does take place in the County. As stated above, timber harvest is considered a compatible agricultural use of the subject property for the Proposed Project under the current zoning designation of AW.

The Agricultural Preservation and Land Use Element and the Conservation Element of the Napa County General Plan provide the following policies related to forestry practices:

Policy AG/LU-18: Timber production areas in the County shall be considered to be those defined in the most recent adopted mapping available from CAL FIRE, unless local areas are defined through a public planning process.

Policy CON-1: The County will preserve land for greenbelts, forest, recreation, flood control, adequate water supply, air quality improvement, habitat for fish, wildlife and wildlife movement, native vegetation, and natural beauty. The County will encourage management of these areas in ways that promote wildlife habitat renewal, diversification, and protection.

Policy CON-35: The County shall encourage active forest management practices to preserve and maintain existing forests and timberland, allowing for their economic and beneficial use.

The Community Character Element of the Napa County General Plan incorporates goals and policies pertaining to aesthetics, arts and culture, views, and scenic roadways that are applicable to the Proposed Project (Napa County, 2009):

Policy CC-5: Recognizing that vineyards are an accepted and attractive visual feature of Napa County, but that visual change can cause public concern, the County shall require the retention of trees in strategic locations when approving conversion of existing forested land to vineyards in order to retain landscape characteristics of the site when viewed from public roadways and shall require the retention of trees to screen non-agricultural activities and other proposed developments.

### 4.2.3 IMPACTS ANALYSIS

#### 4.2.3-1 SIGNIFICANCE CRITERIA

Criteria for determining the significance of impacts to agricultural resources have been developed based on Appendix G of the CEQA *Guidelines*. For the purposes of this analysis, the Proposed Project would have a significant impact if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use;
- Conflict with existing zoning for agricultural use, or a Williamson Act contract;
- Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104[g]);
- Result in the loss of forest land or conversion of forest land to non-forest use; or
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

#### 4.2.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.2-1:** The Proposed Project would result in the loss of forest land through conversion of forest land to non-forest use. Given the limited size of the Proposed Project, this will have a less-than-significant impact to the forest land of the State and region.

The property is currently zoned as AW, which includes agricultural purposes such as timber harvest and vineyard. None of the area immediately adjacent to the property is designated under the FMMP, although there is some Farmland of Statewide Importance within a one-mile radius of the project site. Upon implementation of the Proposed Project, the Timber Harvest Plan (THP) area would be converted for agricultural purposes (vineyards), and the remainder of the property's existing agricultural uses would remain unchanged. Implementation of the Proposed Project would not result in converting Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural uses. The Proposed Project would not conflict with existing zoning in the County's General Plan or cause rezoning of forest land, nor would it conflict with an existing Williamson Act contract.

The property is not located within a Timberland Production Zone (TPZ); however, the Proposed Project would convert approximately 10.0± acres of non-TPZ timberland to a non-timber growing use. Therefore, a THP and TCP are required for the timber harvest action as stated in **Section 3.0**. The Proposed Project would result in the permanent conversion of forest land. However, the property is not located within the commercial forest land base of California. The THP for the Proposed Project (**Appendix H**) states that since the Proposed Project would result in the removal of 10.0± acres of the property's timber, which is a relatively small amount of timber volume when compared to the overall commercial conifer timberland acreage of Napa County, which is 22,000 acres.

Since the THP area is not located within the commercial forest land base of California and represents a small percentage of the forested land in the watershed and in the County, no significant impact can be expected to occur on timber resources of the state or the state's timber productivity and economy (**Appendix H**). Additionally, as stated in the Napa County General Plan, the County has approximately 40,000 acres of land that contains commercial timber species, of which the Angwin area contains the smallest amount of timberland. A cumulative impact analysis of the Proposed Project on Agriculture and Forestry Resources is provided in **Section 6.0**.

**Mitigation Measure 4.2-1:** No further mitigation is required.

## REFERENCES

- California Department of Conservation (Department of Conservation), 1997. California Agricultural Land Evaluation and Site Assessment Model. Instruction Manual. Accessed November 4, 2014. Available online at: <http://www.consrv.ca.gov/DLRP/LESA/lesamodl.pdf>.
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- Napa County, 2009. Napa County General Plan. December 1, 2009. Available online at: <http://www.countyofnapa.org/Pages/DepartmentDocuments.aspx?id=4294970192>. Accessed November 4, 2014.

## 4.3 AIR QUALITY

### 4.3.1 ENVIRONMENTAL SETTING

The primary factors that determine air quality are the locations of air pollutant sources and the amounts of pollutants emitted. Meteorological and topographical conditions, however, are equally important. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants.

The Proposed Project is located approximately three mile northwest of the town of Angwin in Napa County, California. The property is situated within the northeastern end of the Napa Valley. Napa Valley is a long, narrow valley running north to south between two ridges formed within the coastal mountains that have an average ridgeline height of about 2,000 feet. Some peaks in the valley approach 3,000 to 4,000 feet in height. Up-valley winds (from the south during the day) and down-valley winds (from the north during the night) result because of the surrounding terrain. Topography in the County is defined by the Napa Valley and surrounding upland areas, which contain smaller valleys.

Napa Valley has a high potential for natural air pollution due to diminished ventilation caused by the terrain. Locally and regionally generated pollutants can be transported by the prevailing winds northward into the Napa Valley, often trapping and concentrating the pollutants under stable conditions. The local up-valley and down-valley flows shaped by the surrounding mountains may also re-circulate pollutants, contributing to a buildup of pollutants. Napa Valley generally has good air quality due to relatively little development across much of the valley despite its natural predisposition for air pollution. The property is located within the San Francisco Bay Area Air Basin (SFBAAB).

Air quality in the area is a function of the criteria air pollutants (CAPs) emitted locally, the existing regional ambient air quality, and the meteorological and topographic factors that influence the intrusion of pollutants into the area from sources outside the immediate vicinity. The project site's air quality is based on the CAPs meeting the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS).

NAAQS have been established to protect public health and welfare for the six CAPs, ozone, carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), sulfur dioxide (SO<sub>2</sub>), particulate matter 10 and 2.5 microns in size (PM<sub>10</sub> and PM<sub>2.5</sub>), and lead. California has adopted the NAAQS CAPs with more stringent standards than the NAAQS and has included four additional CAPs, sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles, which are designated as CAAQS. If a CAP exceeds the NAAQS or CAAQS, then the air basin or region is designated by the Environmental Protection Agency (EPA) or the California Air Resources Board (CARB) as

nonattainment. The Bay Area Air Quality Management District (BAAQMD) provides California Environmental Quality Act (CEQA) thresholds for CAPs designated nonattainment in an air basin or region. These thresholds are based on the ability of the air basin or region to meet the NAAQS or CAAQS. **Table 4.3-1** shows the NAAQS attainment status for the SFBAAB.

**TABLE 4.3-1**  
ATTAINMENT STATUS FOR THE SFBAAB

Pollutant	Average Time	CAAQS	NAAQS
Ozone (O <sub>3</sub> )	8-hour	Nonattainment	Nonattainment
	1-hour	Nonattainment	N/A
PM <sub>2.5</sub>	24-hour	Nonattainment	Nonattainment
	Annual	Nonattainment	Attainment
PM <sub>10</sub>	24-hour	Nonattainment	Unclassified
	Annual	Nonattainment	Attainment
Carbon Monoxide (CO)	8-hour	Attainment	Attainment
	1-hour	Attainment	Attainment
Lead (Pb)	Quarterly	Attainment	Attainment
Nitrogen Dioxide (NO <sub>2</sub> )	1-hour	Attainment	Unclassified
	Annual	Attainment	Attainment
Sulfur Dioxide (SO <sub>2</sub> )	24-hour	Attainment	Attainment
	Annual	Attainment	Attainment
Sulfates (SO <sub>4</sub> <sup>2-</sup> )	24-hour	Attainment	N/A
Hydrogen Sulfide (H <sub>2</sub> S)	1-hour	Unclassified	N/A
Vinyl Chloride	24-hour	NIA	N/A
Visibility Reducing Particles	8-hour	Unclassified	N/A

NIA = no information available; N/A = not applicable.

Source: BAAQMD, 2013.

### Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. Some reasons for increased sensitivity include a person's pre-existing health problems, proximity to the emissions source, or duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be sensitive to poor air quality. This is because infants and children, the elderly, and people with health afflictions (especially respiratory ailments) are more susceptible to respiratory infections and other air quality related health problems than the general public. Residential areas are also considered to be sensitive to air pollution, because

residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present.

There are no residences located on the property; however, the nearest residence is located approximately 800 feet from the southern property line. There are no schools or hospitals with the vicinity of the project site.

#### 4.3.2 REGULATORY FRAMEWORK

##### 4.3.2-1 PLANS, POLICIES, AND STANDARDS

Regulation of air pollution is achieved through both national and state ambient air quality standards and emission limits for individual sources of air pollutants. As required by the Federal Clean Air Act (FCAA), the EPA has identified “criteria pollutants” and established NAAQS to protect public health and welfare.

California has adopted more stringent ambient air quality standards for most of the CAPs (referred to as CAAQS). Because of the unique meteorological conditions in California, there is considerable diversity between the CAAQS and NAAQS currently in effect in California. **Table 4.3-2** presents both state and national standards.

Under amendments to the FCAA, the EPA has classified air basins, or portions thereof, as either “attainment” or “nonattainment” for each criteria air pollutant, based on whether or not the NAAQS have been achieved. In 1988, the State legislature passed the California Clean Air Act (CCAA), which is patterned after the FCAA to the extent that it also requires areas to be designated as “attainment” or “nonattainment”, but with respect to the CAAQS rather than the NAAQS.

The FCAA also requires nonattainment areas to prepare air quality plans that include strategies for achieving attainment. Air quality plans developed to meet the NAAQS are referred to as State Implementation Plans (SIPs). The CCAA also requires plans for nonattainment areas (except for PM<sub>10</sub>) with respect to the State standards. Thus, just as areas in California have two sets of designations, many also have two sets of planning requirements; one to meet federal requirements relative to the NAAQS and one to meet requirements relative to the CAAQS.

The EPA is responsible for implementing the programs established under the FCAA, such as establishing and reviewing the NAAQS and judging the adequacy of SIPs, but has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

**TABLE 4.3-2**  
CALIFORNIA AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	CAAQS	NAAQS
Ozone (O <sub>3</sub> )	1 hour	0.09 ppm	N/A
	8 hour	0.070 ppm	0.075 ppm
Carbon Monoxide (CO)	1 hour	20 ppm	35 ppm
	8 hour	9.0 ppm	9 ppm
Nitrogen Dioxide (NO <sub>2</sub> )	1 hour	0.25 ppm	N/A
	Annual Mean	N/A	0.053 ppm
Sulfur Dioxide (SO <sub>2</sub> )	1 hour	0.25 ppm	N/A
	3 hour	N/A	0.5 ppm <sup>1</sup>
	24 hour	0.04 ppm	0.14 ppm
	Annual Mean	N/A	0.030 ppm
Respirable Particulate Matter (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3c</sup>	150 µg/m <sup>3</sup>
	Annual Mean	20 µg/m <sup>3</sup>	N/A
Fine Particulate Matter (PM <sub>2.5</sub> )	24 hour	N/A	35 µg/m <sup>3</sup>
	Annual Mean	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
Lead (Pb)	30 day	1.5 µg/m <sup>3</sup>	N/A
	Calendar Quarter	N/A	1.5 µg/m <sup>3</sup>
Sulfates	24 hour	25 µg/m <sup>3</sup>	N/A
Hydrogen Sulfide	1 hour	0.03 ppm	N/A
Visibility Reducing Particles	8 hour	0.23 per kilometer	N/A
Vinyl Chloride	24 hour	0.010 ppm	N/A

NOTES: ppm = parts per million by volume; µg/m<sup>3</sup>= micrograms per cubic meter.

N/A=Not Applicable

Source: CARB, 2013

CARB, California's state air quality management agency, regulates mobile emissions sources and oversees the activities of regional/county air districts. CARB is responsible for establishing emissions standards for on-road motor vehicles sold in California. The BAAQMD is the regional agency empowered to regulate air pollutant emissions from stationary sources in the SFBAAB. Both agencies regulate air quality through their permit authority and through their planning and review activities.

#### 4.3.2-2 AIR QUALITY DATA

##### Pollutants of Concern

The pollutants of concern in the project area are ozone, particulate matter, and toxic air contaminants (TACs). A pollutant of concern is one that is designated nonattainment under the NAAQS or the CAAQS. TACs are discussed below, although no adopted air quality standards exist.

##### Ozone (O<sub>3</sub>)

Photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO<sub>x</sub>) resulting from the incomplete combustion of fossil fuels are the largest source of ground-level O<sub>3</sub>. Because photochemical reaction rates depend on the intensity of ultraviolet light and air

temperature, ozone is primarily a summer air pollution problem. As a photochemical pollutant, O<sub>3</sub> is formed only during daylight hours under appropriate conditions, but is destroyed throughout the day and night. O<sub>3</sub> is considered a regional pollutant, as the forming reaction occurs over time downwind from the sources of the emissions.

### Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

Particle pollution is a mixture of microscopic solids and liquid droplets suspended in air. This pollution, also known as particulate matter, is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, soil or dust particles, and allergens (such as fragments of pollen or mold spores). The size of particles is directly linked to their potential for causing health problems. Small particles less than 10 micrometers (µm) in diameter pose the greatest problems because they can travel deep into lungs (PM<sub>10</sub>) and the bloodstream (PM<sub>2.5</sub>). Exposure to such particles can affect the lungs and heart. Larger particles are of less concern, although they can irritate the eyes, nose, and throat.

CARB maintains several ambient air quality monitoring stations within the BAAQMD that provide information on the average concentrations of CAPs in the region. Monitored ambient air pollutant concentrations reflect the number and strength of emissions sources and the influence of topographical and meteorological factors. The closest monitoring station to the property is located in the City of Napa, at Jefferson Street near Central Avenue, about five miles southwest of the property. It should be noted that the monitoring station is located in an urban area while the property is located in a relatively rural area. **Table 4.3-3** presents a three-year summary of ambient air quality monitoring data from the Napa station and compares ambient air pollutant concentrations of ozone, PM<sub>2.5</sub>, and PM<sub>10</sub> to CAAQS and NAAQS.

**TABLE 4.3-3**  
AIR QUALITY DATA SUMMARY FOR NAPA VALLEY 2011-2013

Pollutant/Standard	Standard	Days Standard Exceeded <sup>1</sup> in:		
		2011	2012	2013
Ozone	Federal 8-Hour	0	0	1
Ozone	State 8-Hour	0	0	2
Ozone	State 1-Hour	0	0	0
PM <sub>10</sub>	State 24-Hour	1	0	0
PM <sub>2.5</sub>	Federal 24-Hour	*	0	1

<sup>1</sup> An exceedance is not necessarily a violation.

\* Insufficient Data.

Source: CARB, 2014

The ambient air quality standards were not met at the monitoring location according to the NAAQS for 8-hour O<sub>3</sub> in 2010, the CAAQS for 1- and 8-hour O<sub>3</sub> in 2010, or the CAAQS for 24-hour PM<sub>10</sub> in 2011, as shown in **Table 4.3-3**.

### 4.3.3 IMPACTS ANALYSIS

This air quality analysis includes a qualitative discussion of expected emissions generated from sources, such as timber harvesting, log hauling, and vineyard construction activities, including grading. This analysis also includes calculations of operational emissions from project initiation to build out of the Proposed Project.

#### 4.3.3-1 SIGNIFICANCE CRITERIA

For the purposes of this analysis, the Proposed Project would have a significant impact if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any ambient air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

For construction and operational related emissions of CAPs, the 2012 BAAQMD CEQA *Guidelines* provides a 54 pounds per day (ppd) threshold for NO<sub>x</sub>, ROG, and PM<sub>2.5</sub>, and an 82 ppd threshold for PM<sub>10</sub>. The BAAQMD CEQA Guidelines also require that basic construction mitigation measures, which are outlined in the guidance document, be implemented (BAAQMD, 2012).

#### 4.3.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.3-1:** During construction, the timber harvest, land clearing, earthmoving, movement of vehicles, and wind erosion of exposed soil associated with implementation of the Proposed Project would have the potential to cause nuisance related to fugitive dust and exceedance of applicable BAAQMD thresholds for criteria pollutants. This is a potentially significant impact.

Conversion of the existing landscape to vineyard requires clearing of vegetation and earthmoving activities, which would expose bare soil to wind erosion, thereby generating fugitive dust. Earthmoving activities would be performed by heavy duty construction equipment, which would emit NO<sub>x</sub>, ROG, PM<sub>2.5</sub>, and PM<sub>10</sub> emissions. The property is located in a rural area with

few sensitive receptors; nevertheless, site preparation activities would have the potential to cause air quality impacts to the area.

The BAAQMD 2012 California Emissions Estimator Model (CalEEMod), Version 2013.2.1, which estimates air pollution emissions from a wide variety of land use projects, was used to estimate the projected emissions from the Proposed Project during construction. For the purposes of the CalEEMod model, it was assumed that construction would only occur during the five-month dry season of each year, and that construction would be completed over the course of one dry season. Construction equipment use was provided by Environmental Resource Management (refer to **Section 3.4.3-3**), and the total gross area of disturbed land was conservatively assumed to be 14.50 acres. Projected emissions from construction of the Proposed Project are presented in **Table 4.3-4** below; CalEEMod output files are provided in **Appendix C**.

**TABLE 4.3-4**  
UNMITIGATED CONSTRUCTION EMISSIONS

Construction Phase	ROG	NO <sub>x</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>
	Pounds per Day			
Timber Harvest and Vineyard Installation – 2015	1.26	10.38	0.90	0.56
<i>BAAQMD Significance Thresholds</i>	<i>54</i>	<i>54</i>	<i>82</i>	<i>54</i>
<b>Threshold Exceeded</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod, 2014

Onsite mulching would be the primary method used for the removal of vegetated material; however, in the event burning is done onsite burning of cleared vegetation would occur during land preparation and during the wet season as permitted by the governing agencies and in accordance with the BAAQMD Regulation 5 (BAAQMD, 2006). As seen in **Table 4.3-4**, the Proposed Project would not exceed the significance thresholds; therefore, the Proposed Project would have a less-than-significant impact to air quality.

The measures below are in addition to the permanent erosion control measures specified in #P13-00373-ECPA and the temporary measures in the Timber Harvest Plan (THP), which include establishing a permanent no till cover crop on all disturbed areas. As shown in **Table 4.3-4**, construction of the Proposed Project would not exceed the BAAQMD CAP thresholds. The permanent erosion control measures would avoid the creation of fugitive dust, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions during construction of the Proposed Project.

**Mitigation Measure 4.3-1:** The Applicant shall implement a fugitive dust abatement program during the construction of #P13-00373-ECPA to further reduce fugitive dust, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions, which shall include the following elements:

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Cover all exposed dirt stockpiles.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent paved streets.
- Limit traffic speeds on unpaved roads to 15 miles per hour (mph).
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

In addition to the above measures, the Applicant shall also implement the required basic construction mitigation measures as recommended by the BAAQMD during the construction of the Proposed Project, which shall include the following elements:

- All exposed surfaces (e.g., parking areas, staging areas, and unpaved access roads) shall be watered as needed to ensure dust abatement.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- All heavy duty construction equipment shall be fitted with diesel particulate matter filters and use only aqueous diesel fuel.

**Impact 4.3-2:** Operation of the Proposed Project would attract additional vehicles to the property, resulting in new regional emissions; however, new emissions would not be substantial and a less-than-significant impact would result.

Maximum operational mobile and area source emissions would occur during the grape harvest season for the proposed vineyard. An estimated 10 one-way employee trips would occur on average during this season (typically only 3 to 4 workers onsite, with occasionally up to 10 workers), with a one-way trip length of approximately 7.5 miles. Air quality modeling was performed for the Proposed Project using the CalEEMod (Version 2013.2) air quality modeling program, output files are provided in **Appendix C**. CalEEMod estimated the employee and emissions associated with operation of the Proposed Project. **Table 4.3-5** shows the

operational emissions from employee and grape haul trips associated with the Proposed Project, and compare the total emissions for the Proposed Project to the BAAQMD thresholds.

**TABLE 4.3-5**  
OPERATIONAL INCREASE IN EMISSIONS FROM VINEYARD CONVERSION

Source	ROG	NOx	PM <sub>10</sub>	PM <sub>2.5</sub>
	Pounds per Day			
Area	0.0001	0.00001	0.00001	0.00001
Energy	0.00	0.00	0.00	0.00
Mobile	0.52	0.44	0.28	0.07
Offroad	0.11	1.08	0.08	0.07
Total Operational Emissions	0.62	1.45	0.34	0.14
<i>BAAQMD Significance Thresholds</i>	<i>54</i>	<i>54</i>	<i>82</i>	<i>54</i>
<b><i>Threshold Exceeded</i></b>	<b><i>No</i></b>	<b><i>No</i></b>	<b><i>No</i></b>	<b><i>No</i></b>

Source: CalEEMod, 2014

The Proposed Project would not exceed the BAAQMD thresholds of significance; therefore, air quality impacts due to operation are less than significant.

**Mitigation Measure 4.3-2:** No mitigation is required.

**Impact 4.3-3:** Construction of the Proposed Project would slightly increase traffic volumes and congestion levels on local roadways, resulting in changes to CO concentrations; however, changes in CO concentrations would not be substantial and a less-than-significant impact would result.

The Proposed Project is in a designated maintenance area for CO; the Napa Valley region has relatively low background levels of CO compared to other parts of the Bay Area. CO disperses rapidly into the atmosphere, which makes it a local pollutant. High concentrations of CO from vehicles generally occur when a large number of vehicles are idling for more than 35 seconds; this generally occurs at signaled intersections with large volumes of traffic (greater than 10,000 vehicles per hour). There are no intersections in the project vicinity that would meet this criterion. Idling of construction equipment on-site has the potential to exacerbate CO concentrations near the property; however, there are no sensitive receptors directly adjacent to the property and with the implementation of **Mitigation Measure 4.3-1** above, CO concentrations from construction would be reduced. Therefore, the Proposed Project's effect on CO concentrations during construction is a less-than-significant impact.

**Mitigation Measure 4.3-3:** No mitigation is required.

**Impact 4.3-4:** Project emissions have the potential to cause distress to sensitive receptors. However, project-related emissions would not be substantial and a less-than-significant impact would result.

Some receptors are considered more sensitive than others to air pollutants as discussed in **Section 4.3.1-1** above. Construction emissions are temporary and the BAAQMD states that if PM<sub>10</sub> is mitigated, no NAAQS or CAAQS would be violated (see also **Impact** and **Mitigation Measure 4.3-1** above). The Proposed Project includes development of 13.6± gross acres of vineyard and disturbed areas; the property is designated as Agriculture Watershed under the Napa County General Plan. The surrounding area consists mainly of open space, forested areas, and agricultural lands. Operational emissions would not increase significantly with the Proposed Project and would not exceed BAAQMD significance thresholds (see **Table 4.3-4**). There are also no schools, hospitals or convalescent homes located close enough to the property that would be affected by construction or operational emissions from the Proposed Project; the closest off-site residence is located between approximately 800 feet from the southern property boundary. Potential distress to sensitive receptors is a less than significant impact.

**Mitigation Measure 4.3-4:** No mitigation is required.

**Impact 4.3-5:** Project operation could result in operational odors. However, odors from operation would not be substantial and a less than significant impact would result.

During installation of #P13-00373-ECPA and subsequent vineyard operations, various diesel-powered vehicles and equipment used on the property would create odors. However, these sources are mobile and transient in nature, and the distance of approximately 800 feet to the nearest off-site residence would provide for dilution of odor-producing constituent emissions. These odors would dissipate rapidly and are temporary. Because of this, and the distance between the property and the nearest sensitive receptor, odors from vehicles and equipment are unlikely to be noticeable beyond the area of operation. However, other odors that may be generated during project operation include the potential application of wettable sulfur and sulfur dust to control mildew. These odors would be temporary and would occur at a substantial distance from rural receptors (greater than 800 feet from the nearest offsite receptors). This is a less than significant impact.

**Mitigation Measure 4.3-5:** No mitigation is required.

**REFERENCES**

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## 4.4 BIOLOGICAL RESOURCES

### 4.4.1 METHODOLOGY

#### 4.4.1-1 FIELD SURVEYS

Analytical Environmental Services (AES) biologists and technical specialists conducted reconnaissance surveys of the property on February 22, 2013 and November 24, 2014. Kjeldsen Biological Consulting conducted field surveys on February 22, March 19, April 17, May 13, and June 3, 2013. The results of Kjeldsen's surveys are presented in the Biological Resources Report dated March 2015, included here as **Appendix D**.

Surveys of the parcel were conducted on foot and representative areas of all the vegetation communities and wildlife habitats were examined and refined via mapping. Transects were walked throughout the project site; areas outside of the area of disturbance were opportunistically studied from access roads and trails. Vegetation communities in the field were mapped on an aerial photograph and shown in the biological field survey area boundary in **Figure 4.4-1** (for habitat descriptions, refer to **Section 4.4.3**). For the purpose of this analysis, vegetation communities within the area surveyed were characterized by the dominant species present and amount of cover of the uppermost canopy layer, according to the Manual of California Vegetation, Second Edition (MCV) (Sawyer et al., 2009) and Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland, 1986).

The purpose of the field surveys was to determine potential impacts of the Proposed Project to onsite biological resources. Potential impacts to biological resources analyzed in this section include impacts from both the precursor timber harvest and development of the vineyard and installation of the ECP under the Proposed Project.

### 4.4.2 REGULATORY FRAMEWORK

#### 4.4.2-1 SPECIAL STATUS SPECIES

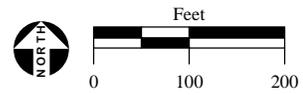
##### **Federal Endangered Species Act**

The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) implement the Federal Endangered Species Act (FESA) of 1973 (16 USC Section 1531 *et seq.*). Threatened and endangered species on the federal list (50 CFR Subsection 17.11, 17.12) are protected from "take" (direct or indirect harm), unless a Section 10 Permit is granted to an individual or a Section 7 consultation and a Biological Opinion with incidental take provisions are rendered to a lead federal agency. Pursuant to the requirements of FESA, an agency reviewing a proposed project within its jurisdiction must determine whether any federally listed species may be present in the project area and determine whether the proposed project would have a potentially significant impact upon such species.



**LEGEND**

 Property Boundary	 USGS Blueline Stream	 Ephemeral Drainage	 Intermittent Creek
 Chamise Chaparral Alliance 6.88 ac	 Manzanita Alliance 5.81 ac	 Ruderal/Developed 2.58 ac	
 Douglas-fir Alliance 4.40 ac	 Mixed Oak Alliance 8.89 ac	 Willow 0.25 ac	
 Foothill Pine Alliance 8.02 ac	 Reservoir 0.85 ac		



SOURCE: Microsoft aerial photograph, 11/2/2010; AES, 2014

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

**Figure 4.4-1**  
Habitat Types

Critical habitat is defined under the FESA as specific geographic areas within a listed species range that contain features considered essential for the conservation of the listed species. Designated critical habitat for a given species may not necessarily be currently occupied by that species if it is within the historic range of the species and supports habitat deemed by the USFWS to be important for the recovery of the species. Critical habitat designation applies only to federal actions or actions funded or permitted by federal agencies. If a federal action or an action allowed by federal funding or a federal permit has the potential to adversely affect critical habitat for a listed species, the responsible federal agency is required to consult with the USFWS or NMFS. Under FESA, habitat loss is considered to be an impact to the species. In addition, the agency is required to determine whether the project is likely to jeopardize the continued existence of any species proposed to be listed under FESA or result in the destruction or adverse modification of critical habitat proposed to be designated for such species (16 USC Section 1536 (3), (4)). Therefore, project-related impacts to these species, or their habitats, would be considered significant and would require mitigation. The USFWS also designates species of concern. Species of concern receive attention from federal agencies during environmental review, although they are not otherwise protected under FESA. Project-related impacts to such species would also be considered significant and would require mitigation.

The project parcel for the Proposed Project does not contain Critical Habitat for federally listed species.

### **California Endangered Species Act**

The California Department of Fish and Wildlife (CDFW) implements State regulations pertaining to fish and wildlife and their habitat. The California Endangered Species Act (CESA) of 1970 (California Fish and Game Code § 2050 *et seq.*, and CCR Title 14, Subsection 670.2, 670.51) prohibits the take (interpreted to mean the direct killing of a species) of species listed under CESA (14 CCR Subsection 670.2, 670.5). A CESA permit must be obtained if a proposed project would result in the take of listed species, either during construction or over the life of the project.

### **California Environmental Quality Act (CEQA) Guidelines Section 15380**

Although threatened and endangered species are protected by specific federal and State statutes, CEQA *Guidelines* § 15380(b) and (d) provides that a species not listed on the federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition of FESA and the section of the California Fish and Game Code dealing with rare or endangered plants or animals. This section was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on, for example, a candidate species that has not yet been listed by the USFWS or a species recognized as being

of special concern by the CDFW. Thus, CEQA provides the ability to protect a species from potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

### **California Fish and Game Codes**

The California Fish and Game Code defines take (Section 86) and prohibits taking of a species listed as threatened or endangered under the CESA (California Fish and Game Code § 2080), or otherwise fully protected (California Fish and Game Code § 3511, 4700, and 5050). Section 2081(b) and (c) of the CESA allows the CDFW to issue an incidental take permit for a state listed threatened and endangered species if specific criteria outlined in Title 14 CCR, § 783.4(a), (b) and California Fish and Game Code § 2081(b) are met. The California Fish and Game Code § 3503 states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the code. Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird. Section 3513 states that it is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. If a project is planned in an area where a species or specified bird occurs, an applicant must design the project to avoid all take of non listed migratory birds; the CDFW cannot provide take authorization under the CESA. The CDFW protects plants designated as endangered or rare under Fish and Game Code § 1900.

### **Migratory Bird Treaty Act**

Most bird species, especially those that are breeding, migrating, or of limited distribution, are protected under federal and state regulations. Under the Migratory Bird Treaty Act of 1918 (16 USC Subsection 703-712), it is unlawful to pursue, hunt, take, capture, kill, or sell migratory birds, their nests, or eggs. Project-related disturbances must be reduced or eliminated during the nesting cycle. California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs. California Fish and Game Code § 3511 list birds that are “fully protected”, which identifies those species that may not be taken or possessed except under specific permit. Bald and golden eagles are protected by the Migratory Bird Treaty Act and the federal Bald and Golden Eagle Protection Act.

### **California Native Plant Protection Act**

The California Native Plant Protection (CNPP) Act of 1977 (California Fish and Game Code § 1900 *et seq.*) requires CDFW to establish criteria for determining if a species or variety of native plant is endangered or rare. As a result, CDFW maintains a "special plants" list consisting of approximately 2,000 native plant species, subspecies, or varieties that are tracked by the California Natural Diversity Database (CNDDDB). In addition, the CNPS maintains inventories of

native flora of California and ranks species according to rarity (CNPS, 2014); California Rare Plant Rank (CRPR) 1 plants are presumed extinct in California, CRPR 1B plants rare or endangered in California and elsewhere, and CRPR 2 plants rare or endangered in California, but more common elsewhere. As stated on the CDFW website, “plants on Lists 1A, 1B, and 2 of the CNPS inventory consist of plants that may qualify for listing, and the CDFW recommends they be addressed in CEQA projects (CEQA Guidelines Section 15380)” (CDFW, 2014).

### **Oak Woodlands Conservation Act**

The Oak Woodlands Conservation Act (California State Senate Bill 1334) became law on January 1, 2005 and was added to the CEQA statutes as 21083.4. This act requires that a county must determine whether or not a project would result in a significant impact on oak woodlands. If it is determined that a project may result in a significant impact on oak woodlands, then one or more of the following mitigation measures are required:

1. Conserve oak woodlands through the use of conservation easements;
2. Plant an appropriate number of trees, including maintenance of plantings and replacement of failed plantings;
3. Contribute funds to the Oak Woodlands Conservation Fund for the purpose of purchasing oak woodlands conservation easements; and
4. Other mitigation measures developed by the county.

#### **4.4.2-2 WETLANDS AND OTHER WATERS OF THE U.S.**

Any project that involves working in navigable waters of the U.S., including the discharge of dredged or fill material, must first obtain authorization from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. The CDFW requires notification prior to commencement, and possibly a Lake or Streambed Alteration Agreement pursuant to California Fish and Game Code Subsection 1601-1616, if a proposed project would result in the alteration or degradation of a stream, river, or lake in California. The Regional Water Quality Control Board (RWQCB) may require State Water Quality Certification (Clean Water Act Section 401 permit) before other permits are issued, which may involve implementation of a storm water pollution prevention plan.

#### **4.4.2-3 LOCAL REGULATIONS, GOALS AND POLICIES**

##### **Napa County General Plan**

Natural resource use in Napa County is regulated by the Napa County General Plan (Napa County, 2008). Relevant goals and policies from the General Plan pertaining to biological resources are provided below.

*Open Space Conservation Policies*

Policy CON-1: The County will preserve land for greenbelts, forest, recreation, flood control, adequate water supply, air quality improvement, habitat for fish, wildlife and wildlife movement, native vegetation, and natural beauty. The County will encourage management of these areas in ways that promote wildlife habitat renewal, diversification, and protection.

Policy CON-2: The County shall identify, improve, and conserve Napa County's agricultural land by:

- Requiring existing significant vegetation be retained and incorporated into agricultural projects to reduce soil erosion and to retain wildlife habitat. When retention is found to be infeasible, replanting of native or non-invasive vegetation shall be required; and
- Minimizing pesticide and herbicide use and encourage research and use of Integrated pest control methods such as cultural practices, biological control, host resistance, and other factors.

*Natural Resource Goals and Policies*

Goal CON 2: Maintain and enhance the existing level of biodiversity.

Goal CON-3: Protect the continued presence of special status species, including special status plants, special status wildlife, and their habitats, and comply with all applicable state, federal, or local laws or regulations.

Goal CON-4: Conserve, protect, and improve plant, wildlife, and fishery habitats for all native species in Napa County.

Goal CON-5: Protect connectivity and continuous habitat areas for wildlife movement.

Goal CON-6: Preserve, sustain, and restore forests, woodlands, and commercial timberland for their economic, environmental, recreation, and open space values.

Policy CON-10: The County shall conserve and improve fisheries and wildlife habitat in cooperation with governmental agencies, private associations and individuals in Napa County.

Policy CON-11: The County shall maintain and improve fisheries habitat through a variety of appropriate measures, including (the following lettered policies):

- Control sediment production from mines, roads, development projects, agricultural activities, and other potential sediment sources.
- Implement road construction and maintenance practices to minimize bank failure and sediment delivery to streams.

Policy CON-13: The County shall require that all discretionary residential, commercial, industrial, recreational, agricultural, and water development projects consider and address impacts to wildlife habitat and avoid impacts to fisheries and habitat supporting special status species to the extent feasible. Where impacts to wildlife and special status species cannot be avoided, projects shall include effective mitigation measures and management plans including provisions to (the following lettered policies):

- Maintain the following essentials for fish and wildlife resources:
- Adequate amounts of feeding, escape, and nesting habitat.
- Proper temperature through maintenance and enhancement of streamside vegetation, volume of flows, and velocity of water.
- Employ supplemental planting and maintenance of grasses, shrubs and trees of like quality and quantity to provide adequate vegetation cover to enhance water quality, minimize sedimentation and soil transport, and provide adequate shelter and food for wildlife and special status species and maintain the watersheds, especially stream side areas, in good condition.
- Provide protection for habitat supporting special status species through buffering or other means.
- Provide replacement habitat of like quantity and quality on- or off-site for special status species to mitigate impacts to special status species.
- Enhance existing habitat values, particularly for special status species, through restoration and replanting of native plant species as part of discretionary permit review and approval.
- Require temporary or permanent buffers of adequate size (based on the requirements of the subject special status species) to avoid nest abandonment by birds and raptors associated with construction and site development activities.

Policy CON-14: To offset possible losses of fishery and riparian habitat due to discretionary development projects, developers shall be responsible for mitigation when avoidance of impacts is determined to be infeasible. Such mitigation measures may include providing and permanently maintaining similar quality and quantity habitat within Napa County, enhancing existing riparian habitat, or paying in-kind funds to an approved fishery and riparian habitat improvement and

acquisition fund. Replacement habitat may occur either on- site or at approved off-site locations, but preference shall be given to on-site replacement.

Policy CON-16: The County shall require a biological resources evaluation for discretionary projects in areas identified to contain or potentially contain special status species based upon data provided in the NCBDR (NCCDPD, 2011), CNDDDB, or other technical materials. This evaluation shall be conducted prior to the approval of any earthmoving activities. The County shall also encourage the development of programs to protect special status species and disseminate updated information to state and federal resource agencies.

Policy CON-17: Preserve and protect native grasslands, serpentine grasslands, mixed serpentine chaparral, and other sensitive biotic communities and habitats of limited distribution. The County, in its discretion, shall require mitigation that results in the following standards:

- Prevent removal or disturbance of sensitive natural plant communities that contain special status plant species or provide critical habitat to special status animal species.
- In other areas, avoid disturbances to or removal of sensitive natural plant communities and mitigate potentially significant impacts where avoidance is infeasible.
- Promote protection from overgrazing and other destructive activities.
- Encourage scientific study and require monitoring and active management where biotic communities and habitats of limited distribution or sensitive natural plant communities are threatened by the spread of invasive non-native species.
- Require no net loss of sensitive biotic communities and habitats of limited distribution through avoidance, restoration, or replacement where feasible. Where avoidance, restoration, or replacement is not feasible, preserve like habitat at a 2:1 ratio or greater within Napa County to avoid significant cumulative loss of valuable habitats.

Policy CON-18: To reduce impacts on habitat conservation and connectivity (the following polices apply):

- In sensitive domestic water supply drainages where new development is required to retain between 40 and 60 percent of the existing (as of June 16, 1993) vegetation onsite, the vegetation selected for retention should be in areas designed to maximize habitat value and connectivity.

- Preservation of habitat and connectivity of adequate size, quality, and configuration to support special status species should be required within the project area. The size of habitat and connectivity to be preserved shall be determined based on the specific needs of the species.
- The County shall require discretionary projects to retain movement corridors of adequate size and habitat quality to allow for continued wildlife use based on the needs of the species occupying the habitat.
- The County shall require new vineyard development to be designed to minimize the reduction of wildlife movement to the maximum extent feasible. In the event the County concludes that such development will have a significant impact on wildlife movement, the County may require the applicant to relocate or remove existing perimeter fencing installed on or after February 16, 2007 to offset the impact caused by the new vineyard development.
- Support public acquisition, conservation easements, in-lieu fees where on-site mitigation is infeasible, and/or other measures to ensure long-term protection of wildlife movement areas.

Policy CON-19: The County shall encourage the preservation of critical habitat areas and habitat connectivity through the use of conservation easements or other methods as well as through continued implementation of the Napa County Conservation Regulations associated with vegetation retention and setbacks from waterways.

Policy CON-22: The County shall encourage the protection and enhancement of natural habitats which provide ecological and other scientific purposes. As areas are identified, they should be delineated on environmental constraints maps so that appropriate steps can be taken to appropriately manage and protect them.

Policy CON-26: Consistent with Napa County's Conservation Regulations, natural vegetation retention areas along perennial and intermittent streams shall vary in width with steepness of the terrain, the nature of the undercover, and type of soil. The design and management of natural vegetation areas shall consider habitat and water quality needs, including the needs of native fish and special status species and flood protection where appropriate. Site-specific setbacks shall be established in coordination with Regional Water Quality Control Boards, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration National Marine Fisheries Service, and other coordinating resource agencies that identify essential stream and stream reaches necessary for the health of populations of native fisheries and other sensitive aquatic organisms within the County's watersheds.

Where avoidance of impacts to riparian habitat is infeasible along stream reaches, appropriate measures will be undertaken to ensure that protection, restoration, and enhancement activities will occur within these identified stream reaches that support or could support native fisheries and other sensitive aquatic organisms to ensure a no net loss of aquatic habitat functions and values within the county's watersheds.

Policy CON-27: The County shall enforce compliance and continued implementation of the intermittent and perennial stream setback requirements set forth in existing stream setback regulations, provide education and information regarding the importance of stream setbacks and the active management and enhancement/restoration of native vegetation within setbacks, and develop incentives to encourage greater stream setbacks where appropriate. Incentives shall include streamlined permitting for certain vineyard proposals on slopes between five and 30 percent and flexibility regarding yard and road setbacks for other proposals.

#### *Oak Woodlands Goals and Policies*

Goal CON-6: Preserve, sustain, and restore forests, woodlands, and commercial timberland for their economic, environmental, recreation, and open space values.

Policy CON-24: Maintain and improve oak woodland habitat to provide for slope stabilization, soil protection, species diversity, and wildlife habitat through appropriate measures including one or more of the following:

- Preserve, to the extent feasible, oak trees and other significant vegetation that occur near the heads of drainages or depressions to maintain diversity of vegetation type and wildlife habitat as part of agricultural projects.
- Comply with the Oak Woodlands Preservation Act (PRC Section 21083.4) regarding oak woodland preservation to conserve the integrity and diversity of oak woodlands, and retain, to the maximum extent feasible, existing oak woodland and chaparral communities and other significant vegetation as part of residential, commercial, and industrial approvals.
- Provide replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio when retention of existing vegetation is found to be infeasible. Removal of oak species limited in distribution shall be avoided to the maximum extent feasible.
- Support hardwood cutting criteria that require retention of adequate stands of oak trees sufficient for wildlife, slope stabilization, soil protection, and soil production be left standing.

- Maintain, to the extent feasible, a mixture of oak species which is needed to ensure acorn production. Black, canyon, live, and brewer oaks as well as blue, white, scrub, and live oaks are common associations.
- Encourage and support the County Agricultural Commission's enforcement of state and federal regulations concerning Sudden Oak Death and similar future threats to woodlands.

Policy CON-28: To offset possible additional losses of riparian woodland due to discretionary development projects and conversions, developers shall provide and maintain similar quality and quantity of replacement habitat or in-kind funds to an approved riparian woodland habitat improvement and acquisition fund in Napa County. While on-site replacement is preferred where feasible, replacement habitat may be either on-site or off-site as approved by the County.

Policy CON-29: The County shall coordinate its efforts with other agencies and districts such as the Resource Conservation District and share a leading role in developing and providing outreach and education related to stream setbacks and other best management practices that protect and enhance the County's natural resources.

Policy CON-30: All public and private projects shall avoid impacts to wetlands to the extent feasible. If avoidance is not feasible, projects shall mitigate impacts to wetlands consistent with state and federal policies providing for no net loss of wetland function.

#### *Water Resources Policies*

Policy CON-6: The County shall impose conditions on discretionary projects which limit development in environmentally sensitive areas such as those adjacent to rivers or streamside areas and physically hazardous areas such as floodplains, steep slopes, high fire risk areas and geologically hazardous areas.

Policy CON-41: The County will work to protect Napa County's watersheds and public and private water reservoirs to provide for the following purposes:

- Clean drinking water for public health and safety;
- Municipal uses, including commercial, industrial and domestic uses;
- Support of the eco-systems;
- Agricultural water supply;
- Recreation and open space; and
- Scenic beauty.

Policy CON-42: The County shall work to improve and maintain the vitality and health of its watersheds. Specifically, the County shall:

- Support environmentally sustainable agricultural techniques and best management practices (BMPs) that protect surface water and groundwater quality and quantity (e.g., cover crop management, integrated pest management, informed surface water withdrawals and groundwater use).

Policy CON-45: Protect the County's domestic supply drainages through vegetation preservation and protective buffers to ensure clean and reliable drinking water consistent with state regulations and guidelines. Continue implementation of current Conservation Regulations relevant to these areas, such as vegetation retention requirements, consultation with water purveyors/system owners, implementation of erosion controls to minimize water pollution, and prohibition of detrimental recreational uses.

Policy CON-48: Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds. Technical reports and/or erosion control plans that recommend site-specific erosion control measures shall meet the requirements of the County Code and provide detailed information regarding site specific geologic, soil, and hydrologic conditions and how the proposed measure will function.

## **Napa County Code**

### *Stream Setbacks*

Napa County Code defines streams and provides setbacks for land clearing for agricultural development. Under Section 18.108.030, a "stream" means any of the following:

1. A watercourse designated by a solid line or dash and three dots symbol on the largest scale of the United State Geological Survey maps most recently published, or any replacement to that symbol;
2. Any watercourse which has a well-defined channel with a depth greater than four feet and banks steeper than 3:1 (horizontal to vertical bank ratio) and contains hydrophilic (i.e., water-adapted) vegetation, riparian vegetation or woody vegetation including tree species greater than ten feet in height; or
3. Those watercourses listed in Resolution No. 94-19 and incorporated herein by reference.

Erosion gullies and ravines being repaired with the technical assistance and/or under the direction of the Napa County Resource Conservation District/National Resource Conservation Service, “scour-holes”, and other non-linear features are not considered streams.

Napa County Code 18.108.025 applies setbacks for agricultural development adjacent to streams. Setbacks included in the Code range from 35 to 150 feet measured from the top of bank and increase with the slope of the terrain parallel to the top of bank.

#### *Vegetation Preservation and Replacement*

Napa County Code 18.108.100 requires the following conditions when granting a discretionary permit for activities within an erosion hazard area (slopes greater than five percent):

- Existing vegetation shall be preserved to the maximum extent consistent with the project. Vegetation shall not be removed if it is identified as being necessary for erosion control in the approved erosion control plan or if necessary for the preservation of threatened or endangered plant or animal habitats as designated by state or federal agencies with jurisdiction and identified on the county’s environmental sensitivity maps.
- Existing trees six inches in diameter or larger, measured at diameter breast height, (DBH), or tree stands of trees six inches DBH or larger located on a site for which either an administrative or discretionary permit is required shall not be removed until the required permits have been approved by the decision-making body and tree removal has been specifically authorized.
- Trees to be retained or designated for retention shall be protected through the use of barricades or other appropriate methods to be placed and maintained at their outboard drip line during the construction phase. Where appropriate, the director may require an applicant to install and maintain construction fencing around the trees to ensure their protection during earthmoving activities.
- Wherever removal of vegetation is necessitated or authorized, the director or designee may require the planting of replacement vegetation of an equivalent kind, quality and quantity.

#### **Napa County Baseline Data Report**

Napa County prepared a Baseline Data Report (NCBDR) in 2005 in support of the Updated General Plan. The NCBDR provides data and information on a range of environmental resources within the County, including Biological Resources. The purposes of the Biological Resources Chapter of the NCBDR are to 1) provide a scientific basis for future regional and site-specific level assessments of project impacts and the evaluation of mitigation measures, conservation proposals, and enhancement opportunities for biological resources; 2) serve as the existing conditions section for biological resources chapters/sections in a planned EIR in support of the County’s General Plan Update; 3) serve as a basis to evaluate current and future

policies at the local and Countywide level as they relate to biological resource protection and enhancement; and 4) document the methods and definitions used to establish a Countywide searchable biological resources database.

Specifically, the NCBDR recommends that CRPR 3 and CRPR 4 plant species be addressed for projects in Napa County to adequately address local species of concern. The Biological Resources Report (Kjeldsen Biological Consulting, 2015; **Appendix D**) prepared for the Proposed Project contains survey methodology and findings documentation consistent the standards and requirements of the Napa County General Plan (Napa County, 2008), including those outlined in the NCBDR (NCCDPD, 2011) in regards to special-status plant species (including local species of concern, CRPR 3 and 4) and vegetation communities.

#### 4.4.3 ENVIRONMENTAL SETTING

##### 4.4.3-1 REGIONAL SETTING

Napa County is located within the Inner North Coast Range Mountains, a geographic subdivision of the larger California Floristic Province (Hickman, 1993), which is strongly influenced by the Pacific Ocean. The region is in climate Zone 14 “Ocean Influenced Northern and Central California,” characterized as an inland area with ocean or cold air influence. The climate of the region is characterized by hot, dry summers and cool, wet winters. The town of Angwin is located at a higher elevation than the Napa Valley, and as a result is mildly cooler with slightly higher precipitation than the valley floor; average precipitation is approximately 40.67 inches per year in the town of Angwin (WRCC, 2014). The average annual temperature for the region ranges from 37.9 to 86.7 degrees Fahrenheit. Napa County extends from an elevation of zero feet above sea level on the west side to approximately 4,200 feet above sea level on the east side. Because of its dramatic variation in climate and topographic diversity, Napa County has a high natural level of biodiversity compared to the rest of California.

The dominant natural land cover types in the vicinity of the property and project site, as mapped by Napa County Vegetation Alliances data (2011), include *Quercus* Forest Alliance - Mixed Oak Forest, *Pinus sabiniana* Woodland Alliance (California foothill pine) Woodland, and *Pseudotsuga menziesii* Forest Alliance - Douglas Fir Forest, *Adenostoma fasciculatum* Shrubland Alliance - Chamise Chaparral and *Arctostaphylos Manzanita* Provisional Shrubland Alliance. Oak woodlands are the dominant natural land cover type in Napa County, covering over 167,000 acres (33 percent of the land cover in Napa County) and are typically characterized by several oak species, including coast live oak (*Quercus agrifolia*), interior live oak (*Quercus wislizenii*), and black oak (*Quercus kelloggii*) (NCCDPD, 2011). The oak woodland in the vicinity of the project site consists mainly of mixed oak woodland. Coniferous forests are also common in the County’s higher elevation areas, occurring on almost 38,000 acres in the County. The Napa County Vegetation Alliances data (2011) designates the habitat types on and in the vicinity of the parcel as Mixed Oak Forest Alliance, California foothill pine Alliance, Douglas-fir Alliance,

Chamise Chaparral Alliance, and Mixed Manzanita Alliance. These habitat types were refined further based on site-specific surveys.

The property is located on a largely forested upland within the “Saint Helena, California” USGS 7.5 minute quad. The property is within the Bell Canyon Reservoir watershed (Calwater 2206.500202), a subunit of the Napa River watershed. On-site elevations range from approximately 2,000 to 2,150 feet above mean sea level. Existing slopes on the property generally range from 8 to 27 percent; less than 1 acre contains slopes of 30 percent or greater (**Figure 4.1-1**).

#### 4.4.3-2 PROJECT PARCEL

The 38.7-acre property is situated on a hill top and southwest-facing hillside. Existing slopes on the property generally range from 8 to 27 percent; less than 1 acre contains slopes of 30 percent or greater. Aquatic features on the property include an unnamed reservoir, two intermittent USGS blue line streams, and one ephemeral drainage (Class III watercourse). The soils within the project parcel are classified by the U.S. Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS) as Forward gravelly loam, 2 to 9 percent slopes; Henneke gravelly loam, 30 to 75 percent slopes, and rock outcrop-Kidd complex, 50 to 75 percent slopes (refer to **Section 4.6** for further discussion of soils).

#### 4.4.4 BIOTIC COMMUNITIES AND ALLIANCES

Biotic communities are the characteristic assemblages of plants and animals that are found in a given range of soil, climate, and topographic conditions across a region. Biotic communities across Napa County were mapped by Thorne et al. (2004). Biological surveys of the property were conducted in 2013 by Kjeldsen Biological Consulting, and AES to provide a detailed assessment of existing conditions on the property, including fine-scale mapping of vegetation communities using classifications provided in the revised *Manual of California Vegetation, Second Edition* (Sawyer et al., 2009).

Jurisdiction over sensitive biotic communities that are considered critical habitat for species listed as threatened or endangered by the federal government lies with the USFWS and NMFS under the National Oceanic and Atmospheric Administration (NOAA). The CDFW considers sensitive biotic communities to be those which are listed in the CNDDDB (e.g., native grasslands; CDFW, 2003). Sensitive biotic communities are either designated by CDFW, considered by local experts to be communities of limited distribution, and/or considered to be waters of the U.S. or the state (Napa County, 2008).

Other natural communities in the County are considered sensitive simply due to their limited local distribution. These biotic communities of limited distribution encompass less than 500 acres of cover within the County and are considered by local biological experts to be worthy of

conservation (e.g., Coast Redwood Alliance; Napa County, 2008). There are no sensitive biotic communities on the project parcel that meet the County’s definition of a biotic community of limited distribution.

Vegetation communities identified onsite during the 2013 biological field surveys were based on Napa County Vegetation Alliance data (2011), which were refined according to field observations of species composition and density, and then classified according to MCV (Sawyer et al. 2009) and Holland (1986). **Figure 4.4-1** shows the vegetation alliances, or habitat types within the project parcel. **Table 4.4-1** reports the gross acreage of each vegetation type in Napa County (when those estimates were available), on the project parcel, and summed across the proposed vineyard blocks. Detailed descriptions of each habitat type are provided in **Sections 4.4.4-1** through **4.4.4-3**. Representative photographs of each vegetation type are shown in **Figure 4.4-2**.

**TABLE 4.4-1**  
BIOTIC COMMUNITIES AND IMPACT ACREAGES ON THE PROPERTY

	Douglas Fir Forest Alliance	California foothill pine Woodland Alliance	Mixed Oak Alliance	Manzanita Chaparral Alliance	Chamise Chaparral Alliance
<b>Napa County</b>					
Estimated Acreage in Napa County	17,268.74	2,808.33	28,713.21	8,603.55	30,911.07
Percent of Total Acreage in Napa County	3.41%	0.55%	5.67%	1.70%	6.10%
<b>Friesen Property</b>					
Total Acreage on Property	4.40	8.02	8.64	5.81	6.88
Percent of Total Vegetation Type in County	0.025%	0.428%	0.030%	0.068%	0.022%
<b>Proposed Vineyard Development</b>					
Acreage of Vegetation Type Proposed for Development	2.30	0.65	5.32	2.84	1.12
Percent of Vegetation Type on Property Impacted	52.3%	8.1%	61.6%	48.8%	16.3%
Percent of Vegetation Type In County Impacted	0.013%	0.02%	0.02%	0.03%	0.00%

Notes: \*All acreages are approximate

<sup>1</sup>Based on Sawyer et al. 2009.

<sup>2</sup>Based on NCBDR, 2011.

<sup>3</sup>Includes proposed vineyard development and erosion control measures within the 17± acre THP footprint.

<sup>4</sup>Based on Figure 4.4-1

Sources: NCBDR, 2011 and Sawyer et al. 2009



**PHOTO 1:** View of typical habitat associated with the THP/TCP illustrating mixed chaparral alliance.



**PHOTO 2:** Manzanita alliance on the project site.



**PHOTO 3:** Doug-fir and Ponderosa pine trees within Doug-fir alliance.



**PHOTO 4:** Reservoir on the property with perimeter band of willows. No removal of vegetation within 100-feet.



**PHOTO 5:** Grey Pine and Chamise chaparral alliance.



**PHOTO 6:** Mixed Oak Woodland Alliance.

#### 4.4.4-1 CHAPARRAL/SCRUB

##### **Chamise Chaparral Alliance**

The dominant plant species found in the Chamise Chaparral Alliance include chamise (*Adenostoma fasciculatum*), Manzanita (*Arctostaphylos* ssp.), toyon (*Heteromeles arbutifolia*), buckbrush (*Ceanothus cuneatus*), sticky monkey flower (*Mimulus aurantiacus*), coyote brush (*Baccharis pilularis*), Yerba santa (*Eriodictyon californicum*), ceanothus (*Ceanothus* ssp.), scrub oak (*Quercus berberidifolia*), and pitcher sage (*Lepchinia calycina*).

Wildlife species primarily associated with this habitat type include western rattlesnake (*Crotalis oreganus*), California mountain kingsnake (*Lampropeltis zonata*), desert cottontail (*Sylvilagus bachmanii*), Sonoma chipmunk (*Tamias sonomae*), wrentit (*Chamaea fasciata*), California thrasher (*Toxostoma redivivum*), rufous-crowned sparrow (*Aimophila ruficeps*), California quail (*Callipepla californica*), Bewick's wren (*Thryomanes bewickii*), and sage sparrow (*Amphispiza belli*).

Approximately 6.88 acres of Chamise Chaparral Alliance occur on the north-central portion of the property (**Figure 4.4-1**). Dominant plant species observed in this alliance include chamise (*Adenostoma fasciculatum*), buckbrush, wavy leaf Ceanothus (*Ceanothus foliosus*), toyon, coyote brush (*Baccharis pilularis*), and Yerba santa. Scattered California foothill pines and California black oaks are also present within this alliance. The sparse herbaceous layer is comprised of primarily grassland plant species and is interspersed with rock outcroppings and patches of bare soil.

Chaparral Chamise Alliance covers 30,911.07± acres, or approximately 6.10 percent, of the total vegetative cover in Napa County. Approximately 6.88 acres of Chamise Chaparral Alliance occur on the property and represents approximately 0.022 percent of the total Chamise Chaparral mapped in Napa County (NCCDPD, 2011; **Table 4.4-1**). Development of the Proposed Project would impact 1.12± acres (8.27 percent) of Chamise Chaparral Alliance on the property and less than 0.01 percent of the Chamise Chaparral Alliance in Napa County. Chamise Chaparral Alliance is not considered a sensitive habitat type.

##### **Manzanita Chaparral Alliance**

The dominant plant species found in the Manzanita Chaparral Alliance include white leaf Manzanita (*Arctostaphylos viscida*), chamise (*Adenostoma fasciculatum*) and leather oak (*Quercus durata*). Additional species include musk brush (*Ceanothus jepsonii* var. *albiflorus*), silk-tassel bush (*Garrya congdonii*), toyon (*Heteromeles arbutifolia*), deer brush (*Ceanothus integerrimus*), and fremontia (*Fremontodendron californicum*). Scattered California foothill pine trees may also be present within this community.

Common wildlife species that occur in this habitat include western rattlesnake (*Crotalis oreganus*), California mountain kingsnake (*Lampropeltis zonata*), desert cottontail (*Sylvilagus bachmanii*), Sonoma chipmunk (*Tamias sonomae*), wrentit (*Chamea fasciata*), California thrasher (*Toxostoma redivivum*), rufous-crowned sparrow (*Aimophila ruficeps*), California quail (*Callipepla californica*), Bewick's wren (*Thryomanes bewickii*), and sage sparrow (*Amphispiza belli*).

Approximately 5.81 acres of Manzanita Chaparral Alliance occur on the west-central and southern portions of the property (**Figure 4.4-1**). Dominant plant species observed within this alliance include common manzanita (*Arctostaphylos manzanita*), Stanford manzanita (*Arctostaphylos stanfordiana*), chamise (*Adenostoma fasciculatum*), buckbrush, wavy leaf Ceanothus, poison oak (*Toxicodendron diversilobum*), and toyon. The shrub layer canopy is one to two meters in height. The sparse herbaceous layer is comprised primarily of grassland plant species.

Manzanita Chaparral Alliance covers 8,603.55± acres, or approximately 1.70 percent, of the total vegetative cover in Napa County. Approximately 5.84 acres of Manzanita Chaparral Alliance occurs on the property and represents approximately 0.068 percent of the total Manzanita Chaparral Alliance mapped in Napa County (NCCDPD, 2011; **Table 4.4-1**). Development of the Proposed Project would impact 2.84± acres (48.8 percent), of Manzanita Chaparral Alliance on the property and 0.03 percent of the Manzanita Chaparral Alliance in Napa County. Manzanita Chaparral Alliance is not considered a sensitive habitat type.

#### 4.4.4-2 OAK WOODLAND

##### **Mixed Oak Alliance**

Dominant oak species within the Mixed Oak Woodland Alliance include interior live oak (*Quercus wislizeni*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*) and valley oak (*Quercus lobata*) in low elevations, with canyon live oak (*Quercus chrysolepis*) on steep slopes. The Mixed Oak Alliance also includes stands of deciduous oaks such as California black oak (*Quercus kelloggii*). Additional tree species known to occur in Mixed Oak Woodlands include big-leaf maple (*Acer macrophyllum*), madrone (*Arbutus menquiesii*), Douglas-fir (*Pseudotsuga menzeisii*), and Ponderosa pine (*Pinus ponderosa*). The understory is composed of annual grassland species, with patches of shrub species such as hillside gooseberry (*Ribes californica*) and poison oak, vine species such as hairy honeysuckle (*Lonicera hispidula*), and herbaceous species such as rigid hedge nettle (*Stachys ajugoides*) and miner's lettuce (*Claytonia perfoliata*).

Mixed Oak Woodland provides habitat for many wildlife species, especially those who are disseminators of acorns such as acorn woodpecker (*Melanerpes formicivorus*), western scrub jay (*Apelocoma californica*), and western gray squirrel (*Sciurus griseus*); and those that use

acorns as major sources of nutrition such as dusky-footed woodrat (*Neotoma fuscipes*), California ground squirrel (*Otospermophilus beecheyi*), and black-tailed deer (*Odocoileus hemionus columbianus*) (NCCDPD, 2011). Most species found in this habitat type are found in other oak woodland and chaparral habitats; however, bird species including Lawrence's goldfinch (*Carduelis lawrencei*), lesser goldfinch (*Carduelis psaltria*), lark sparrow (*Chondestes grammacus*), Bullock's oriole (*Icterus bullockii*), ash-throated flycatcher (*Myiarchus cinerascens*), orange-crowned warbler (*Vermivora celata*), and Hutton's vireo (*Vireo huttoni*) have a specific preference for mixed oak woodland habitat.

Approximately 8.89± acres of Mixed Oak Alliance occur on the northwest and southwest portions of the property (**Figure 4.4-1**). Dominant tree species observed within this alliance include California black oak (*Quercus kelloggii*), interior live oak (*Quercus wislizeni*), Oregon white oak (*Quercus garryana*), California buckeye (*Aesculus californica*), Pacific madrone (*Arbutus menziesii*), California foothill pine (*Pinus sabiniana*), Douglas fir (*Pseudotsuga menziesii*), and California laurel (*Umbellularia californica*). The canopy within this Alliance varies from intermittent to continuous and plant density within the understory shrub and herbaceous layers ranges from sparse to abundant. This alliance qualified as Mixed Oak Alliance based on three or more *Quercus* species present at greater than 30 percent constancy as co-dominants of the tree canopy.

Mixed Oak Alliance covers 28,713.21± acres, or approximately 5.67 percent, of the total vegetative cover in Napa County. Approximately 8.89 acres of Mixed Oak Alliance occur on the property, which represents approximately 0.030 percent of the total Mixed Oak Alliance mapped in Napa County (NCCDPD, 2011; **Table 4.4-1**). Development of the Proposed Project would impact 5.32± acres (61.6 percent), of Mixed Oak Alliance on the property and 0.02 percent of Mixed Oak Alliance in Napa County. Site photos provided in **Figure 4.4-2** show views of the oak woodland on the property. Oak woodlands are considered sensitive habitat types.

#### 4.4.4-3 CONIFEROUS FOREST

##### **Douglas Fir Alliance**

The Douglas Fir Alliance is dominated by Douglas fir (*Pseudotsuga menziesii*) as well as tanoaks (*Lithocarpus densiflora*), big-leaf maple (*Acer macrophyllum*), madrone (*Arbutus menziesii*), and California bay laurel (*Umbellularia californica*). Douglas fir can also be a co-dominant with Ponderosa pine (Sawyer et al., 2009). Shrub species associated with this habitat type include California hazel (*Corylus cornuta* var. *californica*), oceanspray, creeping snowberry (*Symphoricarpos mollis*), poison oak, ceanothus (*Ceanothus* spp.), California nutmeg (*Torreya californica*), woodland rose (*Rosa gymnocarpa*), thimbleberry (*Rubus parviflorus*) and manzanita. Herbaceous species found in the understory of this habitat type include yerba de selva (*Whipplea modesta*).

Wildlife species commonly found in Douglas-fir forest habitat include ring-necked snake (*Diadophis punctatus*), rubber boa (*Charina bottae*), hairy woodpecker (*Picoides villosus*), pileated woodpecker (*Dendropus pileatus*), Steller's jay (*Cyanocitta stelleri*), red-breasted nuthatch (*Sitta canadensis*), pygmy nuthatch (*Sitta pygmaea*), brown creeper (*Certhia americana*), yellow-rumped warbler (*Dendroica coronate auduboni*), western tanager (*Piranga ludoviciana*), pine siskin (*Carduelis pinus*), Trowbridge's shrew (*Sorex trowbridgii*), black bear (*Ursus americanus*), and western gray squirrel (*Sciurus griseus*).

Approximately 4.40 acres of Douglas Fir Alliance occur on the southern portions of the property (**Figure 4.4-1**). Dominant tree species observed within this alliance include Douglas fir, California black oak (*Quercus kelloggii*), bigleaf maple, Pacific madrone (*Arbutus menziesii*), California bay laurel, and Oregon white oak (*Quercus garryana*). The Douglas fir forest on the property is a result of modified fire regime and consists of relatively dense stands of trees at less than 10 foot spacing, with tree heights approaching 60 meters. The structure of the Douglas Fir Alliance on the property satisfies the membership rules which require greater than 50 percent relative cover in the tree canopy and successful reproduction.

The Douglas Fir Alliance covers 17,268.74± acres, or approximately 3.41 percent, of the total vegetative cover in Napa County. Approximately 4.40 acres of Douglas Fir Alliance occur on the property, which represents approximately 0.014 percent of the total Douglas Fir Alliance mapped in Napa County (NCCDPD, 2011; **Table 4.4-1**). Development of the Proposed Project would impact 2.30± acres, approximately 53.4 percent, of Douglas Fir Alliance on the property and 0.01 percent of Douglas Fir Alliance in Napa County. Site photos provided in **Figure 4.4-2** show views of the Douglas fir forest on the property. Douglas Fir Alliance is not considered a sensitive habitat type.

### **California Foothill Pine Alliance**

California foothill pine (*Pinus sabiniana*) forests comprise less than 3,000 acres of the County's total area. They are primarily found in the northern portions of the County in the vicinity of Lake Berryessa, Knoxville, Livermore Ranch, Pope Valley, and Eastern Mountains Evaluation Areas. California foothill pine is rarely found in single-species stands, but more often are found coexisting with co-dominant species such as interior live oak (*Quercus wislizeni*), blue oak (*Quercus douglasii*), and chaparral species such as manzanita (*Arctostaphylos* sp.), Ceanothus (*Ceanothus* spp.), and chamise (*Adenostoma fasciculatum*). The California Foothill Pine Alliance supports an intergrade of wildlife species associated with Chaparral and Oak Woodland Alliances.

Approximately 8.02 acres of California Foothill Pine Alliance occur on the north-central, northeast, and southeast portions property (**Figure 4.4-1**). Dominant tree species observed within this alliance include California foothill pine (*Pinus sabiniana*), California black oak, interior live oak (*Quercus wislizeni*), and California buckeye (*Aesculus californica*). The tallest trees in

this alliance approach heights of 20 meters and create an open to intermittent canopy. The shrub understory ranges from moderate to dense and is comprised of chaparral species such as manzanita and chamise, with an herbaceous layer of primarily grassland species. There was no sign of recent timber or firewood harvesting. The California foothill pine trees were an average 6" to 30" DBH and approximately 40 foot spacing.

The California Foothill Pine Alliance covers 2,808.33± acres, or approximately 0.55 percent, of the total vegetative cover in Napa County. Approximately 8.02 acres of California Foothill Pine Alliance occur on the property, which represents approximately 0.428 percent of the total California Foothill Pine Alliance mapped in Napa County (NCCDPD, 2011; **Table 4.4-1**). Development of the Proposed Project would impact 0.65± acres (8.1 percent) of California Foothill Pine Alliance on the property and 0.02 percent of California Foothill Pine Alliance in Napa County. Site photos provided in **Figure 4.4-2** show views of the California Foothill Pine Alliance occurring on the property. California Foothill Pine Alliance is not considered a sensitive habitat type.

#### *4.4.4-3 WETLANDS, DRAINAGES AND WATERS OF THE U.S.*

##### **Wetlands and Vernal Pools**

The project site does not support any wetlands, vernal pools, or seeps. No potential seasonal wetlands or vernal pools have been identified during biological surveys of the property by Kjeldsen (2015) or AES. There are no wetlands or wetland features on the project site that may be considered under the jurisdiction of the USACE, RWQCB, and CDFW.

##### **Waters of the State**

Two blue line streams and one Class III watercourse are present on the property, as shown in **Figure 4.4-1**. In addition, the property contains an unnamed reservoir that is part of the Friesen Lakes, although it is outside of the project site. The two blue line streams on the property are seasonal intermittent, ephemeral drainages that do not contain instream riparian vegetation. The southeast blue line drainage is Class III on the property with a shallow cut channel with rock, mud, or gravel bed. The northwest blue line drainage is a Class III drainage with less downcutting and a lower slope than the other drainage on the property. The vegetation associated with these drainages is no different than the upland vegetation, and there are no riparian trees, shrubs, or herbs associated with the watercourses.

The TCP and vineyard development are set back from these water features by buffer zones ranging from 55 to 125 feet, consistent with Napa County ordinance and Forest Practice Rules, and no activities would take place within these setbacks. The ECP contains erosion control measures that would be implemented to prevent chemical and sediment transport from the project parcel to the two creeks and further downstream. The entirety of the irrigation water for the vineyard would come from groundwater, as discussed in **Section 4.9**.

#### 4.4.4-4 WILDLIFE MOVEMENT

In Napa County as a whole, wildlife movement is becoming increasingly restricted by urban and agricultural development. Therefore, interspersing natural areas within developed areas is an important design feature for facilitating movement of wildlife and plant populations, increasing genetic variation in plant and animal populations, reducing population fluctuations, and retaining predators of agricultural pests. Wildlife corridors provide valuable ecosystem services including increasing species' ranges, facilitating plant-animal interactions, and preserving watershed connectivity.

Aerial photos were reviewed to look at the habitat surrounding the site and the potential for wildlife movement, or wildlife corridors from adjoining properties onto or through the property. Field surveys were conducted to identify corridors for movement, game trails, or habitat which would favor movement of wildlife or potential gene flow. Biologists also looked for barriers which would prevent movement or direct movement to particular areas (Kjeldsen, 2015). The property is surrounded by adjacent woodlands; however, biological surveys of the property confirmed that there are no identifiable significant wildlife corridors associated with the property (Kjeldsen, 2015). The property has not been identified as part of a major regional movement corridor (NCCDPD, 2011). The ECP contains wildlife exclusion fencing measures, which would involve the installation of exclusionary fencing around the designated vineyard blocks. Vineyard blocks will be individually fenced which will facilitate wildlife movement within and through the property.

#### 4.4.4-5 WILDLIFE

Wildlife was identified onsite during the biological surveys by one or more of the following: calls, scat, remains, or direct sight (Kjeldsen, 2015). Animals with potential to occur on the parcel and to which special regulatory status applies are discussed in the following section.

#### 4.4.5 SPECIAL STATUS SPECIES

Special status species are those considered to be of management concern to state and/or federal resource agencies, including species:

- Listed as endangered, threatened or candidate for listing under the Federal Endangered Species Act.
- Listed as endangered, threatened, rare or proposed for listing under the California Endangered Species Act of 1970.
- Designated as endangered or rare, pursuant to California Fish and Game Code (§ 1901).
- Designated as fully protected, pursuant to California Fish and Game Code (§§ 3511, 4700 or 5050).

- Designated as species of special concern by the CDFW.
- Meeting the definitions of rare or endangered under CEQA.
- Listed as “locally rare” special status plant species in the Napa County Baseline Data Report (NCBDR) (CRPR 3 and 4), including plants ranked by the CNPS to be “rare, threatened or endangered in California” (CRPR 1A, 1B and 2) (NCCDPD, 2011).

Biologists have surveyed the site annually for the past three years, as shown in **Table 4.4-2** below. In addition, a Registered Professional Forester has been onsite 12 times for a total of 48 hours in the past 3 years to conduct Northern spotted owl protocol calling.

**TABLE 4.4-2**  
BIOLOGICAL SURVEYS OF THE PROJECT SITE

Date	Personnel	Person-Hour	Time
February 22, 2013	Kjeldsen Biological Consulting AES: Pete Bontadelli and Annalee Sanborn	3.0 person-hours	15:00 to 16:30
March 19, 2013	Kjeldsen Biological Consulting	4.0 person-hours	10:45 to 12:45
April 17, 2013	Kjeldsen Biological Consulting	3.0 person-hours	15:00 to 16:30
May 13, 2013	Kjeldsen Biological Consulting	3.0 person-hours	12:00 to 13:30
June 3, 2013	Kjeldsen Biological Consulting	3.5 person-hours	09:30 to 11:15
November 24, 2014	AES: Marc Beccio	6.0 person-hours	09:30 to 14:30
February 25, 2015	Kjeldsen Biological Consulting	4.25 person-hours	10:00 to 12:15

The list of potentially occurring special-status species shown in **Table 4.4-3** below is based on recent database queries (USFWS, 2014; CDFW, 2014, CNPS, 2014) and serves as an updated species list from the database queries included in Appendix C to the Biological Resources Report included as **Appendix D**. The list in **Table 4.4-3** has been adapted to show only those special-status species with the potential to occur onsite. As stated in **Section 4.2**, the CDFW recommends that all CRPR 1A, 1B, and 2 plant species be addressed for CEQA projects (CDFW, 2014). CRPR 3 and 4 species were considered as well since such species are considered locally rare in Napa County and are recommended to be addressed per the NCBDR. The project site contains suitable habitat for nine special species: three plant species, one bird species, one reptile species, two amphibian species, and two mammal species as shown in **Table 4.4-3**. These species are discussed further below in **Sections 4.4.4-7** through **4.4.4-9**.

**TABLE 4.4-3**  
SPECIAL STATUS SPECIES WITH THE POTENTIAL TO OCCUR ON THE PROJECT PARCEL

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<b>Plants</b>					
<i>Amorpha californica</i> <i>var. napensis</i> Napa false indigo	--/--/1B.2	Monterey, Marin, Napa, and Sonoma counties.	Broad-leaf upland forest (openings), chaparral, and cismontane woodland. Elevations from 120-2,000 meters.	April - July	No. While cismontane woodland is present on the project site, this species was not observed during any of the biological surveys of the site conducted throughout its bloom period.
<i>Amsinckia lunaris</i> Bent-flowered fiddleneck	--/--/1B.2	Alameda, Contra Costa, Colusa, Lake, Marin, Napa, San Benito, Santa Clara, Santa Cruz, San Mateo, and Yolo counties.	Coastal bluff scrub, cismontane woodland, and valley and foothill grassland. Elevations; 3- 500 meters.	March - June	No. Suitable habitat is not present on the project site. This species was not observed during biological surveys of the site.
<i>Astragalus claranus</i> Clara Hunt's milk-vetch	FE/CT/1B.1	Known to occur in Napa and Sonoma counties (CNPS 2014).	Chaparral (openings), cismontane woodland, and valley and foothill grassland/serpentinite or volcanic, rocky, and clay. Elevations; 75-275 meters (CNPS 2014).	March - May	No. The absence of suitable micro-habitats and vegetation associates, as well as the closed canopy make this habitat unsuitable for this species. This species was not observed during biological surveys of the site.
<i>Brodiaea californica</i> <i>var. leptandra</i> Narrow-anthered California brodiaea	--/--/1B.2	Lake, Napa and Sonoma counties.	Broadleaf upland forest, chaparral valley and foothill grassland, and lower montane coniferous forest; rocky volcanic soil. Elevations from 110-915 meters.	May - July	No. Suitable habitat is present on the project site; however, this species was not observed during biological surveys of the site. This species was observed in the vicinity of the project site during biological surveys. This species does not occur onsite.
<i>Calystegia collina</i> ssp. <i>oxyphylla</i> Mt. Saint Helena Morning glory	--/--/4.2	Lake, Mendocino, Marin, Napa, San Benito, and Sonoma counties.	Chaparral, lower montane coniferous forest, valley and foothill grassland in serpentinite soils. Elevations from 279 – 1010 meters.	April - June	No. Requisite habitat and edaphic conditions are not present within the project site. This species was not observed during biological surveys of the site.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<i>Ceanothus confusus</i> Rincon Ridge ceanothus	--/--/1B.1	Lake, Mendocino, Napa, and Sonoma counties.	Closed-cone coniferous forest, chaparral, and cismontane woodland/volcanic or serpentinite. Elevations: 75-1065 meters.	February - June	No. Suitable habitat and vegetation associates are not present within the project site. This species was not observed during biological surveys of the site.
<i>Ceanothus divergens</i> Calistoga ceanothus	--/--/1B.2	Lake, Napa and Sonoma counties.	Chaparral (serpentinite, volcanic, rocky). Elevations: 170 – 950 meters.	February - April	No. Suitable habitat and vegetation associates are not present within the project site. This species was not observed during biological surveys of the site.
<i>Ceanothus purpureus</i> Holly-leaved ceanothus	--/--/1B.2	Napa, Shasta, Solano, Sonoma, and Trinity counties.	Chaparral and cismontane woodland in volcanic, rocky soils. Elevations: 120 – 640 meters.	February - June	No. Suitable habitat and vegetation associates are not present within the project site. This species was not observed during biological surveys of the site.
<i>Ceanothus sonomensis</i> Sonoma ceanothus	--/--/1B.2	Napa and Sonoma counties.	Chaparral (sandy, serpentinite or volcanic). Elevations: 215 – 800 meters.	February - April	No. Suitable habitat and vegetation associates are not present within the project site. This species was not observed during biological surveys of the site.
<i>Centromadia parryi</i> ssp. <i>parryi</i> Pappose tarplant	--/--/1B.1	Alameda, Contra Costa, Monterey, Santa Clara, Santa Cruz, San Luis Obispo, San Mateo, and Solano counties.	Valley and foothill grassland (alkaline). Elevations: 0 – 230 meters.	May – November	No. Requisite mesic habitat conditions are not present within the project site. This species was not observed during biological surveys of the site.
<i>Harmonia hallii</i> Hall's harmonia	--/--/1B.2	Colusa, Lake, Napa, and Yolo counties.	Chaparral (serpentinite). Elevations: 500 – 975 meters.	April - June	No. Requisite edaphic conditions and chaparral habitat are not present within the project site. This species was not observed during biological surveys of the project site.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<i>Hesperolinon bicarpellatum</i> Two-carpellate western flax	--/--/1B.2	Lake, Napa, and Sonoma counties.	Chaparral (serpentinite). Elevations: 60 – 1005 meters.	May - July	No. Requisite edaphic habitat is not present within or in the vicinity of the project site. This species was not observed during biological surveys of the project site.
<i>Hesperolinon tehamense</i> Tehama County western flax	--/--/1B.3	Alameda, Glenn, Lake, Napa, Stanislaus, and Tehama counties.	Chaparral and cismontane woodland in serpentinite soils. Elevations: 100 – 1,250 meters.	May - July	No. Requisite edaphic habitat is not present within or in the vicinity of the project site. This species was not observed during biological surveys of the project site.
<i>Juncus luciensis</i> Santa Lucia dwarf rush	--/--/1B.2	Lassen, Monterey, Modoc, Napa, Nevada, Placer, Plumas, Riverside, Santa Barbara, San Benito, San Diego, Shasta, and San Luis Obispo counties.	Chaparral, Great Basin scrub, lower montane coniferous forest, meadows and seeps, and vernal pools. Elevations: 300 – 2,040 meters.	April - July	No. Requisite mesic habitat is not present within the project site. This species was not observed during biological surveys of the project site.
<i>Leptosiphon jepsonii</i> Jepson's leptosiphon	--/--/1B.2	Lake, Napa, Sonoma, and Yolo counties.	Chaparral and cismontane woodland, usually volcanic. Elevations from 100-500 meters.	March - May	No. Requisite habitat is not present on the property. In addition, closed canopy precludes presence within the project site. This species was not observed during biological surveys of the project site.
<i>Limnanthes floccosea</i> ssp. <i>floccosa</i> Woolly meadowfoam	--/--/4.2	Butte, Lake, Lassen, Napa, Shasta, Siskiyou, Tehama, and Trinity counties.	Chaparral, cismontane woodland, valley and foothill grassland, and vernal pools, in vernal mesic soils. Elevations: 60 – 1,335 meters.	March - June	No. Requisite mesic habitat is not present within the project site or in the vicinity. This species was not observed during biological surveys of the project site.
<i>Limnanthes vinculans</i> Sebastopol meadowfoam	FE/CE/1B.1	Napa and Sonoma counties.	Meadows and seeps, valley and foothill grassland, and vernal pools in vernal mesic soils. Elevations: 15 – 305 meters.	April - May	No. Requisite mesic habitat is not present within the project site or in the vicinity. This species was not observed during biological surveys of the project site.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<i>Lomatium repostum</i> Napa Lomatium	--/--/4.3	Lake, Napa, Solano, and Sonoma counties.	Chaparral and cismontane woodland in serpentinite soils. Elevations: 90 – 830 meters.	March – June	Yes. Suitable habitat is present on the site within the Chamise Chaparral Alliance and within the forest alliances within the site. This species was observed during biological surveys of the project site.
<i>Lupinus sericatus</i> Cobb Mountain lupine	--/--/1B.2	Colusa, Lake, Napa, and Sonoma counties.	Broad-leaved upland forest, chaparral, cismontane woodland, and lower montane coniferous forest. Elevations range from 275- 1,525 meters.	March - June	No. Requisite vegetation associates are not present within the project site. In addition, historical uses of the project site preclude presence. This species was not observed during biological surveys of the project site.
<i>Navarretia leucocephala</i> <i>ssp. bakeri</i> Baker's navarretia	--/--/1B.1	Colusa, Glenn, Lake, Lassen, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo counties.	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools in mesic soils. Elevations: 5 – 1,740 meters.	April – July	No. Suitable habitat and vegetation associates are not present within the project site. This species was not observed during biological surveys of the project site.
<i>Navarretia rosulata</i> Marin County navarretia	--/--/1B.2	Marin and Napa counties.	Closed-cone coniferous forest and chaparral in serpentinite, rocky soils. Elevations: 200 - 635 meters.	May - July	No. Requisite edaphic conditions are absent within the project site and in the vicinity. This species was not observed during biological surveys of the project site.
<i>Penstemon newberryi</i> <i>var. sonomensis</i> Sonoma beardtongue	--/--/1B.3	Lake, Napa, and Sonoma counties.	Chaparral (rocky). Elevations: 700 – 1,370 meters.	April - August	Yes. Suitable habitat is present within the project site. Closed canopy precludes presence of this species within the project site. This species was not observed during biological surveys of the project site.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<i>Plagiobothrys strictus</i> Calistoga popcorn-flower	FE/CT/1B.	Napa County.	Meadows and seeps, valley and foothill grassland, and vernal pools in alkaline areas near thermal springs. Elevation: 90 – 160 meters.	March - June	No. Requisite mesic habitat is not present within the project site or in the vicinity. This species was not observed during biological surveys of the project site.
<i>Sidalcea oregana ssp. hydrophila</i> Marsh checkerbloom	--/--/1B.2	Glenn, Lake, Mendocino, and Napa counties.	Meadows and seeps and riparian forest in mesic soils. Elevation: 1,100 – 2,300 meters.	June - August	No. Requisite mesic habitat is not present within the project site or in the vicinity. This species was not observed during biological surveys of the project site.
<i>Streptanthus hesperidis</i> Green jewel-flower	--/--/1B.2	Colusa, Glenn, Lake, Napa, Sonoma, and Yolo counties.	Chaparral (openings), and cismontane woodland in serpentinite, rocky soils. Elevation: 130 – 760 meters.	April - July	No. Requisite edaphic habitat as well as historic use of project site preclude the presence of this species within the project site. This species was not observed during biological surveys of the project site.
<i>Trichostema ruygtii</i> Napa bluecurls	--/--/1B.2	Lake, Napa, and Solano counties.	Chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland; vernal mesic thin soils and vernal pools. Elevations from 30-680 meters.	June - October	No. Absence of requisite habitat as well as historic uses of the project site preclude presence of this species on the project site. This species was not observed during biological surveys of the project site.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<b>Animals</b>					
<b>Birds</b>					
<i>Agelaius tricolor</i> Tricolored blackbird	--/ CT <sup>1</sup> /--	West coast of North America from southern Washington, USA to northern Baja California, Mexico. Many populations have been extirpated and others continue to decline throughout the range, especially in southern California.	Requires aquatic habitats with suitable basking sites. Prefers nesting in large freshwater marshes with foraging habitat (open fields, pastures) nearby. Nest sites most often characterized as having gentle slopes (<15 percent) with little vegetation or sandy banks.	March - October	No. Suitable habitat is not present within the project site. This species was not observed during biological surveys of the project site. There is no suitable nesting or foraging habitat in the vicinity.
<i>Progne subis</i> purple martin	--/CSC/--	Local summer resident in wooded low-elevation habitats throughout California; rare migrant in spring and fall, absent in winter. In the south, now only a rare and local breeder on the coast and in interior mountain ranges.	Inhabits open forests, woodlands, and riparian areas in breeding season. Found in a variety of open habitats during migration, including grassland, wet meadow, and fresh emergent wetland, usually near water. Nests in conifer stands, often in woodpecker holes. Uses valley foothill and montane hardwood and conifer, and riparian habitats.	March - August	Yes. Marginally suitable nesting and foraging habitat occurs within the project site. This species was not observed during biological surveys of the project site.

<sup>1</sup> The tricolored blackbird is listed as a candidate for listing as Threatened under the California Endangered Species Act and per Fish and Game Code §2081, these species are afforded the same protections as Threatened species during their candidacy period.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<i>Srtix occidentalis caurina</i> Northern spotted owl	FT/CT <sup>2</sup> /--	Year-round resident in Northern California, Oregon, and Washington, primarily in old growth or mature forests.	Inhabits forests characterized by dense canopy closure of mature and old-growth trees, abundant logs, standing snags, and live trees with broken tops; prefers older forest stands with variety: multi-layered canopies of several tree species of varying size and age, both standing and fallen dead trees, and open space among the lower branches to allow flight under the canopy.	Year-round	Yes. Nearest occurrence (activity center) is approximately 1.6 miles from the property. The Douglas Fir Alliance on the southwestern portion of the property provides a small unit of potentially suitable habitat. This species was not observed during biological surveys of the project site or during the protocol level northern spotted owl surveys ( <b>Appendix O</b> ).
<b>Mammals</b>					
<i>Antrozous pallidus</i> Pallid bat	--/CSC/--	Locally common species at low elevations. Throughout California except for the high Sierra Nevada from Shasta to Kern counties, and the northwestern corner of the state from Del Norte and western Siskiyou counties to northern Mendocino County.	Habitats occupied include grasslands, shrublands, woodlands and forests from sea level through mixed conifer forests below 2,000 meters. The species is most common in open, dry habitats with rocky areas for roosting. Roosts include cliffs, abandoned buildings, bird boxes, hollow trees or tree crevices, and under bridges.	March - September	Yes. Marginally suitable roosting habitat occurs within the project site and suitable foraging habitat occurs within the project site. This species was not observed during biological surveys of the project site.

<sup>2</sup> The northern spotted owl is listed as a candidate for listing as Threatened under the California Endangered Species Act and per Fish and Game Code §2081, these species are afforded the same protections as Threatened species during their candidacy period.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<b><i>Corynorhinus townsendii</i></b> Townsend's big-eared bat	--/CT <sup>3</sup> /	Throughout California, excluding subalpine and alpine habitats. Through Mexico to British Columbia and the Rocky Mountain states. Also occurs in several regions of the central Appalachians.	Requires caves, mines, tunnels, buildings, hollow trees, or other human-made structures for roosting. Hibernation sites must be cool and cold, but above freezing.	March - September	Unlikely. There are no caves or crevices suitable for roosting, although there may be a few tree cavities that provide marginal roosting habitat on the project site. The project site contains suitable foraging habitat. This species was not observed during biological surveys of the project site.
<b>Reptiles</b>					
<b><i>Emys marmorata</i></b> Western pond turtle	--/CSC/--	West coast of North America from southern Washington, USA to northern Baja California, Mexico. Many populations have been extirpated and others continue to decline throughout the range, especially in southern California.	Requires aquatic habitats with suitable basking sites. Nest sites most often characterized as having gentle slopes (<15 percent) with little vegetation or sandy banks.	March - October	Yes. This species is present in the reservoir located on the property; however, it is not likely to occur within the proposed project footprint due to the distance from the reservoir. This species was observed in the vicinity of the reservoir during biological surveys of the project site.

<sup>3</sup> The Townsend's big-eared bat is listed as a candidate for listing as Threatened under the California Endangered Species Act and per Fish and Game Code §2081, these species are afforded the same protections as Threatened species during their candidacy period.

4.0 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

Biological Resources

Scientific Name Common Name	Federal/ State/ Other Status	Distribution	Habitat Requirements	Period of Identification	Potential to Occur Within the Project Site
<b>Amphibians</b>					
<i>Rana boylei</i> Foothill yellow-legged frog	--/CSC/--	Coast Ranges from the Oregon border south to the Transverse Mountains in Los Angeles County, throughout most of Northern California west of the Cascade crest, and along the western portion of the Sierra south to Kern County, with a few isolated populations in the Central Valley.	Occurs in shallow flowing streams with some cobble in a variety of habitats including woodlands, riparian forest, coastal scrub, chaparral, and wet meadows. Rarely encountered far from permanent water sources. Elevations typically range from 0-1,940 meters.	March - June	No suitable habitat occurs within the project site. This species was not observed during biological surveys of the project site.
<i>Rana draytonii</i> California red-legged frog	FT/CSC/--	Coastal Mendocino Co. to Baja, inland through northern Sacramento Valley into the foothills of the Sierra Nevada, south to east Tulare County, and possibly eastern Kern County. Range excludes the Central Valley.	Occurs in permanent and temporary pools of streams, marshes, and ponds with dense grassy and/or shrubby vegetation. Elevations typically range from sea level to 1,600 meters.	March - June	Unlikely. The reservoir and the blue line streams within the property represent marginally suitable breeding habitat. However, there is no habitat within the project site. This species was not observed during biological surveys of the project site.
<b>Fishes</b>					
<i>Oncorhynchus mykiss</i> Central California Coast steelhead	FT/--/--	Russian River south to Soquel Creek, but not including Pajaro River; also San Francisco & San Pablo Bay basins.	For spawning and rearing headwater streams with cold water, deep pools and runs, gravel (1-13 cm) beds for spawning.	All year	No. No suitable aquatic habitats are present within the project site. An impassable dam impounding Bell Reservoir is located downstream of the project site.

**STATUS CODES**

**FEDERAL: U.S. Fish and Wildlife Service and National Marine Fisheries Service**

FE Listed as Endangered by the Federal Government

FT Listed as Threatened by the Federal Government

**STATE: California Department of Fish and Wildlife**

CE Listed as Endangered by the State of California  
CT Listed as Threatened by the State of California  
CSC California Species of Special Concern

**OTHER:**

**CNPS: California Native Plant Society**

CRPR 1B Plants rare or endangered in California and elsewhere  
CRPR 2 Plants rare or endangered in California, but more common elsewhere  
CRPR 3 Plants for which more information is needed  
CRPR 4 Plants of limited distribution

**Threat Ranks**

0.1-Seriously threatened in California (high degree/immediacy of threat)  
0.2-Fairly threatened in California (moderate degree/immediacy of threat)  
0.3-Not very threatened in California (low degree/immediacy of threats or no current threats known)  
Months in parenthesis are uncommon.

SOURCES: CNPS, 2014; CNPS, 2014; BCI, 2014

Species were dismissed from further consideration (refer to **Appendix D**) and analysis in **Section 4.4** of this EIR if:

1. Their distributions fall outside the project site;
2. The species has been recently delisted or has no state or federal status (but may be tracked by the CNDDDB); and/or
3. The project site does not provide suitable habitat and/or soils for the species.

No critical habitats listed by the USFWS occur within the property (**Appendix D**).

Descriptions of target species that have the potential to occur onsite are provided below (refer to **Table 4.4-3**).

#### 4.4.5-1 SPECIAL STATUS PLANT SPECIES

Special status plant species with the potential to occur on the project parcel are described below. The CDFW suggests that all CRPR 1B and 2 plant species be addressed for CEQA projects. Although not required for the CEQA review process, CNPS recommends that CRPR 3 and CRPR 4 plant species also be considered because their status may change and other local and/or regional regulations may require evaluation.

##### **Narrow-anthered California brodiaea (*Brodiaea californica* var. *leptandra*)**

Lily Family (Liliaceae)

Federal Status – None

State Status – None

Other – CRPR 1B.2

Narrow-anthered California brodiaea can be distinguished from the more common harvest brodiaea (*Brodiaea elegans* ssp. *elegans*) by checking the staminode character traits. Narrow-anthered California brodiaea has pale lilac to white flowers, and with a stem greater than 50 centimeters tall (Hickman, 1993). Narrow-anthered California brodiaea typically occurs from 110 to 915 meters in elevation in broadleaf upland forest, chaparral, cismontane woodland, lower montane coniferous forest, and valley and foothill grassland on generally thin rocky soils, of volcanic serpentinite origin, often along drainages. The ideal period of identification is from May through July. It is found in Lake, Napa, and Sonoma counties (CNPS, 2014).

There are four recorded occurrences of this species within a five mile radius of the project parcel (CDFW, 2003). The nearest record of this species is located approximately 1.5 miles northeast of the project parcel (CNDDDB Occurrence Number 12). The oak woodland within the property provides suitable habitat for narrow-anthered California brodiaea. This species was not observed during the focused biological surveys of the project parcel, which were conducted

within the appropriate period of identification for this species. This species was not identified during previous biological surveys of the property by Kjeldsen (2015).

**Napa lomatium (*Lomatium repostum*)**

Carrot Family (Apiaceae)

Federal Status – None

State Status – None

Other – CRPR 4.3

Napa lomatium is a species of flowering plant known only from the Coast Ranges surrounding the San Francisco Bay Area in northern California. It is found in Lake, Napa, Solano, and Sonoma counties (CNPS, 2014). Napa lomatium is a spreading perennial herb with leaves growing up to half a meter long at ground level and an umbel inflorescence composed of yellowish-green to purplish flowers. Napa lomatium typically occurs at elevations ranging from 90 to 830 meters in chaparral and cismontane woodland habitats with serpentine soils. The ideal period of identification is from March through June.

The project site provides suitable habitat for Napa lomatium within the chamise chaparral and oak woodland habitats. This species was observed during the biological surveys of the property, which were conducted within the appropriate period of identification for this species (Kjeldsen, 2015). This species was observed within the Chaparral Chamise Alliance within and outside of the project site (**Appendix D**) in areas that have been cleared of overstory, specifically for the construction of roads. This species is found in disturbed areas following clearing activities, and is often outcompeted as the shrub canopy develops.

**Sonoma beardtongue (*Penstemon newberryi* var. *sonomensis*)**

Plantain Family (Plantaginaceae)

Federal Status – None

State Status – None

Other – CRPR 1B.1

Sonoma beardtongue is a perennial herb that occurs in rocky chaparral communities at elevations that range from 700 to 1,370 meters amsl. This species blooms from April through August. The known range of Sonoma beardtongue includes Lake, Napa, and Sonoma counties (CNPS, 2014). This species is noted for growing approximately 12 inches in height, with large, red flowers. It required excellent drainage, full sun to part shade, and minimal summer water.

There are two documented occurrences of this species within five miles of the project site (CDFW, 2003). The nearest record of this species is located approximately one mile north of the project site (CNDDDB Occurrence Number 7). The Chamise Chaparral Alliance within the property provides suitable habitat for Sonoma beardtongue. This species was not observed

during the focused biological surveys of the project parcel, which were conducted within the appropriate period of identification for this species (Kjeldsen, 2015).

#### 4.4.5-2 SPECIAL STATUS ANIMAL SPECIES

##### **Purple martin (*Progne subis*)**

Family Hirundinidae – Swallows and martins

Federal Status – None

State Status – California Species of Special Concern

One of the world's most studied birds, the purple martin breeds in North America and winters in South America. It is widely distributed throughout the eastern United States, and patchily distributed throughout the western U.S. In California, the species is locally distributed, with the highest concentration of populations occurring along the western Cascade and Sierra Nevada Ranges; North Coast and northern Central Coast Ranges; and in extreme southwest California. The purple martin is a cavity-nester. In the north coastal area of California, purple martin is generally concentrated in coast redwood forest stands, it also utilizes coniferous forests with large dead trees, or snags, containing woodpecker holes. Ideal breeding snags are located in forested areas with relatively open canopy and access to open airspace above (Williams, 1998). Breeding season extends from April to August (Brown, 1997; Sibley, 2003).

There is one mapped CNDDDB occurrence of the purple martin within five miles of the project site (CNDDDB Occurrence Number 12), located approximately one mile southeast (CNDDDB, 2003). The project parcel provides some suitable nesting habitat for this species in the form of large snags with woodpecker holes; however, current management practices include the removal of dead or decaying trees for firewood and/or safety, which reduces the amount of available habitat. This species was not observed during the biological surveys of the project parcel.

##### **Northern spotted owl (*Strix occidentalis caurina*)**

Family Strigidae

Federal Status – Threatened

State Status – Candidate for Listing

Other – None

The northern spotted owl ranges from British Columbia south to Marin County, California. The species is a year-round resident (non-migratory) of mature and old growth coastal forests, and most common in Douglas fir forests that are at least 150 to 200 years old. Northern spotted owls are extremely sensitive to human disturbances, especially logging. The northern spotted owl prefers high canopy forests with snags and broken tree tops, with openings in the understory for movement between trees and foraging areas. Northern spotted owls are cavity

nesters and require large foraging territories to support successful nesting and rearing. Their prey items consist of flying squirrels, woodrats, red tree voles, other small mammals, birds, and invertebrates. Threats to the northern spotted owl include loss of habitat, predation; and competition and interbreeding with the barred owl (*Strix varia*).

Although the northern spotted owl is typically found in large, contiguous stands of mature forest, the Douglas fir forest within the southwestern portion of the property provides a small patch of suitable habitat for the northern spotted owl. For the past three years, surveys following the USFWS Protocol for Surveying Northern Spotted Owls have occurred on the property (**Appendix O**). No northern spotted owls have been detected on the property and the project site contains only 0.5 acres of area that may be considered marginal foraging habitat; the rest of the project site is unsuitable habitat for northern spotted owl. The nearest northern spotted owl activity center is approximately 1.6 miles from the project site.

#### **Pallid bat (*Antrozous pallidus*)**

Federal Status – None

State Status – California Species of Special Concern

Other – Western Bat Working Group High Priority

The pallid bat occurs from British Columbia to Texas south to Baja California and central Mexico (Smithsonian, 2014). In California, the pallid bat occurs from Shasta to Kern counties. The pallid bat is most commonly found in dry, open habitats with rocky areas for roosting. Pallid bats roost alone or in small groups (2 to 20 bats). This species has three different roosts: the day roost is usually in a warm horizontal opening such as in attics, rock cracks, or hollow trees; the night roost is usually in the open, near foliage; and the hibernation roost, which is often in buildings, caves, or cracks in rocks (Smithsonian, 2014). Roosts generally have unobstructed entrances/exits and are high above the ground. The species is an opportunistic feeder and forages primarily over open habitats. Winter habitats are not well understood but the species does not appear to migrate long distances between summer and winter sites.

There are four recorded occurrences of this species within a five mile radius of the project site (CDFW, 2003). The nearest record of pallid bat is located approximately two miles southeast of the project site (CNDDDB Occurrence Number 55). Potentially suitable roosting habitat for pallid bat occurs within the property as small rocky outcroppings, and the chaparral and woodlands on the property provide suitable foraging habitat for this species. Pallid bats were not observed during the biological surveys of the project site.

**Townsend's big-eared bat (*Corynorhinus townsendii*)**

Federal Status – None

State Status – Candidate for Listing

Other – Western Bat Working Group High Priority

Townsend's big-eared bat is found throughout California in a wide range of habitats, although it prefers foraging along riparian corridors on small moths and beetles. Seasonal movement patterns are not well understood and may be localized. Distribution is strongly correlated with availability of caves and cave-like roosting habitat (e.g., abandoned mines, bridges, and culverts). However, the species has also been reported roosting in buildings, bridges, rock crevices, and hollow trees. These bats roost during the day and from October to April when hibernating. Maternity colonies are comprised of groups of females and their young, which roost in relatively warm sites in caves, tunnels, mines, and occasionally in abandoned buildings. These colonies form in May or June when the young are born and remain in the roost until August, by which time the young have been weaned and fledged (CDFW, 2010). This species has begun to decline due to loss of roosting habitat, and is extremely sensitive to human disturbance.

There are two recorded occurrences of this species within a five mile radius of the project site (CDFW, 2003). The nearest record of Townsend's big-eared bat is located approximately 3.8 miles southeast of the project site (CNDDDB Occurrence Number 126). Potentially suitable roosting habitat occurs within the property as rock crevices and tree cavities, and the chaparral and woodlands provide suitable foraging habitat for the Townsend's big-eared bat. This species was not observed during the biological surveys of the project site.

**Western pond turtle (WPT; *Clemmys (=Emmys) marmorata*) and subspecies**

Family Emydidae

Federal Status – None

State Status – California Species of Special Concern

Other – None

The western pond turtle (*Clemmys marmorata*) (WPT) occurs throughout California and in parts of Oregon and southwestern Washington state. Suitable habitat consists of any permanent or nearly permanent water body or stream with suitable refuges, basking sites, and nesting sites. Refuge sites can be submerged logs or rocks or mats of floating vegetation. Basking sites can be partially submerged rocks or logs, as well as shallow-sloping banks with little or no cover. This species constructs nests in sandy banks if present, or in soils up to 100 meters away from aquatic habitat that are at least ten centimeters deep. Nesting has been reported to occur up to 402 meters (1,391 feet) from water (Jennings and Hayes, 1994), but is usually closer, averaging 28 meters (92 feet) from aquatic habitat (Rathbun et al., 2002). Nests must have relatively high

humidity in order for the hatchlings to avoid desiccation. Nesting in upland habitats takes place in sand or hard, compact soils, in open, sunny areas with little vegetation cover (Rathbun et al., 1992; Rathbun et al., 2002). Turtles spend considerable time and effort covering their nests with soil and plant debris. This species eats a variety of organisms, including aquatic plants, beetles, fish, and frogs (CDFW, 2010).

WPT has declined in conjunction with habitat alteration from urbanization and agricultural development. Nesting (i.e., oviposition) and basking habitat (important for egg maturation) are crucial for self-sustaining populations. Loss of emergent wetland vegetation to grazing and trampling makes habitat less suitable for hatchlings and juveniles. Fire suppression on grasslands may cause overgrowth which can excessively shade nesting grounds. Introduced predators such as bullfrogs and warm-water fish can decimate hatchling turtle numbers.

The northwestern pond turtle (*Clemmys marmorata marmorata*) is one of two subspecies of the western or Pacific pond turtle. This subspecies occurs from Washington south to the Central Valley of California. It is found in Pacific-slope drainages to an elevation of approximately 4,700 feet. This subspecies generally leaves aquatic habitat only to reproduce and to hibernate. Hibernation typically takes place from October or November to March or April. Egg-laying typically occurs in May and June (Jennings and Hayes, 1994; CDFW, 2010; Stebbins, 2003).

The northwestern pond turtle intergrades with the southwestern pond turtle in California's Central Valley and San Francisco Bay Area (NatureServe, 2014). It differs from the northwestern pond turtle both in geographical range and in physical characteristics (poorly developed inguinal scutes and color of the throat (NatureServe, 2014). Both subspecies are considered California Species of Special Concern. Because of the geographic distributions of the two subspecies, it is assumed that the northwestern pond turtle is the subspecies present in Napa County.

This species was observed in the vicinity of the reservoir located in the eastern portion of the property. One adult western pond turtle was observed basking on the edge of the reservoir during biological surveys of the property. The reservoir and surrounding areas provide suitable habitat for the western pond turtle; however, suitable habitat is not present within the project footprint. Suitable habitat may occur in the Wild Lake Reservoir, approximately 230 feet west of the property; however, this is at least 230 feet away from proposed project activities and there is no hydrologic connectivity between the onsite reservoir and Wild Lake Reservoir.

### **California red-legged frog (CRLF; *Rana draytonii*)**

Family Ranidae

Federal Status – Threatened

State Status – California Species of Special Concern

Other – None

California red-legged frog (CRLF) occurs from Baja California, Mexico, north to Mendocino County, and is found primarily within coastal counties, although a few widely scattered populations still occur in the Sierra Nevada foothills (Jennings and Hayes, 1994). Traditionally a wide intergrade zone was thought to exist, spanning most of Sonoma, Mendocino and Humboldt counties, between the CRLF and the northern red-legged frog (*Rana aurora aurora*). The California red-legged frog is a state Species of Special Concern and is a federal threatened species.

CRLF is primarily an aquatic species, though it may use some upland habitat during the non-breeding season. Aquatic habitat consists of low-gradient freshwater bodies, including ponds, marshes, lagoons, seeps, springs, and backwaters within streams and creeks. While CRLF can occur in either ephemeral or perennial streams or ponds, populations generally cannot be maintained in ephemeral streams in which surface water disappears before metamorphosis (July to September) during most years. Adults seek waters with dense shoreline vegetation such as willows (*Salix* spp.) and cattails (*Typha* spp.). During the non-breeding season, frogs may use upland habitat that provides shade, moisture, and cooler temperatures, such as spaces under boulders and organic debris. CRLF may use these upland habitats up to approximately 200 feet from suitable aquatic habitat (USFWS, 2002 and U.S. Federal Register, 2006). Most of these overland movements occur at night. CRLF may move distances up to 2.8 kilometers (Fellers, 2007).

CRLF typically lay eggs between December and early April. Eggs are attached to vegetation in shallow water. Tadpoles develop into terrestrial frogs between July and September. Breeding ponds must retain water until this time. CRLF may remain active throughout the year along the coast. In drier inland areas they aestivate in upland habitat from late summer to early winter (USFWS, 2002 and U.S. Federal Register, 2006).

CRLF was listed as a threatened species under FESA effective June 24, 1996. USFWS published the *Recovery Plan for the California Red-legged Frog (Rana aurora draytonii)* (USFWS, 2002) with the objective of de-listing the species by halting or reversing declines in CRLF populations. The Recovery Plan designated eight recovery units throughout California, one of which encompasses the watershed of the North San Francisco Bay (including a portion of the San Pablo Bay watershed). Within this North Bay recovery unit, five “core areas” were designated where recovery actions would be focused. These core areas were selected either because they represent viable populations, or because their locations will contribute to connectivity of CRLF habitat even if currently unoccupied by viable populations. One of the North Bay Core Areas, the Jameson Canyon-Lower Napa River encompasses much of southeastern Napa County (including the project site) and southwestern Solano County. It was selected because portions of it are currently occupied, contain a source population and provide connectivity of habitat between known populations. Unlike critical habitat (see below), core recovery areas have no legal mandate for protection under the FESA and solely rely on

voluntary implementation (USFWS and NMFS 1998). The nearest CRLF critical habitat unit is over 10 miles from the property.

There is one documented occurrence of CRLF within five miles of the project site (CNDDDB Occurrence Number 738), located approximately three miles northeast of the project site (CDFW, 2003). This record is from February 2004 and is listed as possibly extirpated. There is no designated critical habitat for CRLF within or in the vicinity of the project site. The reservoir located on the property provides marginally suitable breeding habitat for CRLF. However, the reservoir is known to support populations of bull frogs (*Lithobates catesbeianus*), largemouth bass (*Micropterus salmoides*) and sunfish (*Lepomis* spp.), all of which are known predators of CRLF tadpoles; therefore, it is highly unlikely that CRLF are present within the reservoir. The intermittent blue line creeks and ephemeral drainage do not provide suitable breeding habitat for CRLF.

The intermittent blue line creeks and ephemeral drainage provide potentially suitable movement corridors for CRLF; however, since the nearest reported CRLF occurrence is approximately three miles from the project site and is believed to be extirpated, it is unlikely that CRLF would utilize the project site for movement to upland estivation habitat. No CRLF were observed within the property during biological surveys of the property (Kjeldsen, 2015).

#### 4.4.6 IMPACTS ANALYSIS

##### 4.4.6-1 SIGNIFICANCE CRITERIA

A project would have a significant adverse impact on biological resources if it would:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS;
- 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 CDFW or USFWS;
- Have a substantial adverse effect on federal protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal estuaries) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; or
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

#### 4.4.6-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.4-1:** Development of the Proposed Project would convert 5.32± acres of Mixed Oak Alliance to vineyard, which could result in adverse impacts to biological resources. In addition, the Proposed Project may conflict with Napa County General Plan Goals CON-2 and CON-6 and Policies CON-17 and CON-24. This would be a potentially significant impact. However, with implementation of **Mitigation Measure 4.4-1** below, this impact would be reduced to less than significant.

Related Napa County General Plan Goals include: CON-2 and CON-6, and Policies CON-17 and CON-24. Goal CON-2 requires maintenance and enhancement of existing levels of biodiversity. Goal CON-6 requires the preservation, sustainment and restoration of forests, woodlands, and commercial timberland for their economic, environmental, recreation, and open space values. Policy CON-17 requires the protection of sensitive biotic communities and habitats of limited distribution, including by requiring no net loss of sensitive biotic communities and habitats of limited distribution through avoidance, restoration, or replacement where feasible (**Section 4.4.2-3**).

Oak woodlands provide important wildlife habitat, help improve air and water quality, slow runoff, prevent erosion, mitigate flooding, provide recreational opportunities, and benefit vineyard owners through pest management. As discussed in **Section 3.0**, 13.6± acres of timberland would be harvested on the property under a Timber Harvest Plan (THP), consistent with Forest Practice Rules, and performed under a CEQA-equivalent process lead by the California Department of Forestry and Fire Protection (CAL FIRE). The area includes 10.0± acres of commercial timberland, with the balance of land being manzanita, chaparral, and ruderal. The Proposed Project would result in the removal of 5.32± acres (61.6 percent) of the total 8.64± acres of Mixed Oak woodland on the property. As discussed previously, Mixed Oak woodlands on the property are composed of co-dominant oak species including interior live oak (*Quercus wislizeni*), Oregon white oak (*Quercus garryana*), California black oak (*Quercus kelloggii*), and one valley oak (*Quercus lobata*). As proposed, development of the Proposed Project would remove native oaks of a relatively young age class with DBH between 6 to 20 inches (Kjeldsen, 2015).

The conversion of 5.32± acres of mixed oak woodland to vineyard represents approximately 63 percent of the total mixed oak woodland on the property, resulting in a potentially significant loss of native woodland habitat and it is in conflict with Policy CON-24. When oak woodlands are converted to other uses, Napa County requires avoidance of the target resource to the extent feasible. When avoidance (in whole or in part) is not feasible, Policy CON-24 requires the replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio. When no or insufficient comparable resources can be identified for preservation nearby, Napa County requires enhancement (through replanting and/or management) of similar but degraded

resources nearby. Since the proposed removal of oak woodland is potentially significant, avoidance measures as well as enhancement and preservation measures are considered to be feasible while allowing for the project objectives to be accomplished. Therefore, **Mitigation Measure 4.4-1** requires a combination of preservation of existing oak woodland onsite and enhancement of other woodlands in order to meet the 2:1 retention ratio.

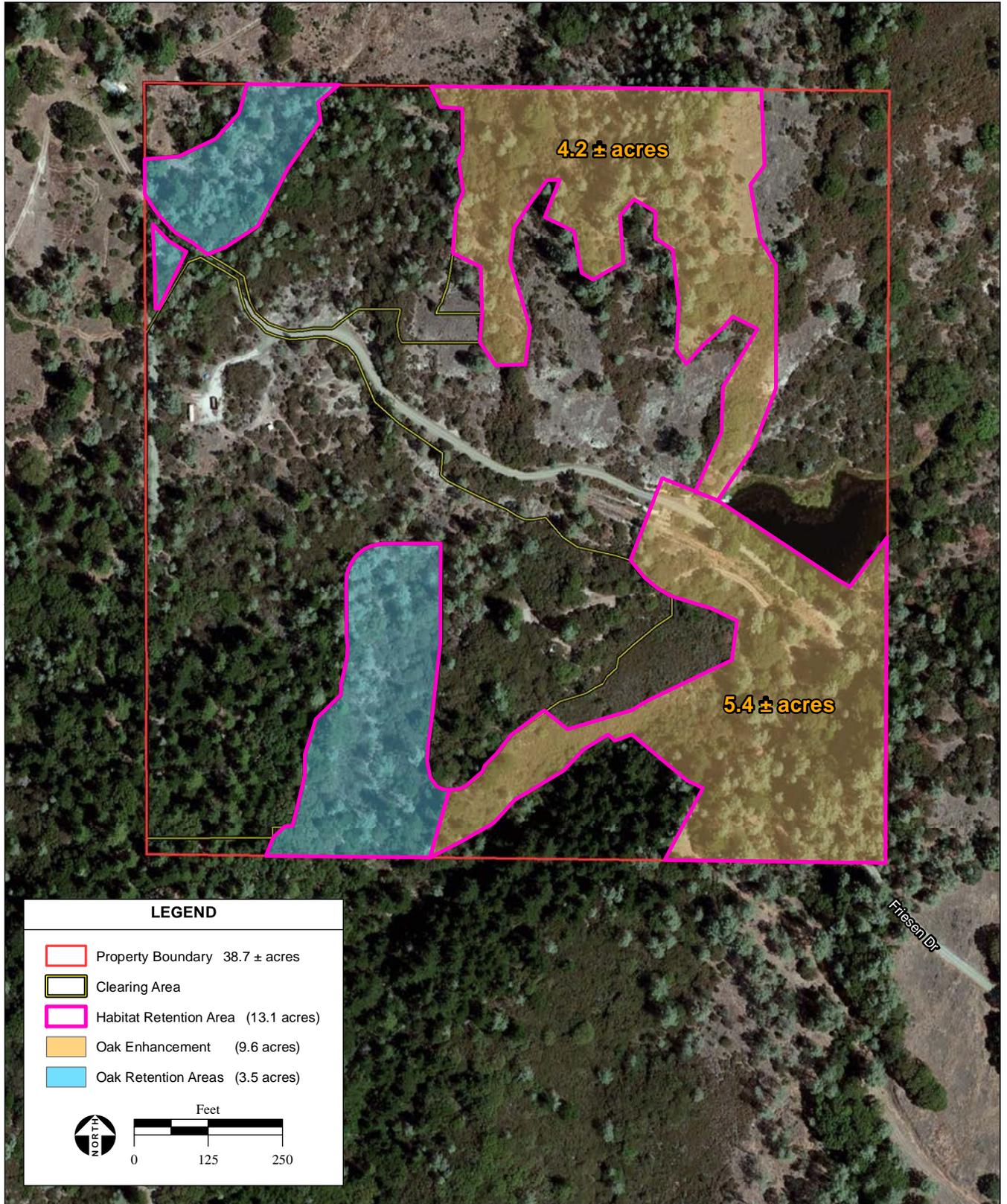
Napa County Ordinance 1219 adopts Sections 18.108.027 of the Napa County Code, which states that:

A minimum of sixty percent of the tree canopy cover on the parcel existing on June 16, 1993 along with any understory vegetation, or when vegetation consists of shrub and brush without tree canopy, a minimum of forty percent of the shrub, brush and associated annual and perennial herbaceous vegetation shall be maintained as part of any use involving earth-disturbing activity.

This code limits development on a property so that it maintains at least 60 percent of the tree canopy and 40 percent of the shrub canopy, as compared with 1993 aerial photography. Therefore, each property has a limited acreage that can be developed per Napa County Ordinance 1219, providing a *de facto* conservation easement for the remainder of the property. The Proposed Project complies with the ordinance while intentionally preserving the best quality habitat and the most sensitive habitat types within the Habitat Retention Area (HRA). Onsite resources were considered during placement of the vineyard blocks, and areas with the highest-value or most sensitive habitat were avoided to the fullest extent feasible. In addition, the HRA was designed to create linkages between existing off-site open space to provide an additional wildlife movement corridor from the Land Trust open space property. The potentially significant loss of oak woodlands would be reduced to less-than-significant levels with the incorporation of mitigation discussed below.

**Mitigation Measure 4.4-1:** A Habitat Retention Area (HRA) shall be created on the property that protects oak woodlands via two mechanisms: retention and enhancement. Mitigation for the 5.32 acres of oak woodland impacted by the project at a 2:1 ratio would necessitate 10.6± acres of high value woodland habitat be enhanced and maintained within the property. This HRA is shown in **Figure 4.4-3** and discussed further below.

A total of 13.1 acres are included in the HRA; this acreage includes the 3.5± acres of oak woodland habitat that will not be impacted by the Proposed Project. The remaining 9.6± acres of the HRA is comprised of California Foothill Pine Alliance and Chamise Chaparral Alliance that contains scattered black and interior live oaks, and will be enhanced as discussed below. These areas will be protected by a *de facto* conservation easement due to Napa County Ordinance 1219 which adopts Section 18.108.027.



SOURCE: Microsoft aerial photograph, 11/2/2010; ESRI Data, 2013; AES, 2014

Davis Family Estates Friesen Vineyard Project DEIR / 213509 ■

**Figure 4.4-3**  
Habitat Retention Area

### *Retention*

Avoidance measures would retain areas identified as high value oak woodlands that occur along riparian corridors. Furthermore, oak trees provide slope stability and reduced erosion, particularly on steep slopes (i.e., greater than 30 percent) and near the heads of drainages. A total of 3.5± acres of existing Mixed Oak Alliance within the property shall be retained by means of avoidance to the maximum extent feasible through project design.

All avoided trees within 50 feet of ground-disturbing activities shall be protected with visible plastic fencing during all phases of construction activities. Visible fencing shall be placed at the outside edge of the dripline (edge of the tree canopy) to protect above- and below-ground tissues of these trees and shall be field verified by Napa County prior to the commencement of any grading or vegetation removal. The following shall not occur within the buffers of any retained tree(s): parking or storage of vehicles, machinery, or other equipment; stockpiling of excavated soils, rocks, or construction materials; or dumping of oils or other chemicals.

### *Enhancement and Restoration*

The Oak Enhancement Areas shown in **Figure 4.4-3** contain oaks in the overstory canopy and in the understory canopy. The HRA proposes to reduce competition for the oaks in the understory by removing competition associated with the non-oak trees in the overstory. This will entail removing California foothill pine (*Pinus sabiniana*) and/or chaparral [chamise (*Adenostoma fasciculatum*), manzanita (*Arctostaphylos* ssp.), etc.]. This reduction may be in the form of cutting pine into firewood and/or creating standing snags to improve wildlife habitat. This will be done on a site-specific basis as directed by a Registered Professional Forester. This reduction will be accomplished by the use of chainsaws to cut the manzanita and the pine trees. The manzanita will be left in place to provide protective habitat for birds and animals, while the pine will be removed if it can be accessed from the existing road. However, most of it will be felled and/or girdled. Girdling of the pine trees will create snag habitat presently lacking in some areas. No mechanical equipment is allowed in the HRA, except on the existing Friesen Drive. All chainsaw work to reduce overstory competition from the manzanita and pines shall be done during the month of November, with no exceptions. This will allow the operator to easily locate and protect the black oak, as leaves will have begun senescence and should be yellow by then. Operations are also limited to November with the creation of the pine snags. The cooler weather and late season will eliminate potential increases in insect populations associated with the pine. It is anticipated that about 30 percent of the pines will be affected.

Reducing the overstory competition will allow the existing oak seedlings to grow; using naturally-established oaks rather than replanting will also ensure higher success rates of mature oaks. At a minimum, a total of 9.6 acres of Oak Enhancement Areas, as identified

on **Figure 4.4-3**, shall receive the treatment described above. This treatment will improve habitat connectivity within the most fragmented habitat areas, thus enhancing the natural habitat and providing increased benefits for wildlife.

With implementation of **Mitigation Measure 4.4-1**, impacts to oak woodlands would be reduced to less-than-significant levels. The HRA would contain 13.1 acres, which exceeds the 2:1 ratio of mitigated versus impacted oaks required by the Napa County General Plan Policy CON 24.

**Impact 4.4-2:** Development of the Proposed Project could result in impacts to waters of the U.S. and therefore may be inconsistent with Policy CON-26. However, with the stream buffers required by the ECP and the mitigation measures required in **Section 4.8 Hazardous Materials**, impacts are less-than-significant.

Two USGS blue line streams, one ephemeral drainage (Class III drainage), and one reservoir occur on the property. No jurisdictional wetlands were mapped during the biological surveys and the hydrologic analysis conducted on the property (Kjeldsen 2015, OEI 2014).

Proposed Project activities including timber harvest, land clearing, vineyard planting, and construction activities have the potential to cause erosion and sediment discharge into aquatic features. Operation and maintenance of logging, land clearing and construction equipment has the potential to result fuel or oil spills that could impact aquatic features. Ongoing activities associated with vineyard management have the potential to cause erosion, result in fuel or oil spills, or lead to herbicide, pesticide, and nutrient discharge into aquatic features.

However, the reservoir is outside of the project footprint and is upstream of proposed vineyard development activities, and will therefore not be affected by the Proposed Project. Setbacks ranging from 55 to 125 feet are designated in the ECP from all three onsite drainages. The setback distances were determined by the Forest Practice Rules and Napa County Ordinance, which ever was larger. In addition, **Mitigation Measure 4.8-1** contains best management practices (BMPs) and **Mitigation Measure 4.8-2** contains Standard Operating Procedures (SOPs) for the use of hazardous materials on the project site, which will reduce impacts to waters of the U.S. and waters of the State to less-than-significant levels.

As part of the ECP, one additional culvert will be added to the roadside ditch that passes under Friesen Drive. The proposed culvert will be installed immediately adjacent to an existing culvert in a drainage ditch that is not considered waters of the U.S. or waters of the state. There is no riparian habitat at this location, and there will be no impact to waters of the U.S.

**Mitigation Measure 4.4-2:** No further mitigation is required.

**Impact 4.4-3:** Development of the Proposed Project would have the potential to affect habitat for special status plant species on the project site and could result in conflicts with Goal CON-2 that requires the maintenance and enhancement of existing levels of biodiversity. This is a potentially significant impact, but would be reduced to less-than-significant levels with implementation of **Mitigation Measure 4.4-3**.

Bloom-season surveys for special status plant species were conducted from February through June of 2013 by Kjeldsen Biological Consulting (2015; **Appendix D**). Of the three special status and locally rare plant species with the potential to occur on the project site, only one species (Napa lomatium) was identified within the property. Napa lomatium is listed as CRPR 4.3 (Plants of Limited Distribution) by CNPS, and is common in recently disturbed areas of chaparral communities. This species was observed along an access road and within the Manzanita Chaparral Alliance habitat, a portion of which is within the proposed vineyard conversion area (**Appendix D**).

Napa lomatium is located within previously cleared and disturbed areas in the Manzanita Chaparral Alliance within the proposed conversion area. As discussed previously, this is a seral species which appears after clearing of overstory vegetation. Therefore, future clearing activities have the potential to facilitate distribution of this species within the project site. However, following clearing activities, this species is often naturally outcompeted as the shrub overstory develops. It is expected that if the project site was left unconverted, allowing natural vegetation growth patterns to persist, this species would not be present. If disturbance of this species is avoided, it will eventually be shaded out and outcompeted by the shrub canopy layer. Routine maintenance of roadways will allow this species to remain on the property.

During the scoping period, the County suggested that a seed retention plan be implemented (**Appendix A**). Given that the Proposed Project would have an adverse effect on at least a portion of identified Napa lomatium areas and corresponding seed bank, a seed retention plan is required in **Mitigation Measure 4.4-3** to ensure that impacts to Napa lomatium are less than significant.

**Mitigation Measure 4.4-3:** A seed bank retention strategy shall be utilized for the protection of Napa lomatium (*Lomatium repostum*) on the property. Prior to ground disturbing activities, a qualified biologist or botanist shall delineate the extent of the Napa lomatium populations within the clearing limits. All Napa lomatium plants shall be transplanted and the top inch of topsoil shall be skimmed at these locations. The plants and soil shall be moved to the 150-foot buffer zone surrounding the pond in an area that is ecologically suitable for Napa lomatium, as identified by the qualified biologist or botanist.

Implementation of **Mitigation Measure 4.4-3** would reduce the impacts to Napa lomatium to a less-than-significant level.

**Impact 4.4-4:** Development of the Proposed Project would have the potential to affect northern spotted owl. The Douglas Fir Alliance on the southwestern portion of the property provides a small patch of potentially suitable breeding habitat for northern spotted owl. The THP includes harvest of trees within this habitat, which could potentially impact northern spotted owl breeding and foraging.

The Douglas Fir Alliance covers 17,268.74± acres, or approximately 3.41 percent, of the total vegetative cover in Napa County. Approximately 4.40 acres of Douglas Fir Alliance occur on the property, which represents approximately 0.025 percent of the total Douglas Fir Alliance mapped in Napa County (NCCDPD, 2011; **Table 4.4-1**). Development of the Proposed Project would impact 2.30± acres, approximately 53.4 percent, of Douglas Fir Alliance on the property and 0.013 percent of Douglas Fir Alliance in Napa County. Although Douglas Fir Alliance is not considered a sensitive habitat type, it is important breeding and foraging habitat for the northern spotted owl. Although there is 0.5 acre of forested habitat on the project site that would meet the definition of suitable NSO habitat as set forth in the USFWS guidelines, this small area is isolated within a larger 11-acre patch of landscape that is unsuitable NSO habitat (Town, 2015; **Appendix O**). Given that the Proposed Project would impact less than 0.013 percent of the Douglas Fir Alliance in the County and would impact only 0.5 acres of potentially suitable NSO habitat, no significant impacts to NSO habitat are anticipated.

The nearest northern spotted owl activity center is located 1.6 miles from the project site (**Appendix O**). The timber harvest and vineyard development activities have the potential to impact populations of northern spotted owl that may be in the vicinity. Northern spotted owl take avoidance will be achieved via compliance with California Forest Practice Rule 14 CCR 919.9(e) Scenario 3, which is applicable when:

- A. Suitable habitat within harvest units, and
- B. Protocol surveys are completed, and
  - a. No owls are detected within 1.3 miles of timber operations AND
  - b. No historic NSO activity centers within 1.3 miles of timber operations.

Therefore, the Proposed Project will have a less-than-significant impact to NSO habitat and will not result in take of NSO due to construction or operation. This is a less-than-significant impact. However, to ensure consistency with 14 CCR 919.9(e) Scenario 3, **Mitigation Measure 4.4-4** is required.

**Mitigation Measure 4.4-4:** All information regarding northern spotted owl shall be submitted to CAL FIRE, and annual operations will not commence until CAL FIRE has determined that the project conforms to the USFWS Scenario 3. Protocol survey calling procedures shall follow the revised (January 9, 2012) Protocol for Surveying Proposed Management Activities that may Impact Northern Spotted Owl (USFWS, 2012).

The Applicant shall implement the following measures to avoid take of the northern spotted owl (USFWS, 2012):

- No timber operations shall occur until all surveys which follow the most current approved USFWS survey protocol for the current, or immediately preceding, survey period are complete; the results have been provided to CAL FIRE to be evaluated for consistency with the plan and protocol; and the results amended into the plan.

**Impact 4.4-5:** Development of the Proposed Project would have the potential to affect special status bird species and nesting and migratory bird species protected under the Migratory Bird Treaty Act. This is a potentially significant impact. After mitigation, impacts would be less than significant.

Under the Migratory Bird Treaty Act of 1918 (16 USC Subsection 703-712), migratory bird species and their nests and eggs are protected from injury or death (**Section 4.4.2**). Therefore, project-related disturbances must be reduced or eliminated during the nesting cycle. In addition, California Fish and Game Code Subsections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds, their nests, and eggs.

Should project construction occur during the nesting season for most bird species, which can begin as early as February 15 and last through September 15, construction-related disturbances in these habitats during the nesting season could result in significant adverse impacts to bird species, including disruption of breeding, increased stress, and mortality. Therefore, **Mitigation Measure 4.4-5** is included to reduce impacts to sensitive and protected bird species to less-than-significant levels.

**Mitigation Measure 4.4-5:** The Applicant shall implement the following measures to avoid disturbing any special status bird species nesting on the project parcel in accordance with the following CDFW-recommended measures:

If project activities are scheduled between February 15 and September 15, CDFW recommends surveys and avoidance measures for nesting birds. With respect to surveys for nesting bird and raptor species, CDFW recommends that the project specifies: 1) nest surveys be conducted no earlier than 14 days prior to tree removal and/or breaking ground (surveys should be conducted a minimum of 14 days prior to disturbance), 2) in the event that nesting birds are found, the project applicant should consult with CDFW and obtain approval for nest-protection buffers prior to tree removal and/or ground disturbing activities, and 3) nest protection buffers will remain in effect until the young have fledged. All nest protection measures should apply to off-site impacts and within 500 feet of project activities. If a lapse in project-related work of 15 days or longer occurs, another focused survey and, if required, consultation with CDFW, will be required before project work can be reinitiated. If

active nests are found during a preconstruction survey, 300-foot no-disturbance buffer zones shall be created around active raptor and songbird nests and shall be maintained until it is determined by a qualified biologist that all young have fledged. These buffer zones may be modified in coordination with CDFW based on existing conditions at the project site. Buffer zones shall be fenced with temporary construction fencing and remain in place until the end of the breeding season or until the young have fledged. If a 15-day or greater lapse of project-related work occurs during the breeding season, another bird preconstruction survey and consultation with CDFW will be required before project work can be reinitiated.

With implementation of **Mitigation Measure 4.4-5**, impacts to birds would be less than significant.

**Impact 4.4-6:** Development of the Proposed Project would have the potential to affect bat species of special concern and species that are candidates for listing by CDFW. This would be a potentially significant impact. After mitigation, impacts would be less than significant.

Development of the Proposed Project could result in direct impacts to bat roosting habitat through the removal of large trees with sufficient crevices to provide maternity roost habitat. Two species of bats have the potential to occur on the project parcel: pallid bat and Townsend's big-eared bat. Both species could roost in large deep cavities in oaks or other large trees and could be adversely affected during tree removal. Both species potentially forage over the project site and roost under bark or in the cavities of trees, rock crevices or nearby human-made structures. Many bat species are known to utilize vineyards for foraging habitat (Western Bat Working Group, 2005).

Construction related activities within the vicinity of roosting habitat also have the potential to impact bats during their maternity season. Project construction would occur during the maternity season for these and other bat species (generally between early April and mid-September). Potentially significant impacts could occur to bats during the maternity season should the bat be roosting in a tree proposed for removal. However, **Mitigation Measure 4.4-6** will ensure that impacts to special-status bats are reduced to less-than-significant levels.

**Mitigation Measure 4.4-6:** A qualified biologist shall conduct a habitat assessment for potential suitable habitat (trees with suitable cavities) within the project site no more than three days before project activities commence. If the habitat assessment reveals any suitable cavities, a qualified biologist shall conduct a concentrated presence/absence survey during peak activity periods on each tree with suitable cavities. If bats are found to be present during peak activity periods, then the qualified biologist shall submit an avoidance plan to the County and CDFW for approval. The avoidance plan shall evaluate the length of time disturbance, equipment noise, and type of habitat present at the project site. In the event the bat avoidance measures required by CDFW result in a reduction or modification of

vineyard block boundaries, the ECP shall be revised by the applicant/engineer and submitted to the County.

With implementation of **Mitigation Measure 4.4-6**, impacts would be less than significant.

**Impact 4.4-7:** Development of the Proposed Project would not have the potential to affect the western pond turtle (WPT); therefore, this is a less-than-significant impact.

A single WPT was observed in association with the reservoir located in the southeastern portion of the property. Given the distance from the reservoir and the fact that the reservoir is outside of project disturbance areas, it is unlikely that western pond turtles would utilize the project site for upland estivation habitat or for movement. Development and operation of the vineyard would not use water from the reservoir and would not occur within the vicinity of the reservoir; therefore, no impacts to habitat associated with the reservoir where western pond turtles were observed would occur. In addition, the Wild Lake Reservoir located over 230 feet west of the property boundary may provide suitable habitat for WPT, but there is a sufficient buffer between project activities and the reservoir that no significant impacts to WPT would occur.

Therefore, impacts to WPT are less than significant.

**Mitigation Measure 4.4-7:** No mitigation is required.

**Impact 4.4-8:** The Proposed Project would have the potential to impact the federally threatened California red-legged frog (CRLF; *Rana draytonii*) because timber harvest operations will occur within 300 feet of the existing onsite reservoir. After mitigation to incorporate the USFWS' take avoidance scenario, this is a less-than-significant impact.

Amphibian declines have been attributed to several factors, including chemical runoff (particularly fertilizers and pesticides) into the aquatic environment, exotic bullfrogs, and overall habitat degradation. Impacts related to the construction and operation of this project could result in chemical runoff and habitat degradation. As discussed in **Impact 4.2-2**, timber harvest and vineyard development will maintain setbacks of 55 to 125 feet, in compliance with the Forest Practice Rules and Napa County Code 18.108.025. Using BMPs as proposed by the project, such as cover crop management and integrated pest management, in addition to the proposed setbacks, would effectively filter sediments, agricultural chemicals, and nutrients to a less-than-significant level.

Although the onsite unnamed reservoir provides marginally suitable breeding habitat, it is unlikely CRLF would colonize or utilize this feature due to its limited distribution within a five mile radius of the property. In addition, the reservoir supports CRLF predators including bullfrog and largemouth bass, which reduces the probability that CRLF could effectively utilize the reservoir.

In addition, there is an existing reservoir on the neighboring property that may provide marginal CRLF habitat, located approximately 230 feet northwest of the project site. Given the distance from these reservoirs and the fact that the reservoirs are outside of project disturbance areas, it is unlikely that CRLF would utilize the project site for upland estivation habitat or for movement. However, timber harvest operations will occur within 300 feet of the existing reservoirs and therefore, take avoidance Scenario IV from the USFWS shall be employed to reduce impacts to less-than-significant levels. Scenario IV is applicable when suitable habitat for CRLF exists within 2 miles of harvest units or within units and harvest activities are planned within 300 feet of suitable habitat within the dry season. **Mitigation Measure 4.4-8** ensures a minimum buffer width from the reservoirs for timber felling and burn piles, consistent with Scenario IV recommendations from the USFWS *California Red Legged Frog Take Avoidance Scenarios* (March 25, 2008). It should be noted that although the entire USFWS recommended operational conditions are provided in **Mitigation Measure 4.4-8**, no road or landing construction is proposed within 300 feet of suitable habitat and water will not be drafted from the reservoir.

Development and operation of the vineyard would not use water from the onsite reservoir and would not occur within the vicinity of the reservoirs; therefore, it is unlikely that the Proposed Project would impact CRLF. With mitigation proposed below, the Proposed Project would not result in take to CRLF.

Therefore, impacts to CRLF are less than significant with mitigation.

**Mitigation Measure 4.4-8:** Consistent with Scenario IV of the USFWS's *California Red Legged Frog Take Avoidance Scenarios* (March 25, 2008), the Applicant shall implement the following measures for the protection of CRLF:

- All suitable habitat must maintain a 30-foot no-cut buffer; no equipment within the no-cut buffer; trees felled away from suitable habitat;
- Pile burning must be outside the 300-foot buffer of suitable habitat;
- No herbicide use allowed within 300 feet of suitable habitat except for direct application to stumps;
- Roads and landings, if constructed, must be at least 300 feet from suitable habitat, and construction must occur in the dry season;
- Water drafting from suitable habitat (for dust abatement) must be done with a hose place in a bucket in a deep pool. The bucket must be covered by less than 1-inch mesh, and the mouth of the hose must be covered by 0.25-inch mesh.

**Impact 4.4-9:** Development of the Proposed Project could interfere with existing wildlife movement corridors and conflict with General Plan Policy CON-18 which requires vineyard development to be designed to minimize the reduction of wildlife movement to the maximum

extent feasible. Based on the proposed design, the project impacts to wildlife movement would be less than significant.

Biological surveys of the property concluded that no identifiable significant wildlife corridors are associated with the property or project site. However, the stream corridors and buffers between the proposed vineyard blocks allow significant wildlife movement between contiguous habitats within the property and adjacent undeveloped lands. Movement areas in general have been preserved throughout the project site consistent with the stream setbacks prescribed pursuant to Section 18.108.025 of the Napa County Code; required stream setbacks within the project site range in width from 55 feet to 125 feet on either side of the streams (measured from top of bank).

Wildlife exclusion fencing is proposed to be installed to encompass the vineyard blocks with exit doors (gates) and/or cattle guards located as shown in the ECP (**Appendix B**) for safe removal of trapped wildlife. Vineyards themselves do not constitute barriers to wildlife movement, but deer fencing around them do present barriers to movement of larger animals. However, the unfenced corridors between the proposed vineyard blocks could be easily traversed by large species such as coyote, bobcat, mountain lion, and deer. Many of the negative effects of habitat fragmentation will be negligible within the project site because the vineyard fences will be highly permeable to most small animals, the vineyards themselves are not a barrier to the movement of most animal species, and the grasslands enclosed within the vineyard blocks will be managed to enhance their value to wildlife. The unfenced areas would provide wildlife movement corridors for all wildlife, including larger animals restricted by deer fencing (deer, wild pig, coyote, mountain lion, and bobcat).

In addition, **Mitigation Measure 4.4-1** which creates the HRA and long-term habitat retention and enhancement on the property will improve wildlife corridors and habitat connectivity on the property. In its existing state, the property contains fragmented habitat that has been altered by humans (road construction, reservoir construction, etc.) and natural causes (predominantly fire). The HRA shown in **Figure 4.4-3** connects with existing open space in the vicinity, including the Napa County Land Trust property to the west, east, and south. Therefore, the HRA will improve wildlife corridors and habitat fragmentation when compared to today's conditions.

**Mitigation Measure 4.4-9:** No mitigation is required.

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## 4.5 CULTURAL RESOURCES

### 4.5.1 SETTING

#### 4.5.1-1 REGIONAL SETTING

The property is part of the hilly to steep mountains located in the southern North Coast Ranges in central Napa County. A number of northwesterly parallel mountain ridges and intervening valleys of varying widths characterize the region. Characteristic vegetation communities occurring within the project region include annual grassland, black oak woodland, ponderosa pine-Douglas fir forest, mixed oak, bay, riparian, madrone woodland and chaparral.

Formal archaeological research in the project vicinity includes early syntheses of Napa County area prehistory by Heizer (1953), Meighan (1955), and Elsasser (1978). Other recent cultural resources studies in the southern North Coast Ranges have built on the work of Fredrickson (1974), who divides human history in California into three broad periods: Paleo-Indian, Archaic, and Emergent. This scheme differentiates between cultural units based on sociopolitical complexity, trade networks, population, and artifact variation. Additionally, Moratto (1984) provides an overview of the culture history of the San Francisco Bay Area. Milliken et al. (2007) devise a chronological framework for the San Francisco Bay Area based on material culture, particularly shell beads and ground stone. This chronology is an update of efforts by Fredrickson (1973, 1974) and Bennyhoff (1994) but incorporates new data, including Groza's (2002) work detailing the radiocarbon dating of shell beads throughout the Bay Area. This summary attempts to combine the basic terms that are used by these various schemes for differentiating the major time intervals (e.g. Early Holocene (Lower Archaic)).

#### **Early Holocene (Lower Archaic) 10,000-5,500 B.P.**

Evidence available from relatively few sites suggests regional occupation by semi-mobile foraging groups and subsistence based upon plants supplemented with marine resources (particularly shellfish) with less dietary emphasis on fish and birds. The archaeological record is characterized by ground stone artifacts, particularly milling stones and hand stones (e.g. manos). Projectile technology includes large, wide-stemmed and leaf-shaped points. Tightly flexed burials are also a characteristic of this time period.

#### **Early Period (Middle Archaic) 5,500-2,500 B.P.**

The Early Period witnesses a series of technological and social innovations in some areas that suggest a more sedentary lifestyle. Regional variation in material culture also becomes apparent, particularly within the San Francisco Bay Area. Increased abundance of net-sinkers also suggests increased concentration on harvesting marine resources, particularly fish. Evidence of sedentism further inland includes recovery of a house floor with post holes dated to ca. 3,500 B.P.

**Lower Middle Period (Initial Upper Archaic) 2,500 to 1,570 B.P.**

The Lower Middle Period is often made archaeologically manifest by stylistic changes in shell beads. Rectangular forms that were once very common now disappear, and are replaced with split-beveled and tiny saucer Olivella beads, which are then outnumbered by large saucer beads. Awls, presumably for making basketry, signal the early development of the long-standing coiling technology in the Central and North Bay. Meanwhile, the milling stone/hand stone forager economy persists only on the Pacific Coast of the San Francisco Peninsula (Milliken et al., 2007: 115-116).

**Upper Middle Period (Late Upper Archaic) 1,570 to 950 B.P.**

The transition to the Upper Middle Period (Late Upper Archaic Period) is marked by another dramatic shift in material cultural. The trade network of saucer beads disappeared and was replaced by a series of temporally diagnostic beads known as M2, M3, and M4.

**Initial Late Period (Lower Emergent) 950 to 450 B.P.**

The cultures of the Bay Area underwent significant changes in the Initial Late Period. Of particular interest are the implications of the introduction of bow and arrow technology. Primarily, a host of new projectile point types appeared in the archaeological record. Procurement of high-quality sources of obsidian, such as Napa Valley Glass Mountain, was reduced dramatically, which is thought to be the result of the control of the sources by a few elite groups. Increases in social stratification were apparent through grave goods of significantly greater wealth than was seen in previous periods (Milliken et al., 2007: 116-117).

**Terminal Late Period: 450 B.P. to Spanish Contact (1776)**

Clamshell disk beads replace cup and sequin beads during this period, but were restricted to the North Bay for the first century. The rest of the region manufactured Olivella lipped and spire-lopped beads prior to the introduction of the new clamshell disk bead. The North Bay was the host of many innovations during this period. New artifact types seen in the North Bay during this period include hopper mortars, magnesite tube beads, corner-notched projectile points and toggle harpoons. The Terminal Late Period ends with Spanish Contact in 1776 (Milliken et al., 2007: 117-118).

**Ethnography**

Ethnographic literature indicates that at the time of historic contact, the project site was within the eastern portion of the territory occupied by Wappo-speaking people. There were five dialects of Wappo, which is a member of the Yukian language family (also including Yuki, Coast Yuki, and Huchnom). Four of these dialects were centered in the Napa/Alexander Valley area and the fifth was an isolated enclave on the south bank of Clear Lake (Sawyer, 1978: 257). The territory of the Southern Wappo extended roughly from just north of the City of Napa northward to the City of St. Helena, encompassing the lower half of the Napa Valley and the fringing

foothills and low mountains to the east and west including Pope Valley. The Wappo economy was based on fishing, hunting, and gathering, with village community, or tribelet, members moving to various places within their territory on a seasonal basis to take full advantage of different resources as they became available.

The Wappo culture was significantly disrupted through missionization and Euroamerican settlement during the 19th century, which they heartily resisted. “Wappo” is the Americanization of “Guapo,” the Spanish word for brave. This was the Spanish name applied to the tribe during the time of missionization due to the people’s resistance to the Franciscan establishment (Kroeber, 1925).

#### 4.5.1-2 HISTORICAL SETTING

Following the settlement of San Diego and Monterey, the Spanish made steady progress in the exploration and settlement of the coastal regions of Alta California. The interior regions, such as the Central Valley and the Sierra Nevada, remained largely uncharted. The first recorded expedition into what is now Napa County was made in 1823 led by Francisco Castro with Jose Sanchez and Father Jose Altamira, scouting for possible future mission locations. This began the earliest sustained settlement of the region by non-natives that same year with the establishment of the Mission San Francisco Solano, at Sonoma, with Napa County within its jurisdiction (Hoover et al., 1990: 242-243).

A community of Americans spread into the interior of Mexican California in the decades after American Jedediah Smith blazed an overland trail in 1826. As a result of Smith opening a route to the interior of California, additional trappers and pioneers emigrated to California. The Hudson’s Bay Trading Company soon followed, utilizing the Siskiyou Trail from their outpost at Fort Vancouver. These early fur traders likely introduced malaria into the Sacramento Valley in 1833, resulting in an epidemic that killed tens of thousands of native people by 1846 (Hurtado, 1988), including the Wappo and their neighbors. Subsequent Euro-American settlement of the region was enabled, in large part, by the introduction of exotic diseases that decimated the native populations of California.

During the American period, Napa County was established as part of the original 27 counties, with the City of Napa always being the county seat (Hoover et al., 1990: 242). Agriculture has always been the primary economic pursuit in Napa, which began with ranching during the Mexican period. Prior to the mass influx of settlers precipitated by the Gold Rush, the hide and tallow were the primary products traded out of Alta California, with lesser amounts of wool. Following the mass emigration to California sparked by the Gold Rush, several boom towns sprung up in modern Napa County including Napa, St. Helena, Yountville, and Calistoga. Since that time, viticulture has been an important product of Napa County, which has remained largely rural and agricultural in nature.

#### 4.5.1-3 EXISTING PROPERTY SETTING

A cultural resources survey of the project site was conducted in May 2013 (Origer & Del Bondio, 2013a). The investigation covered approximately 15.1 acres, including the project site, roughly within the proposed Timber Harvest Plan (THP) area (**Appendix K**). All cultural resources work was performed in compliance with the California Environmental Quality Act (CEQA), Public Resources Code (PRC) Section 21083.2, CEQA *Guidelines* 15064.5, and PRC Section 5024.1.

On May 17, 2013, the State of California Native American Heritage Commission (NAHC) was asked to review the Sacred Lands file for information on Native American cultural resources on the property. Additional letters were sent to Cortina Band of Indians, Federated Indians of Graton Rancheria, the Mishewal-Wappo Tribe of Alexander Valley, the Suscol Intertribal Council, and the Wintun Environmental Protection Agency for further consultation in August of 2013. The consultation with the organizations above did not result in any issues warranting further discussion.

A records search was conducted at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) by NWIC staff at the request of Tom Origer and Associates (NWIC file no. 12-0858). The NWIC, an affiliate of the State of California Office of Historic Preservation, is the official state repository of archaeological and historic records and reports for a 16-county area that includes Napa County, and is housed at Sonoma State University, Rohnert Park, California. The search was conducted to identify previous archaeological surveys and recorded sites within the property for the Proposed Project and included, but was not limited to, a review of the following:

- National Register of Historic Places;
- California Register of Historic Places;
- California Historical Landmarks;
- California Points of Historical Interest listing (as listed in the Historic Property Directory);
- Historical maps;
- Ethnographic literature; and
- Other pertinent historic data.

Archival research showed that the project site had not been previously surveyed and no cultural resources are recorded within the boundaries of the site. One historic-era archaeological site is located approximately one-quarter mile west of the project site (Locke and Hagensiker, 2010). One archaeological survey has been conducted within a mile radius of the project site boundary for a THP and no resources were identified in the survey (Davis, 1999).

#### 4.5.1-4 CULTURAL SURVEY OF PROJECT SITE

A cultural survey was conducted for the project site in May of 2013 (Origer & Del Bondio, 2013a). One prehistoric archaeological site was identified within the project site. The Friesen Site (CA-NAP-1124) is a sparse scatter of obsidian debitage measuring between approximately 20 meters north-south by 46 meters east-west. Subsequent archaeological work conducted at the Friesen Site in *Archaeological Investigations at CA-NAP-1124, Northwest of Angwin Napa County, California* by Origer, Barrow & Del Bondio (2013b) revealed a total of 135 prehistoric cultural items recovered during the excavation of the Friesen Site. Prehistoric materials were dominated by obsidian waste flakes, a byproduct of the manufacture and/or repair of chipped-stone tools. In addition, lesser numbers of other archaeological specimens were recovered including bifacially worked obsidian tools. The Friesen Site occupation began as early as 5,000 years ago and continued until some 150 years ago. The most intensive time of occupation spanned from 500 to 125 years ago.

Origer and Del Bondio (2013b) consider the Friesen Site important pursuant to Criterion 4 of the California Register of Historical Resources (CRHR). The site meets the criteria for classification as a sparse lithic scatter. However, the paucity of formed artifacts and lack of associated features indicate that the Friesen Site is unlikely to yield additional information that has not already been retrieved.

#### 4.5.2 REGULATORY FRAMEWORK

##### 4.5.2-1 CULTURAL RESOURCES DEFINED

Cultural resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. Numerous laws, regulations, and statutes at the state and local level govern archaeological and historic resources deemed to have scientific, historic, or cultural value. The pertinent regulatory framework of these laws is summarized below.

##### 4.5.2-2 CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

CEQA requires that, for projects financed by, or requiring the discretionary approval of public agencies in California, the effects that a project has on historical and unique archaeological resources must be considered (PRC Section 21083.2). Historical resources are defined as buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance (PRC Section 50201). The *CEQA Guidelines* (Section 15064.5) define three cases in which a property may qualify as a historical resource for the purpose of CEQA review:

- A. The resource is listed in or determined eligible for the listing in the CRHR. Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:
1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
  2. Is associated with the lives of persons important in our past;
  3. Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
  4. Has yielded, or may be likely to yield, information important in prehistory or history.
- B. Properties must retain integrity to be eligible for listing on the CRHR. Properties that are listed in or eligible for listing in the National Register of Historic Places (NRHP) are considered eligible for listing in the CRHR, and thus are significant historical resources for the purpose of CEQA (PRC section 5024.1(d)(1)).
- C. The resource is included in a local register of historic resources, as defined in section 5020.1(k) of the PRC, or is identified as significant in a historical resources survey that meets the requirements of section 5024.1(g) of the PRC (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).
- D. The lead agency determines that the resource may be a historical resource as defined in PRC section 5020.1(j), 5024.1, or significant as supported by substantial evidence in light of the whole record.

PRC Section 21083.2 governs the treatment of unique archaeological resources, defined as “an archaeological artifact, object, or site about which it can be clearly demonstrated” as meeting any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

#### ***4.5.2-3 LOCAL RESOLUTIONS, GOALS, AND POLICIES***

##### **Napa County General Plan – Community Character Element**

The General Plan identifies the following goal and policies to preserve and enhance cultural resources in Napa County (Napa County, 2008):

- Goal CC-4: Identify and preserve Napa County's irreplaceable cultural and historic resources for present and future generations to appreciate and enjoy.
- Policy CC-19: The County supports the identification and preservation of resources from the County's historic and prehistoric periods.
- Policy CC-21: Rock walls constructed prior to 1920 are important reminders of the County's agricultural past. Those walls which follow property lines or designated scenic roadways shall be retained to the extent feasible and modified only to permit required repairs and allow for openings necessary to provide for access.
- Policy CC-23: The County supports continued research into and documentation of the county's history and prehistory, and shall protect significant cultural resources from inadvertent damage during grading, excavation, and construction activities.
- Policy CC-30: Because the County encourages preservation of historic buildings and structures in place and those buildings and structure must retain "integrity" to be considered historically significant, the County shall discourage scavenging of materials from pre-1920 walls and other structures unless they are beyond repair.

### **Napa County Code 18.04.010**

Under Title 18, Zoning of the Napa County Code, the Board of Supervisors made several findings with respect to the zoning ordinance. One of those findings (F.15) relates to the objective of preserving sites and structures of a special historical, archaeological, or architectural character and to provide for the maintenance and development of appropriate settings for such resources.

### **4.5.3 IMPACTS ANALYSIS**

#### **4.5.3-1 SIGNIFICANCE CRITERIA**

Based on CEQA *Guidelines* Section 15064.5 and Appendix G of the CEQA *Guidelines*, a project would have significant adverse impacts to cultural resources if the project would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5 (a);
- Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5 (c);
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature; or

- Disturb any human remains, including those interred outside of formal cemeteries.

Any one of the above-cited impacts to a historical resource, as defined by PRC Section 5020.1, constitutes a substantial adverse change pursuant to CEQA. A substantial adverse change to a historical resource is considered a significant impact on the environment.

#### 4.5.3-2 IMPACTS AND MITIGATION MEASURES

This section identifies impacts to cultural resources, which could result from construction, operation, or maintenance of the project. Impacts were analyzed by reviewing various sources regarding cultural resources in the vicinity of the property and through specific surveys (Origer and Del Bondio, 2013a; Origer, Barrow, and Del Bondio, 2013b). State impact significance criteria were applied to each known resource relative to the project design.

**Impact 4.5-1:** The project implementation could result in the disturbance of known cultural resources located at the project site. This would be a significant impact.

**Mitigation Measure 4.5-1:** A qualified archaeologist and Native American representative from the Mishewal-Wappo of Alexander Valley shall be present during ground disturbing activities within the Friesen Site area (CA-NAP-1124) as recommended (Whatford, 2014). Monitors shall be present during work within the site area and up to 25 feet beyond the site boundaries. There is the possibility that potentially important discoveries could be made in this area. In the event that a discovery is made, work should temporarily halt at the place of discovery until the find is evaluated and a plan of treatment is implemented. Additionally, no collection of cultural materials by project personnel shall be allowed.

Implementation of this mitigation measure would reduce this impact to less than significant.

**Impact 4.5-2:** The project implementation has the potential to negatively impact previously unknown cultural resources within the property. This is a potentially significant impact. However, with implementation of **Mitigation Measure 4.5-2** for inadvertent discovery, impacts are reduced to less-than-significant levels.

**Mitigation Measure 4.5-2:** There is a possibility that unanticipated subsurface archaeological deposits may exist within the proposed vineyard areas, as archaeological sites may be buried with no surface manifestation, or may be obscured by vegetation. In accordance with CEQA *Guidelines* Section 15064.5 (f), should any previously unknown prehistoric or historic resources, such as, but not limited to, obsidian and chert flaked-stone tools or toolmaking debris; shellfish remains, stone milling equipment, concrete, or adobe footings, walls, filled wells or privies, deposits of metal, glass, and/or ceramic refuse be encountered during onsite construction activities, earthwork within 100 feet of these materials shall be stopped and the Applicant shall consult with a professional archaeologist

and tribal representatives, and the provisions of 14 CCR 929.3 shall be applied. Once the archaeologist has had the opportunity to evaluate the find he/she shall consult the local California Department of Forestry and Fire Protection (CAL FIRE) Archaeologist regarding the results of the evaluation and appropriate site treatment options, as necessary. Said measures shall be carried out prior to any resumption of related ceased earthwork. All significant cultural resource materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards and a copy of the draft report provided to the local CAL FIRE Archaeologist for review and approval prior to finalization of it.

Implementation of this mitigation measure would reduce this impact to less than significant.

**Impact 4.5-3:** The project implementation could result in the discovery and disturbance of unknown human remains.

While unlikely, there is always the possibility that ground disturbing activities such as earth removal, rock removal and trenching for irrigation lines could result in the discovery and disturbance of unknown human remains within the property by disturbing both surface and subsurface soils. This is a potentially significant impact. With implementation of the following mitigation measure, the impact would be reduced to less than significant.

**Mitigation Measure 4.5-3:** In the event that human remains are discovered, the provisions of the California Health and Safety Code Section 7050.5 (b) shall be followed, including contacting the Napa County Coroner within 24 hours of the find. Upon determining the remains as being Native American in origin, the Coroner would be responsible for contacting the NAHC within 24 hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant (MLD), who is designated by the NAHC.

Implementation of this mitigation measure would reduce this impact to less than significant.

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## 4.6 GEOLOGY AND SOILS

### 4.6.1 SETTING

#### 4.6.1-1 GEOLOGY AND TOPOGRAPHY

The property site is located within the Bell Canyon Reservoir watershed within the Coast Ranges geomorphic province. These ranges are characterized by northwest-southeast trending valleys and ridges and extend along the Pacific Coast from Oregon to Southern California. The Coastal Ranges are comprised of the Franciscan Assemblage, an accreted tectonostratigraphic terrane of heterogeneous rocks comprised of marine sediments, volcanic rocks, and high-pressure metamorphic rocks, all faulted and folded due to the collision of the Farallon and North American Tectonic Plates and subsequent shearing along the San Andreas Transform Fault. These rocks are among the oldest in the Napa County region.

The Sonoma Volcanics lie stratigraphically above the Franciscan Assemblage, located to the east in the Vaca Mountains and enveloping the north and northeast crests and flank of Diamond Mountain (Fox et al., 1973). In most locations, the older Franciscan Assemblage is present at a depth below the Sonoma Volcanics. Formed from volcanic activity in the Sonoma/Napa region about three to 11 million years ago, the Sonoma Volcanics are comprised of layers of various Pliocene- and possible Miocene-age volcanic deposits of andesitic to basaltic lava flows (Fox et al., 1973). The various components are subdivided into volcanic rocks including: rhyolite (light colored, fine-grained, volcanic rock), tuff (cemented volcanic ash), and other pyroclastic (explosive or aerially ejected volcanic material) rocks. These chemically-variable and lithologically-diverse rocks underlie the entire property. The bedrock in the site vicinity is mapped as Sonoma Volcanics ash flow tuff with basaltic and andesitic lava flow interlayered (Fox et al., 1973). This unit is characterized by an assortment of volcanic deposits including tuff, andesite or basaltic flows breccias, and bedded tuff deposits (Gilpin Geosciences, Inc., 2014; **Appendix G**).

The property is located on the large plateau that makes up the crest of Howell Mountain, which is comprised of volcanic deposits that trends roughly northwest-southeast at elevations between 1,600 and 2,000 feet above mean sea level (asml). Numerous and various sized knolls on Howell Mountain represent harder more erosion-resistant bodies of bedrock that form the relief of up to 100 feet above the gently north- and south- dipping plateau surface (Gilpin Geosciences, Inc., 2014; **Appendix G**).

Two blue-line stream channels flow southwest and cut through the site; one bounding the southeast side of the site, and the other separates Block A and Block B at the northwest end of the site. There is a low-flow stream crossing that provides access to Block A. A tributary to the southern channel drains both Blocks C and D.

## 4.6.1-2 SOILS

Soil types and their characteristics in the Napa Valley subregion are controlled in part by their location in either valleys or hillsides. The surficial geologic deposits of the Napa Valley subregion consist of widespread, locally-deep alluvium, and on the flanking ridge systems generally discontinuous deposits of colluviums, soil creep, and landslide deposits. The Napa Valley alluvium, or deposits of clay, silt, sand, and gravel left by flowing streams and runoff, consists primarily of alluvial fan, stream channel, flood plain deposits, and terrace deposits. The soils in Napa Valley are generally very deep, have high productivity, and are often used for vineyards, orchards, and pastures. The colluvial and landslide deposits are typically more heterogeneous in composition and consist of various combinations of mostly unconsolidated soil and rock fragments.

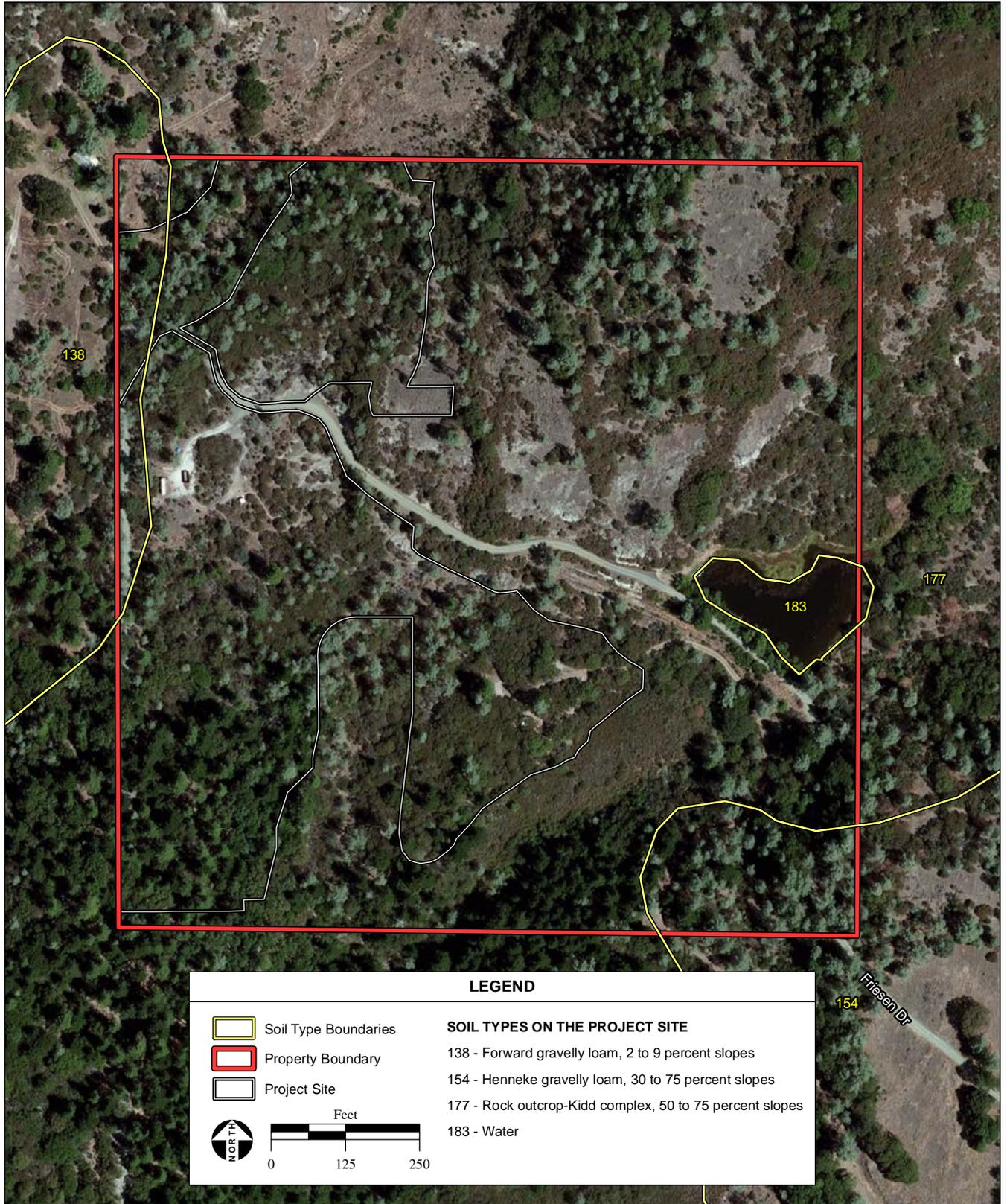
Soils on the property are shown in **Figure 4.6-1** and their characteristics pertaining to erosion and hydrologic factors are summarized in **Table 4.6-1**. The soils mapped at the site include the Forward gravelly loam (2 to 9 percent slopes), Henneke gravelly loam (30 to 75 percent slopes) and Rock outcrop-Kidd complex (50 to 75 percent slopes).

**TABLE 4.6-1**  
SOIL CHARACTERISTICS ON PROPERTY

Map Unit Symbol	Map Unit Name	Acres on Property	Percent of Property	Drainage	Surface Runoff	Erosion <sup>1</sup>	Shrink-Swell Capacity
138	Forward gravelly loam, 2 to 9 percent slopes	1.035	2.77%	Well drained	Medium	Slight	Low
154	Henneke gravelly loam, 30 to 75 percent slopes	1.614	4.31%	Excessively drained	Rapid to very rapid	Very severe	Low to moderate
177	Rock outcrop-Kidd complex, 50 to 75 percent slopes	34.048	90.97%	Well drained	Rapid	N/A	Low
183	Water	0.729	1.95%	N/A	N/A	N/A	N/A

<sup>1</sup> Erosion hazard represents the potential for erosion of soils after disturbance activities. A rating of "slight" indicates that erosion is unlikely under ordinary climatic conditions; "moderate" indicates that some erosion is likely and that erosion-control measures may be needed; "severe" indicates that erosion is very likely and that erosion-control measures are advised; and "very severe" indicates that significant erosion is expected, loss of soil productivity and off-site damage are likely, and erosion-control measures are costly and generally impractical.

Source: NRCS, 2014



SOURCE: USDA SSURGO Soils Surveys of Napa County, 12/2007 ; Microsoft aerial photograph, 11/2/2010; AES, 2014

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**Figure 4.6-1**  
Soil Types

The Natural Resources Conservation Service (NRCS) *Custom Soil Resource Report for Napa County, California, Davis Estates, Friesen Vineyard* (2014) provided a detailed report of soils within the property, as shown in **Table 4.6-1** above. Additionally, Dr. Paul Anamosa of Vineyard Soil Technologies prepared a *Soil Analysis for Vineyard Development* report (2013) for the soils on the project site, included here as **Appendix M**. Twenty-eight backhoe pits were dug and evaluated on the property in support of the Soil Analysis.

The site survey concludes that Kidd loam is found throughout the property. Forward gravelly loam is found in some locations, and there is evidence that Aiken loam may be present in the southwest portion of the project site, although it is not mapped by the NRCS. Aiken loam is a well-drained soil with medium surface runoff, slight erosion hazard, and a moderate shrink-swell capacity. The report stated that the soil textures of the surface layers were loam at most sites. Additionally, the subsoils were loam, sandy loam, clay loam and clay. The structure of subsoils was mostly blocky (acceptable) or massive (very poor). The soils' hardness was friable (acceptable) in the surface horizons, but ranged from firm to hard in the upper and lower subsoils (Vineyard Soil Technologies, 2013).

There is some evidence of debris slide geomorphology on the slopes in the northeastern portion of the property above the reservoir. However, these areas are outside of the proposed vineyard blocks. The potential instability of these slopes will have no effect on the Proposed Project, nor would the development affect the stability of these slopes (Gilpin, 2015; **Appendix G**).

#### 4.6.1-3 SEDIMENT EROSION AND CONTROL

##### **Sediment Erosion**

Sediment erosion is the mechanical breakdown of rock material and the removal of the resultant materials, such as soil and rock particles, by water, wind, and ice. The potential for erosion of a particular area is dependent upon the geology, slope, vegetation cover, hydrology, precipitation, and the intensity of associated storm events. Shallow soil creep is the slow downward movement of soil and loose rock on slopes. On steep hillside areas the potential for erosion is greater and rilling, rutting, and damaging of channel systems can occur. Along many natural drainage courses on both hillsides and valley areas, stream and river flow can result in bank erosion. In overland flow areas (OFAs), or areas where the ground is impermeable or semi-impermeable, sediment is easily dislodged and transported to receiving waters. Large-scale erosion can occur during shallow and deep-seated landsliding or earthflows, particularly during high intensity storm events.

According to vineyard plot studies in the Napa River Basin, the annual surface erosion from hillside vineyards with limited straw or cover crops ranges from 2.3 to 23 tons per acre (Napa County RCD, 1997). Notable amounts of sheetwash and rilling may also occur during large-magnitude storms due to the hydrologic effects of wildfires or vegetation removal. Large

rainstorms that sweep across the Napa River watershed periodically induce both shallow and deep-seated landsliding. Landsliding is further discussed in **Section 4.6.1-4** below.

The project site and vicinity drains to two unnamed tributaries that flow to Bell Creek thence the Napa River. In its existing, undeveloped state, approximately 20.9 tons of sediment per year are generated from the steep hillsides on the property (OEI, 2014; **Appendix F**).

Implementation of the erosion control measures detailed in the Erosion Control Plan (ECP) will reduce existing sedimentation levels on the property, as discussed in **Impact 4.6-1** below.

### **Sediment Control**

Temporary and permanent erosion control measures would limit sediment delivery to off-site receiving waters. Measures for the timber harvest phase are included in the Timber Harvest Plan (THP) (**Appendix H**), and measures for the vineyard development are outlined in the ECP (**Appendix B**). Water spreaders and water bars will be installed to decrease the flow and potential for erosion during substantial precipitation events. Additional undisturbed soil and vegetation within streams setbacks will provide a deposition zone which sediment potentially mobilized from within the project site may be deposited prior to reaching a stream channel (OEI, 2014; **Appendix F**).

Temporary erosion control measures include the installation of fiber rolls and the application of straw mulch where seeding occurs. Fiber rolls will be installed and left in place through the winter after planting, and then removed afterwards. A straw mulch cover would be applied over all open and/or disturbed and seeded areas at the rate specified in the seeding requirements. Permanent erosion control measures, as detailed in the ECP (**Appendix B**) include: cleaning, repair, or replacement of existing drainage features as needed; construction of water bars; construction of rock stabilizers; grading of diversion ditches and installation of drop inlets and water spreaders; the planting of a winter cover crop; and the implementation and adherence to the Annual Winterization program as presented in detail in the ECP. Please see **Section 4.9** for more detail on runoff from the Proposed Project.

#### **4.6.1-4 GEOLOGIC STABILITY**

### **Landslides**

Napa County prepared Geographic Information System (GIS) maps of landslide deposits and areas of potential landslide hazards for the Napa County Environmental Baseline Data Report (NCCDPD, 2005). The data was collected from the interpretation of U.S. Geological Survey (USGS) aerial photographs from sources published over several decades. According to the results of the Napa County Environmental Baseline Data Report, there are no areas susceptible to landslides identified within the property.

A geological reconnaissance of the site was performed by Gilpin Geosciences, Inc. to analyze overall slope stability and local surface erosion with the development of the proposed vineyard. It was observed that the overall slope stability seems favorable due to ground conditions and underlying geologic formations throughout the property. Local surface erosion, soil slumps, or other slope instability was not observed during the reconnaissance of the project site. However, a small slide is mapped in the swale directly east of the property (**Appendix G**).

O'Connor Environmental, Inc. conducted an erosion assessment for the property (**Appendix F**). Observations of the project site in its pre-project condition indicate that limited erosion is occurring on-site. Soil loss for the project site was estimated by using the Universal Soil Loss Equation (USLE), which is detailed in **Appendix F**. Post-project conditions are expected to reduce surface erosion from approximately 20.9 tons/year to approximately 15.1 tons/year, a 27 percent decline (**Appendix F**).

## **Seismicity**

### *Seismic Potential*

Numerous faults exist throughout the Bay Area of Northern California in the regional vicinity of the property. The majority of active faults within the Bay Area are components of the San Andreas Fault zone, a broad north-northwest trending system that extends along coastal California. An active fault is a fault that shows displacement within the last 11,000 years (the Holocene epoch), and therefore, is considered more likely to generate a future earthquake than a fault that has not shown signs of recent activity. A potentially active fault is one that has shown activity in the last 2.5 million years (the Quaternary Period). A fault that the California Geological Survey (CGS) determines to be sufficiently active and well-defined is zoned as an earthquake fault zone according to mandates of the Alquist-Priolo Earthquake Fault Zoning Act of 1972.

When an earthquake occurs, energy waves are radiated outward from the fault. The amplitude and frequency of earthquake ground motions partially depends on the material through which it is moving and distance from the source. The earthquake force is transmitted through hard rock in short, rapid vibrations, while this energy movement becomes a long, high-amplitude motion when moving through soft ground materials, such as valley alluvium. The force an earthquake applies to a structure is expressed in terms of a percentage of gravity (g). For example, an earthquake that produces 0.30 g horizontal ground acceleration will impose a lateral force on a structure equal to 30 percent of its total vertical weight. The intensity of an earthquake is expressed in terms of its effects, as measured by the Modified Mercalli Intensity Scale, and in terms of the quantity of energy released, or magnitude, as measured by the Richter scale. On the Richter scale every one-unit increase indicates an increment of roughly 30 times the energy.

There are numerous faults in the vicinity of the property that have not experienced geologic activity in 1,600,000 years. The closest fault to the property that has experienced activity in the past 130,000 years is the Hunting Creek-Berryessa Fault, located approximately 8.4 miles east of the project site. The Hunting Creek-Berryessa fault is capable of generating an earthquake of Moment Magnitude 6.9 (Gilpin Geosciences, Inc., 2014; **Appendix G**). Refer to **Figure 4.6-2** for a map of Napa County faults.

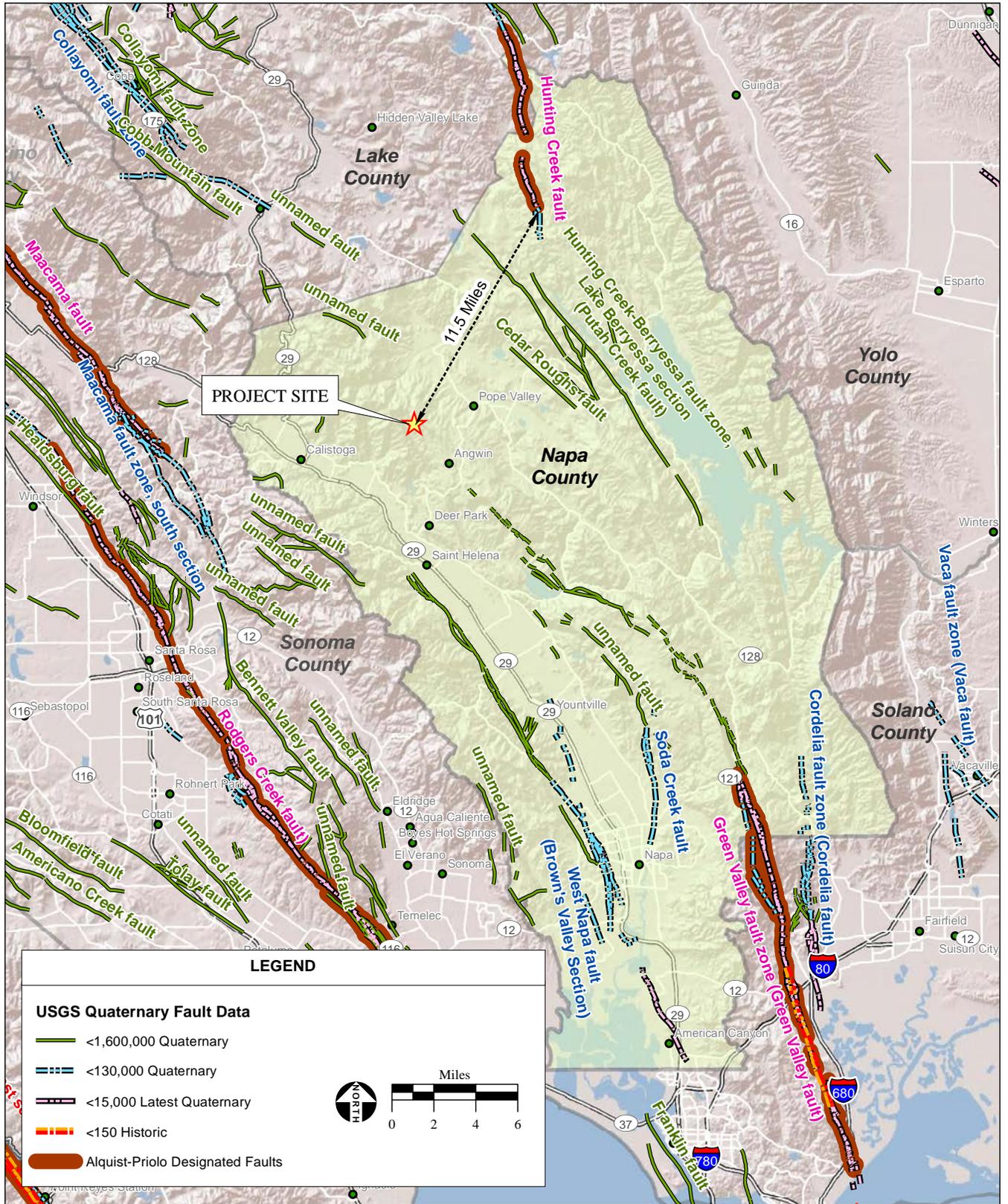
Numerous earthquakes have occurred in the Napa County region within historic times. Between 1735 and 2005, 97 earthquakes were recorded with a magnitude of 5.0 on the Richter scale or larger within 200 kilometers (or approximately 124 miles) of the center of Napa County (NCCDPD, 2005). Seven substantial earthquakes have been recorded since 1836 within 61 miles of the center of Napa County, and had median peak bedrock accelerations of 0.04 g to 0.10 g. This includes the 1906 earthquake of magnitude 8.3 with a median peak bedrock acceleration of 0.10 g located 55 miles from the center of Napa County. Other earthquakes have occurred in the vicinity of Napa County along the previously mentioned faults in the Bay Area, including the 1989 earthquake along the Loma Prieta Fault. Recently, on August 24, 2014, a Moment Magnitude 6.0 earthquake occurred on the West Napa Fault approximately 25 miles south of the project site. This earthquake caused extensive damage in the City of Napa, and although it was felt throughout the Napa Valley and Northern California, it did not cause any damage at the project site, nor did it reactivate the slide just east of the project site.

To estimate the probability of future earthquake events in the Bay Area, USGS considered potential sources of an event on seven different fault systems in the Bay Area. Based on a combined probability of all seven fault systems and background earthquakes, there is a 60 percent chance of a magnitude 6.0 or larger earthquake occurring at the project site within the next 50 years (USGS, 2010). Smaller earthquakes, between magnitudes 6.0 and 6.7, which are capable of causing considerable damage, have about an 80 percent chance of occurring in the Bay Area by 2030 (USGS, 2003).

#### *Seismic Hazards*

Seismic hazards describe the effects caused by surface fault rupture and seismic shaking from a seismic event. Surface fault rupture occurs when a fault breaks through to the ground surface during a seismic event. The California Department of Conservation has not identified the project site as located within an earthquake fault zone (California Department of Conservation, 2014). In addition, no surface rupture hazard potential has been identified for the property based onsite specific geological investigation (Gilpin Geosciences Inc., 2014).

Seismic shaking can result in structural damage. This risk is high because shaking damage can be caused by any of the active faults in the Bay Area discussed above. The severity of the shaking damage at a particular location depends on a number of factors, including the magnitude of the earthquake, the distance to its epicenter, and the nature and thickness of the



SOURCE: USGS Earthquake Hazards Program, 7/26/2010; California Geological Survey, 2005; AES, 2014

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**Figure 4.6-2**  
Napa County Faults

deposits at the location. Areas that are subject to the greatest ground shaking damage are anticipated to be within Napa County's various valleys, because they consist of deep, unconsolidated alluvial deposits underlain by saturated estuarine deposits, which are subject to higher amplitude and longer duration shaking motions (NCCDPD, 2005).

Ground failures, or secondary effects, from ground shaking can extend many miles from the earthquake fault that generated the shaking. Ground failures include landsliding, differential settlement, lateral spreading, and liquefaction. Landsliding triggered by ground shaking occurs in the same types of mountainous terrains that are susceptible to non-seismically induced sliding events. Ground shaking can reactivate dormant landslides, cause new landslides, and accelerate or aggravate movement on active slides. Differential settlement is the non-uniform densification of loose soils that occurs during strong ground shaking and causes uneven settlement of ground surface. Differential settlement could occur in numerous locations, but most likely the valley areas of Napa County. Lateral spreading is a ground failure in which a subsurface layer of soil liquefies, resulting in the overlying soil mass deforming laterally toward a free face. Limited lateral spreading is extremely unlikely given the project area's low probability for liquefaction on the property, discussed below. Although there is potential for seismic ground shaking on the property as mapped by USGS, there are shallow soils on the property and strong bedrock formations, which reduces the risk for seismically-induced landslides.

Liquefaction is a process in which sandy, saturated soils become liquefied and lose their bearing capacity during seismic ground shaking. As a result, sufficiently liquefied soils can no longer support structures built on or beneath them. Liquefaction potential is dependent on such factors as soil type, depth to groundwater, degree of seismic shaking, and the relative density of the soil. Soils most susceptible to liquefaction are saturated, clean, loose, uniformly graded, fine-grained, and unconsolidated materials that are most commonly associated with alluvial valleys with high groundwater levels. On a countywide basis, the potential for liquefaction-induced ground failures is relatively low, since only about 20 percent of the County is characterized as an alluvial valley. The Association of Bay Area Governments (ABAG) creates maps of Bay Area counties that show the susceptibility of mapped areas to liquefaction based on the presence of water-saturated sand and silty materials that may be more prone to liquefaction than other soils. The property's susceptibility to liquefaction is considered very low (ABAG, 2014).

#### 4.6.2 REGULATORY FRAMEWORK

##### 4.6.2-1 NAPA COUNTY

The Napa County General Plan (Napa County, 2008) serves as a broad framework for planning within Napa County. State law requires general plans to cover a variety of topics. The General Plan contains goals and policies related to open space conservation, natural resources, water resources and safety that provide guidance for issues related to geology and soils from the

Proposed Project. The following goals and policies related to geology and soils in the General Plan are applicable to the Proposed Project:

### **Open Space Conservation Policies**

Policy CON-5: The County shall identify, improve, and conserve Napa County's rangeland through the following measures:

- Encouraging livestock management activities to avoid long-term destruction of rangeland productivity and watershed capacity through overgrazing, erosion, or damage to riparian areas.

Policy CON-6: The County shall impose conditions on discretionary projects which limit development in environmentally sensitive areas such as those adjacent to rivers or streamside areas and physically hazardous areas such as floodplains, steep slopes, high fire risk areas and geologically hazardous areas.

### **Natural Resources Policies**

Policy CON-38: The County shall identify, improve, and conserve Napa County's sand and gravel resources, preventing removal of streambed sand and gravel in any manner that would cause adverse effects on water quality, fisheries, riparian vegetation, or flooding.

### **Water Resources Policies**

Policy CON-48: Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds. Technical reports and/or erosion control plans that recommend site-specific erosion control measures shall meet the requirements of the County Code and provide detailed information regarding site specific geologic, soil, and hydrologic conditions and how the proposed measure will function.

Policy CON-49: The County shall develop and implement a water quality monitoring program (or programs) to track the effectiveness of temporary and permanent Best Management Practices (BMPs) to control soil erosion and sedimentation within watershed areas and employ corrective actions for identified water quality issues (in violation of Basin Plans and/or associated Total Maximum Daily Loads [TMDLs]) identified during monitoring.

Policy CON-50: The County will take appropriate steps to protect surface water quality and quantity, including the following:

- Address potential soil erosion by maintaining sections of the County Code that require all construction-related activities to have protective measures in place or installed by the grading deadlines established in the Conservation Regulations. v In addition, the County shall ensure enforceable fines are levied upon code violators and shall require violators to perform all necessary remediation activities.

### **Safety Goals and Policies**

Goal SAF-1: Safety considerations will be part of the County's education, outreach, planning, and operations in order to reduce loss of life, injuries, damage to property, and economic and social dislocation resulting from fire, flood, geologic, and other hazards.

Goal SAF-2: To the extent reasonable, protect residents and businesses in the unincorporated area from hazards created by earthquakes, landslides, and other geologic hazards.

Policy SAF-8: Consistent with County ordinances, require a geotechnical study for new projects and modifications of existing projects or structures located in or near known geologic hazard areas, and restrict new development atop or astride identified active seismic faults in order to prevent catastrophic damage caused by movement along the fault. Geologic studies shall identify site design (such as setbacks from active faults and avoidance of on-site soil-geologic conditions that could become unstable or fail during a seismic event) and structural measures to prevent injury, death and catastrophic damage to structures and infrastructure improvements (such as pipelines, roadways and water surface impoundments not subject to regulation by the Division of Safety of Dams of the California Department of Water Resources) from seismic events or failure from other natural circumstances.

Policy SAF-9: As part of the review and approval of development and public works projects, planting of vegetation on unstable slopes shall be incorporated into project designs when this technique will protect structures at lower elevations and minimize the potential for erosion or landslides. Native plants should be considered for this purpose, since they can reduce the need for supplemental watering which can promote earth movement.

Policy SAF-10: No extensive grading shall be permitted on slopes over 15 percent where landslides or other geologic hazards are present unless the hazard(s) are eliminated or reduced to a safe level.

#### **4.6.2-2 NAPA COUNTY RESOURCE CONSERVATION DISTRICT**

The Napa County Resource Conservation District (RCD) published the Napa River Watershed Owner's Manual in 1996. The manual contains the following objective and recommendations that pertain to the Proposed Project:

##### **Objective G: Reduce Soil Erosion**

**Recommendation G2:** Reduce erosion resulting from agricultural activities. Agricultural activities in the Napa River watershed include grazing, viticulture, small farms and horticulture. Soil disturbance or vegetation removal as a result of agricultural activities can result in loss of topsoil and subsequent water quality degradation. Good agricultural management can also benefit water quality and wildlife habitat, and can contribute to the overall good health of the watershed.

Relevant sub-recommendations include:

- G2.1. Emphasize erosion prevention over sediment retention as a priority in agricultural planning and operations.
- G2.2. Promote the use of permanent vegetative ground cover in vineyards. Support research, demonstrations and technology exchange to refine cover crop technology for vineyards and orchards.
- G2.4. Maintain access roads and farm roads to control storm water runoff in agricultural areas. Utilize assistance from the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service, or other erosion control professionals, for design of storm water runoff control on rural roads.
- G.2.5. Minimize wet weather vehicle traffic through or across agricultural areas, especially on hillsides.
- G.2.6. Provide adequate energy dissipaters for culverts and other drainage pipe outlets.
- G.2.7. Establish vegetated buffer strips along waterways.

#### **4.6.3 IMPACTS ANALYSIS**

##### **4.6.3-1 SIGNIFICANCE CRITERIA**

The Proposed Project would involve clearing the existing brush and ruderal land and timberland, earthmoving activities associated with the development of vineyard areas, erosion control

measures, and other features included within the ECP (**Appendix B**). For the purposes of this EIR, the Proposed Project would have a significant impact if it would:

- Result in the accelerated, long-term erosion and loss of topsoil causing substantial depletion of the agricultural resource or an increase in the rate and quantity of sediment accumulated down slope to the extent that it damages roads, vineyard facilities, adjoining vineyards, or deposits excessive sediment in natural waterways, including the two unnamed tributaries that flow down into the Napa River.
- Alter the topographic or geologic site conditions such that an earthquake would cause substantial damage to the proposed vineyard, or a geologic unit or soil would become unstable, thereby resulting in excessive erosion, soil creep, catastrophic slope and ground failure, or loss of cultivatable land area.

#### 4.6.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.6-1:** Development of the Proposed Project would alter the rate of sediment erosion and yield onsite. This is a potentially significant impact. However upon implementation of the erosion control methods detailed in the ECP (**Appendix B**), the timber harvest and vineyard conversion would all be designed to create a decrease in sediment erosion and yield that would result in a less than significant impact to offsite receiving waters.

The conversion of existing habitats on the property to vineyard would result in the removal of 13.6± gross acres of existing vegetation from the THP area, and the subsequent conversion to vineyard. Approximately two acres within the harvested area would be utilized for access of farm trucks, equipment turn around, and vineyard maintenance operations. The timber harvest and vineyard conversion would result in the removal of existing trees, as well as soil ripping, earthmoving and grading activities. Vegetation clearing would remove obstacles to sediment transport while exposing more soils to erosion. However, an impact from the conversion of existing vegetation to vineyard areas would only be considered significant if sediment erosion and yield are substantial to the extent that damage occurs to roads, vineyard facilities, or adjoining vineyards, or if sedimentation in receiving waters is significant.

The mainstem Napa River is listed as sediment-impaired according to the Clean Water Act, Section 303 (d), because it does not meet the beneficial uses for which it was designated, including steelhead habitat. Section 303 (d) requires the Regional Water Quality Control Board (RWQCB) to create a TMDL for sediment in the Napa River watershed. In order to meet the TMDL standard, it is County Policy (Napa General Plan Policy Con-48) that there should be no change in erosion (“maintain pre-development sediment erosion conditions”) or, alternatively, that the project complies with State Water Quality requirements (**Section 4.6.2**). With the proposed sediment control features detailed in the ECP (**Appendix B**), sediment erosion from the project site will be reduced by roughly 27 percent from pre-project levels under the

Proposed Project (**Appendix F**). Therefore, the Proposed Project meets Napa County standards and will comply with the TMDL standard.

As stated in the Erosion Assessment report for the property (**Appendix F**), the USLE, Special Applications for Napa County, CA erosion estimates was used to calculate sediment detachment and erosion potential for the Proposed Project.

The total surface erosion of the Proposed Project as predicted by USLE is approximately 15.1 tons per year. Under current conditions, the 13.6± acre project site produces a total of 20.9 tons per year of eroded sediment (OEI, 2014). As a result of the Proposed Project and implementation of the ECP, erosion rates on the hilltop will decrease by approximately 25 percent (**Appendix F**). **Table 4.6-2** provides the results of the USLE analysis of pre- and post-project sediment production and delivery conditions.

**TABLE 4.6-2**  
PRE-PROJECT AND POST-PROJECT ESTIMATED SEDIMENT PRODUCTION

Vineyard Area	Gross Acres	Erosion (t/yr) Pre-Project	Erosion (t/yr) Post-Project	Percent Change
<b>Block</b>				
A	0.54	0.2	0.1	<b>-50%</b>
B	2.91	7.9	6.5	<b>-17%</b>
C	7.50	6.4	5.3	<b>-20%</b>
D	2.78	6.5	3.2	<b>-33%</b>
<b>Total</b>	<b>13.73</b>	<b>20.9</b>	<b>15.1</b>	<b>-27%</b>

Source: OEI, 2014; **Appendix F**

The requirements of Napa County's Conservation Regulations (Chapter 18.108) are specifically listed as an effective measure at reducing sediment delivery. The Proposed Project complies with Policy Con-48 because it complies with the Basin Plan requirements with respect to estimated erosion rates. The project ECP and USLE calculations prepared by O'Connor Environmental, Inc. demonstrate that the project would limit potential erosion below the USDA soil erosion tolerance (T) of 3.0 tons per acre per year. The use of erosion control measures including water bars, rock stabilization, and the installation of fiber rolls would filter all surface runoff from the project site prior to its discharge into the existing drainage channels, and would prevent sediment, including the sand size-fraction, from leaving the property. Changes in groundwater and surface hydrology that may occur as a result of the Proposed Project are discussed further in **Section 4.9.3-2**.

The use of the erosion control measures described above represents the best way of minimizing sediment delivery to streams from the Proposed Project. As sediment is identified in the Napa River Sediment TMDL as a primary concern due to potential impacts on beneficial uses, with

implementation of the erosion control measures in the ECP, the Proposed Project would have a less-than-significant impact on the surrounding watershed.

The use of erosion control features as proposed in the ECP will reduce sedimentation from the proposed vineyard blocks. However, there is an existing rocked low-water crossing on Friesen Drive that could receive additional sediment as a result of project implementation if heavy equipment were to use the crossing while there is water flow. This existing rocked ford crossing is located on the northwest portion of the property, and is a stable crossing that has been in place for many years. It is the primary means of access for the Napa Valley Land Trust property located adjacent to the project site. Use of the crossing for vehicle access will not degrade the Class III watercourse, which is an ephemeral drainage that transmits water in response to a rain event and dries up very quickly. The bottom of the crossing and the downstream end is composed of solid rock and will not destabilize. During the majority of the project construction and operational activities, which will take place in spring, summer, and fall, there will be no impacts associated with the existing rocked ford crossing. To ensure that there are no impacts to sedimentation during winter months or rain events, **Mitigation Measure 4.6-1** will limit heavy equipment use of the rocked water crossing.

With incorporation of erosion and runoff control measures proposed in the THP and ECP and discussed above, the overall production of sediment from the project site and load of sediment transported to local waterways is anticipated to be a significant reduction from pre-project conditions with implementation of the Proposed Project. With implementation of the erosion control measures in the ECP, the Proposed Project would have a less-than-significant impact on the surrounding watershed.

**Mitigation Measure 4.6-1:** With full implementation of the ECP (**Appendix B**) and the implementation of the erosion control measures in the THP (**Appendix H**), no further mitigation is required to reduce erosion from vineyard blocks. To reduce the potential for erosion due to use of the rocked low-water crossing on Friesen Drive, the following measures shall be implemented:

- Use of the low water crossing is limited to pickup trucks and or cars during the winter period.
- No heavy equipment is allowed to use the crossing if there is water flow.
- No material, vegetative or otherwise may be dragged through the crossing at any time, wet or dry.
- All vegetation will be transported, if needed, by 10 wheel dump trucks to landings east of the low water crossing.
- No modification of the existing crossing is permitted at any time.

**Impact 4.6-2:** Development of the Proposed Project would involve earthmoving and grading activities that would alter the existing topographic and geologic conditions at the property; however, conditions would not be altered such that significant damage to the property from excessive erosion, soil creep, catastrophic slope, or ground failure would occur nor would such hazards be likely to occur in the event of an earthquake. This impact is less than significant.

The Proposed Project could be subject to an earthquake event from one of the active faults within the San Andreas Fault zone. Numerous earthquakes with large magnitudes have occurred in the Bay Area over the last few centuries, and the USGS estimates that an earthquake of magnitude 6.0 or greater will likely occur at the project site in the next 50 years (USGS, 2010). However, surface fault rupture would not be anticipated to occur at the property, since none of the active faults in Napa County that the CGS determined capable of underground surface fault rupture are located at or near the property. The Proposed Project includes the conversion of forested areas and shrubland areas into vineyard. Construction of the Proposed Project would involve earthmoving activities, soil cultivation, installation and maintenance of drainage and erosion control features, and vineyard plantings. Modifications that would alter the geologic setting of the property would be relatively minor changes associated with earthmoving activities for development of vineyards and associated avenues. Since the Proposed Project would not include construction of buildings or other facilities that would attract a large number of people, the potential risk of exposing people or structures to hazards from a seismic event is nonexistent.

Access to the project site is provided by Friesen Drive, an existing road that forms an embankment along the southwestern portion of the reservoir that is located outside of the project site but on the property. Block D would be located downslope of the road embankment and reservoir. Friesen Drive has exhibited no signs of erosion or instability, and the increased traffic and transport of large equipment would not result in instability to this road or the reservoir (Gilpin, 2015; **Appendix G**).

Ground failures due to seismically-induced ground shaking can reactivate dormant landslides, cause new landslides, accelerate or aggravate movement on active slides, as well as result in differential settlement, lateral spreading, and liquefaction. Seismically-induced ground shaking could potentially occur from the Hunting Creek-Berryessa Fault, located approximately 8.4 miles east of the property (Gilpin Geosciences, Inc., 2014). As discussed in **Section 4.6.1-4** above, based on the observation of no landslides located within the project site and existing slope stability, the project area's susceptibility to liquefaction is considered low. Lateral spreading is unlikely to occur because there are no liquefiable slopes on the property. Additionally, there are no observed slides located within the project site, and any landslide deposits on the property are located outside the project development area. Although impacts to people or structures as a result of seismically-induced ground failure are low, the engineering geological and geotechnical investigation (**Appendix G**) include two additional recommendations for implementation of the

ECP, which are included as **Mitigation Measure 4.6-2** below. Therefore, impacts associated with seismically induced ground failure as a result of the Proposed Project would be less than significant with mitigation.

**Mitigation Measure 4.6-2:** The recommendations found in the engineering geological and geological technical investigation shall be implemented, including:

- On the rock disposal area typical detail, the note for the keyway should specify a minimum embedment of 12 inches into firm soil or bedrock.

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## 4.7 GREENHOUSE GAS EMISSIONS

### 4.7.1 SETTING

It is anticipated that the average global temperature could rise 0.6 to 4.0 degrees (°) Celsius (C) (1.08 to 7.2 °Fahrenheit (F)) between the years 2000 and 2100 (IPCC, 2007). The extent to which human activities affect global climate change is a subject of considerable scientific debate. While many in the scientific community contend that global climate variation is a normal cyclical process that is not necessarily related to human activities, the Intergovernmental Panel on Climate Change (IPCC) report identifies anthropogenic greenhouse gases (GHGs) as a contributing factor to changes in the Earth's climate (IPCC, 2007 and 2014).

The IPCC modeling estimates that anthropogenic carbon dioxide (CO<sub>2</sub>) in the lower atmosphere has increased by approximately 31 percent since the year 1750. At the same time, average temperature in the lower atmosphere has increased approximately 0.6 to 0.8 °C (1.08 to 1.44 °F). Due to the challenges inherent in modeling the complexities of the Earth's climate, the proportional importance of anthropogenic activities as opposed to natural feedback systems is exceptionally difficult to establish. Nonetheless, the IPCC concludes that "most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic GHG concentrations." This Draft Environmental Impact Report (EIR) assumes that an increase in anthropogenic GHG concentration is in fact contributing to global warming, consistent with State policy.

IPCC theorizes that a continuation of this warming trend could have profound implications, including flooding, erratic weather patterns, and reduced arctic ice. The IPCC projects a number of future GHG emissions scenarios leading to a varying severity of impacts on the environment and the global economy. According to the 2007 IPCC report, if anthropogenic GHG continue to increase in the atmosphere there will be a point at which the above impacts would become irreversible, this point is commonly referred to as the "tipping point." Although the 2007 IPCC report states the tipping point may be as far off as 20 years, some experts contend the tipping point has already been reached. The fifth IPCC report is expected to be released in its entirety by the end of 2014. The first installment, Working Group I, Climate Change 2013, The Physical Science Basis of the fourth IPCC report was released in September 2013; this installment was accepted and the underlying science was approved.

Sources of GHG emission in the region include, but are not limited to, on and off road vehicles, agriculture (cattle and farming), water and wastewater transport, indirect electricity use, solid waste disposal, loss of carbon sequestration in flora, and changes in land use.

Climate change is a global phenomenon attributable to the sum of all human activities and natural processes. The California Governor's Office of Planning and Research (OPR) provides

guidance on integrating analysis of climate change in California Environmental Quality Act (CEQA) documents (OPR, 2008).

This analysis considers whether project emissions are individually or cumulatively significant. Based on the Proposed Project's GHG emissions (refer to **Section 6.0**), it was determined that specific climate change impacts could not be attributed to the proposed development. As such, project impacts are most appropriately addressed in terms of the incremental contribution to a global cumulative impact.

#### 4.7.2 REGULATORY FRAMEWORK

Climate change is a global phenomenon attributable to the sum of all human activities and natural processes. The OPR recommends quantification of GHG emissions, assessment of the significance of any impact on climate change, and identification of mitigation or alternatives that would reduce GHG emissions. Climate change has the potential to reduce the snow packs in the Sierra Nevada Mountains, cause the sea level to rise, and increase the intensity of wildfires and storms.

The following regulatory background gives context to the issues of climate change and importance in reducing GHG emissions in California:

##### **Assembly Bill 32**

Signed by the California State Governor on September 27, 2006, Assembly Bill (AB) 32 codifies a key requirement of Executive Order (EO) S-3-05, specifically the requirement to reduce statewide GHG emissions to year 1990 levels by the year 2020. AB 32 tasks the California Air Resources Board (CARB) with monitoring State sources of GHGs and designing emission reduction measures to comply with the law's emission reduction requirements.

AB 32 required that CARB prepare a comprehensive "scoping plan" that identifies all strategies necessary to fully achieve the required 2020 emissions reductions. In early December 2008, CARB released its scoping plan to the public and on December 12, 2008, the CARB Board approved the scoping plan.

The scoping plan calls for an achievable reduction in California's carbon footprint. Reduction of GHGs emissions to 1990 levels are proposed, which equates to cutting approximately 30 percent from estimated GHG emission levels projected in 2020, or about 15 percent from today's levels. The scoping plan relies on existing technologies and improving energy efficiency to achieve the 30 percent reduction in GHG emission levels by 2020. The scoping plan provides the following key recommendations to reduce GHG emissions:

- Expand and strengthen existing energy efficiency programs as well as building and appliance standards;

- Achieve a statewide renewable energy mix of 33 percent;
- Develop a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establish targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets; and
- Adopt and implement measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard.

### **Senate Bill 97**

Signed by the Governor on August 24, 2007, Senate Bill (SB) 97 required that the OPR prepare CEQA guidelines for evaluating the effects of GHG emissions and for mitigating such effects. The Natural Resources Agency adopted these guidelines on December 31, 2009.

In April 2009, OPR released the CEQA Guidelines Section Proposed to be Added or Amended, which included guidelines for evaluating the effects of GHG emissions and for mitigating such effects. On December 31, 2009, the Natural Resources Agency delivered its rulemaking package to the Office of Administrative Law for their review pursuant to the Administrative Procedure Act.

### **CEQA Guidelines**

In accordance with SB 97, the Natural Resources Agency adopted Amendments to the CEQA *Guidelines* for GHGs on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments and filed them with the Secretary of State for inclusion in the California Code of Regulations. The Amendments became effective on March 18, 2010. The amendments to the CEQA *Guidelines* provide the following direction for consideration of climate change impacts in a CEQA document:

- The determination of significance of GHG emissions calls for a careful judgment by the lead agency;
- A model or methodology shall be used to quantify GHG emissions resulting from a CEQA project;
- Significance may rely on qualitative analysis or performance based standards;
- The CEQA document shall discuss regional and/or local GHG reduction plans;
- A CEQA document shall analyze GHG emissions if they are cumulatively considerable;
- A description of the effects of climate change on the environment shall be included in CEQA documents;
- A CEQA document shall contain mitigation measures, which feasibly reduce GHG emissions;
- GHG analysis in a CEQA document may be Tiered or Streamlined; and

- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long term commitment to AB 32 implementation.

### **Senate Bill 375**

SB 375 was approved by the Governor on September 30, 2008. SB 375 provides for the creation of a new regional planning document called a "sustainable communities strategy" (SCS). A SCS is a blueprint for regional transportation infrastructure and development that is designed to reduce GHG emissions from cars and light trucks to target levels that will be set by CARB for 18 regions throughout California. Each of the various metropolitan planning organizations and the Association of Bay Area Governments (ABAG) must prepare an SCS and include it in that region's regional transportation plan. The SCS would influence transportation, housing, and land use planning. CARB determines whether the SCS will achieve the region's GHG emissions reduction goals. Under SB 375, certain qualifying in-fill residential and mixed-use projects would be eligible for streamlined CEQA review.

### **Bay Area Air Quality Management District Climate Change Guidelines**

In June 2010, the Bay Area Air Quality Management District's (BAAQMD) Governing Board adopted new CEQA Guidelines (Guidelines), which provide guidance for analyzing project-level climate change impacts. The Guidelines provide GHG emissions thresholds for project operation; however, the Guidelines do not provide project construction GHG emission thresholds. On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the BAAQMD had failed to comply with CEQA when it adopted the thresholds provided in its CEQA Guidelines. The court did not determine whether the thresholds were valid on the merits. The court set aside the thresholds and ceases dissemination of them until the BAAQMD complies with CEQA. The BAAQMD has appealed the Alameda County Superior Court's decision. On August 13, 2013 the Court of Appeal of the State of California, First Appellate District, held that establishing thresholds of significance is not a "project" subject to its own CEQA review and found in favor of the BAAQMD.

### **Napa County**

Since the certification of the Final General Plan EIR and adoption of the General Plan, Napa County has undertaken numerous efforts aimed at reducing GHG emissions. The County participated in a multi-jurisdictional effort lead by the Napa County Transportation and Planning Agency (NCTPA) to quantify community-wide emissions for all jurisdictions within the County and to develop a non-binding emission reduction framework that each jurisdiction can use to guide their decision making and planning.

The County has also prepared and adopted an emission reduction plan aimed at reducing emissions from County operations. The County is currently in the process of preparing a

Climate Action Plan (CAP) specific to unincorporated areas of the County. The CAP is being developed to meet qualifications established by CARB. The CAP will include a refined inventory and forecast of GHG emissions for unincorporated Napa County, including emissions associated with agriculture and changes in carbon sequestration over time. The CAP will quantify emissions from vineyard development and operations (as well as other sectors), and will include emission reduction measures aimed at achieving goals of AB 32. A draft CAP was completed in January 2011 and was proposed to be adopted in late 2011. That draft CAP included a 52 percent reduction in GHG emissions from “business as usual” practices. In March 2012, the draft CAP was revised based on public input and it was determined that fewer vineyard conversion projects and the potential for even further reductions in GHG emissions from existing vineyards would occur. Therefore, the reduction from development and vineyard projects was revised to 38 percent. The draft CAP represents a guiding framework for this analysis; however, the draft CAP was not adopted by the County. The County is in the process of revising the draft CAP. Therefore, State goals are used in this analysis as the basis for determining less-than-significant impacts during project construction (see **Section 4.7.3-1** below).

### 4.7.3 IMPACTS ANALYSIS

#### 4.7.3-1 SIGNIFICANCE CRITERIA

For the purposes of this analysis, the Proposed Project would have a significant impact if it would:

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs.

As discussed in **Section 4.7.2**, the BAAQMD CEQA Guidelines was adopted by the BAAQMD Board of Directors in June 2010 and upheld in court on August 13, 2013. The BAAQMD CEQA Guidelines do not provide specific thresholds for GHG emissions from construction.

In accordance with BAAQMD Guidelines, a project can be determined to have a less-than-significant impact by providing either project components or mitigation that would reduce operational GHG emissions below a threshold of 1,100 metric tons (MT) per year of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) (BAAQMD, 2012).

CO<sub>2</sub>e is a method by which GHGs other than CO<sub>2</sub> are converted to a CO<sub>2</sub>-like emission value based on a heat-capturing ratio or global warming potential. CO<sub>2</sub> is used as the base and is given a value of one. Methane (CH<sub>4</sub>) has the ability to capture 21 times more heat than CO<sub>2</sub>; therefore, CH<sub>4</sub> is given a CO<sub>2</sub>e value of 21. GHG emissions are multiplied by the CO<sub>2</sub>e value to

achieve one GHG emission value. By providing a common measurement, CO<sub>2</sub>e provides a means for presenting the relative overall effectiveness of emission reduction measures for various GHGs in reducing project contributions to global climate change.

Although the Guidelines provide clear guidance on how to analyze GHG emissions from biogenic sources, which result from natural biological processes such as the decomposition or combustion of vegetative matter (wood, paper, vegetable oils, animal fat, yard waste, etc.), the Guidelines do not require the quantification of biogenic emissions as part of the quantification of GHG emissions for projects and does not provide a GHG emission threshold for these sources for both operation and construction activities. However, the Guidelines do recommend that construction-related GHG emissions be quantified using the CalEEMod 2013.2 air quality program California Emissions Estimator Model (CalEEMod) and disclosed in the appropriate environmental document. The Guidelines require that only exhaust from construction equipment be included in the climate change analysis, similar to the analysis for criteria pollutants.

For this analysis, a reduction of approximately 25 percent from “business as usual” levels of GHG emissions, which is consistent with recent court decisions and the language of AB 32, will be deemed to be an appropriate means for meeting the State’s GHG reduction goals (*Citizens for Responsible Equitable Environmental Development v. City of Chula Vista*, (July 8, 2011, D057779)). Therefore, for this analysis, such a reduction in GHG emissions will be considered as a less-than-significant impact to climate change. This significance threshold is consistent with the State of California and AB 32 GHG Reduction Goals. As stated above, since the County has not yet adopted any further reduction criteria, the State goals are used in this analysis as the basis for determining less-than-significant impacts during project construction. As described in **Section 4.7.2**, the court did not set aside the BAAQMD operational GHG thresholds on its merits; therefore, the BAAQMD GHG operation threshold of 1,100 MT per year or less shall be the basis for determining project operational significance.

#### **4.7.3-2 IMPACTS AND MITIGATION MEASURES**

**Impact 4.7-1:** Construction of the Proposed Project would emit GHGs and would have the potential to exacerbate global climate change. Project sources of GHG emissions during construction would include the transport and delivery of construction equipment to the property; operation of construction equipment, including equipment used for the timber harvest, planting the vineyard, and installing the erosion control system; worker trips; fuel use; and material transport. This is a potentially significant impact; however, after mitigation, impacts would be less than significant.

**Methodology**

GHG emissions from construction equipment were estimated using CalEEMod air quality model. Typical equipment to be used during the timber harvest and installation of the vineyard and erosion control measures include excavators, crawler tractors, and graders. A complete description of the equipment to be used during construction of the Proposed Project is found in **Section 3.0 Project Description**. It was conservatively assumed that the total gross area of disturbed land would be 14 acres within the timber harvest area on the property and installation of a 10.5± acre vineyard. Projected GHG emissions from construction of the Proposed Project are presented in **Table 4.7-1** below; CalEEMod output files are provided in **Appendix C**.

**TABLE 4.7-1**  
GREENHOUSE GAS CONSTRUCTION EMISSIONS

Proposed Project	GHGs	GHG Emissions (MT of CO <sub>2</sub> e)
<b>Construction GHG Emissions</b>		
Mobile Construction Activities <sup>1</sup>	CO <sub>2</sub> e	30
Timber Removal <sup>2</sup>	CO <sub>2</sub> e	2,571
Soil Tilling/Ground Clearing <sup>3</sup>	CO <sub>2</sub> e	431
<b>Subtotal</b>		<b>3,032</b>
Timber to Lumber	CO <sub>2</sub> e	<1,851> <sup>4</sup>
<b>Total Construction GHG Emissions</b>		<b>1,181</b>
<b>Percent Reduction in GHG Emissions</b>		<b>61.0%</b>

ST = short tons; MT = metric tons; CO<sub>2</sub>e = carbon dioxide equivalent

<sup>1</sup> Estimated using BAAQMD recommended CalEEMod air quality model and includes land clearing, vineyard avenues, irrigation system installation, planting, etc.

<sup>2</sup> Actual harvesting of standing carbon from the trees that will be cleared for vineyard construction. Timber Removal is based on 257.14 MT per acre, 10± acres cleared (EPA, 2013).

<sup>3</sup> Carbon loss from tilling and ground disturbing activities based on 10.5± acres tilled, 41 MT of carbon stored per acre.

<sup>4</sup> Based on 72 percent of timber converted to lumber.

Source: CalEEMod, 2013

**Findings**

**Table 4.7-1** shows the estimated project construction emissions of GHG from construction activities including mobile and indirect sources as well as the GHG emissions from biogenic sources. Construction GHG emissions would be reduced with the milling and conversion of removed trees to lumber onsite. As part of the Proposed Project’s design, milling the harvested trees on site and eliminating the use of logging trucks reduces the project’s GHG emissions impacts in comparison to standard timber harvesting operations by roughly 50 percent. This is due to the high number of trips associated with logging trucks under typical “business as usual” timber harvesting practices. Once the vineyard is established and the cover crop is applied, the vine plantings will occupy roughly 10.5± acres (net vineyard). However, it is difficult to quantify the amount of carbon sequestration gained in planting the vineyard, and therefore it was not

included as a reduction in this analysis. Construction GHG emissions would be further reduced with the implementation of the BAAQMD construction emission reduction measures and practices outlined in **Mitigation Measure 4.7-1** (below); however, these reductions are also difficult to accurately quantify due to limited scientific research available related to the measure. Therefore, reductions from the construction emission reduction measures included in **Mitigation Measure 4.7-1** are not included in this analysis, which results in a more conservative estimate of construction GHG emissions (**Table 4.7-1**).

As shown in **Table 4.7-1**, GHG emissions from construction activities, including removal of trees and carbon emitted due to tillage and ground clearing would result in 3,032 MT of CO<sub>2</sub>e. The Proposed Project's design would retain 1,851 MT of CO<sub>2</sub>e, or 61.0 percent of the project's GHG emissions in the form of lumber (**Table 4.7-1**). The total of construction GHG emissions from the Proposed Project would be 1,181 MT of CO<sub>2</sub>e when including lumber carbon retention, or a decrease in 61.0 percent from "business as usual" development. This 61.0 percent decrease is greater than the 38 percent GHG emission reductions required in the Napa County draft CAP, so no additional mitigation is required. The Proposed Project will reduce GHG emissions from construction by 61.0 percent from "business as usual" practices, which results in a less-than-significant impact to climate change.

**Mitigation Measure 4.7-1:** The Applicant shall implement the following mitigation measures to reduce project-related GHG emissions during construction of the Proposed Project:

- The Applicant shall maintain all construction equipment in accordance with manufacturers' specifications.
- The Applicant shall limit construction equipment idling time to less than five minutes.

**Impact 4.7-2:** Operation of the Proposed Project would emit GHGs and would have the potential to exacerbate global climate change. Project operational sources of GHG emissions would include vehicles (produce, material, and worker transport) traveling to and from the Proposed Project, energy use, and limited water transport. As shown below, impacts would be considered less than significant.

**Methodology**

Operational GHG emissions from mobile and area sources were estimated using CalEEMod air quality model. Mobile sources include worker trips and transport of grapes and materials. Indirect GHG emissions from water conveyance, average annual loss of carbon sequestration, and agricultural activities were also estimated by CalEEMod.

**Findings**

Under the BAAQMD CEQA Guidelines, a project’s operational emissions must be quantified. **Table 4.7-2** shows the estimated project-related GHG emission from direct and indirect emission sources.

**TABLE 4.7-2**  
GREENHOUSE GAS OPERATIONAL EMISSIONS

Proposed Project	GHGs	GHG Emissions (MT/yr of CO <sub>2</sub> e)
<b>Direct Operational GHG Emissions</b>		
Loss of Sequestration <sup>1</sup>	CO <sub>2</sub> e	26
Area	CO <sub>2</sub>	1
<b>Indirect Operational GHG Emissions</b>		
Mobile	CO <sub>2</sub>	63
Water and Wastewater <sup>2</sup>	CO <sub>2</sub> e	2
<b>Total Annual Operational GHG Emissions</b>		<b>92</b>
<i>BAAQMD Operational GHG Emissions Threshold</i>		<i>1,100</i>
<b>Significant</b>		<b>No</b>

ST = short tons; MT = metric tons; CO<sub>2</sub>e = carbon dioxide equivalent

<sup>1</sup> Actual loss of carbon sequestration due to the permanent removal of 10.5± acres of timber.

<sup>2</sup> Based on 3.8 acre-feet of water use per year (refer to **Section 4.9**).

Source: CalEEMod, 2013

Agricultural lands depend on water for irrigation and this water must be provided either from wells, lakes, or streams. The movement of water can be energy intensive. In California, the movement of water constitutes 14 percent of the State’s total energy usage due largely to factors such as distance moved, major State and federal water projects, and depth to groundwater in some areas. The use of gas or diesel powered pumps to extract water from the ground or move water from lakes or streams for various land uses increases GHG emissions. However, the Proposed Project does not exhibit these factors since the proposed water use would be from an existing on site well, and the distance from the pump to the proposed vineyard is relatively small (less than 0.5 mile). Thus, the Proposed Project would make efficient use of water from existing water sources to the degree necessary, thereby reducing the energy required to transport water and reducing GHG emissions. Therefore, the GHG emissions

impacts for water and wastewater shown in **Table 4.7-2** constitute a standard estimate that is largely conservative and does not take into account these project specific factors.

### **Benefits of the Proposed Project's Design**

There are several other beneficial aspects of the Proposed Project's design that would reduce impacts to climate change. Construction equipment would be kept on site during construction (which would minimize truck trips), engine idling would be minimized, equipment would be properly maintained, and a cover crop would be established on all disturbed areas. These project components, which would reduce GHG emissions, are not readily quantifiable; therefore, a conservative approach was taken in this analysis and the GHG emissions reductions due to these specific project components were not included in the analysis. Therefore, the GHG emissions impacts identified in **Table 4.7-2** are conservative estimates.

As shown in **Table 4.7-2**, operational GHG emissions would be less than the BAAQMD CEQA threshold of 1,100 MT of CO<sub>2</sub>e for project-level operation; therefore, operation of the Proposed Project would result in a less-than-significant impact to climate change.

**Mitigation Measure 4.7-2:** No mitigation is required.

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## 4.8 HAZARDOUS MATERIALS

This section addresses hazardous materials, school and public safety, and emergency response plans.

### 4.8.1 SETTING

#### 4.8.1-1 DEFINITION OF HAZARDOUS MATERIAL

A material is considered hazardous if it appears on a list of hazardous materials prepared by a Federal, State, or local agency, or if it has characteristics defined as hazardous by such an agency. A hazardous material is defined in Title 22 of the California Code of Regulations (CCR) as:

*“A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed” (CCR, Title 22, Section 66260.10).*

#### 4.8.1-2 CURRENT SITE CONDITIONS

##### **Database Searches**

Regulatory agency databases were searched in an effort to identify locations of current and historical hazardous materials storage, generation, and documented releases. It should be noted that a site could be listed on a hazardous materials database and be in compliance with local, State, and federal laws. The State Water Resources Control Board (SWRCB) GeoTracker database search did not identify any hazardous sites on the project site or parcel, and there are no sites listed within a one-mile radius (SWRCB, 2014).

The nearest documented leaking underground storage tank (LUST) site is located at least three miles south of the project site in the town of Angwin. The Lukens Property (T0605500054) was cleaned up for potential gasoline contamination to groundwater and soil as of August 3, 1999 (SWRCB, 2014).

The Proposed Project site is not listed on the LUST database or the State CORTESE list, and there are no listed sites within one mile (EnviroStor, 2014).

### **Air Strips and Airports**

The nearest airport to the project site is the Angwin-Parrett Field Airport, located 3.25 miles southeast of the project site in the east end of Angwin, California.

### **Wildland Fires**

The Project Site is located on land designated as a “Very High Fire Hazard Severity Zone (VHFHSZ)” within a State/federal responsibility area according to the California Department of Forestry and Fire Protection (CAL FIRE) (CAL FIRE, 2007).

#### **4.8.1-3 PROPOSED VINEYARD OPERATIONS**

A Sustainable Integrated Pest Management (IPM) program will be implemented for the Proposed Project, and is attached to this EIR as **Appendix J**. The following practices will be implemented for the project as outlined in the IMP:

- Utilize closed systems for materials applications where appropriate. A closed system is defined in the California Department of Pesticide Regulations (CDPR) Code of Regulations, Title 3, 6000. “Definitions”.
- Maintain a wastewater capture or containment program for equipment washing where appropriate. Methodologies are addressed in the CDPR Pesticide Management Plan for Water Quality.
- Implement a “no spill” protocol to ensure that all existing surface runoff systems and groundwater remain free of contaminants from farming practices
- Maintain a log of all materials transported
- Maintain a record of all irrigation and fertilizer applications
- Maintain and report to Napa County, all applications of pesticide, including rates and method of application.

Risk mitigation of soil loss, erosion, material application, and material composition will be performed as detailed in the Erosion Control Plan (ECP), as discussed in **Appendix B**. There would be no permanent storage of fertilization and pesticide materials on site. Sustainability procedures outlined in the IPM program would minimize the necessity of off-site materials. The use of inputs onsite, when necessary, would use organic (OMRI-certified) materials where appropriate. All non-biodegradable wastes and residual materials would be transported offsite in closed containers. Additionally, the suggested materials detailed in the IPM program are not known to be bio-accumulators, or to have a sufficiently rapid degrading half-life or toxicity that would pose a threat as an environmental accumulator.

## 4.8.2 REGULATORY FRAMEWORK

### 4.8.2-1 FEDERAL

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) governs the sale, distribution and use of pesticides in the United States (EPA, 2012). Pesticides are regulated under FIFRA until they are disposed, at which time they become wastes and are regulated under the Resource Conservation and Recovery Act (RCRA), which ensures responsible management of hazardous and nonhazardous waste (EPA, 2014). Some, but not all, pesticides are regulated as hazardous waste when disposed. FIFRA was enacted in 1947, and significantly amended in 1972 and 1996, to provide federal control of pesticide distribution, sale, and use. FIFRA requires that each manufacturer register each pesticide and its label with the U.S. Environmental Protection Agency (EPA) before it can be manufactured for commercial use.

The Occupational Safety and Health Administration (OSHA) was created to ensure worker safety and health in the United States by working with employers and employees to create better working environments. Section 1919, Subpart H-Hazardous Materials of the Occupational Safety and Health Act of 1970 provides information and guidelines for working with hazardous materials. All employees at the property will be trained in proper methods of working with hazardous materials.

The U.S Department of Transportation has the authority to regulate all safety aspects of hazardous materials transportation in accordance with the Hazardous Materials Transportation Act of 1975. The Motor Carrier Act of 1980 requires carriers of hazardous materials to demonstrate their ability to pay for damages sustained from an accident involving such materials by means of adequate insurance. The California Highway Patrol (CHP) regulates transportation of hazardous materials in California. Fertilizers and petroleum fuel that are used on the property would be delivered onsite by licensed contracted delivery companies.

### 4.8.2-2 STATE

The CDPR protects human health and the environment by regulating pesticide sales and use and fostering reduced-risk pest management. Oversight by DPR includes product evaluation and registration, environmental monitoring, residue testing of fresh produce, and local use enforcement through Napa County Agricultural Commissioner's Office. DPR's regulations of pesticide use on the property would be regulated through the policies of the Napa County Agricultural Commissioner. Pesticides are authorized to be applied by certified pest applicators under DPR and are permitted through the Napa County Agricultural Commissioner.

The RCRA and the California Health and Safety Code authorize the California Department of Toxic Substance Control (DTSC) to regulate the handling, storage, transportation, and disposal

of hazardous substances. DTSC regulations of hazardous materials use on the property would be followed through the local Certified Unified Program Agencies (CUPAs) as described below.

Senate Bill 1082 required the establishment of a unified hazardous waste and hazardous materials management program. The result was the California Environmental Protection Agency (CalEPA) Unified Program. The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. The state agencies responsible for these programs set the standards for their program, while local governments implement the standards. CalEPA oversees the implementation of the program as a whole. The Unified Program is implemented at the local level by 85 government agencies certified by the Secretary of CalEPA. These Certified Unified Public Agencies (CUPAs) have typically been established as a function of a local environmental health or fire department. The Proposed Project will comply with the Unified Program through the Napa County Environmental Planning, Building, and Environmental Services (PBES) Department.

All vehicles and drivers involved in the transportation of hazardous materials must comply with the requirements contained in federal and state regulations, and must apply for and obtain a hazardous materials transportation license from the CHP (CHP, 2008). Fertilizers and petroleum fuel that are delivered onsite by the contracted delivery companies are responsible for complying with state and federal regulations.

#### **Public Resources Code, Division 4, Chapter 6**

**4427. Operation of fire causing equipment.** During any time of the year when burning permits are required in an area pursuant to this article, no person shall use or operate any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices from which a spark, fire, or flame may originate, which is located on or near any forest-covered land, brush-covered land, or grass-covered land, without doing both of the following:

- a) First clearing away all flammable material, including snags, from the area around such operation for a distance of 10 feet.
- b) Maintain one serviceable round point shovel with an over all length of not less than forty-six (46) inches and one backpack pump water-type fire extinguisher fully equipped and ready for use at the immediate area during the operation.

This section does not apply to portable powersaws and other portable tools powered by a gasoline-fueled internal combustion engine.

**4428. Use of hydrocarbon powered engines near forest, brush or grass covered lands without maintaining firefighting tools.** No person, except any member of an emergency crew

or except the driver or owner of any service vehicle owned or operated by or for, or operated under contract with, a publicly or privately owned utility, which is used in the construction, operation, removal, or repair of the property or facilities of such utility when engaged in emergency operations, shall use or operate any vehicle, machine, tool or equipment powered by an internal combustion engine operated on hydrocarbon fuels, in any industrial operation located on or near any forest, brush, or grass-covered land between April 1 and December 1 of any year, or at any other time when ground litter and vegetation will sustain combustion permitting the spread of fire, without providing and maintaining, for firefighting purposes only, suitable and serviceable tools in the amounts, manner and location prescribed in this section.

- a) On any such operation a sealed box of tools shall be located, within the operating area, at a point accessible in the event of fire. This fire toolbox shall contain: one backpack pump-type fire extinguisher filled with water, two axes, two McLeod fire tools, and a sufficient number of shovels so that each employee at the operation can be equipped to fight fire.
- b) One or more serviceable chainsaws of three and one-half or more horsepower with a cutting bar 20 inches in length or longer shall be immediately available within the operating area, or, in the alternative, a full set of timber-felling tools shall be located in the fire toolbox, including one crosscut falling saw six feet in length, one double-bit ax with a 36-inch handle, one sledge hammer or maul with a head weight of six, or more, pounds and handle length of 32 inches, or more, and not less than two falling wedges.
- c) Each rail speeder and passenger vehicle, used on such operation shall be equipped with one shovel and one ax, and any other vehicle used on the operation shall be equipped with one shovel. Each tractor used in such operation shall be equipped with one shovel.
- d) As used in this section:
  - 1) "Vehicle" means a device by which any person or property may be propelled, moved, or drawn over any land surface, excepting a device moved by human power or used exclusively upon stationary rails or tracks.
  - 2) "Passenger vehicle" means a vehicle which is self-propelled and which is designed for carrying not more than 10 persons including the driver, and which is used or maintained for the transportation of persons, but does not include any motor truck or truck tractor.

### **California Forest Practice Rules, Article 8**

**918, 938, 958 Fire Protection [Coast, Northern, Southern].** When burning permits are required pursuant to PRC § 4423, timber operators shall:

- a) Observe the fire prevention and control rules within this article.
- b) Provide and maintain fire suppression related tools and devices as required by PRC §§ 4427, 4428, 4429, 4431, and 4442.

- c) Submit each year, either before April 1st or before the start of timber operations, a fire suppression resources inventory to the Department as required by the rules.

**918.1, 938.1, 958.1 Fire Suppression Resource Inventory [All Districts].** The Fire Suppression Resource Inventory shall include, as a minimum, the following information:

- a) Name, address, and 24-hour telephone number of an individual and an alternate who has authority to respond to Department requests for resources to suppress fires.
- b) Number of individuals available for fire fighting duty and their skills.
- c) Equipment available for fire fighting. The Fire Suppression Resource Inventory shall be submitted to the ranger unit headquarters office of the Department having jurisdiction for the timber operation.

**918.3, 938.3, 958.3 Roads to be Kept Passable [All Districts].** Timber operators shall keep all logging truck roads in a passable condition during the dry season for fire truck travel until snag and slash disposal has been completed.

**918.4, 938.4, 958.4 Smoking and Matches [All Districts].** Subject to any law or ordinance prohibiting or otherwise regulating smoking, smoking by persons engaged in timber operations shall be limited to occasions where they are not moving about and are confined to cleared landings and areas of bare soil at least three feet (.914 m) in diameter. Burning material shall be extinguished in such areas of bare soil before discarding. The timber operator shall specify procedures to guide actions of his employees or other persons in his employment consistent with this subsection.

**918.5, 938.5, 958.5 Lunch and Warming Fires [All Districts].** Subject to any law or ordinance regulating or prohibiting fires, warming fires or other fires used for the comfort or convenience of employees or other persons engaged in timber operations shall be limited to the following condition:

1. There shall be a clearance of 10 feet (3.05 m) or more from the perimeter of such fires and flammable vegetation or other substances conducive to the spread of fire.
2. Warming fire shall be built in a depression in the soil to hold the ash created by such fires.
3. The timber operator shall establish procedures to guide actions of his employees or other persons in their employment regarding the setting, maintenance, or use of such fires that are consistent with (a) and (b) of this subsection.

**918.6, 938.6, 958.6 Posting Procedures [All Districts].** Timber operators shall post notices which set forth lists of procedures that they have established consistent with Sections 918.4 [938.4, 958.4] and 918.5 [938.5, 958.5]. Such notices shall be posted in sufficient quantity and

location throughout their logging areas so that all employees, or other persons employed by them to work, shall be informed of such procedures. **Coast and Northern:** Timber operators shall provide for diligent supervision of such procedures throughout their operations.

**918.7, 938.7, 958.7 Blasting and Welding [All Districts].** Timber operators shall provide for a diligent fire watch service at the scene of any blasting or welding operations conducted on their logging areas to prevent and extinguish fires resulting from such operations.

**918.8, 958.8 Inspection for Fire [Coast, Southern].** The timber operator or his/her agent shall conduct a diligent aerial or ground inspection within the first two hours after cessation of felling, yarding, or loading operations each day during the dry period when fire is likely to spread. The person conducting the inspection shall have adequate communication available for prompt reporting of any fire that may be detected.

**938.8 Inspection for Fire [Northern]. (a)** The timber operator or his/her agent shall conduct a diligent aerial or ground inspection within the first two hours after cessation of felling, yarding, or loading operations each day during the dry period when fire is likely to spread. The person conducting the inspection shall have adequate communication available for prompt reporting of any fire that may be detected.

**918.10, 938.10, 958.10 Cable Blocks [All Districts].** During the period when burning permits are required, all tail and side blocks on a cable setting shall be located in the center of an area that is either cleared to mineral soil or covered with a fireproof blanket that is at least 15 ft. in diameter. A shovel and an operational full five-gallon back pump or a fire extinguisher bearing a label showing at least a 4A rating must be located within 25 feet of each such block before yarding.

#### 4.8.2-3 LOCAL

Napa County PBES is the CUPA for Napa County, including all of its cities (Napa County, 2013). As the CUPA, the Napa County PBES administers the following Unified Programs:

- Hazardous Materials Release Response Plans and Inventory (Business Plan) Program;
- California Accidental Release Prevention Program (CalARP);
- Underground Storage Tank Program;
- Hazardous Waste Generator and Hazardous Waste Onsite Treatment Programs; and
- AST Program (Spill Prevention, Control and Countermeasure (SPCC) Plans).

Through the enactment of Assembly Bill 2185 in 1985, the Business Plan Program was developed, commonly known as the Hazardous Materials Business Plan (HMBP) or Community Right to Know Program. The purpose of the program is to make available to the public information on what hazardous materials are being handled at businesses in the community,

provide information to emergency responders on what hazardous materials are handled at a facility, and provide training to employees in how to handle a release or threatened release of hazardous materials at a facility. There are an estimated 1,250 facilities in Napa County subject to the HMBP program. The Napa County PBES began countywide implementation of this program in 1989. The Napa County PBES requires businesses that store hazardous materials above the minimum reportable quantities (a total weight of 500 pounds for solids, a total volume of 55 gallons for liquids, and 200 cubic feet for compressed gases) to have a HMBP. The HMBP consists of owner/operator information, chemical inventory, and an emergency response plan and maps. The Proposed Project would be subject to the HMBP if oil, gasoline, and diesel fuel are stored onsite in excess of 55 gallons.

The CalARP Program regulates facilities that handle extremely hazardous materials in quantities that are greater than state or federal planning standards. The purpose of the program is to reduce the incidences of releases of extremely hazardous materials and decrease the impact of a release. A Restricted Materials Permit is required for hazardous materials listed on the Regulated Substances List, and if the quantity of hazardous materials stored or handled onsite are greater than the regulated limit. If a permit were required, a Risk Management Plan would need to be submitted.

The materials used on the property are not listed on the Federal Regulated Substances List; therefore, the Proposed Project is not subject to the CalARP Program.

The Napa County Agricultural Commissioner and staff are responsible for the implementation of federal, state and local hazardous materials regulatory programs within Napa County. The Agricultural Commissioner is authorized to enforce the laws administered by the DPR. The Agricultural Commissioner requires a private applicator certificate for restricted materials (pesticides) use.

Safety issues associated with transportation of hazardous substances are discussed in the Safety Element of the Napa County General Plan. The following safety and conservation policies are listed in the General Plan (Napa County, 2008):

Policy SAF-5: The County shall cooperate with other local jurisdictions to develop intra-county evacuation routes to be used in the event of a disaster within Napa County.

Policy SAF-30: Potential hazards resulting from the release of liquids (wine, water, petroleum products, etc.) from the possible rupture or collapse of aboveground tanks should be considered as part of the review and permitting of these projects.

Policy SAF-31: All development projects proposed on sites that are suspected or known to be contaminated by hazardous materials and/or are identified in a hazardous

material/waste search shall be reviewed, tested, and remediated for potential hazards.

Policy CON-2 (e): Encourage inter-agency and inter-disciplinary cooperation, recognizing the agricultural commissioner's role as a liaison and the need to monitor and evaluate pesticide and herbicide programs over time and to potentially develop air quality, wildlife habitat, or other programs if needed to prevent environmental degradation.

Policy CON-2 (f): Minimize pesticide and herbicide use and encourage research and use on integrated pest control methods such as cultural practices, biological control, host resistance and other factors.

### 4.8.3 IMPACTS ANALYSIS

The CEQA *Guidelines* list a series of threshold criteria to analyze hazardous materials impacts resulting from a project. This section considers only the criteria that involve use of hazardous materials, which are directly applicable to the project.

#### 4.8.3-1 SIGNIFICANCE CRITERIA

For purposes of this analysis, an impact is considered significant if the Proposed Project would:

- Create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials; or
- Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving release of hazardous materials into the environment.
- 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.

#### 4.8.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.8-1:** There is potential for incidental leakage, rupture, or spillage when fueling timber harvest and agricultural equipment during construction and operation of the Proposed Project, which could result in hazards to the public or environment. If substantial quantities of diesel fuel or unleaded gasoline reach soil or on-site drainage areas, surface and/or groundwater quality may be degraded. This is a potentially significant impact.

During construction that would occur during the implementation of the timber harvest, ECP installation, and vineyard installation, the use of hazardous materials could include substances such as gasoline, diesel fuel, motor oil, and hydraulic fluid through maintenance of vehicles and

construction equipment. Fueling and oiling of construction equipment would be performed as needed. The most likely possible hazardous materials releases would involve the dripping of fuels, oil, and grease from equipment. A complete list of proposed equipment as listed for the timber harvest, ECP installation, and vineyard installation can be found in **Section 3.4.3-3**. The small quantities of fuel, oil, and grease that may drip from properly maintained vehicles would occur in relatively low toxicity and concentration. Typical construction management practices limit and often eliminate the effect of such accidental releases. No long-term effects to the soil or groundwater would occur. An accident involving a service or refueling truck would present the worst-case scenario for the release of a hazardous substance. Depending on the relative hazard of the material, if a spill of significant quantity were to occur, the accidental release could pose a hazard to construction employees, as well as to the environment. Such a release could result in a potentially significant impact.

Potentially significant impacts during temporary construction activity can be mitigated to less than significant levels through the implementation of best management practices (BMPs) as outlined in the Timber Harvest Plan (**Appendix H**) intended to eliminate construction related pollutants from leaving the construction site. Specific project objectives associated with the implementation of the ECP under the Proposed Project are identified in **Section 3.0**. These measures, as well as the BMPs described in **Mitigation Measure 4.8-1**, would ensure that potential impacts are reduced to a less than significant level.

**Mitigation Measure 4.8-1:** In addition to the erosion control measures described in **Section 3.0**, personnel shall follow written BMPs for filling and servicing construction equipment and vehicles. The BMPs, which are designed to reduce the potential for incidents involving hazardous materials, shall include:

- Refueling shall be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans shall be placed under equipment to catch potential spills during servicing.
- All disconnected hoses shall be placed in containers to collect residual fuel from the hose.
- Vehicle engines shall be shut down during refueling.
- No smoking, open flames, or welding shall be allowed in refueling or service areas.
- Refueling and all construction work shall be performed outside of any onsite stream buffer zones to prevent contamination of water in the event of a leak or spill.
- Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
- A spill containment kit that is recommended by the Napa County PBES or local fire department will be onsite and available to staff if a spill occurs.

In the event that contaminated soil and/or groundwater or other hazardous materials are generated or encountered during construction, all work shall be halted in the affected area and the type and extent of the contamination shall be determined. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with federal, state, and local regulations. If containment and size of the spill is beyond the scope of the contractor, proper authorities shall be notified.

The potential release of hazardous materials during construction of the Proposed Project is reduced to less than significant with the implementation of the mitigation measure above.

**Impact 4.8-2:** In the event IPM techniques are found to be inadequate for vineyard maintenance, the Proposed Project would include the use of pesticides for vineyard maintenance. Non-compliance with hazardous materials regulations including improper pesticide use, storage, or disposal can be hazardous to human health and the environment. Non-compliance would be considered a potentially significant impact.

The Proposed Project may include the use of chemicals for vineyard maintenance in the event all other non-chemical methods were previously exhausted and found insufficient. If such a scenario were to occur, the owner would hire only a licensed pesticide applicator or would apply for a private applicator certificate and a restricted materials permit from the Napa County Agricultural Commissioner. The owner would also comply with the Napa County Agricultural Commissioner's regulations, such as renewing the private applicator certificate every three years and restricted materials permits annually, and reporting pesticides use to the Napa County Agricultural Commissioner by the 10<sup>th</sup> of every month following application. In addition, all vineyard employees would be trained annually in the proper use of pesticides. Implementation of **Mitigation Measure 4.8-2** would ensure that potential impacts are reduced to a less-than-significant level.

**Mitigation Measure 4.8-2:** In the event pesticides are used onsite, only a certified pest applicator shall apply the pesticides and personnel shall follow Standard Operating Procedures (SOPs) when applying chemicals to the vineyard. SOPs for pesticide use, shall include the following:

- Purchase only enough pesticide that would be used per season.
- All chemicals will be stored in their original containers. Labels on the containers will not be removed.
- Chemicals will be kept in a well-ventilated locked area.
- Chemical storage areas will be 100 feet from any drainage area, stream, or groundwater well.
- If a chemical must be disposed of, contact the Napa County Agricultural Commissioner to locate a hazardous waste facility for proper disposal.

- Chemicals will never be poured down the sink, toilet, or stream.
- Proper personal protection equipment will be utilized when working with chemicals.

Implementation of the mitigation measure above reduces potential impacts from improper chemical use and storage to a less than significant level.

**Impact 4.8-3:** The potential release of hazardous materials into the environment may affect surface water or groundwater during operation and maintenance of the vineyard. This is a potentially significant impact.

During operation of the proposed vineyard, the use of hazardous materials would likely include substances such as gasoline, diesel fuel, motor oil, and a limited amount of pesticides and fertilizers (see **Impact 4.8-2**). Hazardous materials releases from operation and maintenance of the vineyard may occur from dripping of fuels, oil, grease, pesticides, and fertilizers from mechanical equipment. The small quantities of hazardous materials that may drip from properly maintained equipment would occur in relatively low toxicity and concentration. It is not likely that significant impacts to soil or groundwater would occur.

Napa County PBES promotes BMPs to reduce hazardous material contamination of surface and groundwater. The Proposed Project would be operated in a manner that is consistent with Napa County PBES requirements. As discussed in **Section 4.4 Biological Resources**, stream setbacks are proposed consistent with Napa County stream setback requirements. No vineyard operation or maintenance activities would occur in the buffer zones. During storm events, the buffer zone would act as a filter to reduce the potential for petroleum products, pesticides, or fertilizers to reach drainages onsite or off-site waters of the U.S.

Implementation of **Mitigation Measure 4.8-3**, in addition to BMPs and project design setbacks, would ensure that potential impacts are reduced to a less-than-significant level.

**Mitigation Measure 4.8-3:** In addition to **Mitigation Measures 4.8-1** and **4.8-2**, fuel loading and chemical mixing areas during operation should be established away from any areas that could potentially drain off-site or potentially affect surface and groundwater quality. When farm equipment is cleaned at the existing facility, only rinse water that is free of gasoline residues, waste oils, pesticides, and other chemicals should be allowed to diffuse back into vineyard areas. In the event pesticides, herbicides or fungicides are used, all rinse water from farm equipment and rinse water from application equipment used to apply chemicals should be collected and stored in containers that are of sufficient size to contain the water until a hazardous materials transporter can remove the rinse water. No rinse water shall be drained to a septic system or discharged to ground or surface water to prevent the release of hazardous materials into the environment during operation and maintenance of the Proposed Project.

**Impact 4.8-4:** Construction of the Proposed Project has the potential to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. With compliance with PRC § 4427 and 4428 and the Forest Practice Rules Article 8, this impact is less than significant.

Equipment used during timber harvest, ECP implementation, and/or vineyard development activities may create sparks, which could ignite dry grass on the project site. During construction, the use of power tools and acetylene torches may also increase the risk of fire hazard. This risk, similar to that found at other construction sites, is considered potentially significant. However, with the BMPs found in PRC § 4427 and 4428, as well as Article 8 of the Forest Practice Rules, all flammable material must be cleared within 10 feet of potentially spark-producing construction operations, proper fire extinguishing equipment must be present onsite, and other fire protection measures are required for construction of the Proposed Project. With adherence to these laws and regulations pertaining to fire protection, construction of the Proposed Project will have a less-than-significant impact to wildfire risk.

**Mitigation Measure 4.8-4:** No mitigation is required.

**Impact 4.8-5:** Operation of the Proposed Project would reduce exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. This is a beneficial impact.

Implementation of the Proposed Project would include clearing of timberland and brush, which would reduce the understory vegetation and brush biomass available to fuel wildland fire. Additionally, implementation of the Proposed Project would include development of a Habitat Retention Area (refer to **Section 4.4**), within which enhancement and management techniques would be employed to reduce understory and competing vegetation to improve the recruitment of oak woodland. These enhancement and management techniques would also serve to reduce fire biomass fuel. Further, the installation of the proposed vineyard would reduce fire susceptibility by breaking up some of the overstory biomass fuels in the existing forest canopy, providing a less fire-sensitive irrigated agricultural crop than the existing use. Reduction in wildland fire biomass fuel reduces the potential exposure of people and structures to significant risk of loss, injury, or death involving wildland fires; accordingly, operation of the Proposed Project is a beneficial impact.

**Mitigation Measure 4.8-5:** No mitigation is required.

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## 4.9 HYDROLOGY AND WATER QUALITY

### 4.9.1 SETTING

#### 4.9.1-1 CLIMATE

The Napa Valley region has a Mediterranean climate characterized by warm, dry summers and cold, wet winters. The vast majority of the precipitation occurs in the form of rain, though snow is not uncommon at higher elevations. Approximately 90 percent of annual precipitation falls as rain during the winter and early spring months. Annual precipitation varies significantly from year to year, and deviations can be as high as 200 percent from the 85-year average. In general, precipitation varies significantly throughout Napa County ranging from 22.5 inches per year to 75 inches per year, decreasing from north to south and with lower elevations (NCCDPD, 2005). The greatest rainfall intensity occurs in the mountain regions along the northern and western edges of Napa County. For 100-year, 24-hour, and six-hour storm events, the maximum amount of precipitation ranges from five to 14 inches (NCCDPD, 2005). In the Bell Canyon watershed, a subunit of the Napa River watershed located along the eastern edge of the County, between 1940 and 2013, the average annual precipitation was approximately 40.7 inches, measured at the Angwin Pacific Union College weather station located 3 miles southeast of the project site (WRCC, 2014).

#### 4.9.1-2 SURFACE WATERS

The topography of Napa County consists of a series of parallel northwest-trending mountain ridges and intervening valleys of varying sizes. These mountain ridges subdivide the County into three principal watersheds: Napa River watershed, Putah Creek/Lake Berryessa watershed, and Suisun Creek watershed. The Napa River watershed covers an area of approximately 426 square miles and extends in a northwesterly direction roughly 45 miles from San Pablo Bay to the hills north of Calistoga. The Napa River watershed includes primarily a central valley floor contained on three sides by mountains to the north, west, and east. The watershed further demarcated into the Upper Napa River Watershed and the Napa River watershed. The Upper Napa River watershed extends from the northern headwaters of the Napa River on Mount St. Helens to Howell Mountain to the east and Sulphur Creek to the west (NCRCD, 2005). The project site lies within the Bell Canyon watershed, a subbasin that drains to Bell Canyon Reservoir. Canon Creek is the main tributary to Bell Creek, which enters the Bell Canyon Reservoir; Bell Creek flows approximately 1.7 miles from the base of the dam forming the reservoir to its confluence with the Napa River (NCRCD, 2005).

The Napa River is the largest river in Napa County and drains numerous tributaries of the watershed along a 55-mile stretch from Mount St. Helena to the San Pablo Bay where it empties to the south. The lowest reaches of the Napa River and its tributaries north into the City of Napa are influenced by tides due to the proximity to San Pablo Bay.

In general, tributaries to major drainages typically form canyons in their steeper upstream reaches, where they flow over the more resistant bedrock of the mountainous areas. In terms of geomorphic form, Napa County streams typically descend from steep headwater reaches onto alluvial fan surfaces and then onto valley floors. Some of the upstream reaches of tributaries are intermittent, while others are perennial. The downstream reaches, especially of the larger streams, are generally perennial. Stream flows generally peak in January or February and are lowest from August through November. Average and maximum stream flows are scaled with drainage areas.

Within a short time period (1946 to 1959), three major dams were built that resulted in regulation of approximately 17 percent of the Napa River watershed area: Conn, Bell, and Rector dams (Stillwater Sciences et al., 2002). Since then, the number of reservoirs and dams in the watershed has increased, leaving very few natural, unregulated streams in the County. Significant dams in the Napa River watershed include Conn Creek, Rector Creek, Bell Canyon, and Milliken Creek dams. All of these dams are located on the tributary streams along the eastern side of the watershed, and effectively block every major east side tributary between St. Helena and Napa, except Soda Creek (NCRCD, 2005).

### **Bell Canyon Watershed**

The property is situated on the northwest side of Howell Mountain, a peak that separates Napa Valley from Pope Valley to the east. The entire property consists of two parcels that total 38.7 acres, with the gross area of disturbance totaling 13.6± acres. Onsite elevations range from 1,600 to 2,000 feet above mean sea level, and slopes within proposed vineyard blocks range from approximately 8 to 27 percent. The property is located in the Bell Canyon watershed, a subwatershed of the Napa River Watershed. Bell Creek drains a watershed of approximately 10.1 square miles, including the subdrainage area of Canon Creek. Bell Creek is approximately 10.6 miles long, although only approximately 1.75 miles are located below the dam and are therefore accessible to salmonids (NCRCD, 2005). The project site is situated above the dam that forms Bell Canyon Reservoir, in the headwaters of the watershed. The property contains two U.S. Geological Survey (USGS) blue line streams, one Class III drainage, and a reservoir, but no jurisdictional wetlands.

### **Drainage**

The project site drains to two unnamed tributaries to Bell Creek; consistent with the Hydrologic Analysis conducted for the Proposed Project by O'Connor Environmental, Inc. (OEI) and included here as **Appendix E**, the westernmost tributary will henceforth be referred to as Tributary 1 and the southern tributary will be referred to as Tributary 2. Tributary 1 drains an area of 230± acres, while Tributary 2 has a smaller drainage area of 93± acres (**Appendix E**).

To the east of the property, there are a number of storage ponds and diversion ditches operated by the Howell Mountain Mutual Water Company, which supply drinking water to approximately 400 residences in the town of Angwin. Collectively, these reservoirs are known as the Friesen Lakes. The reservoir onsite is part of this system, as well as one diversion ditch mapped on the property, beginning just below the reservoir on the eastern edge of parcel APN 018-060-013; this ditch does not convey water in typical conditions and is outside of the project site. The existing reservoir and ditch will be unaffected by the Proposed Project, as both are located upstream of the proposed vineyard blocks and outside of the area of impact. There are two watercourse crossings along Friesen Drive across Class III drainages; one is an existing culvert and the other is a rock crossing. Neither water crossing would be impacted by the Proposed Project. The rock crossing currently provides access to the Napa Land Trust property and would provide access to Block A, although it is not anticipated to be used in the winter as there are no erosion control features in Block A that require winter maintenance. Approval of the Proposed Project and implementation of the Erosion Control Plan (ECP) (**Appendix B**) will result in the development of numerous erosion control measures designed to prevent soil erosion and sediment impairment downstream in the Napa River watershed.

### Runoff Potential

The primary landscape features affecting the volume and the rate of runoff are soil type, use, vegetative cover, and slopes. The most predominate soil type located at the property is classified by the U.S. Department of Agriculture (USDA) Soil Conservation Service for the Napa County Soil Survey as the Rock outcrop-Kidd complex series (SCS 177), as well as small areas of Forward gravelly loam (SCS 138) and Henneke gravelly loam (SCS 154) (NRCS, 2014). Hydrologic soils are classified based on the minimum infiltration rate obtained for the bare soil after prolonged wetting (USDA, 2007). The Rock outcrop-Kidd complex series is in hydrologic soil group D, which is described as having high runoff potential when thoroughly wet, and water movement through the soil is restricted or very restricted (NRCS, 2014 and USDA, 2007). Henneke gravelly loam is also hydrologic soil group D, while Forward gravelly loam is soil group B. Soils in hydrologic soil group B are described as having “moderately low runoff potential when thoroughly wet,” and water transmission through the soil is unimpeded (NRCS, 2014 and USDA, 2007). Please see **Section 4.6 Geology and Soils**, for a detailed description of the soils on the property.

Different land uses require different types and amounts of coverage by vegetation, which influences runoff. Currently, the property consists of three different types of hardwood woodland habitats and two types of shrubland/chaparral habitat types, interspersed with some more open, grassland-type areas (**Appendix D**). Habitats with dense vegetation coverage disperse runoff by intercepting precipitation and providing obstacles to the concentration of runoff.

A detailed ECP (**Appendix B**) has been created for the property by Napa Valley Vineyard Engineering, Inc. (NVVE) to comply with Napa County regulatory requirements. As of July 10, 2015, the Napa County Resource Conservation District (RCD) determined that the ECP meets all technical adequacy requirements, and it is currently in a final review period. The complete ECP for the Proposed Project (#P13-00373-ECPA) is included as **Appendix B** (NVVE, 2013). The ECP provides for modifications of runoff patterns on the property to assist with mitigating impacts from erosion. To mitigate potential erosion and runoff, the ECP suggests construction of a rock lined ditch along the southern edge of Vineyard Block D, attenuation basins located in two locations on the project site, and water bars and water spreaders to trap runoff from the proposed vineyard blocks. Additional erosion control measures are described in more detail in **Section 3.0** and **Figure 3-4**.

### **Flooding**

The valley portion of Napa County is a flood-prone region as a result of the Mediterranean climate with wet winters and dry summers, and a landscape of steep hills and a wide valley floor. Downstream flooding may cause hazards if flows are impeded by crossings, culverts, or roads, and if structures in urban areas are inundated with flood flows from upstream. The Federal Emergency Management Agency (FEMA) has mapped flood zones in Napa County for 100- and 500-year flood events. The Proposed Project is situated on a mountain overlooking the valley and is not located within any FEMA designated flood zones (FEMA map 06055C0275E) (FEMA, 2008).

### **Surface Water Quality**

#### *Sediment Loading*

Runoff from the property is eventually transported to the Napa River, which is currently listed as an impaired water body for nutrients, pathogens, and sediment under Section 303 (d) of the Clean Water Act (CWA) (SWRCB, 2011). The construction of several large dams between 1924 and 1959 on major tributaries in the eastern Napa River watershed and northern headwater areas of Napa River has affected sediment transport processes into the mainstem Napa River by reducing the delivery of the coarse load sediments to the river. Thirty percent of the Napa River watershed drains into dams, such that ponds and reservoirs behind these dams capture a significant fraction of all sediment input to channels (Napolitano, et al. 2007). The entire property is above the Bell Canyon dam, which acts to trap sediment as described above.

The mainstem Napa River is listed as sediment-impaired according to the Clean Water Act, Section 303 (d) because it does not meet the beneficial uses for which it was designated, including steelhead habitat. Historically, the Napa River system has been described as a gravel-bed river; more recently, the Napa River has become increasingly dominated by finer sediments. Dams that trap sediment in the area have not significantly reduced the degree to which finer sediments are being delivered to the watershed. As a result of this fine

sedimentation, habitats for steelhead, Chinook salmon, and Californian freshwater shrimp, which rely on more gravel substrate in the river, have been negatively affected from reduced gravel permeability (Stillwater Sciences et. al, 2002; Napolitano, 2007). Section 303 (d) requires the Regional Water Quality Control Board (RWQCB) to create a Total Maximum Daily Load (TMDL) for sediment in the Napa River watershed. Under California Water Code §13242, the RWQCB is also authorized to develop an implementation program to meet the TMDL. The RWQCB Staff Report for the development of the TMDL specifically cites vineyards as a source of human caused sediment discharge, and states that a total 50 percent reduction in sediment loading to the watershed is necessary in order to meet the TMDL (Napolitano et al., 2007). The TMDL load reductions are based on natural conditions prior to human activities. The Napa County ECP regulations are designed to address this ongoing issue with water quality.

### *Temperature*

Parameters that influence stream temperature include ambient air temperature, humidity, riparian vegetation, topography, surrounding land uses, and flow conditions. Water temperature influences a number of chemical processes within water bodies. Streams in Mediterranean climates, such as in Napa County, experience naturally low summer flows which results in watersheds that are susceptible to the impacts of high water temperatures. Additionally, land development often alters channel geomorphology, which creates conditions that cause water temperatures to rise and habitat to degrade. These activities include the removal of riparian shading, reduced cold-water inputs (i.e., altered groundwater supplies), and increased surface runoff.

The Napa River watershed currently provides habitat for cold-water anadromous fish species, including steelhead trout and Chinook salmon. Water temperature is a key constituent for assessing the quality of water within the Napa River watershed. Steelhead and Chinook salmon are highly sensitive to temperature and require cold water throughout the majority of their life stages. Mainstem and tributary temperatures are elevated to a level that can cause stress to salmonids, but not high enough to be acutely lethal. Elevated temperature conditions contribute to reduced habitat conditions for salmonids, particularly when combined with low summer base flows and aggraded channels (raised from sediment). However, the dam at Bell Canyon Reservoir is a barrier to anadromy, preventing anadromous fish from traveling farther upstream in the watershed.

### *Nutrients*

Nutrients, specifically nitrogen and phosphorus, are essential for life and play a primary role in ecosystem functions. In addition to naturally present concentrations in the atmosphere and organic matter, nutrients are introduced to waterbodies through human or animal waste disposal or agricultural application of fertilizers. Nutrients are commonly the limiting factor for growth in aquatic systems. However, excessive levels of nutrients affect aquatic systems in a wide range

of ways, including producing toxic or eutrophic conditions, both of which impair aquatic life. The Napa River is identified as impaired by nutrient loading according to Section 303 (d) of the CWA. Wang et al. (2004) identified numerous nutrient load contributors, including point sources such as wastewater treatment plants, and non-point sources such as septic system seepage, agricultural and urban runoff, and atmospheric deposition. No specific numeric nutrient targets for the Napa River watershed have been established by the SFRWQCB.

### *Pathogens*

High concentrations of fecal bacteria have been recorded in the Napa River since the 1960s. Consequentially, the SFRWQCB identified the Napa River as impaired by pathogens according to Section 303 (d) of the CWA. Sources that contribute to the significant pathogen loads in the watershed include faulty onsite sewage treatment systems, failing sanitary sewer lines, municipal runoff, and livestock grazing. Past monitoring efforts indicate that urban runoff and failing septic systems are the primary pathogen sources during wet weather months, while failing sanitary sewer lines and septic tanks may constitute the primary pathogen sources during the dry season. To address this issue, a TMDL has been developed for the Napa River and its tributaries, which implements density-based targets and zero discharge of untreated or inadequately treated human waste.

### 4.9.1-3 GROUNDWATER

#### **Regional Groundwater Resources**

In regional basins, municipal and irrigation wells have average depths ranging from about 200 to 500 feet. Well yields in these basins range from less than 50 gallons per minute (gpm) to approximately 3,000 gpm. The Napa-Sonoma Valley groundwater basin is one of the more heavily utilized basins in the region for groundwater supply. Groundwater data from the Napa Valley subbasin shows well yields at a maximum of 3,000 gpm and an average of 223 gpm (DWR, 2003). The North Napa Valley Basin (NNVB) is by far the most productive aquifer in the basin, which can locally provide water to wells at rates in excess of 3,000 gpm (NCCDPD, 2005). As discussed below, these groundwater basins are found in the alluvial valley floor of Napa Valley. The project site is located in the eastern hills above the valley, and is not located in either of these groundwater basins.

#### **Groundwater on the Property**

The property is underlain by rocks of the Sonoma Volcanics rock formation, as discussed further in **Section 4.6 (Appendix G)**. The Sonoma Volcanic Formation has moderate to high primary porosity, and as such plentiful groundwater resources are often found in these geologic units and it represents the principle water bearing geologic formation in the region. However, Sonoma Volcanics are water-bearing rocks, and are not considered a groundwater basin. Sonoma Volcanics generally contain groundwater in fractures and joints, in zones of deep weathering, along remnant flow channels, and between individual flow units that developed

amid successive volcanic events. Due to the nature of groundwater occurring in these rocks, the amount of groundwater available to wells in the volcanic materials is highly dependent on well depth, as well as the size, frequency, openness, lateral continuity and degree of interconnection of the fractures and joints encountered in the rocks at a specific site. The existing well on the property, located approximately 50 feet south of the existing reservoir, is capable of sustaining a yield of approximately 50 gallons per minute (gpm). Groundwater pumped from this well will be the source of irrigation water for the proposed vineyard. The well is supported by surface water infiltration and groundwater aquifers.

### **Groundwater Quality**

In general, groundwater quality throughout most of the San Francisco hydrologic region is suitable for most urban and agricultural uses with only local impairments. The primary constituents of concern are high total dissolved solids (TDS), nitrate, boron, and organic compounds. Areas of high TDS (and chloride) concentrations have typically been found in groundwater basins situated close to the San Francisco Bay including the Napa Valley. Specifically, groundwater with high TDS, iron, and boron levels in other parts of Napa Valley make the water unfit for agricultural uses (DWR, 2003). As mentioned above, this generally applies to the alluvial groundwater basins on the valley floor. Well water quality data for wells constructed in Sonoma Volcanics generally show a bicarbonate character with low levels of iron and manganese, and the water quality is generally suitable for agricultural use (Napa County, 2014).

#### **4.9.1-4 WATER SUPPLY**

The Proposed Project would include a timber harvest of 10.0± acres within the 13.6± acre project site, with a subsequent conversion of the project site into 10.5± net acres of commercial vineyard producing premium quality grapes. Water use on the new vineyard is expected to be approximately 6.6 acre feet per annum (afa) during the establishment period and 3.3 afa following establishment of the vineyard (**Appendix B**). The water system for the Proposed Project consists of one existing well, and the proposed installation of a drip irrigation system that will be used predominantly for the establishment of the vineyard.

### **Surface Water Supply**

Two USGS blue line streams and one Class III watercourse exists within the project site, as shown in **Figure 4.4-1**. The TCP and vineyard development are set back from these water features by buffer zones ranging from 55 to 125 feet, consistent with Napa County ordinance and Forest Practice Rules, and no activities would take place within these setbacks. The entirety of the irrigation water for the vineyard would come from groundwater, as discussed below.

## Groundwater Supply

A water balance analysis by NVVE (2014) for the Proposed Project determined that approximately 9 – 13 percent of precipitation that falls on Sonoma Volcanics can percolate into the underlying formation (**Appendix N**). The property receives approximately 125 acre-feet (af) of rainfall (37.43 acre property multiplied by the average precipitation rate of 40 inches). Using a conservative estimate of 10 percent recharge, the property recharges approximately 12.5 acre-feet (af) to the Sonoma Volcanics annually (NVVE, 2014; **Appendix N**).

The long-term groundwater use of the proposed vineyard is approximately 3± afa, or 15 percent of the parcel's allowable 20 afa by the County (Phase 1 Water Availability Analysis in **Appendix I**). The vineyard requires approximately 6 af of water per year during the establishment period when the grape vines are young, which represents 30 percent of the parcel's allowable groundwater limit and is still less than the recharge rate from annual precipitation on the property.

### 4.9.2 REGULATORY FRAMEWORK

#### 4.9.2-1 FEDERAL

The Federal CWA is the primary federal law that protects the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. It operates on the principle that all pollutant discharges into the nation's waters are unlawful unless specifically authorized by a permit. The CWA authorizes the U.S. Environmental Protection Agency (USEPA) to protect and maintain the quality and integrity of the nation's waters. Part of the CWA provides for the National Permit for Discharge Elimination System (NPDES), in which discharges into navigational waters are prohibited except in compliance with specified requirements and authorizations (discussed in detail below).

#### 4.9.2-2 STATE

The Regional Water Quality Control Plan for the San Francisco Bay Basin and the California Enclosed Bays and Estuaries Plan serve to protect the water quality of the state consistent with identified beneficial uses. These plans govern the waste discharge and non-point source control requirements in the state through the regional boards.

Section 303 (d) of the CWA requires that each state identify water bodies or segments of water bodies that are "impaired" (i.e., not meeting one or more of the water quality standards established by the state). Once a water body or segment is listed, the state is required to establish a TMDL for the pollutant causing the conditions of impairment. The TMDL is the quantity of a pollutant that can be safely assimilated by a water body without violating water quality standards. The intent of the 303 (d) list is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for continued water

quality degradation. The SFRWQCB has identified waters that are polluted and need further attention to support their beneficial uses. The 303 (d) list includes the Napa River for nutrients, pathogens, and sedimentation/siltation.

The SFRWQCB identifies beneficial uses and water quality objectives for surface waters in the region, as well as effluent limitations and discharge prohibitions intended to protect those uses. The existing beneficial uses designated for the Napa River are agricultural, municipal, and domestic supply, cold freshwater habitat, fish migration, navigation, preservation of rare and endangered species, water contact and non-water contact recreation, fish spawning, warm freshwater habitat, and wildlife habitat.

### **National Pollutant Discharge Elimination System**

In California, the USEPA has delegated the implementation of this program to the State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards. The NPDES program regulates municipal and industrial storm water discharges under the requirements of the CWA. Initially, the NPDES program permits focused on regulating point source pollution. In the early 1970s, an amendment to the CWA directed the NPDES program to address non-point source pollution through a phased approach.

The NPDES is federally mandated, but enforced locally. Applicants with construction projects disturbing one or more acres of soil are required to file for coverage under the State Water Board, Order No. 2009-0009-DWQ, NPDES General Permit No. CAS000002 for Discharges of Storm Water Runoff Associated with Construction Activity (General Permit). Construction activities include clearing, excavation, stockpiling, and reconstruction of existing facilities involving removal and replacement. During installation and operation of the vineyard, the ECP would cover the stormwater management requirements under the General Permit.

### **Sustainable Groundwater Management Act**

The intent of the Sustainable Groundwater Management Act (SGMA; Water Code § 10720 et seq.) is to “enhance local management of groundwater consistent with rights to use or store groundwater... [and] to preserve the security of water rights in the state to the greatest extent possible consistent with the sustainable management of groundwater.” The SGMA states that “any local agency or combination of local agencies overlying a groundwater basin may elect to be a groundwater sustainability agency for that basin” (Water Code § 10723). A groundwater sustainability agency will be formed within each groundwater basin to prepare and implement a plan for long-term groundwater sustainability. The sustainability agency for the area has not yet been finalized.

#### 4.9.2-3 LOCAL

The Napa County General Plan (General Plan) serves as a broad framework for planning within Napa County (Napa County, 2008). State law requires general plans to cover a variety of topics. The General Plan contains goals and policies related to: open space conservation, natural resources, water resources, safety, circulation, and provides guidance for issues related to hydrology and water quality. Applicable General Plan policies for the Proposed Project are provided below.

#### **Open Space Conservation Policies**

Policy CON-6: The County shall impose conditions on discretionary projects which limit development in environmentally sensitive areas such as those adjacent to rivers or streamside areas and physically hazardous areas such as floodplains, steep slopes, high fire risk areas and geologically hazardous areas.

#### **Water Resources Goals and Policies**

Goal CON-8: Reduce or eliminate groundwater and surface water contamination from known sources (e.g., underground tanks, chemical spills, landfills, livestock grazing, and other dispersed sources such as septic systems).

Goal CON-9: Control urban and rural storm water runoff and related non-point source pollutants, reducing to acceptable levels pollutant discharges from land-based activities throughout the county.

Goal CON-10: Conserve, enhance and manage water resources on a sustainable basis to attempt to ensure that sufficient amounts of water will be available for the uses allowed by this General Plan, for the natural environment, and for future generations.

Goal CON-11: Prioritize the use of available groundwater for agricultural and rural residential uses rather than for urbanized areas and ensure that land use decisions recognize the long term availability and value of water resources in Napa County.

Goal CON-12: Proactively collect information about the status of the county's surface and groundwater resources to provide for improved forecasting of future supplies and effective management of the resources in each of the County's watersheds.

Policy CON-18: To reduce impacts on habitat conservation and connectivity (the following policies apply):

- In sensitive domestic water supply drainages where new development is required to retain between 40 and 60 percent of the existing (as of June 16, 1993) vegetation onsite, the vegetation selected for retention should be in areas designed to maximize habitat value and connectivity.

Policy CON-42: The County shall work to improve and maintain the vitality and health of its watersheds. Specifically, the County shall:

Support environmentally sustainable agricultural techniques and best management practices (BMPs) that protect surface water and groundwater quality and quantity (e.g., cover crop management, integrated pest management, informed surface water withdrawals and groundwater use).

Policy CON-47: The County shall comply with applicable Water Quality Control/Basin Plans as amended through the Total Maximum Daily Load (TMDL) process to improve water quality. In its efforts to comply, the following may be undertaken:

- Ensuring continued effectiveness of the National Pollution Discharge Elimination System (NPDES) program and storm water pollution prevention.
- Ensuring continued effectiveness of the County's Conservation Regulations related to vineyard projects and other earth-disturbing activities.

Policy CON-48: Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds. Technical reports and/or erosion control plans that recommend site-specific erosion control measures shall meet the requirements of the County Code and provide detailed information regarding site specific geologic, soil, and hydrologic conditions and how the proposed measure will function.

Policy CON-50: The County will take appropriate steps to protect surface water quality and quantity, including (the following specific policies):

- Preserve riparian areas through adequate buffering and pursue retention, maintenance, and enhancement of existing native vegetation along all intermittent and perennial streams through existing stream setbacks in the County's Conservation Regulations.

- The County shall require discretionary projects to meet performance standards designed to ensure peak runoff in 2-, 10-, 50-, and 100-year events following development is not greater than predevelopment conditions.
- In conformance with National Pollution Discharge Elimination System (NPDES) requirements, prohibit grading and excavation unless it can be demonstrated that such activities will not result in significant soil erosion, silting of lower slopes or waterways, slide damage, flooding problems, or damage to wildlife and fishery habitats.

Policy CON-52: Groundwater is a valuable resource in Napa County. The County encourages responsible use and conservation of groundwater and regulates groundwater resources by way of its groundwater ordinances.

Policy CON-53: The County shall ensure that the intensity and timing of new development are consistent with the capacity of water supplies and protect groundwater and other water supplies by requiring all applicants for discretionary projects to demonstrate the availability of an adequate water supply prior to approval. Depending on the site location and the specific circumstances, adequate demonstration of availability may include evidence or calculation of groundwater availability via an appropriate hydrogeologic analysis or may be satisfied by compliance with County Code “fair-share” provisions or applicable State law. In some areas, evidence may be provided through coordination with applicable municipalities and public and private water purveyors to verify water supply sufficiency.

### **Safety Goals and Policies**

Goal SAF-5: To protect residents and businesses from hazards caused by human activities.

Policy SAF-30: Potential hazards resulting from the release of liquids (wine, water, petroleum products, etc.) from the possible rupture or collapse of aboveground tanks should be considered as part of the review and permitting of these projects.

### **Circulation Goals and Policies**

Policy CIR-8: Roadway, culvert, and bridge improvements and repairs shall be designed and constructed to minimize fine-sediment and other pollutant delivery to waterways, to minimize increases in peak flows and flooding on adjacent properties, and where applicable to allow for fish passage and migration, consistent with all applicable codes and regulations.

## **Napa County Code**

### *Section 18.108 – Conservation Regulations*

Napa County Code Section 18.108 includes conservation regulations such as requirements for standard erosion control measures, provisions for intermittent or perennial streams, requirements for use of erosion hazard areas. This section of the code also defines streams and provides stream setbacks for grading and land clearing for agricultural development (see **Section 4.4** for the discussion of this code section).

Some portions of the property have slopes greater than five percent, therefore, under Napa County Code Section 18.108.070, the Proposed Project would require permit approval prior to any grading activities (see **Section 3.0**).

Napa County Code 18.108.027 requires that as part of any use involving earth-disturbing activity in sensitive domestic water supply drainages, the following vegetation-retention requirements apply:

- A minimum of 60 percent of the tree canopy cover on the parcel or holding existing on June 16, 1993 along with any understory vegetation, and
- When vegetation consists of shrub and brush without tree canopy, a minimum of 40 percent of the shrub, brush and associated annual and perennial herbaceous vegetation.

### *Section 13.15 – Groundwater Conservation Ordinance*

Napa County Code Section 13.15 regulates, to the maximum extent possible, “the extraction and use of groundwater resources in Napa County” in order to “prohibit extraction for wasteful, unreasonable or non-beneficial purposes” and to “promote groundwater conservation.” The County implements this ordinance through discretionary approval of a groundwater permit for new development projects. Groundwater permits are evaluated through the Water Availability Analysis (WAA) process, which must demonstrate that sufficient water is available for use. Napa County is currently in the process of updating its WAA process to account for new legislative actions, scientific understanding of the local aquifers, and BMPs for groundwater sustainability.

## **Napa County Resource Conservation District**

The RCD published the Napa River Watershed Owner’s Manual in 1996. This manual lists the following objectives and recommendations that pertain to the Proposed Project:

### **Objective G: Reduce Soil Erosion**

Recommendation G2: Reduce erosion resulting from agricultural activities. Agricultural activities in the Napa River watershed include grazing, viticulture, small farms and horticulture. Soil disturbance or vegetation removal as a result of agricultural activities can result in loss of

topsoil and subsequent water quality degradation. Good agricultural management can also benefit water quality and wildlife habitat, and can contribute to the overall good health of the watershed. Sub-recommendations include:

- G2.1. Emphasize erosion prevention over sediment retention as a priority in agricultural planning and operations.
- G2.2. Promote the use of permanent vegetative ground cover in vineyards. Support research, demonstrations and technology exchange to refine cover crop technology for vineyards and orchards.
- G2.3. Establish tree cover in unused areas to decrease erosion of topsoil.
- G2.4. Maintain access roads and farm roads to control storm water runoff in agricultural areas. Utilize assistance from the USDA Natural Resource Conservation Service, or other erosion control professionals, for design of storm water runoff control on rural roads.
- G2.5. Minimize wet weather vehicle traffic through or across agricultural areas, especially on hillsides.
- G2.6. Provide adequate energy dissipaters for culverts and other drainage pipe outlets.
- G2.7. Establish vegetated buffer strips along waterways.
- G2.8. Develop grazing management plans to increase vegetation residue on rangeland.

#### 4.9.3 IMPACTS ANALYSIS

The basic philosophy for the design of the Proposed Project is to minimize environmental disturbance and control erosion on the property rather than capturing soil after it has been displaced. To help meet this goal, the ECP includes several different measures for prevention of erosion and control of sediment, as described in **Section 3.4.2**. **Section 4.6.3-2** discusses how the project design will reduce the production of sediment by 22.4 percent. This section addresses how erosion control features will prevent sediment impacts to the Napa River and prevent increases in runoff off of the property. The Proposed Project would aim to preserve the existing courses of runoff and drainage onsite to the degree feasible, as well as implement ECP measures that improve the courses of runoff and drainage onsite once the vineyard block is in place.

#### 4.9.3-1 SIGNIFICANCE CRITERIA

For the purpose of this EIR, an impact to hydrology and water quality would be significant if it would result in any one of the following:

- Alter the existing onsite drainage pattern in a manner that would substantially increase the volume and rate of surface runoff such that on- or offsite drainages become unstable (either by increased erosion or increased sediment deposition), the capacity of existing or planned stormwater drainage systems is overwhelmed, and/or significant flooding occurs;
- Alter the existing onsite drainage pattern in a manner that would substantially degrade water quality, onsite and within downstream receiving water bodies, by increasing the suspended sediment load and/or contributing other pollutants to the natural waterways;
- Expose people or structures to a significant risk of loss due to flooding; or
- 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.

#### 4.9.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.9-1:** Development of the Proposed Project would alter the existing drainage pattern of the property. This is a potentially significant impact. However, with implementation of the ECP, a slight decrease in the volume and rate of runoff onsite would occur and there would be no change in runoff to receiving waters. Therefore, a less-than-significant impact would result.

The drainage pattern of an area will, in part, determine the rate and volume of runoff. Drainage patterns refer to the characteristics of a landscape that determine the course of runoff in an area, which is determined by the size and extent of vegetation, and topographic and geologic features. Development activities involved with the Proposed Project would alter the existing drainage pattern of the property. Lands that typically generate greater concentrations of runoff characteristically contain few obstacles, impervious surfaces, and poorly drained soils.

The timber harvest and subsequent conversion of the property into a vineyard would result in the removal of 10.0± acres of trees. Conversion of the land use would also involve soil ripping and earthmoving activities required for vineyard preparation. Installation of the proposed structural erosion control measures, as described in **Section 3.0**, would preserve water quality in downstream areas off the property. The erosion control measures provided for in the ECP and the vegetative erosion control measures to increase ground vegetation cover would provide new obstacles to runoff concentration that would reduce impacts to onsite water features (**Appendix B**).

### Hydrology Analysis Methodology

To evaluate the effects of the Proposed Project on runoff, a quantitative watershed hydrology study was completed by OEI (**Appendix E**). The analysis assessed the likely effects on runoff due to changes in land cover from forest to vineyard, and due to changed drainage patterns by the installation of the erosion control measures found in the ECP (**Appendix B**).

The TR-55 model, a USDA model that is often used for Napa County projects, was used to analyze the Proposed Project watershed (**Appendix E**). TR-55 estimates runoff and peak discharge while developing hydrographs for small basins using rainfall, drainage basin topographic characterizations, and vegetative/soil cover to determine runoff potential as inputs (USDA, 2009). TR 55 has been used in Napa County for many years to evaluate potential changes in runoff associated with vineyard development. TR 55 tends to provide relatively high magnitudes of runoff relative to some other methods, notably including the USGS National Streamflow Statistics. Nevertheless, TR 55 provides a relatively simple means to evaluate the relative magnitude of change in runoff associated with vineyard conversion. The TR 55 model generates a runoff hydrograph based on hypothetical rainfall events corresponding to the recurrence intervals specified by County of Napa, and has proved a useful tool in evaluating hydrologic impacts of alternative project designs.

### Rainfall

The northwestern coastal U.S. is classified as type IA out of the four 24-hour rainfall distributions (USDA, 2009). Type IA rainfall represents a Mediterranean climate with dry summers and wet winters. For the property, rainfall events of a 24-hour duration were simulated in the model for the 2, 10, 50, and 100 year reoccurrence interval storms. A rainfall depth-duration-frequency analysis was determined from queries of the NOAA Atlas 14 Volume 6 Version 2; results are shown in **Table 4.9-1** below.

**TABLE 4.9-1**  
RAINFALL DEPTHS FOR TYPICAL RECURRENCE  
INTERVAL STORMS ON THE PROPERTY

Recurrence Interval Storm (24 hour Duration)	Precipitation Depth (in)
2 year	4.51
10 year	6.59
50 year	8.67
100 year	9.54

Source: OEI, 2014

### Vegetative/Soil Cover

The runoff potential of different land uses was determined by assigning land use curve numbers to different land uses. Land use composite curve numbers (curve numbers) indicate the runoff

potential of a soil and are based on ground cover and the hydrologic soil group. A curve number is attributed to different land uses to measure the influence of land cover on infiltration and runoff rates. Curve numbers depend on the vegetative type, amount of cover, and the land use practice, and are weighted to take into account variances over the study area. Higher curve numbers indicate higher amounts of impervious surfaces, and therefore higher potential for runoff. The composite curve numbers for the current conditions ranged from 65 to 91, which is a conservative estimate for the property, which contains grassland, brush, forest, and disturbed areas (**Appendix E**; USDA, 2009). Post-project composite curve numbers varied from 73 to 91, which is typical of agricultural lands and gravel roadways (**Appendix E**; USDA, 2009).

Soils are classified into four soil hydrologic groups (A, B, C, and D) according to the infiltration rate for rainfall, and are classified ranging from high infiltration rate and low runoff potential (Soil Group A) to very slow infiltration rate and a high runoff potential (Soil Group D). As mentioned in **Section 4.6**, the soils located at the property are classified by the USDA Soil Conservation Service Napa County Soil Survey as Rock outcrop-Kidd complex series (SCS 177), as well as small areas of Forward gravelly loam (SCS 138) and Henneke gravelly loam (SCS 154) (NRCS, 2014). The Rock outcrop-Kidd complex and Henneke gravelly loam are hydrologic group D, while the small area of Forward gravelly loam is hydrologic group B (NRCS, 2014).

### Existing and Planned Drainage Catchments

To determine the drainage flow of the project, OEI delineated the pre-project drainage basins based on topographic analysis in the Watershed Modeling System 9.1 (WMS) software, LiDAR-based digital elevation models, and observations made from field observations of the property (**Appendix E**). Of the eight delineated subbasins, only drainage basins 6 and 7 leave the project site as concentrated and/or channelized flow in pre-project conditions; all other drainage from the property occurs as sheet flow (**Appendix E**). As discussed in the Hydrologic Analysis, “post-project drainage basins were defined by modifying pre-project basins to reflect the changes in flow paths proposed in the ECP” (**Appendix E**). After implementation of the Proposed Project and rerouting of some flows in the proposed erosion control measures, three of the eight drainage basins will be resized from their pre-project condition. For a complete description of the drainage basins in pre- and post-project conditions, please see **Appendix E**.

### Results

Peak discharges for the post-project retention basins were calculated using the TR-55 model. The individual basins were analyzed for 2-, 10-, 50-, and 100-year 24-hour storm events in current, post-project conditions with no erosion control, and post-project conditions with the proposed ECP. The current conditions provide a baseline for comparison with the post-project conditions with erosion mitigation (**Appendix B**). **Table 4.9-2**, below, compares the current and post-project peak discharges in cubic feet per second (cfs).

**TABLE 4.9-2**  
PEAK FLOW COMPARISON FOR THE PROPERTY

	Existing Peak Discharge (cfs)	Proposed Project Peak Discharge (cfs)	Percent Change
2-year	11.6	8.2	-29.5%
10-year	24.1	18.6	-22.9%
50-year	38.4	30.6	-20.2%
100-year	44.6	35.9	-19.4%

Source: OEI, 2014; **Appendix E**

Overall, there would be decreases in the peak runoff from the project site under all storm types with the erosion control features proposed in the ECP. With the development of the Proposed Project including the erosion control measures found in the ECP, there are decreases in peak runoff ranging from 19.4 to 29.5 percent in post-project conditions (**Appendix E**).

In addition, the TR-55 model provides preliminary analysis to compare pre- and post-project runoff volumes, shown in **Table 4.9-3**, below.

**TABLE 4.9-3**  
PEAK RUNOFF COMPARISON FOR THE PROPERTY

	Existing Runoff Volume (acre-feet)	Post-Project Runoff Volume (acre-feet)	Percent Change
2-year	247	218	-11.7%
10-year	455	417	-6.2%
50-year	677	635	-6.2%
100-year	773	729	-5.7%

Source: OEI, 2014

Overall, there would be decreases in runoff volume from the project site under all storm types with the proposed erosion control features. With the development of the Proposed Project, there are decreases in runoff volume from 5.7 to 11.7 percent. It is expected that required maintenance for all proposed diversion and erosion control structures would be performed on a routine basis to ensure effective operation, as described in the ECP (**Appendix B**).

## Findings

Development of the Proposed Project would alter the drainage pattern of the property, but would not result in an increased rate or volume of runoff. In fact, the Proposed Project would result in a slight decrease in both the peak discharge and volume of surface runoff at the property.

Therefore, this is a less-than-significant impact. The primary reason for the decrease in runoff is the construction of attenuation basins that would delay peak flow timing. Another factor contributing to the reduction in runoff, or lower curve numbers, is the use of cover crops within all the vineyard blocks. Drainage system features onsite would not result in flooding because the rate and volume of runoff would not increase from the Proposed Project, and because these drainage features were determined to be appropriate for local hydrology conditions during development of the ECP. This is a less-than-significant impact.

**Mitigation Measure 4.9-1:** With implementation of the Erosion Control Plan, potential impacts are reduced to less than significant and no additional mitigation is required.

**Impact 4.9-2:** Development of the Proposed Project has the potential to alter sedimentation levels in runoff flowing to off-site receiving waters. This is a potentially significant impact. However, as discussed in **Section 4.6**, there will be a decrease in sediment production from the project site with implementation of the ECP and there will be a less-than-significant effect to receiving waters.

As discussed in **Impact 4.9-1**, development of the Proposed Project would alter the existing drainage pattern of property through the removal of existing vegetative land cover, soil ripping and earthmoving activities, and the removal of trees. Alteration of the existing drainage pattern resulting in an increased volume and rate of runoff to these drainages could result in increased loading of sediment and pollutants to onsite drainages, and subsequently offsite streams and the Napa River. However, with implementation of the ECP and the creation of the two attenuation basins as discussed above, runoff from the project site would decrease in rate and volume under post-project conditions (**Appendix E**). Therefore, the Proposed Project would not result in increased accumulation of sediments in receiving waters, increased nutrient loading, or adverse impacts to water temperature.

### **Sediment Loading**

Since the mainstem Napa River has been listed as sediment-impaired according to the Clean Water Act, Section 303 (d), no net increase in sediment yield from the property should be allowed to occur from development of the Proposed Project. As discussed in **Impact 4.6-1**, with incorporation of erosion and runoff control measures proposed in the ECP and discussed above, the overall load of sediment transported to local waterways from the site of the Proposed Project is anticipated to decrease from pre-project conditions. Therefore, implementation of the ECP for the Proposed Project would be beneficial in reducing both offsite onsite erosion and sedimentation loads from contributing to sedimentation entering the Napa River. In addition, Mitigation Measure 4.6-1 will ensure that there is no increase in erosion due to use of the existing rocked low-water cross on Friesen Drive. Thus, this is a less-than-significant impact. For a more detailed analysis of the project impacts to sediment loading from erosion, refer to **Section 4.6**.

### Chemical Loading

The Proposed Project will be operated using integrated pest management (IPM) techniques that focus on environmentally sensitive methods of reducing agricultural pests and avoids the use of harsh chemicals, as discussed in **Appendix J**. The use of chemical pesticides and herbicides will be applied only as a last resort method, and will be purchased, transported, applied, and disposed of in compliance with all local, State, and federal regulatory requirements, as discussed in **Section 4.8**. Any fertilizers used on the property would be used sustainably, and include lime and/or gypsum application, liquid fertilizers (preferably certified organic), foliar fertilizers such as zinc and boron, and compost (**Appendix J**). Use of fertilizers can result in runoff laden with excessive plant nutrients, which can lead to eutrophication and algal growth in receiving waters; pesticide use can result in runoff contributing to toxic conditions in receiving waters. However, the runoff from the property is reducing under post-project conditions, and adherence to the IPM plan (**Appendix J**) and mitigation measures provided in **Section 4.8** will ensure there is no risk to chemical loading of the Napa River. Therefore, this is a less-than-significant impact.

### Temperature

Water temperature influences a number of chemical processes within water bodies. The elevation of the water temperature is influenced by ambient air temperature, humidity, riparian vegetation, topography, surrounding land use, and flow conditions. The Proposed Project would not alter the thermal characteristics of the downstream waterways. This impact is less than significant.

The Proposed Project would not alter the topography of local creeks located downstream of the property. Fiber rolls, water spreaders, and drop inlets will slow surface runoff and trap sediments to reduce the loosening of topsoil. As determined from the sediment budget discussed in **Impact 4.6-1**, sediment yield from the proposed vineyard and sediment accumulation in receiving waters would be expected to decrease with the Proposed Project and implementation of the ECP. Potential impacts from sedimentation that can increase water temperature, such as excess sediment runoff due to the conversion of timberland to vineyard, would not occur. The modification of the vegetative cover on the site would not affect any watercourse shading, as appropriate setbacks and buffers would be maintained along the streams on the property, as discussed in **Impact 4.4-4**. This is a less-than-significant impact.

**Mitigation Measure 4.9-2:** With implementation of the Erosion Control Plan, potential impacts are reduced to less than significant and no additional mitigation is required.

**Impact 4.9-3:** The Proposed Project would not be located in a FEMA flood zone. Development of the Proposed Project would not exacerbate flooding or expose people or structures to a risk of loss. This is a less-than-significant impact.

Development of the Proposed Project would not be located within a FEMA mapped flood zone for a 100- or 500-year precipitation event. According to the hydrology analysis presented in **Impact 4.9-1**, no increase in the rate or volume of runoff is anticipated to occur along project watercourses under the Proposed Project conditions. The Proposed Project would not exacerbate flood flows downstream, impede or redirect flood flows or expose people or structures to flooding hazards.

**Mitigation Measure 4.9-3:** No mitigation is required.

**Impact 4.9-4:** Development of the Proposed Project would not 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. This is a less-than-significant impact.

The Proposed Project would withdraw groundwater from the existing well on the property for use irrigating the proposed vineyards. As stated in **Section 4.9.1-4**, approximately 6.6 afa will be used for the establishment of the vineyard; in the long-term, the proposed vineyard will require approximately half of this amount of water. The long-term water use of the proposed vineyard blocks is only 19 percent of the allowable groundwater allotment for the property. Furthermore, it is estimated that the property provides the recharge opportunity for approximately 12.5 af per year of percolation into the Sonoma Volcanics, which is less than the long-term irrigation needs of the Proposed Project. Therefore, the development of the Proposed Project would not impact local or regional groundwater levels. This is a less-than-significant impact.

California is currently in a period of drought and has had several multi-year droughts in the period of record. The Proposed Project, which would utilize 3.3 af per year (less than 20 percent of the property's recharge ability to the underlying Sonoma Volcanics), is not a significant increase to the local groundwater pumping. Although no local groundwater sustainability plan has been formed yet under the new Sustainable Groundwater Management Act, the Proposed Project would be legally required to comply with any rules or BMPs required therein. In addition, the Proposed Project is in compliance with the Napa County WAA process and would obtain a groundwater use permit prior to vineyard development to ensure that groundwater is available for the Proposed Project.

**Mitigation Measure 4.9-4:** No mitigation is required.

**Impact 4.9-5:** Development of the Proposed Project would not result in conflicts within Napa County Code Section 18.108.027. Napa County Code Section 18.108.027 requires the retention of a minimum of 60 percent of the tree canopy cover, or when vegetation consists of shrub and brush without tree canopy, a minimum of 40 percent of the shrub, brush, and

associated annual and perennial herbaceous vegetation within sensitive domestic supply watersheds.

Bell Canyon watershed is a designated a sensitive domestic supply watershed by the County. In 1993 aerial photographs, there were 10.17 acres of tree canopy and 25.24 acres of brush cover. The Proposed Project would retain 6.32 acres (62.1 percent) of tree canopy and 14.39 acres (57.0 percent) of brush on the property, which conforms with Napa County Code. This is a less-than-significant impact.

**Mitigation Measure 4.9-5:** No mitigation is required.

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## 4.10 LAND USE

### 4.10.1 SETTING

#### 4.10.1-1 REGIONAL

Approximately 51,000 acres of Napa County (County) consists of active agriculture land and 54,000 acres consists of grazing land. The remaining area includes several towns and cities, including the City of Napa, Yountville, American Canyon, Calistoga, and St. Helena (WICC, 2010). St. Helena is the nearest incorporated city to the project site, located in the northwestern portion of the County, approximately six miles southwest of the project site. The 38.7-acre property is located within the northern borders of the unincorporated town of Angwin. Land uses in this portion of Napa County primarily consist of Rural Residential, Urban Residential, Suburban, Public-Institutional, Agriculture, and Open Space.

#### 4.10.1-2 LAND USES ON THE PROPERTY

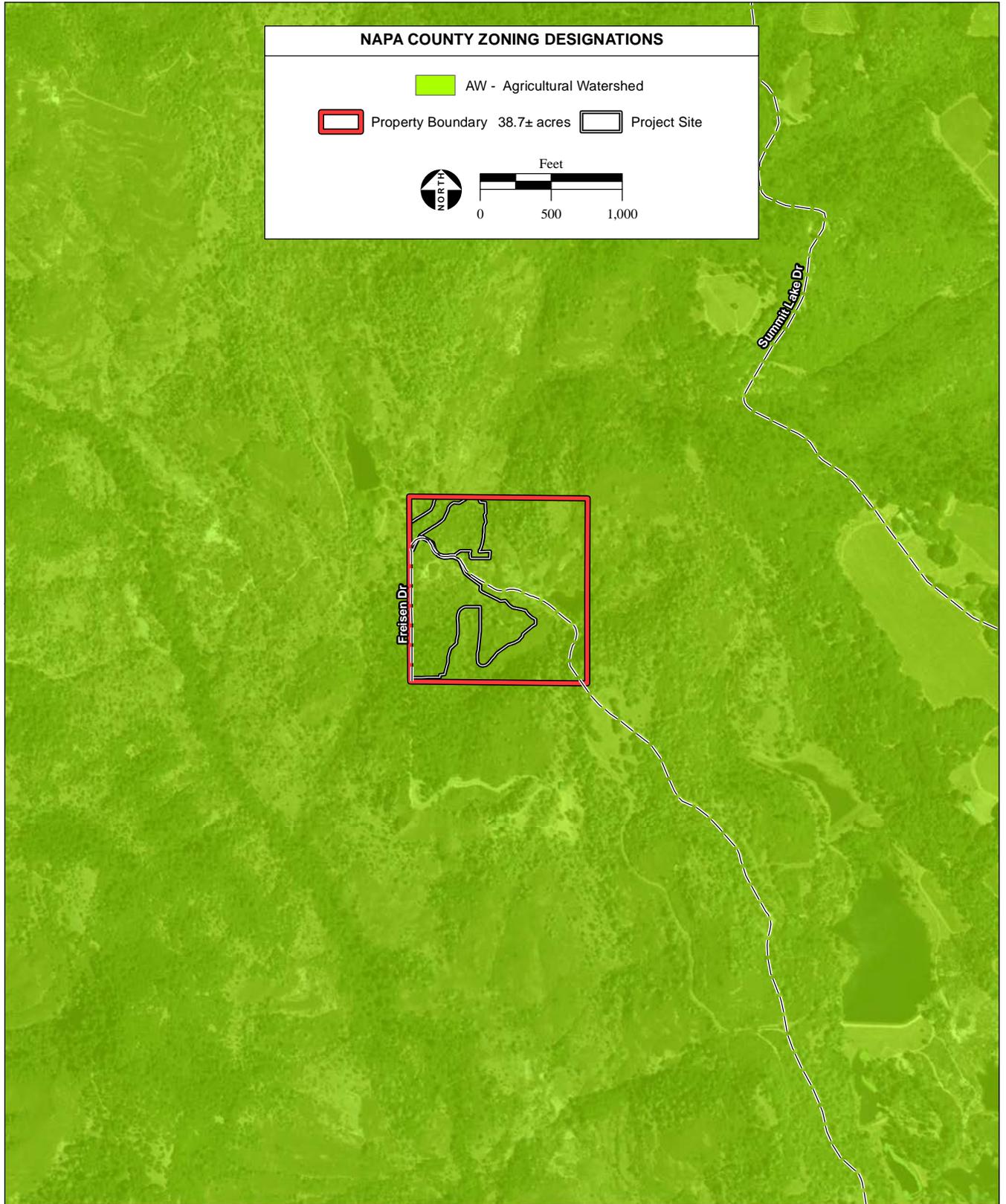
As described in **Section 3.0**, the 13.6± acre project site within the 38.7-acre property is situated on a hill top and southwest-facing hillside. The property was likely logged over 100 years ago, but has not been logged since. The project site is accessed via Friesen Road. No public access roads exist within the property. No new roads will be built on the property for timber removal and vineyard development.

#### 4.10.1-3 SURROUNDING LAND USES

Land uses adjacent to the property is rural, and includes scattered residences. Two residences are located within a half mile of the project site. The lands to the west, east, and to some extent the south, are owned by the Napa Valley Land Trust (Land Trust). The 3,030 acre Dunn-Wildlake Ranch Preserve Land Trust property (Preserve) is utilized for recreational hiking. Also, a hunting lodge is located on the Land Trust property west of the project site from prior property ownership. The Preserve is accessed via Friesen Drive, which passes through vineyards and rural landscape.

### 4.10.2 REGULATORY FRAMEWORK

As shown in **Figures 4.10-1** and **4.10-2**, the 38.7 acre property is located in rural, unincorporated Napa County. The parcel is under the jurisdiction of the County; therefore, only the County's General Plan and Zoning Ordinance are applicable to land uses on the site. The surrounding lands are also under the jurisdiction of Napa County.



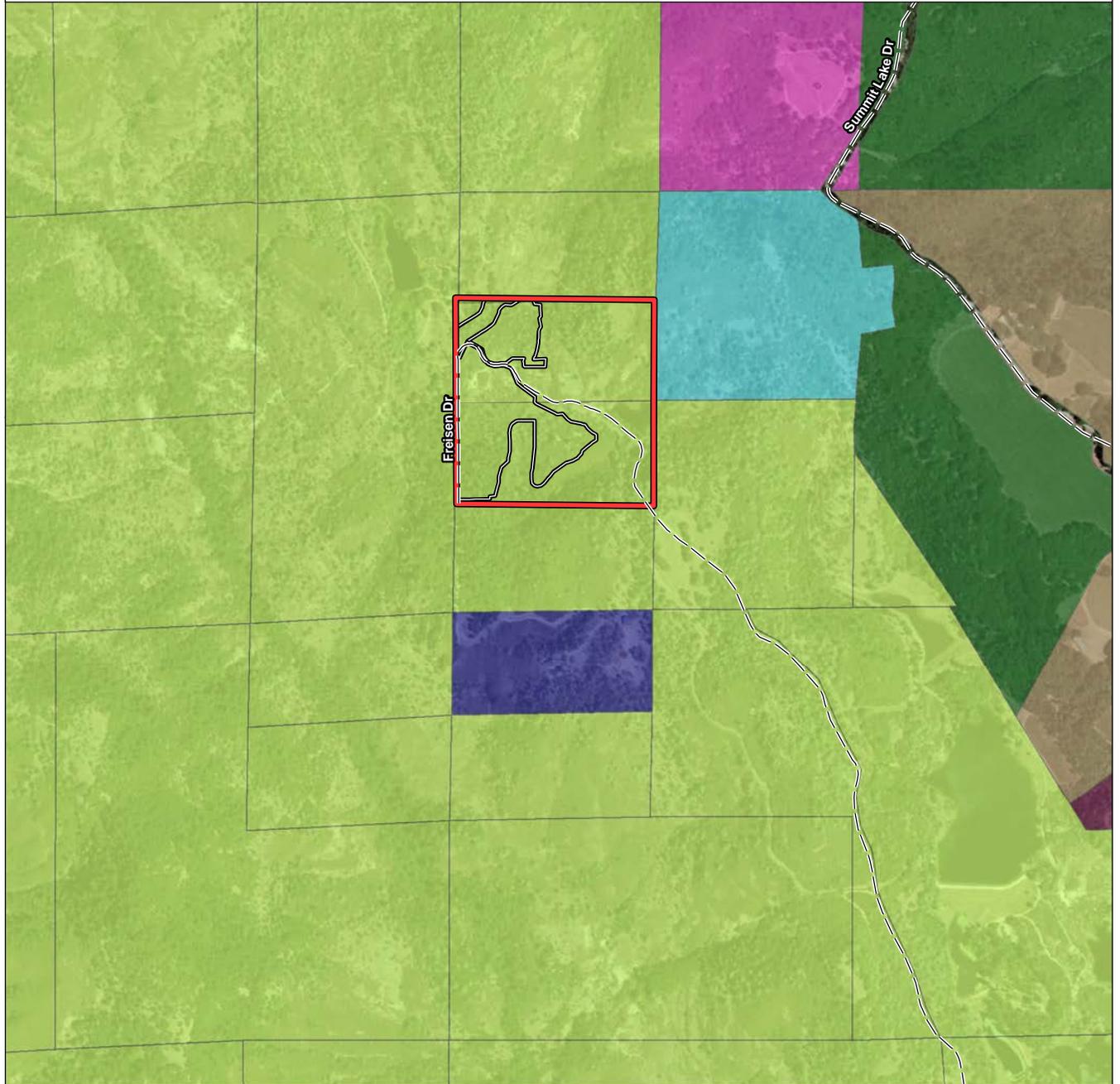
SOURCE: Napa County Planning Dept., 8/6/2002; Microsoft aerial photograph, 11/2/2010; AES, 2014 *Davis Family Estates Friesen Vineyard Project DEIR / 213509* ■

**Figure 4.10-1**  
Napa County Zoning Designations

NAPA COUNTY LAND USE DESIGNATIONS

- |   |  |  |
|---|--|--|
|  30 - VACANT LAND RURAL          |  34 - VINEYARD LAND >5 AC           |  392 - VINEYARD > 5 AC W/2 SFRS |
|  3001 - VACANT RURAL W/MISC IMPS |  37 - CONTRACT NON VINEYARD W/1 RES |  4210 - WINERY WITH VINEYARD    |
|  31 - RURAL RES < 5 AC W/1 RES   |  382 - CONTRACT VINEYARD W/2 SFRS   |  4211 - WINERY/VINEYARD/1 RES   |
|  32 - RURAL RES > 5 AC W/1 RES   |  39 - VINEYARD > 5 AC W/1 RES       |  |

 Property Boundary 38.7± acres  Project Site



SOURCE: Napa County Planning Dept., 09/13/2009; Microsoft aerial photograph, 11/2/2010; AES, 2011. *Davis Family Estates Friesen Vineyard Project DEIR / 213509* ■

**Figure 4.10-2**  
Napa County General Plan Land Use

#### 4.10.2-1 LAND USE DESIGNATIONS AND ZONING

##### **Napa County Code of Ordinances - Zoning**

As shown in **Figure 4.10-1**, the Napa County Zoning Ordinance has zoned the land within the project boundary as Agricultural Watershed (AW).

The Napa County Zoning Ordinance describes the intent of this zoning designation as follows:

*“The AW district classification is intended to be applied in those areas of the county where the predominant use is agriculturally oriented, where watershed areas, reservoirs and floodplain tributaries are located, where development would adversely impact on all such uses, and where the protection of agriculture, watersheds and floodplain tributaries from fire, pollution and erosion is essential to the general health, safety and welfare (Napa County, 2008).”*

Agricultural uses, such as timber harvesting and vineyard production, are considered permitted land uses under the applicable land use designation within the project site (Napa County Zoning Ordinance). Generally, permitted uses, as set forth in Section 18.20.020 include, but are not limited to, the following:

“Agriculture, including but not limited to, as defined in Section 18.08.040 as: (a) growing and raising trees, vines, shrubs, berries, vegetables, nursery stock, hay, grain, and similar food crops and fiber crops, and (d) sale of agricultural products grown, raised, or produced on the premises” (Napa County, 2012).

##### **Napa County General Plan Land Use Designations**

As shown in **Figure 4.10-2**, the Napa County General Plan’s land use designation for the property is “Agriculture Watershed & Open Space,” with surrounding land use designations consistent with the 38.7-acre property.

##### **Napa County General Plan Goals and Policies for Land Use**

The Agricultural Preservation Element and Land Use Element of the Napa County General Plan provide the following goals and policies pertaining to land use that are applicable to the Proposed Project (Napa County, 2009):

Goal AG/LU-1: Preserve existing agricultural land uses and plan for agriculture and related activities as the primary land uses in Napa County

Goal AG/LU-3: Support the economic viability of agriculture, including grape growing, winemaking, other types of agriculture, and supporting industries to ensure the preservation of agricultural lands.

Policy AG/LU-17: The County encourages active, sustainable forest management practices, including timely harvesting to preserve existing forests, retaining their health, product, and value.

Goal CON-11: Prioritize the use of available groundwater for agricultural and rural residential uses rather than for urbanized areas.

Policy CON-2: The County shall identify, improve and conserve Napa County's agricultural land through the following measures:

- Require that existing significant vegetation be retained and incorporated into agricultural projects to reduce soil erosion and to retain wildlife habitat.
- Minimize pesticide and herbicide use and encourage research and use on integrated pest control methods such as cultural practices, biological control, host resistance, and other factors.

### **Napa County Erosion Control Plans**

Erosion Control Plans are required for earthmoving activity, grading, improvement, or construction of a structure on sites of five percent slope or greater. The Napa County Planning, Building, and Environmental Services (PBES) Department administers this ordinance and grants approvals. The Napa County Resource Conservation District (RCD) reviews all erosion control plans for agricultural activities proposed on slopes greater than five percent, and passes on its recommendations to the Napa County PBES.

### **Napa County Stream Setbacks**

Section 18.108.025 of the Napa County Conservation Regulations states that clearing of land for new agricultural uses is required to comply with designated stream setbacks which are based on slope, unless a use permit is obtained from Napa County, or unless an exemption in Section 18.108.050 applies. Setbacks are measured from the top of the bank on both sides of the stream as it exists at the time of replanting, redevelopment, or new agricultural activity.

### **Napa County Slope Regulations**

Section 18.108.060 of the Napa County Conservation Regulations states that no construction, improvement, grading, earthmoving activity or vegetation removal associated with the development or use of land shall take place on those parcels or portions thereof having a slope of 30 percent or greater, unless an exemption under Sections 18.108.050 or 18.108.055 apply, or unless an exception through the use permit process is granted pursuant to Section 18.108.040 and resolution 94-19.

### Napa County Erosion Hazard Areas

Sections 18.108.070 and 18.108.100 of the Napa County Conservation Regulations outline requirements in erosion hazard areas, including vegetation preservation and replacement.

#### 4.10.3 IMPACTS ANALYSIS

##### 4.10.3-1 SIGNIFICANCE CRITERIA

Section 15125(d) of the California Environmental Quality Act (CEQA) *Guidelines* states that “[t]he EIR shall discuss any inconsistencies between the Proposed Project and applicable general plans and regional plans.” Criteria for determining the significance of land use impacts have been developed based on Appendix G of the CEQA *Guidelines*. For the purposes of this EIR, land use impacts are considered significant if the Proposed Project would:

- Physically divide an existing community;
- Result in a substantial inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect; or
- Conflict with any applicable habitat conservation plan, or natural community conservation plan.

##### 4.10.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.10-1:** The Proposed Project would not physically divide an existing community. This impact would be less than significant.

The Proposed Project would convert 10.0± acres of existing timberland and 3.6± acres of brush and ruderal for the development of a 13.6 acre vineyard within the 37.8-acre project site. This conversion would remain within the parcel and would not physically divide an existing community.

**Mitigation Measure 4.10-1:** No mitigation is required.

**Impact 4.10-2:** The Proposed Project would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. This impact would be a less than significant.

The Proposed Project is consistent with all applicable land use plans defined by the Napa County Code of Ordinances and the Napa County General Plan. Vineyards are considered an allowable agricultural land use under the zoning designations of the project site. Additionally, an Erosion Control Plan (**Appendix B**) has been prepared, thereby remaining consistent with the Erosion Control Plan regulation of the Napa County Code of Ordinances.

**Mitigation Measure 4.10-2:** No mitigation is required.

**Impact 4.10-3:** The Proposed Project would not conflict with an applicable habitat conservation plan or natural community conservation plan. This impact would be a less than significant.

There are no habitat conservation plans or natural community conservation plans that are applicable to the Proposed Project. Additionally, a Biological Resources Report conducted by Kjeldsen Biological Consulting (**Appendix D**) concluded that Proposed Project would not have substantial adverse effects, either directly or through habitat modifications, on any species identified as candidate, sensitive, and special status species in local or regional plans, policies, or regulations with implementation of the mitigation measures identified in **Section 4.4.6**. No substantial adverse effects to riparian habitat or other sensitive natural communities as found in local or regional plans, policies, or regulations would occur as well.

**Mitigation Measure 4.10-3:** No mitigation is required.

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## 4.11 NOISE

### 4.11.1 REGULATORY FRAMEWORK

#### 4.11.1-1 FEDERAL

Federal regulations establish noise limits for medium and heavy trucks (defined as a vehicle weighing more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations, Part 205, Subpart B. The federal truck pass-by noise standard is 80 decibels (dB) at 15 meters (approximately 50 feet) from the vehicle pathway centerline. Federal regulations governing truck manufacturing implement these controls.

#### 4.11.1-2 STATE AND LOCAL

The State of California establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by noise standard is equal to the federal standard (80 dB). The State pass-by standard for light trucks and passenger cars (defined as a vehicle weighing less than 4.5 tons, gross vehicle weight rating) is also 80 dB at 15 meters (approximately 50 feet) from the centerline. These standards are implemented in two ways: (1) controls on vehicle manufacturers; and (2) legal sanctions from State and local law enforcement officials on vehicle operators in violation of these standards.

### Napa County General Plan

The Napa County General Plan, adopted in 2008 (General Plan), is the guiding document for development in the unincorporated areas of Napa County (County), which include the subject property and surrounding properties. Policies in the General Plan that are relevant to noise and applicable to the Davis Family, LLC Friesen Vineyards Project (Proposed Project) include the following:

Goal CC-7: Accept those sounds which are part of the County's agricultural character while protecting the people of Napa County from exposure to excessive noise.

Policy CC-35: The noises associated with agriculture, including agricultural processing, are considered an acceptable and necessary part of the community character of Napa County, and are not considered to be undesirable provided that normal and reasonable measures are taken to avoid significantly impacting adjacent uses.

Policy CC-38: Standards for maximum exterior noise levels for various types of land uses are established in the County's Noise Ordinance. Additional standards are provided in the Noise Ordinance for construction activities (i.e., intermittent or temporary noise). (Refer to **Table 4.11-1**)

**TABLE 4.11-1**  
 EXTERIOR NOISE LEVEL STANDARDS  
 (LEVELS NOT TO BE EXCEEDED MORE THAN 30 MINUTES IN ANY HOUR)

Land Use Type	Time Period	Noise Level (dBA) by Noise Zone Classification		
		Rural	Suburban	Urban
Single-Family homes and Duplexes	10 pm. to 7 am.	45	45	50
	7 am. to 10 pm.	50	55	60
Multiple residential 3 or More units Per Building (Triplex +)	10 pm. to 7 am.	45	50	55
	7 am. to 10 pm.	50	55	60
Office and Retail	10 pm. to 7 am.	60		
	7 am. to 10 pm.	65		
Industrial and Wineries	Anytime	75		

dBA = hourly A-weighted sound level in decibels  
 Source: Napa County, 2008.

Policy CC-49: Consistent with the County’s Noise ordinance, ensure that reasonable measures are taken such that temporary and intermittent noise associated with construction and other activities does not become intolerable to those in the area. Construction hours shall be limited per the requirements of the Noise Ordinance. Maximum acceptable noise limits at the sensitive receptor are defined in Police CC-35.

Policy AG/LU-15: The County affirms and shall protect the right of agricultural operators in designated agricultural areas to commence and continue their agricultural practices (a “right to farm”), even though established urban uses in the general area may foster complaints against those agricultural practices. The “right to farm” shall encompass the processing of agricultural products and other activities inherent in the definition of agriculture provided in Policy AG/LU-2, above. The existence of this “Right to Farm” policy shall be indicated on all parcel maps approved for locations in or adjacent to designated agricultural areas and shall be a required disclosure to buyers of property in Napa County.

**Napa County Noise Ordinance**

Section 8.16.080 Specific Types of Noise Prohibited under the County’s Noise Ordinance that are applicable to construction of the project, include:

**Construction or Demolition:**

1. Operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between the hours of seven p.m. and

seven a.m., such that the sound there from creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the appropriate authority. This subsection shall not apply to the use of domestic power tools, as specified in subsection (B)(3) of this section.

2. Noise Restrictions at Affected Properties. Where technically and economically feasible, construction activities shall be conducted in such a manner that the maximum noise levels at affected properties will not exceed those listed in the following schedule (refer to **Table 4.11-2**):

**TABLE 4.11-2**  
NOISE LIMITS FOR CONSTRUCTION ACTIVITIES

	Residential	Commercial	Industrial
Daily: 7 am. to 7 pm.	75 dBA	80 dBA	85 dBA
Daily: 7 pm. to 7 am.	60 dBA	65 dBA	70 dBA

dBA = hourly A-weighted sound level in decibels  
Source: Napa County, 2008.

Section 8.16.090 Exemptions to noise regulations which are applicable to operation of the Proposed Project, include:

**Agricultural Operations:**

All mechanical devices, apparatus or equipment associated with agricultural operations conducted on agricultural property. Wineries are not included in this section.

**4.11.2 ENVIRONMENTAL SETTING**

**4.11.2-1 CHARACTERISTICS OF ENVIRONMENTAL NOISE**

**Acoustical Background and Terminology**

Noise is often defined as unwanted sound. Pressure variations occurring frequent enough (at least 20 times per second) for the human ear to detect are called sounds. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called hertz (Hz).

The perceived loudness of sounds depends upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable. The decibel scale measures sound levels using the hearing threshold (20 micropascals of pressure) as the point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken

to keep the numbers in a practical range. **Table 4.11-3** shows the most commonly used noise descriptors.

**TABLE 4.11-3**  
DEFINITION OF ACOUSTICAL TERMS

Terms	Definitions
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter)
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dBA	Sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network, which de-emphasizes very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after adding 5 decibels to measurements taken in the evening (7 to 10 pm) and 10 decibels to measurements taken between 10 pm and 7am.
Day/Night Noise Level, Ldn	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Lmax, Lmin	The maximum and minimum A-weighted noise level during the measurement period.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: FHWA, 2010

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum (20 Hz to 20,000 Hz). As a result, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz to better represent the human ear's sensitivity to mid-range frequencies. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard method of frequency de-emphasis and is typically applied to community noise measurements. In practice, the level of a sound source is measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. All of the noise levels reported herein are A-weighted unless otherwise stated.

### Noise Exposure and Community Noise

An individual's noise exposure is a measure of noise over a period of time. **Table 4.11-4** shows examples of noise sources that correspond to various sound levels. The noise levels presented in **Table 4.11-4** are representative of measured noise at a given instant. These levels rarely persist consistently over a long period of time and community noise levels vary continuously due to the contributing sound sources of the ambient noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources such as aircraft flyovers, moving vehicles, sirens, etc., which are typically readily identifiable to an individual. These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to characterize a community noise environment and evaluate cumulative noise impacts.

**TABLE 4.11-4**  
TYPICAL A-WEIGHTED SOUND LEVELS

Activities	Noise Level in Decibels
Limit of Hearing	0
Normal Breathing	10
Soft Whisper	30
Library	40
Refrigerator	50
Rainfall	50
Washing Machine	50-75
Normal Conversation	60
Hair Dryer	60-95
Alarm Clock	65-80
Power Mower	65-95
Dumpster Pickup (at 50 feet)	80
Garbage Disposal	80-95
Noisy Restaurant	85
Train Approaching (Engines)	85-90
Tractor	90
Shouting in Ear	110
Loud Rock Concert	120
Stock Car Race	130
Jet Engine at Takeoff	150

Source: Napa County, 2008.

Nighttime ambient noise levels are typically lower than daytime ambient noise levels. For this reason, and because of the potential for sleep disturbance, people tend to be more sensitive to

increased noise levels at night than during the day, and increases in nighttime noise have a far greater impact on the community noise environment than increases in daytime noise.

### ***Effects of Noise on People***

The effects of noise on people can be divided into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction;
- Interference with activities such as speech, sleep, and learning; and
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the third category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. With regard to increases in A-weighted noise level, the following relationships occur (Caltrans, 2009):

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dBA;
- Outside such controlled conditions, the trained ear can detect changes of 2 dBA in normal environmental noise;
- It is widely accepted that the average healthy ear, however, can barely perceive noise level changes of 3 dBA;
- A change in level of 5 dBA is a readily perceptible increase in noise level; and
- A 10-dBA change is recognized as twice as loud as the original source.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. Noise levels are measured on a logarithmic scale, instead of a linear scale. On a logarithmic scale, the sum of two noise sources of equal loudness is 3 dBA greater than the noise generated by only one of the noise sources (e.g., a noise source of 60 dBA plus another noise source of 60 dBA generate a composite noise level of 63 dBA). To apply this formula to a specific noise source, in areas where existing levels are dominated by traffic, a doubling in traffic volume will increase ambient noise levels by 3 dBA. Similarly, a doubling in heavy equipment use, such as the use of two pieces of equipment where one formerly was used, would also increase ambient noise levels by 3 dBA. A 3 dBA increase is the smallest change in noise level detectable to the average person. A change in ambient sound of 5 dBA can begin to create concern. A change in sound of 7 to 10 dBA typically elicits extreme concern and/or anger.

### Noise Attenuation

Stationary “point” sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6 dBA to 7.5 dBA per doubling of distance from the source, depending upon environmental conditions (i.e., atmospheric conditions and noise barriers, either vegetative or manufactured, etc.). Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a “line” source), would typically attenuate at a lower rate, approximately 3 to 4.5 dBA per doubling distance from the source (also dependent upon environmental conditions) (Caltrans, 2009). Noise from large construction sites (with heavy equipment moving dirt and trucks entering and exiting the site daily) would have characteristics of both “point” and “line” sources, so attenuation would generally range between 4.5 and 7.5 dBA per doubling of distance.

### Vibration

The effects of groundborne vibrations typically cause only a nuisance to people, but at extreme vibration levels, damage to buildings may occur. Although groundborne vibration can be felt outdoors, it is typically an annoyance only indoors, where the associated effects of a building shaking can be notable. Groundborne noise is an effect of groundborne vibration and only exists indoors, since it is produced from noise radiated from the motion of the walls and floors of a room and may consist of the rattling of windows or dishes on shelves.

Peak particle velocity (PPV) is often used to measure vibration. PPV is the maximum instantaneous peak (inches per second) of the vibration signal. Scientific studies have shown that human responses to vibration vary by the source of vibration, which is either continuous or transient. Continuous sources of vibration include construction, while transient sources include truck movements. Generally, the thresholds of perception and annoyance are higher for transient sources than for continuous sources. Structural damage can occur when PPV values are 0.5 inches per second or greater. Annoyance can occur at levels as low as 0.1 inches per second and become strongly perceptible at approximately 0.9 inches per second (Caltrans, 2004). **Table 4.11-5** shows PPV vibration levels caused by representative construction equipment, as published by the California Department of Transportation (Caltrans).

**TABLE 4.11-5**  
VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

Equipment	PPV at 25 feet (inches/second)
Large bulldozer	0.089
Excavator	0.089
Scraper	0.089
Loaded trucks	0.076
Small bulldozer	0.003

Source: Caltrans, 2004

Blasting is a common construction technique that uses explosives to break apart rocks. Ground vibration that occurs from blasting is dependent on the type of rock, type of explosive, and depth below ground that explosives are placed. Blasting in various industries uses different techniques and may result in different PPV. Caltrans (2013) gives the following formula to calculate PPV for blasting:

$$PPV = K (D_s)^{-1.6}$$

Where:

*PPV = peak particle velocity (in/sec),*

*D<sub>s</sub> = square-root scaled distance (distance to receiver in ft. divided by square root of charge weight in lbs.)*

*K = a variable subject to many factors*

Using this equation, blasting would have a PPV of 0.07 inches/second at 800 feet (based on 10 pounds of explosive), which is the minimum distance from the property to the nearest residential sensitive receptor.

#### 4.11.2.-2 EXISTING NOISE LEVELS AND SOURCES

The area surrounding the project site is rural and consists of open space to the north, south, and west, and agriculture uses to the east. The nearest road to the property is Friesen Drive, which bisects the project site. Traffic on this roadway is a primary source of noise in the vicinity of the site. The noise environment at and in the immediate vicinity of the property is also influenced by scattered agricultural activities due vineyards located to the east project site. Due to the rural nature of the property the ambient noise level is estimated to be 45 dBA, Leq. There are no known existing sources of groundborne vibrations within 0.5 miles of the Proposed Project.

#### 4.11.2-3 SENSITIVE NOISE RECEPTORS

Some land uses are considered more sensitive to ambient noise levels than others, sensitivity being a function of noise exposure (in terms of both exposure duration and insulation from noise) and the types of activities involved. Residential, hospital, and school land uses are generally more sensitive to noise than commercial and industrial land uses.

There are no residences located on the property; however, there is a residence located approximately 800 feet from the southern property line (approximately 1,000 feet south of the nearest vineyard block (Block D)). There are no schools or hospitals with the vicinity of the project site.

### 4.11.3 IMPACTS ANALYSIS

#### 4.11.3-1 SIGNIFICANCE CRITERIA

The following criteria are established by California Environmental Quality Act (CEQA) *Guidelines* and have been used in this section to evaluate potential environmental impacts of the Proposed Project on sensitive noise receptors. Such an impact is considered significant if it would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive groundborne vibration noise levels;
- Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- 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, expose people residing or working in the project area to excessive noise levels; or
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels.

The operation of the Proposed Project is covered under the County's right-to-farm ordinance, as discussed in **Section 4.11.1-2** above. The Proposed Project is in a rural area, is zoned for agricultural use, and is consistent with land uses in the vicinity of the project site. Therefore, the Proposed Project would not cause a substantial permanent increase in ambient noise levels above what is in character of the surroundings, and would not cause a substantial temporary or periodic increase in ambient noise levels that would exceed any applicable standards or ordinances. These impacts are not discussed further.

#### 4.11.3-2 METHODOLOGY

##### Noise

Construction noise levels from construction equipment were estimated using Caltrans Guidelines, as standard construction equipment will be used and the County does not produce its own estimated noise levels for construction equipment. Project-related construction noise level was compared to Napa County's construction noise significance levels provided in **Table 4.8-1** and **Table 4.8-2** to determine noise impact due to construction of the Proposed Project.

Traffic volumes related to the Proposed Project were compared to existing traffic volumes. Caltrans noise guidelines were used to determine traffic noise level increase along local roadways attributable to the Proposed Project (Caltrans, 2009). The existing noise levels were

added to the increased noise attributed to the Proposed Project and was compared to applicable significance thresholds.

Increases in the ambient noise level due to stationary sources (parking lot and truck noise) were estimated using known noise levels and comparing those noise levels to the applicable significance thresholds.

### **Vibration**

Vibration noise levels for construction and operation of the Proposed Project were determined using Caltrans guidelines (Caltrans, 2013). Those vibration noise levels were then compared to Napa County significance thresholds.

#### **4.11.3-3 SIGNIFICANCE THRESHOLDS**

According to the County's Construction Noise Ordinance 8.16.080, if construction-related noise increases the ambient noise level above 75 dBA, Leq in the vicinity of a residence, a significant impact would occur (refer to **Table 4.11-2**). According to the County of Napa's General Plan, operational noise impacts are considered significant if a project-related noise source increases the ambient noise level above 75 dBA, Leq (refer to **Table 4.11-1**).

However, according to Napa County General Plan Policy CC-35 and Napa County Noise Ordinance 8.16.090, noise resulting from agricultural operations is considered a necessary part of the community character of Napa County and is exempt from standard non-agricultural noise regulation. The Proposed Project seeks to develop agricultural land (vineyards) in land zoned for agriculture within a rural area. Therefore, operation of the Proposed Project is exempt from the Noise Ordinance thresholds stated above.

For this analysis, excessive groundborne vibrations are defined as those that are equal to or exceed 0.5 PPV at the nearest non-residential structure, and exceed 0.1 PPV (in/sec) experienced at the nearest residence (Caltrans, 2004). Therefore, an impact is considered potentially significant if construction or operation of the Proposed Project would result in an increase of 0.5 PPV (in/sec) at the nearest non-residential structure, or 0.1 PPV at the nearest residence.

#### **4.11.3-4 IMPACTS AND MITIGATION MEASURES**

**Impact 4.11-1: Construction.** Construction of the Proposed Project would not expose persons to a temporary or substantial permanent increase in the ambient noise level or generate noise levels in excess of standards established in the General Plan or County noise ordinance, or applicable standards of other agencies.

Typical construction noise levels are presented in **Table 4.11-6**. The nearest noise sensitive receptor to construction activities is a residence located approximately 800 feet south of the project site and approximately 1,000 feet south of Block D. Based on the topography and natural noise barriers (trees) a noise attenuation value of 6.0 dBA, Leq per doubling of the distance was used in this noise analysis (Caltrans, 2009). Using noise levels listed in **Table 4.11-6** (reference distance of 50 feet) the maximum noise level at the nearest sensitive noise receptor during construction of the Proposed Project would be approximately 58 dBA, Leq.

Noise associated with the construction activities of the Proposed Project would therefore be less than the County's noise threshold of 75 dBA, Leq for residential areas. Therefore, construction of the Proposed Project would not result in a temporary, significant increase in the ambient noise level or generate noise levels in excess of the County's noise standards. Furthermore, construction activities associated with the Proposed Project would be limited to occur between the hours of 7 A.M. to 7 P.M., consistent with County Ordinance 8.16.080 2. Noise from construction of the Proposed Project is a less than significant impact.

**TABLE 4.11-6**  
TYPICAL CONSTRUCTION EQUIPMENT NOISE

Equipment	dBA Leq at 50 feet	Usage Factor (%)	dBA Leq at 800 feet
Excavator	85	40	57
Front-end loader	80	40	52
Dump truck	84	40	56
Bulldozer	85	50	58
Water truck	85	50	58
Flat-bed delivery truck	84	40	56
Earth mover	85	50	58
Backhoes	80	40	52

Calculated via Caltrans equation:

$$\text{Leq}(h), \text{ dBA} = \text{Lmax at 50 feet} - 20\log(D / 50) + 10\log(\text{UF})$$

Source: Caltrans, 2009

**Operation.** Operation of the Proposed Project generally consists of replanting, pruning, harvesting, fertilizer and/or pesticide application, annual harvesting, and grape transport. The Proposed Project would slightly increase the ambient noise level in the immediate vicinity of the property. As shown in **Table 4.8-6** above, loaded trucks can generate noise levels of 85 dBA, Leq at distances of 50 feet. Nonetheless, the Proposed Project's agricultural operations would be exempt under Section 8.16.090(E) of the Napa County municipal code. Additionally, given the existing agricultural uses in the vicinity of the project site (to the south and east) and the agricultural nature of the Proposed Project, it would not interfere with Napa County General Plan policies and operational noise impacts would be less than significant.

**Mitigation Measure 4.11-1:** No mitigation is required.

**Impact 4.11-2:** The Proposed Project would not expose persons to or generate excessive groundborne vibration noise levels. This impact is less than significant.

**Construction.** Construction activities for the Proposed Project would consist of using earthmoving equipment shown in **Table 4.11-7**. Generally, excessive vibration is only an issue when construction requiring the use of equipment with high vibration levels (i.e., compactors, large dozers, etc.) occurs within 25 to 100 feet of an existing structure. Medium-sized dozers, compactors, scrapers and other equipment are anticipated to be used during construction of the Proposed Project. No pile driving or high vibration level equipment would be used during construction. The nearest noise receptor is a residence, approximately 1,000 feet from the location of the nearest site of construction activities for the Proposed Project. **Table 4.11-7** provides estimated construction vibration levels at this distance. As shown in **Table 4.11-7**, the predicted PPV levels for all of the equipment to be used in construction of the Proposed Project would be below the significance thresholds of 0.5 PPV for non-residential structures and 0.1 PPV for residences (see **Section 4.11.2-1**). This would be a less-than-significant impact.

**TABLE 4.11-7**  
 PREDICTED PPV AT 50 AND 800 FEET FROM CONSTRUCTION

Equipment	PPV (inches/second) at 25 feet	PPV (inches/second) at 800 feet <sup>1</sup>
Large bulldozer	0.210	0.0016
Drilling	0.089	0.0006
Loaded trucks	0.076	0.0005
Small bulldozer	0.003	0.0000

<sup>1</sup>PPV was predicted using the equation  $PPV_{predicted} = PPV_{ref} * (25 / D_{source})^{1.4}$ .  
 PPV = peak particle velocity  
 Source: Caltrans, 2012; AES, 2014.

As discussed in **Section 4.11.2-1**, the predicted vibration from blasting that may occur during vineyard planting is approximately 0.07 inches/second at 800 feet, the distance to the nearest sensitive receptor. This is less than the 0.5 PPV inches/second significance threshold, and this impact is less than significant.

**Operation.** Loaded trucks traveling to and from the Proposed Property during operation would be the only source of vibrations from the operation of the Proposed Project. Truck usage on local roadways generated by the Proposed Project would increase during harvest season. Based on the calculations presented in **Table 4.11-7**, vibrations from loaded trucks can be 0.0005 PPV, which is below the significance threshold of 0.1 PPV for residences (see **Section 4.11.3-3**). Therefore, the additional loaded truck traffic during harvest would not expose

sensitive noise receptors to excessive groundborne vibration or groundborne noise levels. This would be a less-than-significant impact.

**Mitigation Measure 4.11-2:** No mitigation is required.

**Impact 4.11-3:** The Proposed Project is not located in the vicinity of a private airstrip. The nearest airport, Angwin-Parrett Field, is located within 3.25 miles to the southeast. The Proposed Project would not place residences in the vicinity of the airport; therefore, the Proposed Project would not expose people residing in the project area to excessive noise levels. Given the distance of the project site to the airport and the topography of the region; therefore, this is a less than significant impact.

**Mitigation Measure 4.11-3:** No mitigation is required.

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## 4.12 TRANSPORTATION AND CIRCULATION

### 4.12.1 SETTING

#### 4.12.1-1 EXISTING ROADWAY NETWORK

Access to the project site is provided via an existing roadway network northwest of the town of Angwin. Direct access to the project site is provided via Friesen Drive. Roadways that would be utilized by project related traffic are described below and depicted in **Figure 4.12-1**.

*Friesen Drive* is a two-lane north/south oriented roadway which dissects the project property. Friesen Drive extends from Buckeye Lane in the southeast to its terminus approximately 2.6-miles to the northwest at the property. The roadway is paved until the project property and then extends as maintained gravel easement to a private residence beyond the property. Friesen Drive is under the jurisdiction of the County of Napa (County) but is a private roadway accessed by a gate. The intersection of Friesen Drive and Buckeye Lane to the south of the project site is one-way stop controlled.

*Buckeye Lane* is a short, two-lane paved north/south oriented roadway that connects White Cottage Road in the south to Friesen Drive in the north. Buckeye Lane is under the jurisdiction of the County.

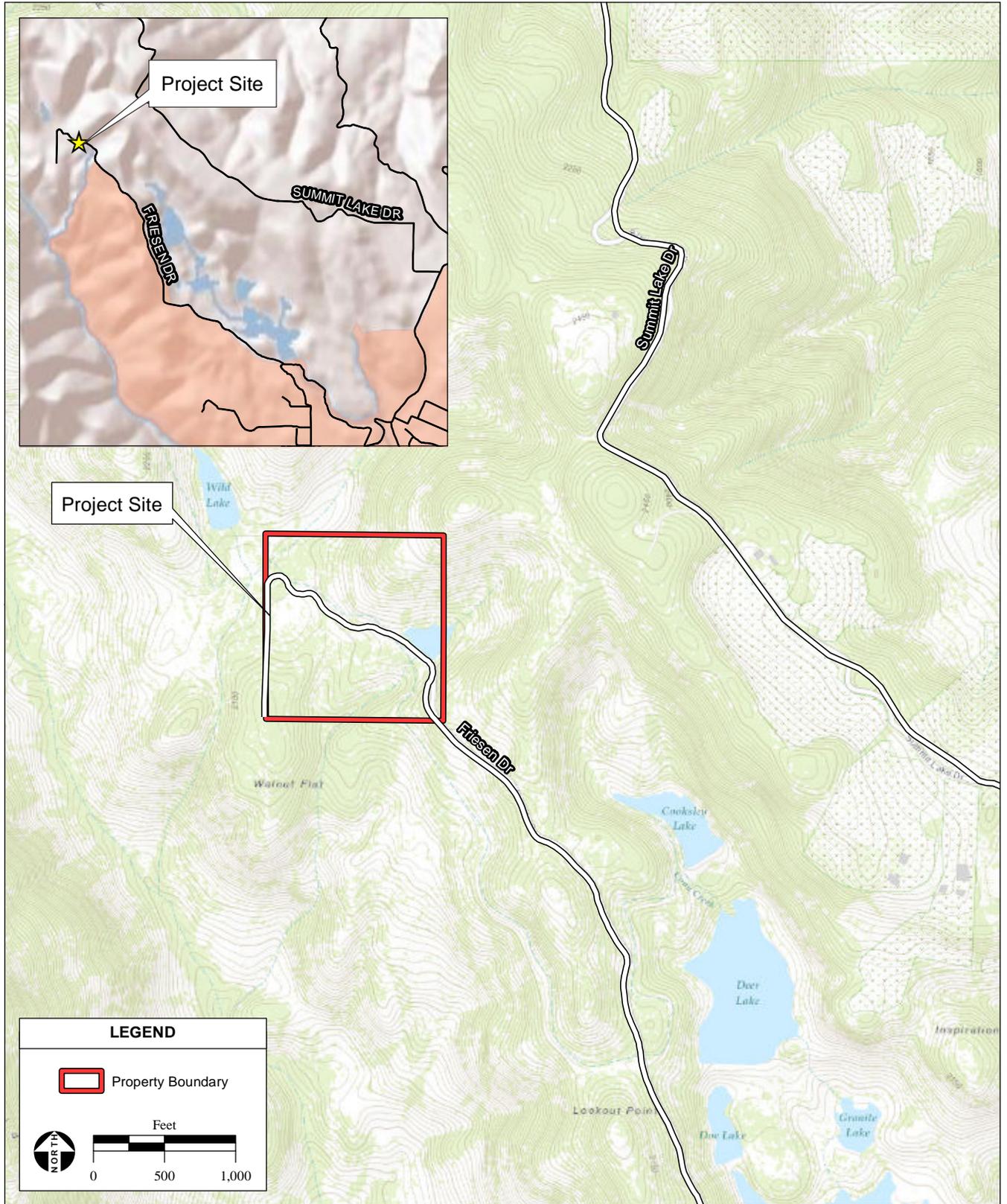
*White Cottage Road* is a two-lane paved north/south oriented roadway that intersects with Buckeye Lane and traverse south to its terminus at Howell Mountain Road. White Cottage Road is under the jurisdiction of the County. White Cottage Road intersections with Buckeye Lane and Howell Mountain Road are one-way stop controlled.

*College Avenue* is a two-lane east/west oriented roadway that provides access to the western portion of the town of Angwin and direct access to Pacific Union College (PUC) to the east of Howell Mountain Road. Buckeye Lane is located 1,700 feet southwest of the College Avenue / White Cottage Road intersection.

*Howell Mountain Road* is a two-lane north/south oriented major roadway that provides regional access to the project site. Howell Mountain Road turns into Deer Park Road just south of the town of Angwin, and connects the Silverado Trail in the Napa Valley with the Pope Valley to the north.

#### 4.12.1-2 EXISTING TRAFFIC CONDITIONS

As identified by the County in the Traffic Volume Summary, peak day volumes on Howell Mountain Road are 1,196 eastbound trips and 1,168 westbound trips. White Cottage Road



**Figure 4.12-1**  
Regional Transportation Network

peak day volumes to the north of the intersection with Howell Mountain Road are 829 northbound trips and 871 southbound trips (Napa County, 2009).

The peak day volumes on Friesen Drive were estimated based on the number of property owners along the roadway, which is 37 in addition to the project property (adjacent landowners contacted for the THP, refer to **Appendix H**) and an assumption that each property would result in a maximum of 9.57 trips per day. These assumptions are conservative the trips per day value is typically applied to single-family residences (ITE, 2008) and not all property owners along Friesen Drive have residences on their properties. Further, some of the residences along Friesen Drive are vacation or seasonal homes. Accordingly, the peak day volume on Friesen Drive is 354 vehicles.

Typically, the practical capacity of most two-lane rural roadways is 14,000 vehicles per day (HCM, 2000). Given the rural nature of the roadways leading to the project site, the topography or the region, and the relatively minimal existing traffic volumes, the practical capacity for Howell Mountain Road, White Cottage Road, and Friesen Drive was assumed for this analysis to be half the typical maximum at 7,000 vehicles per day.

As noted in the Timberland Conversion Plan (TCP) (**Appendix I**) for the Davis Family, LLC Friesen Vineyard Project (Proposed Project), Friesen Drive, White Cottage Road, Howell Mountain Road, and other roadways in the surrounding area have historically and are currently being used for the transport of agricultural crops by a wide variety of landowners in the County. Many of the roads in the surrounding area were originally built to transport agricultural products, including forest products and produce, early in the last century.

#### ***4.12.1-3 BIKEWAYS, PEDESTRIAN FACILITIES, PUBLIC TRANSPORTATION SYSTEMS***

There are no dedicated bicycle pathways/routes in the immediate vicinity of the project site. The nearest bicycle pathway is a small section of Howell Mountain Road in the vicinity of the PUC, which is approximately 2.9 miles southeast of the project site. No public transportation currently serves the project site.

#### **4.12.2 REGULATORY SETTING**

##### ***4.12.2-1 STATE***

##### **California Department of Transportation**

The California Department of Transportation (Caltrans) manages interregional transportation, including the management and construction of the state highway system. In addition, Caltrans is responsible for the permitting and regulation of state roadways. Caltrans establishes performance standards that apply to specific routes and publishes those standards in

transportation concept reports. There is one roadway that falls under Caltrans' jurisdiction, State Route 29 (SR-29), which is approximately four miles southwest of the project site.

#### *4.12.2-2 LOCAL*

##### **Napa County General Plan (2008)**

The Napa County General Plan Circulation Element (2008) seeks to provide safe and efficient movement on well-maintained roads throughout the County. The following are related goals and policy guidelines that pertain to transportation and circulation:

**Goal CIR-2:** The County's transportation system shall provide for safe and efficient movement on well-maintained roads throughout the County, meeting the needs of Napa County residents, businesses, employees, visitors, special needs populations, and the elderly.

**Policy CIR-13:** The County seeks to provide a roadway system that maintains current roadway capacities in most locations and is both safe and efficient in terms of providing local access. The following list of improvements has been supported by policy makers within the County and all five incorporated cities/town, and will be implemented over time by the County and other agencies to the extent that improvements continue to enjoy political support and funding becomes available:

##### Countywide

- Install safety improvements on rural roads and highways throughout the county including but not limited to new signals, roundabouts, bike lanes, shoulder widening, softening sharp curves, etc.

**Policy CIR-15:** The County shall maintain and apply consistent highway access standards regarding new driveways to minimize interference with through traffic while providing adequate local access. The County shall also maintain and apply consistent standards (though not exceeding public road standards) regarding road widths, turn lanes, and other improvements required in association with new development. Application of these standards shall consider the level of improvements on contiguous roads.

**Policy CIR-16:** The County shall seek to maintain an adequate Level of Service (LOS) on roads and at intersections as follows. The desired level of service shall be measured at peak hours on weekdays.

- The County shall seek to maintain an arterial LOS D or better on all county roadways, except where maintaining this desired level of service would

require the installation of more travel lanes than shown on the Circulation Map.

- The County shall seek to maintain a LOS D or better at all signalized intersections, except where the level of service already exceeds this standard (i.e., LOS E or F) and where increased intersection capacity is not feasible without substantial additional right-of-way.
- No single level of service standard is appropriate for un-signalized intersections, which shall be evaluated on a case-by-case basis to determine if signal warrants are met.

### 4.12.3 IMPACTS ANALYSIS

#### 4.12.3-1 SIGNIFICANCE CRITERIA

Criteria for determining the significance of impacts to traffic and circulation have been developed based on Appendix G of the California Environmental Quality Act's (CEQA) *Guidelines* and relevant agency guidelines. Impacts to the existing transportation network would be considered significant if the Proposed Project would:

- 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);
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways (LOS D in Napa County);
- 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;
- Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Result in inadequate emergency access;
- Result in inadequate parking capacity; or
- Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

#### 4.12.3-2 IMPACTS AND MITIGATION MEASURES

**Impact 4.12-1:** The Proposed Project would increase traffic volumes on roadways in the area during construction phases (Timber Harvest and Vineyard Construction). This is a potentially significant impact, but it is reduced to less-than-significant levels with implementation of **Mitigation Measure 4.12-1.**

Construction traffic typically occurs outside of peak hour traffic. The typical construction hours of the Proposed Project would be 7 A.M. to 7 P.M. Monday through Saturday (**Appendix H**). Construction activities would be intermittent and short-term in nature. Accordingly, peak day traffic conditions were utilized to analyze the impact of construction traffic associated with the Proposed Project. Friesen Drive is the primary access roadway for all traffic entering and exiting the property.

Due to nature of the rural roadways in the vicinity of the project site and the existing vehicular traffic on these roadways, logging trucks will not be used under the Proposed Project; instead, the harvested timber will be milled onsite and lumber not retained onsite will be transported from the property on legally loaded, three-axle trucks. Trucks will, however, will be delivering heavy equipment and materials to the project site. Vehicles expected to be used during construction include, but are not limited to, legally loaded, three-axle trucks; dump trucks; delivery trucks; and construction worker vehicles. Equipment, including milling equipment, would stay onsite for the duration of timber harvest. It is anticipated that an average of four trips for material delivery to and from the site would occur per day and that the heavy equipment listed in **Table 3-3** would be delivered to the project site once at the start of timber harvest and remain onsite for the duration of the construction season. Therefore, there would be seven heavy equipment delivery trips at the beginning of construction and seven trips to remove the equipment at the end of the season. Because trucks are larger than passenger cars and can result in a greater impact, a passenger car equivalence (PCE) multiplier of 8 cars per truck was used (TRB, 2000).

As stated in **Section 3.4.3-3**, there would be approximately 10 construction workers during each construction phase (THP, ECP installation, and vineyard development). For peak day conditions, 20 worker trips per day were assumed to account for round-trip commuting to and from the project site, which is conservative given that workers may carpool or ride-share. Therefore, the total PCE trips added to the local roadway network during construction of the Proposed Project would be 24 per day during the construction phase with an additional 7 heavy equipment deliveries happening two times during the year.

As discussed in **Section 4.12.1-2**, peak day volume on Howell Mountain Road is 1,196 eastbound trips and 1,168 westbound trips and peak day volume on White Cottage Road is 829 northbound trips and 871 southbound trips (Napa County, 2009). The addition of 24 trips on an average day and 31 trips on the equipment delivery days is well below the assumed County maximum capacity of 7,000 vehicles per day on Howell Mountain Road and White Cottage Road. The additional 24 trips represents an increase in peak day volume trips of 2.0 percent (eastbound) and 2.1 percent (westbound) on Howell Mountain Road and 2.9 percent (northbound) and 2.8 percent (southbound) on White Cottage Road. Further, these trips would be temporary and averaged over the course of a day.

As discussed in **Section 4.12.1-2**, peak day volume on Friesen Drive is 354 trips (ITE, 2008) and the addition of 24 trips would increase the peak day volumes on Friesen Drive by 6.8 percent. Although the addition of 24 trips (maximum 31 trips on two days a year during construction) would still be well below assumed County maximum capacity of Friesen Drive, it would temporarily increase peak day volumes on Friesen Drive, which is a private, gated residential roadway with minimal existing traffic. **Mitigation Measure 4.12-1** is included below to ensure large trucks operate with caution on rural roads and to ensure material and equipment deliveries would be limited to the off-peak hours (9 AM to 4 PM). With mitigation, potential impacts related to construction traffic are reduced to a less-than-significant level.

**Mitigation Measure 4.12-1:** The following mitigation measures provided in the Timber Conversion Plan (**Appendix I**) shall be required for construction vehicles using off-site roadways during construction activities.

- All oversized construction vehicles are advised to use extreme caution when delivering equipment/materials or transporting milled lumber along county roads, especially in areas of limited site visibility.
- Oversized construction vehicles are to operate with headlights on for safety and are not to exceed 15 miles per hour on Friesen Drive, and 25 miles per hour while on rural county roads.
- Oversized vehicles are not to use Jake brakes in the immediate vicinity of residential neighborhoods.
- All construction activities are restricted to Monday through Saturday 7 am to 7 pm. No activities may take place on Sundays and holidays.
- Heavy equipment and material delivery and removal will be limited to non-peak hours (9 AM to 4 PM) and will be maintained and/or stock piled onsite to avoid multiple in and out trips to the extent practical and feasible.

**Impact 4.12-2:** The Proposed Project would increase traffic volumes on roadways in the area during operation of the vineyard development.

Operation of the Proposed Project would generate trips on account of vineyard maintenance and grape harvest. Vineyard operation and maintenance would typically require 3 to 4 people per day or less, but would require up to 10 people for short durations during certain operational tasks, such as pruning or harvest. Operational traffic associated with the Proposed Project would be greatest during harvest of the vineyard. During operation of the Proposed Project, grapes are anticipated be transported in farm trucks to wineries in the Napa Valley area. The grape harvest is expected to be transported over a 30-day harvest period when the vineyard reaches maturity. This type of agricultural traffic anticipated to be generated by the Proposed Project would be minimal and very similar to other agricultural transport activities presently

taking place on Friesen Drive. Approximately three 20± ton trucks are anticipated to transport harvested grapes during this 30-day period (**Appendix I**). At worst case scenario, 26 peak day trips would be added to the transportation system. This long-term addition of operational trips to and from Friesen Drive would be minimal, seasonal, and would not exceed capacity on existing roadways serving the property and in the vicinity. Therefore, operation of the Proposed Project would result in a less-than-significant impact to area circulation.

**Mitigation Measure 4.12-2:** No mitigation is required.

**Impact 4.12-3:** Construction and operational traffic generated by the Proposed Project will not result in inadequate emergency access. This is a less-than-significant impact.

The property's main access point (including emergency access) connects directly to Friesen Drive. As discussed under **Impact 4.12-1**, since the level of temporary construction traffic (Timber Harvest and Vineyard Development) is minimal and there is a very low increase in long-term traffic volumes associated with the addition of worker trips for operation of the vineyard, these factors would not change the LOS experienced by fire and emergency services in accessing the project site and surrounding properties.

The Proposed Project is located in a Very High Fire Hazard Severity Zone (CAL FIRE, 2007). Access for firefighting equipment to the property occurs from Friesen Drive, which provides direct access to all vineyard blocks. Biomass fuel loading is high on and in the vicinity of the property. Installation of the proposed vineyard will further reduce fire susceptibility by breaking up some of the overstory biomass fuels in the existing forest canopy, providing a less fire-sensitive irrigated agricultural crop than the existing use. Thus, the potential demands on fire services and emergency access would be reduced with the completion of the Proposed Project.

Therefore, because the Proposed Project would not result in inadequate emergency access, this impact is less than significant.

**Mitigation Measure 4.12-3:** No mitigation is required.

**Impact 4.12-4:** Traffic generated by construction and operation of the Proposed Project does not have the potential to impact pedestrian, bicycle, and public transport in the vicinity of the project. This is a less-than-significant impact.

There are no roadway pedestrian systems or public transportation facilities in the immediate vicinity of the Proposed Project. Also, the development of the Proposed Project would not create a need for such facilities in the vicinity of the property. Although there are no designated bicycle facilities in the vicinity of the project site, some bicycles operate along Howell Mountain Road adjacent to the Angwin PUC. Construction and operation of the Proposed Project would

generate a small amount of project-related construction and operational traffic; however, not along this portion of Howell Mountain Road. Therefore, the Proposed Project would not affect bicycle transportation given the temporary and minimal project-related traffic. A less-than-significant impact would occur to bicycle, public transportation, and pedestrian facilities from implementation of the Proposed Project.

**Mitigation Measure 4.12-4:** No mitigation is required.

**Impact 4.12-5:** The temporary increase in traffic from construction worker vehicles and the import and export of materials could adversely affect traffic and transportation conditions in the project area, resulting in a conflict with applicable County General Plan policies establishing measures of effectiveness for the performance of the circulation system. However, this impact is less than significant.

Because the increase in traffic volumes caused by construction activities would not exceed the capacity of local roadways, the additional construction-related vehicle trips that would be generated from employee vehicles and construction equipment associated with project construction would not result in considerable changes in the performance of the circulation system. Therefore, these additional trips would not result in a conflict with an applicable plan, ordinance, or policy related to traffic circulation. This impact would be less than significant.

**Mitigation Measure 4.12-5:** No mitigation is required.

**Impact 4.12-6:** Traffic generated by the Proposed Project does not have the potential to result in changes to air traffic patterns.

Traffic generated by the proposed project would not interfere with existing air traffic patterns from Angwin-Parrett airport located approximately 2.8 miles southeast of the project site. This impact would be less-than-significant.

**Mitigation Measure 4.12-6:** No mitigation is required.

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## ***SECTION 5.0***

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ALTERNATIVES TO THE PROPOSED PROJECT

# SECTION 5.0

## ALTERNATIVES TO THE PROPOSED PROJECT

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### 5.1 INTRODUCTION

This section reviews alternatives to the Proposed Project considered during the preparation of this Environmental Impact Report (EIR). The purpose of the alternative analysis, according to CEQA *Guidelines* § 15126.6(a), is to describe a range of reasonable alternative projects that could feasibly attain most of the objectives of the Proposed Project and to evaluate the comparative merits of the alternatives. CEQA *Guidelines* § 15126.6(b) requires consideration of alternatives that could reduce to a less than significant level or eliminate any significant adverse environmental effects of the Proposed Project, including alternatives that may be more costly or could otherwise impede the Proposed Project's objectives. The range of alternatives evaluated in an EIR is governed by a "rule of reason," which requires the evaluation of alternatives "necessary to permit a reasoned choice." Alternatives considered must include those that offer substantial environmental advantages over the Proposed Project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors. An EIR does not need to consider every possible alternative, but must consider alternatives that will foster informed decision-making and public participation.

In accordance with the CEQA *Guidelines*, the alternatives considered in this EIR include those that 1) could accomplish most of the basic objectives of the project, and 2) could avoid or substantially lessen one or more of the significant effects of the project. To provide the appropriate context for this alternatives analysis, the Proposed Project objectives and key significant effects are summarized below in **Section 5.2**. Project alternatives determined to achieve the CEQA selection criteria are discussed in **Section 5.3**. This discussion evaluates the capacity of selected project alternatives to accomplish the basic objectives of the project and provides a comparison of the potential environmental impacts expected to occur for each resource area. These comparisons are used in **Section 5.4** to determine the Environmentally Superior Alternative.

### 5.2 PROJECT OBJECTIVES

Approximately 10 acres of the 13.6± acre project site contains timberland that would be harvested under a Timber Harvest Plan (THP) consistent with Forest Practice Rules, and evaluated under a CEQA-equivalent process led by the California Department of Forestry and Fire Protection (CAL FIRE). The timber harvest would occur before the conversion of the

timberland to non-timberland uses, and final vineyard development would be consistent with the erosion control plan (ECP) elements of the Proposed Project that require County approval.

After the timber harvest occurs on the property, specific objectives associated with the Proposed Project are to:

- Convert the 13.6± acre project site, which includes the 10.0± acre TCP area with the balance of acreage including brush (chaparral and manzanita) and ruderal land to permanent uses other than timberland;
- Implement a 13.6± acre ECP for the overall project site;
- Develop 10.5± net acres of vineyard on the portions of the property that are suitable for the cultivation of high-quality wine grapes while ensuring the economic viability of the Proposed Project; and
- Provide opportunities for vineyard employment and economic development in the County.

### 5.2.1 KEY IMPACTS OF THE PROPOSED PROJECT

Key impacts of the Proposed Project are evaluated in **Section 4.0** of this EIR. Project design, regulatory requirements, and recommended mitigation measures would reduce all potential short- and long-term impacts during construction and operation of the Proposed Project to a less than significant level. There are no significant and unavoidable impacts associated with the Proposed Project.

## 5.3 ALTERNATIVES TO THE PROPOSED PROJECT

### 5.3.1 NO PROJECT ALTERNATIVE

#### Description

As required by CEQA *Guidelines* Section 15126.6(e), a No Project Alternative has been evaluated. The evaluation of the No Project Alternative allows decision makers to compare the impacts of the Proposed Project against no development of the project. According to the CEQA *Guidelines* Section 15126.6(e)(2), the No Project Alternative shall discuss what would reasonably be expected to occur in the foreseeable future if the project were not approved. Thus, the No Project Alternative consists of the environmental conditions that currently exist with no future development on the property. The property would remain as currently described in the existing setting under each issue area discussed in **Section 4.0**.

#### Ability to Meet Project Objectives

With the No Project Alternative, the property would continue to remain in its existing state as partially forested with areas of chaparral, manzanita, and ruderal/developed lands. No changes to the existing forested areas or open space areas would occur. No conversion of the property to non-timber uses would occur. The trees and vegetation cover proposed for removal through the timber harvest would remain unaffected. The currently dense vegetative cover would

remain, and the fire hazard reduction benefits, which would result from the conversion to less fire-susceptible land use and the enhancement of some of the foothill pine complex back to oak woodland, would not occur. This alternative would not accomplish the basic objectives of the Proposed Project. The economic objectives of the timber harvest and vineyard conversion would not be achieved through this alternative.

### **Summary of Environmental Impacts**

This alternative would eliminate short-term impacts related to construction activities. Temporary impacts associated with noise, pollutants, and greenhouse gas (GHG) emissions from construction activities would be avoided. Additionally, because ground-disturbing activities would not occur, potential impacts to hydrology, water quality, and biological resources would be avoided. The fire hazard reduction benefits of the Proposed Project would not be achieved.

The development of project features associated with the timber harvest, installation of the ECP, and vineyard conversion would not occur under this alternative. The impacts identified in **Section 4.0** would be avoided and the existing environmental setting would remain.

### 5.3.2 NO TIMBER CONVERSION ALTERNATIVE

#### **Description**

The No Timber Conversion Alternative would result in the planting of vineyard on 4.0± acres of non-timberland on the property. This alternative would result in the conversion to vineyard of 1.12± acres of chamise chaparral, 2.84± acres manzanita, and some areas of ruderal/developed land. Limited timber may be harvested as a result of this alternative; however, the timberland on the property would not be converted to vineyard and therefore no Timber Conversion Plan (TCP) would be needed. There are 4.0± acres that could be planted to vineyard without a TCP as they are currently brush and grassland habitat, but they are situated on some areas with slopes greater than five percent. Therefore, a revised ECP would be required, and Napa County would have approval authority over the No Timber Conversion Alternative.

No woodland habitat would be removed as a result of this alternative and therefore no habitat mitigation would be needed. The existing Mixed Oak woodland would not be retained on the property in the area designated the Habitat Retention Area (HRA). Further, no enhancement activities (e.g. removal of competing species, refer to **Section 4.4**) would occur the areas identified for enhancement of Mixed Oak woodland habitat.

#### **Ability to Meet Project Objectives**

The No Timber Conversion Alternative would generally meet the project objectives because it would allow for the conversion of a portion of the project site to vineyard, would require implementation of an ECP for a portion of the project site, and would develop a vineyard on some of the portions property that are suitable for the cultivation of high-quality wine grapes,

which would provide some opportunities for vineyard employment and economic development in the County. However, the No Timber Conversion Alternative would not completely meet the project objectives, specifically the goal to ensure the economic viability of the Proposed Project, as it would significantly reduce the acreage available for vineyard planting and ECP implementation. This would in turn significantly reduce the opportunities for vineyard employment and economic development in the County, and would not be economically viable.

### **Summary of Environmental Impacts**

The No Timber Conversion Alternative would result in the same impacts to aesthetics and land use as impacts associated with the Proposed Project. Similar to the Proposed Project, the No Timber Conversion Alternative would not have a substantial adverse effect on a scenic vista, damage scenic resources, substantially degrade the existing visual character of the site and its surroundings, or create a new source of substantial light or glare. Also similar to the Proposed Project, the No Timber Conversion Alternative would not physically divide an existing community, conflict with an applicable land use plan, policy, or regulation, or conflict with an applicable habitat conservation plan or natural community conservation plan. The level of impact would be the same as the Proposed Project.

Compared to the Proposed Project, impacts to forested land would be lesser under the No Timber Conversion Alternative. This alternative would not result in the harvesting of 10± acres of medium-density and high-density forest and would result only in the conversion of chaparral, manzanita, and ruderal/developed habitat to vineyard.

The No Timber Conversion Alternative, similar to the Proposed Project, would generate construction-related dust and particulate matter, additional vehicles on the local transportation system, and noise. This alternative does not include harvest of timber and proposes a smaller vineyard and ECP implementation area, so impacts due to construction of this alternative will be slightly lesser than the Proposed Project. However, these impacts were analyzed for the Proposed Project and determined to be either less than significant with mitigation (air quality and traffic, refer to **Sections 4.3** and **4.12**, respectively) or less than significant (noise, refer to **Section 4.11**). The mitigation measures included in the Proposed Project for air quality and traffic (**Mitigation Measures 4.3-1** and **4.12-1**, respectively) would also be required for the No Timber Conversion Alternative to minimize potential impacts.

Lesser impacts would occur to special-status bat species and special-status bird species on the project site in the short term because no tree harvest would occur. However, the special status plant species (*Napa lomatium*) would suffer in the long term as natural succession of the existing dominant habitat would result in shading from the overstory and eventually out-compete the plant species, and the No Timber Conversion Alternative would not be required to mitigate for this species' seed bank onsite.

This alternative would also not result in the retention and enhancement of the existing Mixed Oak woodland on the property within the Habitat Retention Area (HRA). This alternative would not protect the oak woodland onsite and would not ensure the prevention of future development on the property. In addition, no habitat enhancement techniques would occur on the forested land on other areas within the HRA, as listed in **Mitigation Measure 4.4-3** for the Proposed Project. Therefore, in considering the above outcomes of this alternative, impacts to biological resources would be greater in the long term when compared to those of the Proposed Project (refer to **Section 4.4**).

The No Timber Conversion Alternative would avoid development in the area on the property that contains known cultural resources and would thereby result in a reduced impact compared to the Proposed Project. However, as discussed in **Section 4.5**, the Proposed Project would result in a less than significant impact with mitigation to known cultural resources on the property. Additionally, the No Timber Conversion Alternative would result in the same potential to affect previously unknown cultural resources and the same potential to discover and disturb of unknown human remains as the Proposed Project. The mitigation measures included in the Proposed Project (**Mitigation Measures 4.5-2 and 4.5-3**) would be required for the No Timber Conversion Alternative to minimize potential impacts to cultural resources.

Some of the areas proposed for conversion to vineyard under the No Timber Conversion Alternative are greater than five percent slope and would require an ECP be developed with project-specific erosion control measures. Similar to the ECP for the Proposed Project, the ECP for this alternative would be specifically designed to reduce sedimentation to downstream, off-site watercourses, such as the Napa River, which is currently listed as an impaired water body for nutrients, pathogens, and sediment under Section 303 (d) of the Clean Water Act (CWA) (**Section 4.9**). The No Timber Conversion Alternative would be required to reduce post-project sediment production on the project site as is required of the Proposed Project. However, the ECP for this alternative would be for a smaller acreage than the Proposed Project ECP, and would not improve the existing conditions on the entire 13.6-acre project site by decreasing sediment by 27 percent. Impacts of the No Timber Conversion Alternative associated with erosion, change in property hydrology, and downstream water quality would be similar or slightly greater than those under the Proposed Project.

As the No Timber Conversion Alternative would be developed on the same property as the Proposed Project, impacts associated with seismicity would be the same as those associated with the Proposed Project.

Construction of the No Timber Conversion Alternative would result in the emission of GHGs, though at a lesser extent than the Proposed Project, as the installation of the ECP and vineyard would be over a smaller area thereby requiring fewer materials and construction activities. Sources of GHG emissions during construction of this alternative would include the transport and delivery of construction equipment to the property; operation of construction equipment,

including equipment used for the planting the vineyard and installing the erosion control system; worker trips; fuel use; and material transport. As no timber harvest would occur, the No Timber Conversion Alternative would not retain any carbon in lumber and would have to purchase GHG emissions credits from a recognized GHG reduction credit organization to achieve the required percent reduction in GHG emissions per the Napa County draft Climate Action Plan.

Compared to the Proposed Project, impacts related to hazardous materials would be slightly less under the No Timber Conversion Alternative. A similar potential for incidental leakage, rupture, or spillage when fueling equipment during construction and operation of the No Timber Conversion Alternative would occur as that of the Proposed Project, albeit at a slightly reduced scale since there is no timber harvest component and the construction area would be smaller. Additionally, a similar risk for improper pesticide use, storage, or disposal would exist under the No Timber Conversion Alternative compared to the Proposed Project, again at a slightly reduced scale since the vineyard area would be smaller. The mitigation measures included in the Proposed Project (**Mitigation Measures 4.8-1, 4.8-2, and 4.8-3**) would be required for the No Timber Conversion Alternative to minimize potential impacts related to hazardous materials.

As the proposed vineyard under the No Timber Conversion Alternative would be smaller than the proposed vineyard under the Proposed Project, the water demand during and after establishment would be reduced accordingly. Therefore, the impact to groundwater supply of the No Timber Conversion Alternative would be less when compared to the Proposed Project. However, as discussed in **Section 4.9**, long-term water use of the Proposed Project is only 19 percent of the allowable groundwater allotment for the property and, even with the Proposed Project, the property would provide the recharge opportunity for approximately 12.5 acre feet per year, which far exceeds the long term irrigation needs of the Proposed Project.

## **5.4 ALTERNATIVES ELIMINATED FROM CONSIDERATION**

### **5.4.1 SELECTIVE LONG-TERM TIMBER HARVEST AND MANAGEMENT ALTERNATIVE**

#### **Description**

For the Selective Long-Term Timber Harvest and Management Alternative, timber would be harvested on portions of the 38.7-acre property, and subsequently seedlings would be re-planted. No vineyard development would occur on the property; as this is the primary objective of the project, this alternative has been removed from further consideration. Since the timber harvest area is designed to accommodate the vineyard conversion under the Proposed Project, under the Selective Long-Term Timber Harvest and Management Alternative, a larger timber harvest area would likely occur. Apart from the existing developed areas (i.e. roadways), waterways, and reservoir, nearly the entire 38.7-acre property would be selectively harvested for timber products, cleared if necessary (i.e. areas with predominantly chaparral and

manzanita), and replanted for future timber harvest operations. However, the property does not contain large amounts of high quality timber and is not within a Timberland Protection Zone (TPZ), indicating the economic benefits and long term viability of this alternative are less than desirable.

### **Ability to Meet Project Objectives**

The Selective Long-Term Timber Harvest and Management Alternative would not fully meet the objectives of the project. The harvest of timber over a larger portion of the property would provide short term economic benefits in the form of increased marketable timber products. However, it would take roughly 20 to 40 years before another timber harvest would be feasible given the size of the trees or economically viable given the costs for harvesting operations and the sale of timber products. Likewise, the economic tax benefits to the County and the addition of jobs to the local workforce would be significantly reduced under this alternative as there would be no ongoing work force needed for the vineyard operations. The erosion control measures that would be implemented as part of a project that includes a vineyard development component would not occur. Finally, the development of portions of the property that are suitable for the cultivation of high-quality wine grapes is the central objective of the project, one that would provide the greatest economic returns in the long term while also operating in a sustainable, environmentally sensitive manner.

### **Summary of Environmental Impacts**

Impacts to biological resources under the Selective Long-Term Timber Harvest and Management Alternative would include greater impacts, at least in the short term, to Douglas fir, Foothill pine, Mixed Oak, and Willow habitat than those of the Proposed Project. Similar to the Proposed Project, the recommended mitigation measures to reduce impacts to these resources would be applied in appropriate ratios to the actual acreage of woodland habitat impacted (refer to **Section 4.4**).

Impacts to the onsite wildlife movement corridors and habitat would be temporarily impacted during the operation of the timber harvest and replanting activities. Also, no deer fencing would be installed. However, reduced vegetation cover over a greater acreage of the property under this alternative could impact foraging and cover habitat for many terrestrial and bird species during the forest re-growth period.

The selective timber harvest and corresponding Timber Harvest Plan (THP) would be implemented pursuant to CAL FIRE standards. The County ECP regulations would not apply under this alternative. The mitigation measures contained in the Proposed Project's ECP are significantly greater than those found in a THP. As such, the Selective Long-Term Timber Harvest and Management Alternative would result in more extensive impacts in terms of total acreage and would have the potential for greater impacts to hydrology and water quality as well as geology and soils.

The disturbance to the forest associated with the Selective Long-Term Timber Harvest and Management Alternative would cause ground disturbing activities over a greater total acreage than those anticipated and mitigated for in the Proposed Project. During timber harvest activities, potential impacts to resource areas such as aesthetics, hydrology and water quality, biological resources, noise, and air quality would likely be greater than those associated with and mitigated for in the Proposed Project. However, the THP process would require mitigation measures to lessen or eliminate these potential impacts.

## 5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA *Guidelines* Section 15126.6(d) requires an evaluation of alternatives to the Proposed Project.

*“The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.”*

Consistent with this CEQA requirement, a summary matrix has been prepared which qualitatively compares the effectiveness of each of the project alternatives in reducing environmental impacts. This matrix, presented in **Table 5-1**, identifies for each impact area whether the alternatives would have greater, lesser, or similar impacts compared with the Proposed Project. As stated above in **Section 5.2.1**, there would be no significant and unavoidable impacts as a result of the Proposed Project. Each of the impacts identified under the Proposed Project would be considered less than significant after mitigation. Therefore “greater” and “lesser” impacts identified in **Table 5-1** are referring to varying degrees of impacts below established significance thresholds. In summary, the environmentally superior alternative is the alternative that would cause the least impact to the biological and physical environment.

**TABLE 5-1**  
**ENVIRONMENTAL IMPACT COMPARISON**  
**BETWEEN THE PROPOSED PROJECT AND PROJECT ALTERNATIVES**

Impact Area	Project Alternatives	
	No Project Alternative	No Timber Conversion Alternative
Aesthetics	Lesser	Similar
Agriculture and Forestry Resources	Lesser	Lesser
Air Quality	Lesser	Lesser
Biological Resources	Lesser	Greater
Cultural Resources	Lesser	Lesser
Geology and Soils	Greater	Similar or Slightly Greater
Greenhouse Gas Emissions	Lesser	Lesser
Hazards and Hazardous Materials	Lesser	Similar
Hydrology and Water Quality	Lesser	Similar or Slightly Greater
Land Use/Planning	Similar	Similar
Noise	Lesser	Similar
Transportation and Traffic	Lesser	Similar

As discussed above, implementation of the No Project Alternative would result in no change in land use on the property; however, it fails to meet the objectives of the project. Under the No Project Alternative, impacts to hydrology and water quality as well as geology and soils would likely be greater than the Proposed Project since the drainages on the property would not be improved. Therefore, the current erosion and sedimentation occurring from this source would continue. Without implementation of the ECP, the water quality of off-site watercourses would not be improved. This could lead to greater impacts to water quality in the long term for off-site watercourses such as the Napa River, which is currently listed as a Section 303 (d) impaired water body under the CWA.

The No Timber Conversion Alternative would result in slightly lesser impacts as compared to those of the Proposed Project because it has a lesser footprint and does not involve timber harvest operations. Given the smaller size of the vineyard proposed under the No Timber Conversion Alternative, the air quality impacts and GHG emissions associated with construction would be less compared to the Proposed Project. The No Timber Conversion Alternative would avoid converting forested areas, including Mixed Oak woodlands, to other land uses and would

therefore result in a lesser biological impact in the short term. However, it would not provide the long term preservation of any of the existing Mixed Oak woodlands nor the enhancement of oak habitat in other areas of the property, which would be a greater impact to biological resources in the long term. The No Timber Conversion Alternative would result in the implementation of an ECP, which would result in similar impacts associated with hydrology and water quality as well as geology and soils compared to the Proposed Project. However, because the ECP would cover only 4.0± acres compared to 13.6± acres under the Proposed Project, the beneficial reduction in sedimentation from the entire property would be less under the No Timber Conversion Alternative compared to the Proposed Project. Overall, the No Timber Conversion Alternative would likely result in lesser direct impacts to the environment than the Proposed Project, but it would not result in any of the environmental benefits of the Proposed Project.

Generally, the environmentally superior alternative is the alternative that would cause the least damage to the environment. Since implementation of the No Project Alternative would result in fewer adverse environmental effects than would occur under the Proposed Project and the No Timber Conversion Alternative, the No Project Alternative would be considered the environmentally superior alternative. However, the No Project Alternative would not achieve the central project objective of development of vineyard.

If the No Project Alternative is the environmentally superior alternative, *CEQA Guidelines* Section 1526.6(e)(2) requires identification of an environmentally superior alternative among the other alternatives considered in the EIR. When comparing the remaining development alternatives, the Proposed Project is the most environmentally superior alternative. The Proposed Project is the only alternative which fully meets the project objectives and has been designed to lessen impacts to the environment to less-than-significant levels through implementation of the recommended mitigation measures provided in **Section 4.0**.

## ***SECTION 6.0***

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### **OTHER CEQA-REQUIRED SECTIONS**

# SECTION 6.0

## OTHER CEQA-REQUIRED SECTIONS

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California Environmental Quality Act (CEQA) required discussions are presented in this section, including:

- Indirect and Growth-inducing impacts of the Proposed Project;
- Cumulative Impacts of the Proposed Project;
- Unavoidable Significant Impacts of the Proposed Project (i.e., residually significant impacts); and
- Irreversible Changes.

### 6.1 INDIRECT AND GROWTH INDUCING IMPACTS

CEQA *Guidelines* § 15126.2 [d] requires that an Environmental Impact Report (EIR) evaluate the growth inducing impacts of a proposed project. A growth inducing impact is defined by the CEQA *Guidelines* as an impact that fosters economic or population growth, or the construction of additional housing, either directly or indirectly. Direct growth inducement would result, for example, if a project involved the construction of new housing. Indirect growth inducement would result if a project established substantial new permanent employment opportunities (e.g., new commercial, industrial, or governmental enterprises) or if it would remove obstacles to population growth (e.g., expansion of a wastewater treatment plant that could allow more construction in the service area).

Growth inducement may constitute an adverse impact if the growth is not consistent with or accommodated by the land use plans and growth management plans and policies for the area affected. Local land use plans provide development patterns and growth policies that guide orderly development supported by adequate public services, such as water supply, roadway infrastructure, sewer services, and solid waste services. A project that would induce “disorderly” growth (i.e., conflict with the local land use plans) could directly or indirectly cause additional adverse environmental impacts and other public services impacts. An example of this would be the re-designation of property planned for agricultural uses to urban uses, possibly resulting in the development of services and facilities that encourage the transition of additional land in the vicinity to more intense urban uses. Another example would be the extension of urban services to a non-urban site, thereby encouraging conversion of non-urban lands to urban lands.

As described in **Section 3.0**, the Proposed Project would result in the permanent conversion to vineyards of 10.0± acres within the 13.6± acre area already harvested under the THP process

also pending before CAL FIRE under a separate CEQA functional equivalent process. As noted in **Section 4.10**, the Proposed Project is located within unincorporated Napa County (County) and is zoned as Agricultural Watershed (AW).

The conversion of timberland and development of the vineyard under the Proposed Project would not conflict with existing County land use designations, surrounding land uses, or local habitat conservation plans (**Sections 4.2 and 4.10**). The Proposed Project would not result in any of the following repercussions:

- Remove (or create) obstacles to growth;
- Cause a strain on existing community services provided in the region;
- Impede economic growth; or
- Cause a need for additional housing.

Therefore, no indirect or growth inducing impacts would occur as a result of the Proposed Project.

## 6.2 CUMULATIVE IMPACT ANALYSIS

Cumulative impacts refer to the effects of two or more projects that, when combined, are considerable or compound other environmental effects. Cumulative impacts must consider the combined impact of past, present, and reasonably foreseeable future projects. When assessing a cumulative impact, an EIR must identify if the project makes a “cumulatively considerable” contribution to the cumulative environment. A project’s contribution may be cumulatively considerable even if the project’s individual impact is considered less than significant. CEQA *Guidelines* Section 15130(b) requires that discussion of cumulative impacts reflect the severity of the impacts and their likelihood of occurrence. The CEQA *Guidelines* state that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness. Pursuant to CEQA Guidelines Section 15130(b), this EIR uses projections contained in the Napa County General Plan EIR (2007), General Plan (2008), and related planning documents, which describe or evaluate regional or area-wide conditions contributing to cumulative impacts.

### 6.2.1 GEOGRAPHIC SCOPE

CEQA requires that the cumulative analysis define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for geographic limitations. As such, the analysis in this section will rely on projects that have the potential to contribute to cumulative impacts within the community of Angwin and an area generally within a three mile radius of the property, with the exception of air quality, greenhouse gas emissions, and agriculture and

forestry, which were analyzed within a larger area of impact as discussed in **Section 6.2.2** below.

### 6.2.2 CUMULATIVELY CONSIDERABLE IMPACTS

CEQA *Guidelines* § 15130(a) provides the following direction with respect to the cumulative impact analysis and the determination of significant effects:

1. A cumulative impact consists of an impact that is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts.
2. When the combined cumulative impact associated with the project's incremental effect is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed further.
3. An EIR may determine that a project's contribution to a significant cumulative effect will be rendered less than cumulative considerable and thus is not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

The following is an analysis of cumulative impacts related to the Proposed Project by environmental resource category as described in **Section 4.0**. Refer to **Section 4.0** for a detailed discussion of the nature and scope of impacts associated with the Proposed Project.

#### 6.2.2-1 AESTHETICS

**Visual Resources.** Long distance views of the project site are shielded by topography and forested vegetation. Nearby views from private Friesen Drive and adjacent properties would remain consistent with the existing character visual character and would not be significantly altered as similar views of vineyards are already available in the vicinity. Given that there is no reasonably foreseeable project that would alter the surrounding forested lands such that the Proposed Project would be more visible, a less-than-significant cumulatively considerable impact would occur.

**Lighting and Glare.** As operation of the Proposed Project would not create a substantial light or glare that would adversely affect day or nighttime views in the area, the Proposed Project would not contribute to the cumulative environment. No cumulatively considerable impact would occur.

#### 6.2.2-2 AGRICULTURE AND FORESTRY RESOURCES

The Fire and Resource Assessment Program's (FRAP's) *Land Base of California Forests* report lists Napa County as having 22,000 acres of Commercial Conifer Timberland (Shih, 1998). Conifer Timberland is defined as growing more than 20 square-feet per acre per year. This

22,000 acres is a small portion of the nearly 131,136 acres of forest land in the entire County, which includes cypress forest, deciduous oak woodland, Douglas fir/redwood forest, evergreen oak woodland, evergreen oak woodland, deciduous, non-native woodland, and pine forest as classified and mapped by the County (Napa County, 2002). Other areas of the County, which may have forest land with commercial conifer growth, contain small and scattered areas that are not included under the general designation of Commercial Conifer Timberland. The property falls within one of these scattered areas and is not within the commercial forest land base of California. As noted in the Timber Harvest Plan (THP), since the forested timber harvest portion (10.0± acres) of the property is so small and the Proposed Project would remove a small amount of timber volume that is not within the commercial forest land base of California, no significant impact can be expected to occur on timber resources of the State or its timber productivity and economy (**Appendix H**).

**Bell Canyon Reservoir Watershed.** An analysis of potential impacts to the Bell Canyon Reservoir watershed from implementation of the Proposed Project is presented in Section IV of the THP (**Appendix H**). The results of this analysis show that in the past ten years, timber harvesting has been limited to vineyard conversion on 5 acres within the assessment area. Furthermore, the number of timber conversion applications has most likely reach its peak and has dropped significantly within the last five years (**Appendix H**). The proposed timber harvest of 10.0± acres represents less than 0.015 percent of the total land in the watershed. Combined with the other known projects from the last decade, the total amount of timber converted is approximately 5 acres and is 0.0075 percent of the Bell Canyon Reservoir watershed. When added to the other known conversion projects in the watershed, this minor increase of less than 0.015 percent is less than significant to the watershed as a whole. Therefore, no significant impact can be expected to occur to the state timber harvest volumes or the economic values to Napa County or the state due to the loss of timberland, based on the following: the small amount of timber resources harvested annually in Napa County; the reduced number of timberland to vineyard conversions in the watershed; the small scale of the timberland conversion expected from the Proposed Project; and the small scale of the one other timberland conversion project known in the assessment area. Therefore, cumulative impacts to agriculture and forestry resources would be considered less than significant.

### 6.2.2-3 AIR QUALITY

The geographic scope for the cumulative air quality impact analysis is the San Francisco Bay Area Air Basin (SFBAAB) because cumulative air quality impacts could potentially affect the entire San Francisco Bay Area region. Cumulative air quality issues in the SFBAAB are addressed through regional air quality control plans developed by the Bay Area Air Quality Management District (BAAQMD). These plans account for projected growth in the Bay Area, as embodied in the adopted General Plans of the various cities and counties that comprise the Bay

Area. There is, therefore, no need to identify each and every specific “probable future project” that might contribute emissions within the air basin.

**Project Construction.** Construction elements of the Proposed Project, including the timber harvest, installation of erosion control measures, and development of the vineyard, concurrent with other projects in the air basin would generate emissions of criteria pollutants, including suspended and inhalable particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and equipment exhaust emissions. As discussed in **Section 4.3**, for construction-related impacts, the BAAQMD has developed significance thresholds of 54 pounds per day of nitrogen oxide (NO<sub>x</sub>), reactive organic gases (ROG), and PM<sub>2.5</sub> and 82 pounds per day of PM<sub>10</sub> and recommends basic construction mitigation for all projects (BAAQMD, 2012). BAAQMD’s significance thresholds consider the regions cumulative emissions levels. Construction emissions from the development of the Proposed Project would not exceed the BAAQMD threshold with implementation of a fugitive dust abatement program under **Mitigation Measure 4.3-1 (Section 4.3)**. The BAAQMD Guidelines take into account past, present, and future emissions of criteria pollutants; therefore, since the project would not exceed BAAQMD thresholds, the cumulative impacts due to construction would be less than significant.

**Project Operation.** The BAAQMD also provides cumulative operational significance thresholds for NO<sub>x</sub>, ROG, PM<sub>2.5</sub> and PM<sub>10</sub> (BAAQMD, 2012). The SFBAAB non-attainment status for NO<sub>x</sub>, ROG, PM<sub>2.5</sub>, and PM<sub>10</sub> is attributed to the region’s development history. Past, present, and future development contribute to the region’s adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact; no single project is sufficient in size to, by itself, result in non-attainment of the ambient air quality standards. However, if a project contribution is considerable, then the project’s cumulative impact on regional air quality would be considered significant. Cumulative thresholds are the same as project thresholds, which are provided in **Section 4.3**. As shown in **Table 4.3-5 in Section 4.2**, project-related operational NO<sub>x</sub>, ROG, PM<sub>2.5</sub>, and PM<sub>10</sub> emissions would not exceed the BAAQMD cumulative operational significance thresholds, and therefore the cumulative operational impacts would be less than significant.

#### 6.2.2-4 *BIOLOGICAL RESOURCES*

Cumulative projects in the vicinity of the property, including growth resulting from build-out of the County’s General Plan and any proposed future development in the vicinity of the property, are anticipated to permanently remove plant and wildlife resources, which could affect special status species and their habitat, nesting and foraging habitat for resident and migratory birds, and/or local policies or ordinances protecting biological resources.

### Impacts to Biological Resources during Construction

As discussed in **Section 4.4**, potential impacts to biological resources analyzed in this EIR include impacts from the precursor timber harvest phase, the erosion control plan (ECP), and vineyard installation under the Proposed Project. The project design follows County goals and policies including the incorporation of setbacks within the THP area that will prevent construction activities from disturbing adjacent forested areas to be retained onsite, outside of the 13.6± acre vineyard footprint. As a result, forested habitat onsite occurring outside of the THP area will not be impacted by construction and operation of the Proposed Project.

It is anticipated that projects in the cumulative environment would produce similar impacts to biological resources during construction. However, the Proposed Project would not have a considerable contribution to these construction impacts because **Section 4.4** includes mitigation measures to reduce potential impacts to special status species (**Mitigation Measures 4.4-3** through **4.4-8**) and habitats (**Mitigation Measure 4.4-1**) during construction to less than significant levels. The County would similarly require cumulative projects with potentially significant impacts to wildlife and plant species in the vicinity of the Proposed Project to comply with federal, State and local regulations and ordinances and to mitigate for potential impacts to biological resources during construction. Cumulative projects with the incorporation of appropriate mitigation and approval of local, State, and federal agencies would reduce impacts to cumulative environmental conditions to less than significant levels.

### Impacts to Biological Resources Due to Vineyard Conversion

**Watershed.** Although vineyards only provide limited habitat value for wildlife, local regulations ensure that installation of vineyards do not necessarily represent a total loss of habitat for wildlife. This ensures that the Proposed Project in combination with those from other past, present, and reasonably foreseeable future projects will not have a significant and unavoidable impact. Napa County Conservation Regulations (Napa County Code, Chapter 18.108.100) require projects to maintain portions of open space on parcels proposed for development, which provides habitat for plants and foraging and nesting opportunities for wildlife. Napa County Conservation Regulations (Napa County Code, Chapter 18.108.025) generally preclude development on slopes greater than 30 percent and require setbacks of 35 to 150 feet from all County-definitional streams (depending on slopes). These County regulations would apply to any cumulative projects in the vicinity of the Proposed Project, which would lessen any potential impacts to the surrounding watershed. Further, the Proposed Project includes a Habitat Retention Area (HRA) that was specifically designed to offset impacts to oak woodland, protect the onsite water supply reservoir, and provide buffers around onsite water courses, which provides better and more ongoing protection for the watershed. Therefore, with mitigation and compliance with local regulations, the Proposed Project does not have a considerable contribution to impacts due to vineyard conversion.

**Special Status Species.** The property provides habitat for the following special status species: Napa lomatium (*Lomatium repostum*), western pond turtle (*Clemmys marmorata*), northern spotted owl (*Strix occidentalis caurina*), and other migratory birds. Mitigation measures have been provided in **Section 4.4** to reduce the project's impact to each special status species to less-than-significant, either through replanting, avoidance, or preservation methods. Therefore, the Proposed Project's impact to special status species is less than cumulatively considerable, with implementation of mitigation.

**Habitats.** Habitats on the property include: Douglas Fir Forest Alliance, Foothill Pine Woodland Alliance, Mixed Oak Alliance, Mixed Manzanita Alliance, and Chamise Chaparral Alliance. Special status plant and wildlife may occur in these habitats. Although the project proposes to remove portions of these habitats, they are still relatively common in the cumulative environment surrounding the project site. As shown in **Table 4.4-1** of **Section 4.4**, the acreage of onsite habitat types removed by the Proposed Project are relatively minor when compared to the total percentage of each habitat type represented in the County. There are no designated sensitive biotic communities on the property, but Mixed Oak Woodland is afforded protection by the County General Plan. It is anticipated that projects in the cumulative environment would produce similar impacts to biological resources. As such, specific mitigation and avoidance measures (**Mitigation Measure 4.4-1**) specified in **Section 4.4** reduce the project's impacts to habitat loss to less than significant levels through the creation of an HRA designed to protect Oak Woodland at greater than a 2:1 ratio, resulting in less-than-significant impacts in the cumulative environment.

#### 6.2.2-5 CULTURAL RESOURCES

Potential projects in the vicinity of the property, including growth resulting from build-out of the County's General Plan and proposed development in the vicinity of the property, have the potential to cumulatively impact cultural resources. Archaeological and historic resources are afforded special legal protections designed to reduce the cumulative effects of development. Potential cumulative projects and the Proposed Project would be subject to the protection of cultural resources afforded by the CEQA *Guidelines* Section 15064.5 and related provisions of the Public Resources Code. In addition, projects with federal involvement would be subject to Section 106 of the National Historic Preservation Act. Given the non-renewable nature of cultural resources, any impact to protected sites could be considered cumulatively considerable. As discussed in **Section 4.5**, with implementation of **Mitigation Measure 4.5-1**, site-specific cultural resources identified within the property would be protected. Additionally, **Mitigation Measures 4.5-2** and **4.5-3** in **Section 4.5** provide for the protection of unanticipated discoveries during ground disturbing activities. With the implementation of these mitigation measures, the Proposed Project's incremental contribution to cumulative impacts to cultural resources is considered to be less than significant.

### 6.2.2-6 GEOLOGY AND SOILS

Implementation of the Proposed Project and other potential cumulative projects in the region, including growth resulting from build-out of the County's General Plan and other proposed development in the vicinity of the property, could result in increased erosion and soil hazards and could expose additional structures and people to seismic hazards.

Potential soil and seismic hazards from cumulative development could represent a significant cumulative impact if such projects do not incorporate grading/erosion plans and are not developed to the latest building standards by incorporating recommendations from site-specific geotechnical reports. Like the Proposed Project, any future development would be required to comply with the Napa River TMDL for sediment, which prevents the increase of sedimentation into the Napa River and its tributary watersheds. Future projects in the cumulative environmental will not have a significant cumulative impact on sedimentation with the compliance with local, regional, and State regulations. As stated in **Section 4.6**, there were two technical reports prepared for the Proposed Project, the ECP (NVVE, 2014; **Appendix B**) and the Engineering Geological and Geotechnical Evaluation (Gilpin Geosciences, Inc., 2014; **Appendix G**), that include mitigation measures that are specifically designed for and included as part of the Proposed Project (refer to **Section 3.0**), which would reduce impacts during construction and operation of the Proposed Project to local geology and soils. The Applicant would implement the recommended mitigation measures and design specifications included in the ECP and supporting technical reports, which are designed to avoid, reduce, or mitigate potential impacts associated with geology and soils. Therefore, with incorporation of design standards, cumulative impacts of the Proposed Project would be considered less than significant.

### 6.2.2-7 GREENHOUSE GAS EMISSIONS

As discussed in **Section 6.2.2-3** above, cumulative air quality issues in the SFBAAB are addressed through regional air quality control plans developed by the BAAQMD. These plans account for projected growth in the Bay Area, as embodied in the adopted General Plans of the various cities and counties that comprise the Bay Area. There is, therefore, no need to identify each and every specific "probable future project" that might contribute emissions within the air basin.

**Project Construction.** The purchase of emission credits required by **Mitigation Measure 4.7-1** and the Proposed Project's design reduces greenhouse gas (GHG) emissions from construction by 39 percent from "business as usual" practices, which results in a less than significant impact to climate change. Since the County's draft Climate Action Plan (CAP) provides for a reduction in GHG emissions by 38 percent, the Proposed Project meets the draft CAP standard. As discussed in **Section 4.7**, the BAAQMD CEQA Guidelines was adopted by the BAAQMD Board of Directors in June 2010 and upheld in court on August 13, 2013. The

BAAQMD CEQA Guidelines do not provide specific thresholds for GHG emissions from construction. The Applicant would further reduce construction-related GHG emissions from the Proposed Project with implementation of **Mitigation Measure 4.7-1**.

**Project Operation.** As shown in **Section 4.7, Table 4.7-2**, operational GHG emissions are estimated to be 343 MT per year. These emissions would be less than the BAAQMD CEQA threshold of 1,100 MT of CO<sub>2</sub>e for project-level operation. Therefore, operation of the Proposed Project would not result in cumulatively impacts to climate change.

#### 6.2.2-8 HAZARDOUS MATERIALS

Other past, present, and reasonably foreseeable future projects may have a similar increase in use of hazardous materials that may present a significant cumulative impact. Construction and operation of the Proposed Project in combination with cumulative development in the project vicinity could lead to impacts related to hazardous materials, if mitigation was not included. The Proposed Project and similar cumulative projects would involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction. Impacts related to these activities are extensively regulated by various federal, State, and local agencies and it is assumed that similar projects would also comply with these hazardous materials regulations.

Operation of the Proposed Project and cumulative projects in the vicinity could result in impacts if development were to result in potential exposure of hazardous materials to sensitive individuals or the general public-at-large. Operation of the Proposed Project using integrated pest management (IPM; **Appendix J**) practices and reduce the large scale use of chemicals such as pesticides and herbicides and would therefore result in a low risk for adverse effects. Because hazardous materials impacts are site-specific and the Proposed Project would not require substantial volumes of hazardous materials, the project would not contribute to cumulatively considerable hazardous impacts.

Furthermore, **Mitigation Measures 4.8-1, 4.8-2, and 4.8-3 (Section 4.8)** include measures to ensure that any hazardous materials that are stored or used onsite would be properly maintained, reducing the risk of spills or adverse effects. With implementation of these mitigation measures, the Proposed Project would not result in an incremental increase in the risk of hazardous materials that would be cumulatively considerable.

#### 6.2.2-9 HYDROLOGY AND WATER QUALITY

The project site is located within the drainage area of the Bell Canyon watershed, which constitutes a drainage area of roughly 10.1 square miles. As stated in **Section 4.9**, the analysis of impacts to hydrology and water quality from the Proposed Project included factors such as topography, drainage, and other physical features of the local area. For this cumulative impact analysis, potential impacts of the Proposed Project in addition to cumulative impacts of other

projects within the watershed form the scope of this discussion. Cumulative impacts to hydrology could occur from past, present, and reasonably foreseeable future projects within the watershed.

**Protection of Stream Corridors and Water Quality.** The Proposed Project includes the restriction of earthmoving activities to the dry season consistent with County Code Section 18.108.070(L), and the installation of fiber rolls, seeding and mulching of disturbed areas, and other erosion control measures and best management practices (BMPs) discussed in **Section 3.0**, which would reduce the potential for sedimentation to move off-site. The Proposed Project would not increase runoff rates or volumes, or degrade water quality (as discussed in **Section 4.9**) and would not increase soil erosion or sedimentation (as discussed in **Section 4.6**).

As shown in **Section 4.9**, implementation of the ECP for the Proposed Project would result in improved conditions to on and off-site water quality. As stated in **Section 4.9.1-2**, the Napa River is currently listed as an impaired water body for nutrients, pathogens, and sediment under Section 303 (d) of the Clean Water Act (CWA). Runoff from the project site is eventually transported to the Napa River; therefore, from a cumulative standpoint, implementation of the ECP under the Proposed Project would be beneficial by improving onsite and offsite water quality by lessening cumulative sedimentation impacts to the Napa River.

**Groundwater Supplies.** Other past, present, and reasonably foreseeable future projects that utilize groundwater may present a significant cumulative impact to the local groundwater aquifer. The Proposed Project would require approximately 3 acre feet per annum (afa) in the long term for vineyard irrigation; for the establishment of the vineyard, it may require up to 6 afa. The long-term water use of the proposed vineyard blocks is only 15 percent of the allowable groundwater allotment for the property. Other projects within the Bell Canyon watershed would be required to limit groundwater use to the allowable groundwater allotment for the associated property. Furthermore, it is estimated that the Proposed Project's property provides the recharge opportunity for approximately 12.5 af per year of percolation into the Sonoma Volcanics, which is less than the long-term irrigation needs of the Proposed Project (NVVE, 2014; **Appendix N**). Accordingly, the incremental impact of the Proposed Project to local groundwater supplies would not be significant when considered in the context of those cumulative projects.

#### *6.2.2-10 LAND USE*

Potential cumulative projects in the vicinity of the property, including growth resulting from build-out of the County's General Plan and proposed developments in the vicinity of the property, would be developed in accordance with local and regional planning documents; thus, cumulative impacts associated with land use compatibility are expected be less than significant. Additionally, as discussed in **Section 4.10**, the Proposed Project would not result in a

substantial inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. Further, the Proposed Project is consistent with the County zoning ordinance, and General Plan (2008) land use designations, goals, and policies, and therefore would not cause or contribute cumulative impacts to land use.

#### 6.2.2-11 NOISE

**Construction.** Construction of the Proposed Project in combination with other past, present, and reasonably foreseeable future projects may result in a significant cumulative impact to noise in the vicinity of the project site. However, construction activities associated with the Proposed Project are unlikely to occur in combination with additional development projects in the vicinity because the area is rural and surrounding County designated land uses include rural residences, vineyards, and agriculture, with no known development projects pending. Existing noise from Friesen Road, which bisects the property, and scattered agricultural activities in the vicinity of the property would be the only other source of noise in the immediate vicinity during construction of the Proposed Project.

As stated in **Section 4.11**, the nearest noise sensitive receptor to construction activities is a residence located approximately 800 feet south of the property. Analysis of potential noise impacts on this receptor included factors such as natural noise barriers (trees and vegetation), which attenuate noise impacts. The results concluded that the maximum noise level at the nearest sensitive noise receptor during construction of the Proposed Project would be approximately 58 dBA Leq, which is below the County's noise threshold of 75 dBA, Leq for construction near residential areas. Furthermore, construction activities associated with the Proposed Project shall occur between the hours of 7 A.M. to 7 P.M., which is consistent with County Ordinance 8.16.080.

Construction of the Proposed Project in combination with cumulative sources of noise in the vicinity would not expose persons to temporary or substantial permanent increases in the ambient noise level or generate noise levels in excess of standards established in the General Plan, County noise ordinance, or applicable standards of other agencies. It is short-term in nature and, with mitigation, would not cause an increase in ambient noise that is cumulatively considerable. This temporary construction noise will not be a considerable contribution to noise in the area.

**Operation.** As stated in **Section 4.11**, the Proposed Project would slightly increase the ambient noise level in the immediate vicinity of the property. However, given the small size of the project, the location of the project (existing agricultural uses in the vicinity of the project site), the low-density residential uses in the area, and the County's General Plan Policy CC-35, which states that agriculture and agricultural processing is considered an acceptable and necessary

part of the community character of Napa County and is not considered to be undesirable, the Proposed Project's contribution to potential cumulative impacts associated with ambient noise levels would be considered less than significant.

**Groundborne Vibration.** Additionally, construction of the Proposed Project would not result in cumulative impacts due to groundborne vibration noise levels. There are no known projects in close enough proximity to the project site that would contribute to groundborne vibration noise levels. Given the predicted PPV levels for all of the equipment to be used in construction and operation of the Proposed Project would be below the significance thresholds of 0.1 PPV for residences, which is the nearest sensitive receptor, no cumulative impacts would occur.

#### *6.2.2-12 TRANSPORTATION AND CIRCULATION*

Construction of the Proposed Project in combination with other past, present, and reasonably foreseeable future projects may result in a significant cumulative impact to local roadways and traffic conditions. However, as discussed above, there are no pending development projects in the immediate vicinity and so construction activities associated with the Proposed Project are unlikely to occur in combination with additional development projects, and the Proposed Project has no significant impact on traffic with mitigation. Therefore, construction of the Proposed Project would not contribute to cumulative traffic impacts in the region.

As stated in **Section 4.12**, operation of the Proposed Project would generate worker trips for vineyard maintenance and grape harvest, which would typically require 3 to 4 people per day or less but would require up to 10 people for short durations during certain operational tasks, such as harvesting. During operation of the Proposed Project, grapes would be transported in farm trucks to wineries in the Napa Valley area. Approximately three 20± ton trucks are anticipated to transport harvested grapes during a 30-day period (**Appendix I**). This type of agricultural traffic anticipated to be generated by the Proposed Project would be minimal and very similar to other agricultural transport activities (i.e. grapes, cattle, sheep, horses, apples, rock aggregates, fire wood, etc.) presently taking place on local roadways in the vicinity of the Proposed Project (**Appendix I**). This long-term addition of up to 26 daily trips during certain, infrequent vineyard operations (e.g. pruning, harvesting) to Friesen Drive, White Cottage Road, and Howell Mountain Road would be minimal, seasonal, well below County threshold of significance and road design of 7,000 vehicles per day, and not significantly impact the existing roadways serving the property and in the vicinity; therefore, operation of the Proposed Project would not result in cumulative impacts to transportation and circulation in the area.

### **6.3 SIGNIFICANT AND UNAVOIDABLE IMPACTS**

As stated in **Section 4.0**, there are no significant and unavoidable impacts that would result from implementation of the Proposed Project.

## 6.4 IRREVERSIBLE CHANGES

State CEQA Guidelines Section 15126.2(c) provides the following direction for the discussion of irreversible changes:

*“Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.”*

The Proposed Project would result in an irreversible use of energy resources, primarily fossil fuels for construction equipment (e.g., fuel, oil, natural gas, and gasoline) and the consumption or destruction of other nonrenewable or renewable resources (e.g., timber, gravel, metals, and water). However, operation of the Proposed Project would not require any long term or cumulative commitment of these resources other than the minimal equipment and materials needed to maintain the vineyard.

The Proposed Project would also result in a temporary increase in car and truck trips during construction, which would be largely reduced during the operational phase. These additional trips would also require the use of fossil fuels and other nonrenewable resources.

## REFERENCES

BAAQMD, 2012. California Environmental Quality Act: Air Quality Guidelines. Prepared by the Bay Area Air Quality Management District. Available online at: [http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines\\_Final\\_May%202012.ashx?la=en](http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en). May 2012. Accessed November 10, 2014.

Napa County, 2008. Napa County General Plan. June 3, 2008. Available online at: <http://www.countyofnapa.org/PBES/Planning/>. Accessed on December 27, 2012.

Napa Valley Vineyard Engineering (NVVE), 2014. Davis/Bercovich Erosion Control Plan File #P13-00373-ECPA. Water Demand and Water Availability Analysis. January 14, 2014.

Shih, Tian-Ting, 1998. Land Base of California's Forests. Fire and Resource Assessment Program. California Department of Forestry and Fire Protection. December 1998.

# ***SECTION 7.0***

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## **REPORT PREPARATION**

# **SECTION 7.0**

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## **REPORT PREPARATION**

### **7.1 LEAD AGENCY**

***CALIFORNIA DEPARTMENT OF FORESTRY AND FIRE PROTECTION***

Attn: Bill Solinsky

P. O. Box 944246

Sacramento, CA 94244-2460

### **7.2 RESPONSIBLE AGENCY**

***NAPA COUNTY PLANNING, BUILDING, AND ENVIRONMENTAL SERVICES  
DEPARTMENT***

Attn: Brian Bordona

1195 Third Street, 2nd Floor

Napa, CA 94559

### **7.3 EIR CONSULTANTS**

***ANALYTICAL ENVIRONMENTAL SERVICES***

1801 7th Street, Suite 100

Sacramento, CA 95811

(916) 447-3479

David Zweig, Project Director

Pete Bontadelli, Biological Resources Director

Annalee Sanborn, Deputy Project Manager

Nick Mitrovich, Environmental Analyst

Marc Beccio, Senior Biologist

Katelyn Peterson, Biologist

Jacqueline McCrory, Biologist

Erin Quinn, Environmental Analyst

Dana Hirschberg, Senior Graphic Designer

Glenn Mayfield, Graphic Designer

***ENVIRONMENTAL RESOURCE MANAGEMENT***

Scott Butler, Registered Professional Forester  
889 Hwy 20-26  
Ontario, OR 97914

***GILPIN GEOSCIENCES, INC.***

Lou M. Gilpin, Geologist  
2038 Redwood Road  
Napa, CA 94558

***KJELDEN BIOLOGICAL CONSULTING***

923 St. Helena Ave.  
Santa Rosa, CA 95404

***NAPA VALLEY VINEYARD ENGINEERING, INC.***

Drew Aspegren, P.E., Civil Engineer  
176 Main Street, Suite B  
Saint Helena, CA

***O'CONNOR ENVIRONMENTAL, INC.***

P.O. Box 794  
Healdsburg, CA 95448

***PINA VINEYARD MANAGEMENT***

Justin Leigon, Viticulturist

***TOM ORIGER AND ASSOCIATES***

Tom Origer, Archaeology/Historical Research  
P.O. Box 1531  
Rohnert Park, California, 94927

**7.4 FEDERAL AGENCIES CONSULTED**

United States Fish and Wildlife Service

**7.5 STATE AGENCIES CONSULTED**

Native American Heritage Commission  
California Department of Fish and Wildlife  
California San Francisco Bay Regional Water Quality Control Board

## 7.6 LOCAL GOVERNMENT AGENCIES CONSULTED

Napa County Planning, Building, and Environmental Services Department  
Napa County Resource Conservation District

# ***APPENDICES***

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# ***APPENDIX A***

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NOTICE OF PREPARATION (NOP)  
CORRECTION NOTICE  
NOP COMMENTS



## California Department of Forestry and Fire Protection

To: State Clearinghouse  
1400 Tenth Street  
Sacramento, CA 95814

From: Bill Solinsky  
CAL FIRE, Resource Management  
P.O. Box 944246  
Sacramento, CA 94244-2460

### **Subject: Notice of Preparation of a Draft Environmental Impact Report Davis Family Estates Friesen Vineyard Project June 24, 2014**

The California Department of Forestry and Fire Protection (CAL FIRE) is the Lead Agency and Napa County is a Responsible Agency for the preparation of an Environmental Impact Report (EIR) for the Davis Family Estates Friesen Vineyard Project (Proposed Project) in compliance with the California Environmental Quality Act (CEQA). Consistent with CEQA Guidelines Section 15082, CAL FIRE, as Lead Agency, has prepared this Notice of Preparation (NOP) to inform all responsible and trustee agencies that an EIR will be prepared. The purpose of the NOP is to describe the Proposed Project and potential environmental effects in order to allow agencies and interested parties to provide input on the scope and content of the EIR. A copy of this NOP and figures referenced herein is provided on CAL FIRE's website: [sacramentopubliccomment@firre.ca.gov](mailto:sacramentopubliccomment@firre.ca.gov). Comments on this NOP are due to CAL FIRE by 5:00 PM on July 24, 2014.

#### **Project Summary**

The purpose of the Proposed Project is to convert approximately 14 acres of timberland to a commercial vineyard (Project Site). The Project Site is located within a 38.7-acre property identified as Napa County assessor's parcel numbers (APNs) 018-060-012 and 018-060-013. A Timberland Conversion Permit (TCP) is required for the Project Site, which triggers a need to prepare a CEQA document for the Proposed Project. Given the potential for environmental impacts, an Environmental Impact Report (EIR) is being prepared. A Napa County Erosion Control Plan (ECP) is also required for the Proposed Project. The environmental impacts of the TCP, the ECP, and the development of the vineyard on the Project Site will be evaluated against the CEQA baseline of the Project Site.

In addition, a Timber Harvesting Plan (THP) is being prepared concurrently for the harvest of 10.0± acres within the Project Site and will be processed separately by CAL FIRE. The balance of approximately 4.0 acres within the Project Site is comprised of grass, brush, and ruderal land. The THP will be evaluated by CAL FIRE through a CEQA-equivalent process consistent with the Forest Practice Rules. The EIR will include the THP, the TCP, and the ECP as attachments.

#### **Project Location**

The Project Site is located on a 38.7-acre property within a portion of the northwest quarter of Section 25 of the Mount Diablo Base Meridian within Township 9 North and Range 6 West. The property includes two parcels which are identified as Napa County APNs 018-060-012 and 018-060-013. The property is located at 1875 Friesen Drive, roughly two miles northwest of the town of Angwin in northern Napa County, California, as shown in **Figure 1**. Land uses in the vicinity of the property include vineyards, rural residences, and open space. The 3,030-acre Dunn-Wildlake Ranch Preserve, which is managed by the Land Trust of Napa County, is located to the west, south, and

east of the property; the preserve is adjacent to the west and east borders of the property. Property elevations range from approximately 2,050 to 2,200 feet above mean sea level. Soils on the property are forward gravelly loam for the most part, with some Henneke gravelly loam and rock outcrop-Kidd complex soils. The property is located within the Bell Canyon Reservoir watershed (Calwater 2206.500202), and an unnamed reservoir, one Class III watercourse, and one blue-line (Class II) stream are present on the property. The Project Site is set back 150 feet from the reservoir, and the Project Site would be set back from the Class III watercourse and blue-line (Class II) stream consistent with Napa County standards and/or CAL FIRE standards (whichever is most protective). The slopes on the Project Site range from 5 to 27 percent. A map of the property with the Project Site identified is included as **Figures 2 and 3**.

As part of the EIR process, a report on the biological resources within an approximate 18-acre survey area (which includes the Project Site of 14± acres and immediately surrounding area within the 38.7-acre property) has been prepared. The following habitats have been identified within the 18-acre survey area: Ghost Pine Woodland Alliance, Douglas Fir Forest Alliance, Mixed Oak Forest Alliance, Chamise Chaparral Alliance, and Provisional Shrubland Manzanita Alliance. There are ponderosa pines within the Project Site, but the pines within the survey area do not constitute a Ponderosa Pine Forest.

### **General Plan/Zoning Designations**

The Project Site is zoned Agricultural Watershed (AW).

### **Project Description**

The Proposed Project would convert approximately 14 acres of timberland to a commercial vineyard within a 38.7-acre property. The 14± acres constitute the Project Site and the total area to be converted to vineyard. The remaining 24.7 acres of the property will not be impacted by the project. Four vineyard blocks are proposed for development within the Project Site (**Figure 3**). The vineyard blocks will include wine grape vines as well as internal farm avenues and space for vineyard maintenance operations; therefore, the net area of the vineyard will be approximately 10.5 acres. The establishment of the vineyard as part of the Proposed Project is consistent with the current Napa County zoning designation of Agricultural Watershed (AW).

The Project Site is not located within a Timberland Protection Zone (TPZ). However, since the Proposed Project would convert “non-TPZ timberland to a non-timber growing use” through timber operations in which “future timber harvests will be prevented or infeasible because of land occupancy and activities thereon,” a TCP and approval is required from CAL FIRE consistent with the Z’berg-Nejedly Forest Practice Act (Division 4, Chapter 8, Public Resources Code) and California Forest Practice Rules (Title 14, California Code of Regulations). CAL FIRE will therefore be the CEQA Lead Agency on the EIR.

Harvested timber would be processed on-site using a portable mill. All non-merchantable trees and vegetation would be removed, chipped, and/or burned on-site, consistent with CAL FIRE, Napa County, and San Francisco Bay Air Quality Management District standards. Suitable forest products such as lumber, sawlogs, chips, etc. would be marketed as appropriate. Wood products leaving the site would be limited to transport on 3-axle trucks and would not require the use of logging trucks. No new roads, except internal farm avenues within the new vineyard, would be built. As a result of implementation of the ECP and the Forest Practice Act, post-project sediment erosion conditions and peak hydrological runoff are projected to be below pre-project conditions; these aspects are detailed in the hydrological report and sediment report that have been prepared for the Proposed Project and will be included with the EIR as attachments.

Chapter 18.108 of the Napa County Code (Conservation Regulations) requires an ECP be prepared by a Licensed Civil Engineer for the Proposed Project and approved by Napa County because slopes on the Project Site are greater than 5 percent. Consequently, Napa County will be a Responsible Agency for the EIR.

### **Environmental Factors Potentially Affected**

Anticipated impacts of the Proposed Project on the following list of resource areas will be analyzed in the EIR per CEQA Guidelines (Title 14 CCR Division 6, Chapter 3). The impacts of the Proposed Project will be determined by evaluating against the CEQA baseline, which is the Project Site as it currently exists (prior to the THP).

Aesthetics: The Project Site is located within the view shed of vehicles traveling on Friesen Drive and possibly hikers in the Dunn-Wildlake Ranch Preserve. An analysis of potential impacts to aesthetics from the Proposed Project will be provided in the EIR.

Agriculture and Forestry Resources: The impacts of the Proposed Project to these resources will be a primary subject of the EIR. An analysis of impacts to agricultural and forestry resources in the vicinity of the Project Site and local region will be included in the EIR.

Air Quality: Non-merchantable trees and vegetation would be removed, chipped, and/or burned on-site, consistent with Napa County and San Francisco Bay Air Quality Management District standards. An analysis of potential impacts to air quality from the Proposed Project will be provided in the EIR.

Biological Resources: An analysis of potential impacts to biological resources as a result of the construction and operation of the Proposed Project will be provided in the EIR.

Cultural Resources: A preliminary cultural resources survey of the Project Site identified a cultural resource in the vicinity of the Project Site. Further analysis of potential impacts to cultural resources as a result of the Proposed Project will be provided in the EIR.

Geology/Soils: An ECP is required to be prepared for the Proposed Project, which includes erosion control measures to be implemented during construction and operation of the vineyard. Further analysis of potential impacts to local geology/soils will be provided in the EIR.

Greenhouse Gas Emissions: An analysis of potential impacts due to the Proposed Project's greenhouse gas emissions attributed to construction, operation, and canopy removal will be provided in the EIR.

Hazards and Hazardous Materials: An analysis of hazards and hazardous materials as they pertain to construction and operation of the Proposed Project will be provided in the EIR.

Hydrology/Water Quality: The Proposed Project site would be set back from the watercourses, consistent with Napa County standards and/or CAL FIRE standards (whichever one is most protective), and no conversion activities would take place within these setbacks. An analysis of impacts from the Proposed Project to local hydrology, including groundwater, and water quality will be provided in the EIR.

Land Use/Planning: No significant impacts are anticipated. As stated above, the Proposed Project would result in the development of vineyards within the 14± acre Project Site, which is consistent with the current Napa County zoning designation, Agricultural Watershed. Any potential impacts to neighboring properties within 300 feet will be

evaluated, consistent with CAL FIRE programs. An analysis of impacts to land use/planning due to the Proposed Project will be provided in the EIR.

Mineral Resources: No known mineral resources that are of state, regional, or local value are identified on or within the vicinity of the Proposed Project site, and therefore no significant impacts are anticipated. No further analysis will be provided in the EIR.

Noise: No significant impacts are anticipated. However, an analysis of noise impacts to the Project Site and vicinity as a result of construction and operation of the Proposed Project will be provided in the EIR.

Population/Housing: The Proposed Project would not induce substantial population growth and would displace neither existing housing nor people; therefore, no significant impacts are anticipated. No further analysis will be provided in the EIR.

Public Services: The Proposed Project would not result in a substantial increase of demand on public services, and therefore no significant impacts are anticipated. No further analysis will be provided in the EIR.

Recreation: The Proposed Project would not include construction of any recreational activities and would not increase the use of existing recreational facilities, including recreational facilities within 300 feet of the project boundary. Therefore, no significant impacts are anticipated, and no further analysis will be provided in the EIR.

Transportation/Traffic: No new roads, except internal farm avenues within the new vineyard and 14± acres of disturbance, would be built. An analysis of transportation/traffic issues as they pertain to construction and operation of the Proposed Project will be provided in the EIR.

Utilities/Service Systems: The Proposed Project would not result in any additional demands on utilities and service systems. An active electricity connection exists near the reservoir along Friesen Road. Groundwater would be pumped from an existing operation well and serve as the irrigation water source, and no additional wastewater would be generated. Therefore, no significant impacts are anticipated, and no further analysis will be provided in the EIR.

Mandatory Findings of Significance: A complete analysis of mandatory findings of significance, including cumulative impacts of the Proposed Project, will be provided in the EIR.

In order for your comments to be considered, please submit your written comments no later than **5:00 PM on July 24, 2014** to:

**Bill Solinsky**  
CAL FIRE, Resource Management  
P.O. Box 944246  
Sacramento, CA 94244-2460

Email: [Bill.Solinsky@fire.ca.gov](mailto:Bill.Solinsky@fire.ca.gov) (Please include "Davis Friesen Vineyard" in email subject line).

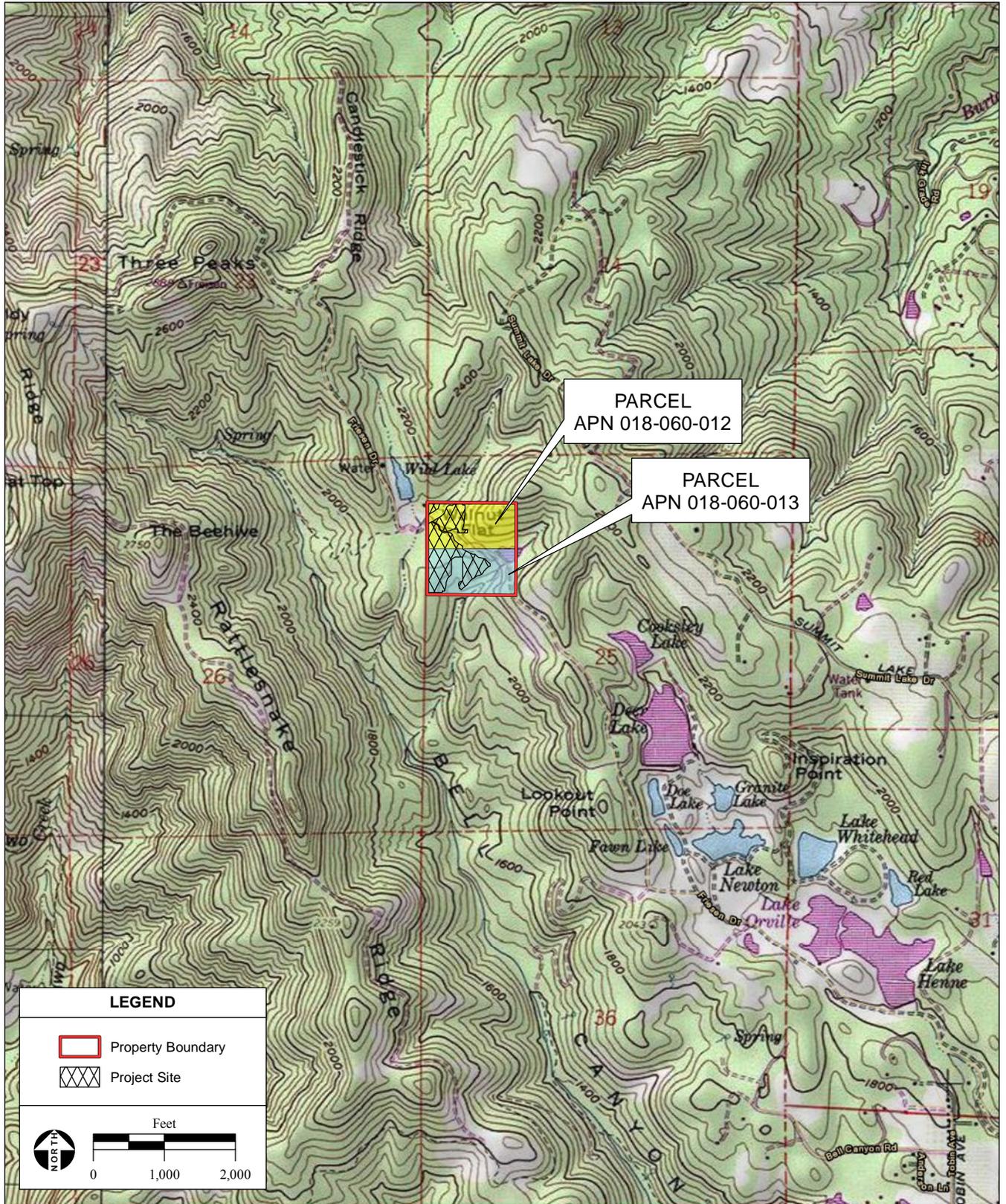
Comments by Fax will not be accepted.



SOURCE: ESRI Data, 2013; AES, 2013

Davis Family Estates Friesen Vineyard Project NOP / 213509 ■

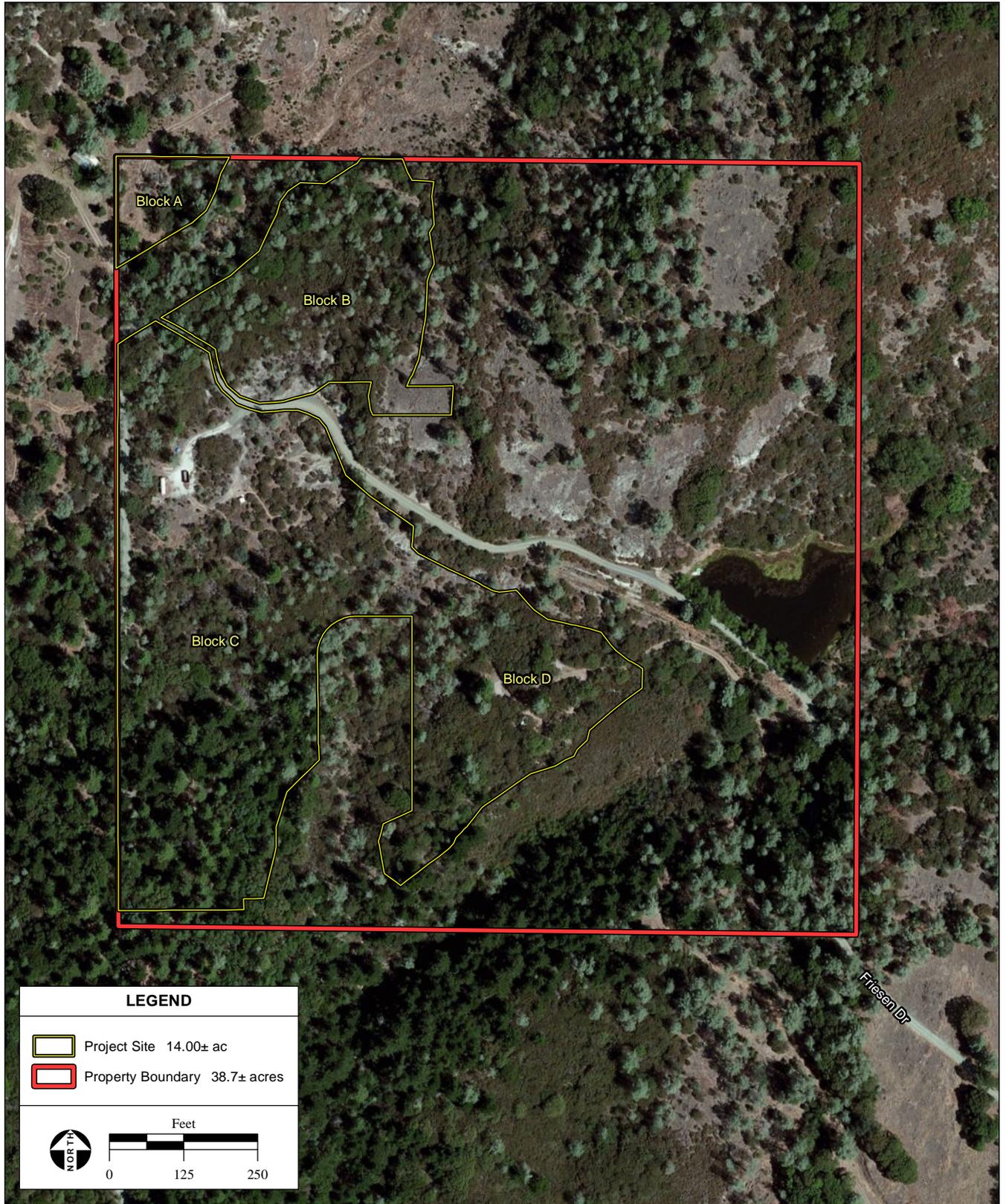
**Figure 1**  
Regional Location



SOURCE: "Saint Helena, CA" USGS 7.5 Minute Topographic Quadrangle, T9N, R6W, Section 25, Mt. Diablo Baseline & Meridian; ESRI Data, 2013; AES, 2013

Davis Family Estates Friesen Vineyard Project NOP / 213509 ■

**Figure 2**  
Site and Vicinity



SOURCE: Microsoft aerial photograph, 11/2/2010; ESRI Data, 2013; AES, 2013

Davis Family Estates Friesen Vineyard Project NOP / 213509 ■

**Figure 3**  
Project Site Boundary

# Memorandum

To: State Clearinghouse  
1400 Tenth Street  
Sacramento, CA 95814

Date: June 25, 2014

Telephone: (559) 243-4153

Website: [www.fire.ca.gov](http://www.fire.ca.gov)

From:   
BILL SOLINSKY  
Resource Management  
California Department of Forestry and Fire Protection (CAL FIRE)

Subject: Notice of Preparation of a Draft Environmental Impact Report  
Davis Family Estates Friesen Vineyard Project

## CORRECTION NOTICE

The California Department of Forestry and Fire Protection (CAL FIRE) is the Lead Agency and Napa County is a Responsible Agency for the preparation of an Environmental Impact Report (EIR) for the Davis Family Estates Friesen Vineyard Project (Proposed Project) (SCH # 2014062076) in compliance with the California Environmental Quality Act (CEQA). The Notice of Preparation (NOP) for the Proposed Project was released Tuesday, June 24, 2014, to inform all responsible and trustee agencies that an EIR will be prepared and initiating a 30-day scoping period. Comments on the NOP are due to CAL FIRE by 5:00 PM on July 24, 2014.

The NOP contained two administrative errors. The CAL FIRE website address where the NOP is posted was incorrect in the NOP. In addition, the email address to which comments on the Proposed Project can be submitted was incorrect (note that the mailing address for submitting comments is correct). The purpose of this document is to update the website and email address as follows below. (~~Strike out text~~ is the original erroneous text; underlined text is the corrected text.).

A copy of this NOP and figures referenced herein is provided on CAL FIRE's website:

~~sacramentopubliccomment@fire.ca.gov~~

[http://calfire.ca.gov/resource\\_mgt/resource\\_mgt\\_EPRP\\_PublicNotice.php](http://calfire.ca.gov/resource_mgt/resource_mgt_EPRP_PublicNotice.php)

In order for your comments to be considered, please submit your written comments no later than 5:00 PM on July 24, 2014 to:

Bill Solinsky  
CAL FIRE, Resource Management  
P.O. Box 944246  
Sacramento, CA 94244-2460

Email: ~~Bill.Solinsky@fire.ca.gov~~ [sacramentopubliccomment@fire.ca.gov](mailto:sacramentopubliccomment@fire.ca.gov) (Please include "Davis Friesen Vineyard" in email subject line).

1550 Harbor Blvd., Suite 100  
West SACRAMENTO, CA 95691  
(916) 373-3710  
Fax (916) 373-5471



July 1, 2014



Bill Solinsky  
Cal Fire  
P.O. Box 944246  
Sacramento, CA 94244-2460

RE: SCH# 2014062076 Davis Family Estates Friesen Vineyard Project, Napa County.

Dear Mr. Solinsky:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064.5(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect. To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional archaeological Information Center for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
  - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File Check. **SFL Check Completed with Negative Results**
  - A list of appropriate Native American contacts for consultation concerning the project site and to assist in the mitigation measures. **Native American Contacts List attached**
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per California Environmental Quality Act (CEQA) Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in Public Resources Code (PRC) §5097.98, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

Sincerely,

*Katy Sanchez*

Katy Sanchez  
Associate Government Program Analyst

CC: State Clearinghouse

## Native American Contact List

Napa County  
July 1, 2014

The Federated Indians of Graton Rancheria  
Gene Buvelot  
6400 Redwood Drive, Ste 300      Coast Miwok  
Rohnert Park , CA 94928      Southern Pomo  
coastmiwok@aol.com  
(415) 279-4844 Cell  
(707) 566-2288 ext 103

Suscol Intertribal Council  
Charlie Toledo  
P.O. Box 5386  
Napa , CA 94581  
suscol@suscol.net  
(707) 256-3561

Middletown Rancheria of Pomo Indians  
Jose Simon III, Chairperson  
P.O. Box 1035      Pomo  
Middletown , CA 95461      Lake Miwok  
(707) 987-3670 Office  
(707) 987-9091 Fax

Cortina Band of Indians  
Charlie Wright, Chairperson  
P.O. Box 1630      Wintun / Patwin  
Williams , CA 95987  
(530) 473-3274 Office  
(530) 473-3301 Fax

Yocha Dehe Wintun Nation  
Marshall McKay, Chairperson  
P.O. Box 18      Wintun (Patwin)  
Brooks , CA 95606  
(530) 796-3400  
(530) 796-2143 Fax

Kesner Flores  
P.O. Box 1047      Wintun / Patwin  
Wheatland , CA 95692  
calnagpra@hotmail.com  
(925) 586-8919

Ya-Ka-Ama  
7465 Steve Olson Lane      Pomo  
Forestville , CA 95436      Coast Miwok  
cbelleau@yakaama.org or      Wappo  
(707) 887-1541

Yocha Dehe Wintun Nation  
Leland Kinter, Native Cultural Renewal Committee  
P.O. Box 18      Wintun (Patwin)  
Brooks , CA 95606  
lkinter@yochadehe-nsn.gov  
(530) 979-6346  
(530) 796-3400 - office  
(530) 796-2143 Fax

The Federated Indians of Graton Rancheria  
Greg Sarris, Chairperson  
6400 Redwood Drive, Ste 300      Coast Miwok  
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(707) 566-2291 Fax

Yocha Dehe Wintun Nation  
Cynthia Clarke, Native Cultural Renewal Committee  
P.O. Box 18      Wintun (Patwin)  
Brooks , CA 95606  
(530) 796-3400 Office  
(530) 796-2143 Fax

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH # 2014062076 Davis Family Estates Friesen Vineyard Project, Napa County.

**Native American Contact List**

Napa County

July 1, 2014

Mishewal-Wappo Tribe of Alexander Valley

Scott Gabaldon, Chairperson

2275 Silk Road

Wappo

Windsor , CA 95492

scottg@mishewalwappotribe.

(707) 494-9159

The Federated Indians of Graton Rancheria

Gene Buvelot

6400 Redwood Drive, Ste 300

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This list is current only as of the date of this document.

Distribution of this list does not relieve any person of the statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed SCH # 2014062076 Davis Family Estates Friesen Vineyard Project, Napa County.

**From:** [Starovoytov, Anya@Waterboards](mailto:Starovoytov, Anya@Waterboards)  
**To:** [Sacramento\\_Public\\_Comment@CALFIRE](mailto:Sacramento_Public_Comment@CALFIRE)  
**Cc:** [Stephanie\\_Henderson; Ponton, James@Waterboards](mailto:Stephanie_Henderson; Ponton, James@Waterboards)  
**Subject:** RE: Davis Friesen Vineyard - Comments on NOP  
**Date:** Thursday, July 24, 2014 4:30:21 PM

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I forgot to include the link to the publically noticed documentation I am referring to in item # 5 below. Here is the website where both the NOP and Initial Study can be viewed:

[http://www.waterboards.ca.gov/sanfranciscobay/water\\_issues/programs/TMDLs/vineyard/index.shtml](http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/vineyard/index.shtml)

These items were released for public comment on July 7<sup>th</sup> and the comment period will close at 5 pm on Wednesday, August 6<sup>th</sup>.

Thank you,

Anya Starovoytov  
Environmental Scientist  
San Francisco Bay Regional Water Quality Control Board  
(510) 622 2506 – phone

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**From:** Starovoytov, Anya@Waterboards  
**Sent:** Thursday, July 24, 2014 4:24 PM  
**To:** Sacramento Public Comment@CALFIRE  
**Cc:** 'Stephanie\_Henderson'; Ponton, James@Waterboards  
**Subject:** Davis Friesen Vineyard - Comments on NOP

Dear Mr. Solinsky,

The San Francisco Bay Regional Water Quality Control Board has reviewed the NOP for the proposed Davis Family Estates Friesen Vineyard Project and we have the following comments:

1. It is unclear at which point in time the Napa County Erosion Control Plan (ECP) will be prepared and finalized for this proposed vineyard development. Will this occur prior to or concurrently with the EIR process?
2. Within the Project Description section on page 2, the second paragraph defines "TPZ" as Timberland Protection Zone. Is this referring to the Timberland Production Zones (TPZ)?
3. Will increases in the amount of water pumped from the existing groundwater well for vineyard irrigation, and any potential impacts to groundwater and other environmental features due to those increases, be evaluated under the Hydrology/Water Quality section of the proposed EIR?
4. Based on our review of Figure 3, the north-west area within the proposed "Block C" appears to show evidence of land disturbance and clearing. Our concerns regarding vineyard development include the potential for uncontrolled erosion of sediment and its transport to receiving waters from disturbed areas. The EIR should include discussion of how

disturbed/cleared areas will be addressed to limit the potential for erosion and sediment delivery to receiving waters to avoid environmental impacts to these waters. Disturbed areas such as the one appearing in Block C should not be used as the basis for acceptable pre-project sediment yield calculations.

5. We would like to note that our agency is currently developing General Waste Discharge Requirements (General WDRs) that will regulate discharges from vineyards in the Napa River and Sonoma Creek Watersheds. We have recently released a Notice of Preparation of an EIR as well as an Initial Study that present the proposed Performance Standards that would be required upon these General WDRs taking effect. The Performance Standards are included in Table 2 of the Initial Study and reflect the performance standards that are also identified in the Sediment Total Maximum Daily Loads (TMDLs) that were established for the Napa River watershed in the late 2000s. Although the permit is still in development, these proposed performance standards should be considered during the development of the Davis Family Estates Friesen Vineyard Project.

Thank you for providing us with an opportunity to review and comment on this proposed Project.

Anya Starovoytov  
Environmental Scientist  
San Francisco Bay Regional Water Quality Control Board  
(510) 622 2506 – phone

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**From:** Stephanie Henderson [<mailto:shenderson@analyticalcorp.com>]  
**Sent:** Wednesday, June 25, 2014 2:49 PM  
**To:** Ponton, James@Waterboards; Starovoytov, Anya@Waterboards  
**Subject:** RE: Davis Friesen Vineyard Project NOP

Hello Mr. Ponton and Ms. Starovoytov,

Attached please find one (1) copy of the Correction Notice for the Notice of Preparation (NOP) for the Davis Family Estates Friesen Vineyard Project prepared in compliance with the California Environmental Quality Act (CEQA). Please feel free to contact me if you have any questions or require any additional information. Thank you.

Stephanie

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Stephanie Henderson  
ANALYTICAL ENVIRONMENTAL SERVICES  
Deputy Project Manager / Environmental Analyst | [shenderson@analyticalcorp.com](mailto:shenderson@analyticalcorp.com)  
1801 7th Street, Suite 100 | Sacramento, CA 95811  
916.447.3479 | Fax 447.1665  
[www.analyticalcorp.com](http://www.analyticalcorp.com)

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**From:** Stephanie Henderson  
**Sent:** Tuesday, June 24, 2014 11:49 AM  
**To:** 'Ponton, James@Waterboards'; Starovoytov, Anya@Waterboards  
**Subject:** Davis Friesen Vineyard Project NOP

Hello Mr. Ponton and Ms. Starovoytov,

Attached please find one (1) copy of the Notice of Preparation (NOP) for the Davis Family Estates Friesen Vineyard Project prepared in compliance with the California Environmental Quality Act (CEQA). A copy of the NOP and figures referenced therein is provided on CAL FIRE's website: [sacramentopubliccomment@fire.ca.gov](mailto:sacramentopubliccomment@fire.ca.gov).

Please submit your written comments no later than 5:00 PM on July 24, 2014 to:

Bill Solinsky  
CAL FIRE, Resource Management  
P.O. Box 944246  
Sacramento, CA 94244-2460

Or

[Bill.Solinsky@fire.ca.gov](mailto:Bill.Solinsky@fire.ca.gov) (Please include "Davis Friesen Vineyard" in email subject line).

Comments by Fax will not be accepted.

Please feel free to contact me if you have any questions or require any additional information. Thank you.

--

Stephanie Henderson  
ANALYTICAL ENVIRONMENTAL SERVICES  
Deputy Project Manager / Environmental Analyst | [shenderson@analyticalcorp.com](mailto:shenderson@analyticalcorp.com)  
1801 7th Street, Suite 100 | Sacramento, CA 95811  
916.447.3479 | Fax 447.1665  
[www.analyticalcorp.com](http://www.analyticalcorp.com)

**From:** [Solinsky, Bill@CALFIRE](mailto:Solinsky_Bill@CALFIRE) on behalf of [Sacramento\\_Public\\_Comment@CALFIRE](mailto:Sacramento_Public_Comment@CALFIRE)  
**To:** [Stephanie\\_Henderson](mailto:Stephanie_Henderson); [Hall, Dennis@CALFIRE](mailto:Hall_Dennis@CALFIRE); [Reischman, Matthew@CALFIRE](mailto:Reischman_Matthew@CALFIRE)  
**Subject:** FW: Davis Freisen Vineyard Project  
**Date:** Friday, July 25, 2014 9:16:53 AM

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FYI

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**From:** Karin Troedsson [mailto:[karin@napalandtrust.org](mailto:karin@napalandtrust.org)]  
**Sent:** Thursday, July 24, 2014 3:04 PM  
**To:** Sacramento Public Comment@CALFIRE  
**Subject:** Davis Freisen Vineyard Project

Bill Solinsky  
CAL FIRE, Resource Management  
PO Box 944246  
Sacramento, California 94244-2460

**Re:** Notice of Preparation of the Draft Environmental Impact Report  
Davis Family Estates Freisen Vineyard Project

Dear Mr. Solinsky:

As you mentioned in your June 24, 2014 Notice of Preparation (NOP), The Land Trust of Napa County owns the Dunn-Wildlake Preserve adjacent to the Davis Family Estates Project.

We were not included in the NOP distribution and we only learned about the NOP and its deadline yesterday. Therefore we have not had time to analyze the proposed project to make comments in the comment period.

We would request notice for any future developments associated with this project. If the applicant or CalFire need access to our property for their studies we invite them to contact Mike Palladini at [mike@napalandtrust.org](mailto:mike@napalandtrust.org) or 707-261-6317 to arrange for access.

Karin Troedsson  
Staff Attorney



Land Trust of Napa County  
1700 Soscol Ave, Suite 20

Napa, CA 94559

Direct: (707) 261-6326

Fax: (707) 252-1071

[karin@napalandtrust.org](mailto:karin@napalandtrust.org)

[www.napalandtrust.org](http://www.napalandtrust.org)

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www.countyofnapa.org

David Morrison  
Director

July 24, 2014



Bill Solinsky  
CAL FIRE  
Division of Resource Management  
P.O. Box 944246  
Sacramento, CA 94244-2460

RE: N.O.P. COMMENTS  
**Frostfire Vineyards II LLC Vineyard Conversion: File No. P13-00373-ECPA**  
**Friesen Road: APN 018-060-012 & -013**

Dear Mr. Solinsky:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the Environmental Impact Report (EIR) that will be prepared for the Frostfire Vineyards II LLC (Friesen) Vineyard Conversion and Timber Harvest Plan Application. The project involves the removal of timberland and other native vegetation including oak woodland and chaparral and development of approximately 14 acres of new vineyard.

As a Responsible Agency ((California Code of Regulations (CCR) Section 15381)) under the California Environmental Quality Act (CEQA) it is the County's obligation to review and decide on the permit for the proposed hillside vineyard, an Agricultural Erosion Control Plan application (ECPA), for the development of 14 acres of new vineyard as referenced in the ECPA application. It is the County's intention, via this correspondence, to ensure that environmental review of the project, pursuant to CEQA, considers impacts associated with entire project including the proposed vineyard development and subsequent vineyard operations (CCR Section 15063.1). For the County to utilize the NOP and draft EIR for the review of the County ECPA permit, the EIR will need to adequately disclose any potential impacts of the entire project and include appropriate mitigation measures for those impacts.

A CEQA document that does not adequately disclose and assess potential impacts of the entirety of the project could result additional environmental review when the County conducts its discretionary review of the associated permit noted above, which could result in delays to the applicant and project implementation, as well as, potential project modifications. As such, the County would like you to consider the following comments regarding the NOP and Proposed EIR for the reference application.

**A. Project Description:**

- i. Provide a description and/or illustration of all proposed project features including the timber harvest vegetation clearing limits (which may be beyond the proposed vineyard boundaries), and the infrastructure required for the ongoing operation and maintenance of the vineyard including irrigation facilities, water tanks,

staging area(s), and rock storage and/or stockpile areas. A complete project description that includes all components of the project is essential to adequately understand and assess potential impacts of the proposed project.

#### B. Geology and Soils:

- i. The overall disturbed areas involved in the timber harvest clearing limits should be considered as part of the project for the potential to cause impacts, as mentioned above. The soil loss modeling provided describes a pre project cover value of pasture or grazed woodland, however the existing conditions consist of dense forest, oak woodland, and chaparral vegetation which may ultimately mischaracterize current runoff and soil loss conditions from which the proposed project conditions are compared and evaluated. Please accurately take into account and analyze the existing conditions of the project and evaluate the proposed change from an ungrazed forest to a commercial vineyard. Napa County General Plan Conservation Policy CON-48 requires erosion control plans that maintain pre-development sediment erosion conditions. Without appropriate soil loss modeling for the project, potential impacts associated with soil loss and sedimentation cannot be adequately disclosed, assessed, or mitigated. Furthermore, the County would not be in a position to determine if the project is consistent with the above referenced general plan policy, which is required before the County could take action on the project.

#### C. Hydrology and Water Quality:

- i. The overall project areas involved and the cover estimates for pre-project conditions are also important as referenced above in the Geology and Soils discussion in determining if the project would result in an increase in storm water runoff and concentrated flows. Napa County General Plan Policy CON-50 requires that discretionary projects meet performance standards to ensure peak runoff in 2-, 10-, 50-, and 100-year storm events following development is not greater than predevelopment conditions. Without appropriate runoff modeling encompassing the entirety of the project (vineyard blocks, vineyard avenues, clearing limits, and all existing and proposed roadways to be utilized as part of the construction and ongoing operation of the project), potential impacts or changes associated with hydrology may not be accurately determined and effective mitigation cannot be developed. This is of particular importance given the project is located in the Bell Canyon Reservoir Sensitive Domestic Water Supply Watershed, which is subject to specific design criteria outlined in section 18.108.027 and 140 of the Napa County Code.
- ii. Water Availability Analysis: A thorough analysis and discussion of water availability for the proposed vineyard is needed. Any additional supporting information would be beneficial to support any impact conclusion.

#### D. Biological Resources:

- i. Stream setbacks: The erosion control plan site plans generally indicate the vineyard project would comply with required Napa County stream setbacks ((Napa County Code (NCC) Section 18.108.025)), and avoid development on slopes over 30 percent. However, it is not clear whether timber harvest vegetation clearing will also meet setback buffer requirements. The latest draft of the erosion control plan dated January 21, 2014 at the proposed stream setback on the east edge of Vineyard Block C conflicts with two significant trees at the natural slopes break of greater than 30%. These two trees appear to be just outside the edge of the proposed project boundary. The eastern edge of Block C above the drainage should be adjusted to ensure the significant trees at the headwaters of the drainage are avoided and a no-touch canopy buffer around the significant trees to be retained should be shown on the plans to avoid conflict with the proposed vineyard. Since the existing trees are at the lower elevations on these steeper slopes and the plans propose a rock fill slope along the downhill eastern edge of the vineyard block, the avoidance of the significant trees at their canopy line would be feasible and result in only a minor boundary adjustment with negligible effect to the vineyard layout.
- ii. Special Status Species:
  - Napa County Lomatium (*Lomatium repositum*) – The biological report found the presence of this species in three locations affected and/or within the proposed project boundaries. The report identifies this plant as a California Native Plant Society plant of limited distribution (4.3). The report finds that removing these three plant locations would not be a significant impact. However, if project redesign and avoidance is considered

infeasible, at minimum a basic seed retention strategy of skimming the top inch of soil at the three identified plant locations directly impacted by the project, depositing the topsoil spoils outside of project implementation boundaries, and then replacing and spreading the topsoil containing the seeds in a location along the edge of disturbance that the biologist identifies as appropriate for the plant. This potential mitigation would at least attempt to not lose the entire onsite seedbed if it were to be buried or otherwise left in the managed vineyard boundary or newly constructed roadway. It appears that impacts to *Lomatium* could be feasibly mitigated by relocation of the plant populations to a compatible site adjacent to the project boundary.

- Western Pond Turtle (WPT) – As indicated in the biological report, WPT was found onsite and is known to occupy the project site and subject property. Mitigation to avoid significant impacts to WPT, in the form of preconstruction surveys in suitable habitat within 100 feet of project activities should be included, and such surveys should evaluate the potential habitat relative to the Wild Lake Reservoir off-site of the project (located 230 feet west of proposed block A) and any potential migratory corridors between the on-site reservoir and the off-site reservoir. It appears that impacts to WPT migration and habitat could be avoided by the use of wildlife exclusion fencing that features large gauge openings so that it does not restrict small ground-dwelling wildlife, combined with the use of cattle guards in the entry gates that would not inadvertently trap WPT. The extent of potential habitat should include upland habitat, which could extend up to 275 feet from water bodies and streams (Analytical Environmental Services, November 2008, Circle-S Draft EIR). All potential WPT habitat should be identified so that potential impacts can be adequately assessed and mitigated. Napa County General Plan Conservation Goals CON-2 and CON-3 strive to maintain and enhance the existing level of biodiversity, and protect the continued presence of special-status species, and their habitat: Conservation Policy CON-13 require that all discretionary, agricultural, and water development projects consider and address impacts to wildlife habitat and avoid impacts to habitat supporting special-status species to the extent feasible.
  - California Red-legged Frog- the biological report discussion provided for a potential special-status animal species, California Red-legged Frog (*Rana draytonii*), or CRLF, states that the existing pond on-site does not provide good habitat and is approximately 100 feet away from the project. However, the majority of the proposed project site is actually closer to the larger reservoir on the neighboring parcel, which could provide better frog habitat based on its characteristics and proximity to blue line streams. Please address and discuss the adjacent off-site aquatic resources so there is not an important informational gap with regard to CRLF to adequately evaluate the proposed project.
- iii. The extent of any Sensitive Biotic Communities and Biotic Communities of Limited Distribution as defined in the County Baseline Data Report, including the presence and extent of any ponderosa pine forest alliance is mentioned, but not discussed at length. Ponderosa pines are found within the project area but deemed not in enough numbers to merit their own forest alliance. Nonetheless, ponderosa pine trees in high value avoidance locations should be targeted for retention. Napa County Conservation Policy CON – 24 requires Preservation, to the extent feasible, of other significant vegetation that occur near the heads of drainages or depressions to maintain diversity of vegetation type and wildlife habitat as part of agricultural projects. Avoidance with canopy buffers of the Doug fir and Ponderosa pine trees on the steep slopes just outside the edge of proposed Block C boundary (as mentioned in A).i. above) in the headwater drainage setback are ideal candidates to meet this preservation requirement and they should be avoided.
- Napa County Conservation Policy CON - 24 also requires first and foremost preservation and avoidance to the extent feasible, then alternatively the replacement or preservation of oak woodland at a 2:1 ratio. It is not clear that there are any opportunities for replacement within the project parcels, and on this subject the report is silent. Please provide an expanded discussion of cumulative woodland loss; considering the setting and surrounding vineyard development and potential cumulative impacts (in particular cumulative loss of forest land). The northern tip of Proposed Block C and the southwest edge of Block B both contain the most intact stand of young oak woodland and ponderosa pine. Avoidance of these areas would be feasible with a minimal revision to the project boundary, and would provide a substantial preservation benefit. These stands are also

located along the driveway to the parcels west and north of the project site, and would minimize aesthetic impacts resulting from the project.

- iv. **Wildlife Movement:** see discussion above regarding WPT movement to ensure that impacts to wildlife movement as a result of future vineyard and fence installation remain less than significant.

#### E. Land Use and Planning

- i. As indicated in these comments, without complete plans showing the full extent of the proposed project it appears that the project could potentially be in conflict with the Napa County General Plan Goals and Policies outlined below. As such, the IS and Proposed MND should include a discussion of how the proposed project and mitigation measures achieves or are otherwise consistent with applicable County Goals, Policies and Regulations:
  - Goal CON-2: Maintain and enhance the existing level of biodiversity.
  - Goal CON-3: Protect the continued presence of special-status species, including special-status plants, special-status wildlife, and their habitats.
  - Policy CON-13: The County shall require that all discretionary residential, commercial, industrial, recreational, agricultural, and water development projects consider and address impacts to wildlife habitat and avoid impacts to fisheries and habitat supporting special-status species to the extent feasible. Where impacts to wildlife and special-status species cannot be avoided, projects shall include effective mitigation measures and management plans including provisions to:
    - d) Provide protection for habitat supporting special-status species through buffering or other means.
    - e) Provide replacement habitat of like quantity and quality on- or off-site for special-status species to mitigate impacts to special-status species.
    - f) Enhance existing habitat values, particularly for special-status species, through restoration and replanting of native plant species as part of discretionary permit review and approval.
  - Policy CON-17: Preserve and protect native grasslands, serpentine grasslands, mixed serpentine chaparral, and other sensitive biotic communities and habitats of limited distribution. The County, in its discretion, shall require mitigation that results in the following standards:
    - a) Prevent removal or disturbance of sensitive natural plant communities that contain special-status plant species or provide critical habitat to special-status animal species.
    - b) In other areas, avoid disturbances to or removal of sensitive natural plant communities and mitigate potentially significant impacts where avoidance is infeasible.
    - e) Require no net loss of sensitive biotic communities and habitats of limited distribution through avoidance, restoration, or replacement where feasible. Where avoidance, restoration, or replacement is not feasible, preserve like habitat at a 2:1 ratio or greater within Napa County to avoid significant cumulative loss of valuable habitats.
  - Policy CON-24: Maintain and improve oak woodland habitat to provide for slope stabilization, soil protection, species diversity, and wildlife habitat through appropriate measures including one or more of the following:
    - a) Preserve, to the extent feasible, oak trees and other significant vegetation that occur near the heads of drainages or depressions to maintain diversity of vegetation type and wildlife habitat as part of agricultural projects.
    - c) Provide replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio when retention of existing vegetation is found to be infeasible. Removal of oak species limited in distribution shall be avoided to the maximum extent feasible.
  - Policy CON-27: The County shall enforce compliance and continued implementation of the intermittent and perennial stream setback requirements set forth in existing stream setback regulations.
  - Policy CON-55: The County shall consider existing water uses during the review of new water uses associated with discretionary projects, and where hydrogeologic studies have shown that the new water uses will cause significant adverse well interference or substantial reductions in groundwater discharge to surface waters that would alter critical flows to sustain riparian habitat and

fisheries or exacerbate conditions of overdraft, the County shall curtail those new or expanded water uses.

Chapter 18.108 Napa County Conservation Regulations (Section 18.108.010 NCC) in part encourages: the preservation of the natural resources of the county of Napa; minimization of grading operations and other such man-made effects in the natural terrain; preservation of riparian areas and other natural habitat by controlling development near streams and watercourses; and, development which minimizes impacts on existing land forms and preserves existing vegetation.

F. Transportation and Circulation

- i. The EIR should address whether there would be a less than significant impact on traffic and circulation as a result of the proposed project, such as impacts associated with the number of truck and worker trips associated with vineyard development and installation, and subsequent ongoing vineyard operation to support that conclusion. The EIR should include information regarding the approximate anticipated equipment and trips necessary to implement and maintain the proposed project. This information would also assist in assessing potential construction and operation air quality and GHG emission impacts associated with the proposed project.

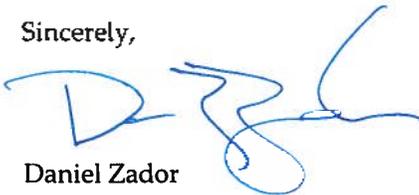
G. Cultural Resources

- i. It is indicated in the Cultural Report provided for the project, there are cultural resources within the project area. Mitigation to avoid these features has been recommended and should be included in the EIR or the areas with cultural resources (within Proposed Block A totaling 0.54 acre) should be avoided entirely. To understand the extent of the proposed project plans showing full extent of the project including vineyard development and buffers should be provided.

In short the intent of these comments is to outline the sufficiency of the environmental review document in identifying and analyzing the possible impacts of the entire project and the ability of the County to utilize the document in reviewing and issuing associated permits necessary for project implementation.

I would like to thank you for providing the County an opportunity to review and comment on the NOP and eventually the draft EIR. If you should have any questions regarding any of the above issues, please feel free to contact me at your convenience at 707-259-8239 or [daniel.zador@countyofnapa.org](mailto:daniel.zador@countyofnapa.org)

Sincerely,



Daniel Zador  
Planner II

Cc: Brian Bordona, Supervising Planner, Engineering and Conservation Division  
Drew Aspegren, Napa Valley Vineyard Engineering, Project Engineer  
Scott Butler, Register Professional Forester

## Memorandum

Date: July 22, 2014

To: Mr. Bill Solinsky  
California Department of Forestry and Fire Protection  
Post Office Box 944246  
Sacramento, CA 94244-2460



From:   
Scott Wilson, Regional Manager  
California Department of Fish and Wildlife – Bay Delta Region, 7329 Silverado Trail, Napa, California 94558

Subject: Davis Family Estates Friesen Vineyard Project, Notice of Preparation of a Draft Environmental Impact Report, SCH #2014062076, Napa County

The California Department of Fish and Wildlife (CDFW) has reviewed the Notice of Preparation provided for the draft Environmental Impact Report (EIR). The 38.7-acre project site is located at 1875 Friesen Drive, approximately two miles northwest of the Town of Angwin in Napa County, within the Bell Canyon watershed. The proposed project would convert approximately 14 acres of timberland to a commercial vineyard within the 38.7-acre property. The project area includes ghost pine woodland, Douglas-fir forest, mixed-oak forest, chamise chaparral, ponderosa pine and shrubland manzanita. The 3,030-acre Dunn-Wildlake Ranch Preserve is surrounding the project parcel to the west, south and east.

During preparation of the draft EIR, please provide a complete assessment (including but not limited to type, quantity and locations) of the habitats, flora and fauna within and adjacent to the project area, including endangered, threatened, and locally unique species and sensitive habitats. The assessment should include reasonably foreseeable direct and indirect impacts (temporary and permanent) that may occur with implementation of the project. Rare, threatened and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380). CDFW recommended survey and monitoring protocols and guidelines are available at [http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols\\_for\\_Surveying\\_and\\_Evaluating\\_Impacts.pdf](http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/Protocols_for_Surveying_and_Evaluating_Impacts.pdf).

The Biological Resources Section of the draft EIR should individually discuss appropriate habitat, life cycle, potential impacts and mitigation measures for special status species which may occur such as, but not limited to: northern spotted owl (*Strix occidentalis caurina*), purple martin (*Progne subis arboricola*), pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), western red bat (*Lasiurus blossevillii*), western pond turtle (*Emys marmorata*), red legged frog (*Rana draytonii*), and yellow legged frog (*Rana boylei*). Appropriate avoidance and mitigation measures should also be included in the draft EIR to address potentially significant impacts to wildlife movement of species such as, but not limited to: bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), ringtail cat (*Bassariscus astutus*), coyote (*Canis latrans*) and mountain lion (*Puma concolor*).

Please be advised that a California Endangered Species Act (CESA) Permit must be obtained if the project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the project. Issuance of a CESA Permit is subject to the CEQA documentation; therefore, the CEQA document must specify temporary and permanent impacts, avoidance and minimization mitigation measures, and a mitigation monitoring and reporting program. If the project will impact CESA listed species, early consultation is encouraged, as significant modification to the project and mitigation measures may be required in order to obtain a CESA Permit.

There is one Class III watercourse and one Class II watercourse identified, which likely provide suitable habitat for western pond turtle (*Actinemys marmorata*) and foothill yellow legged frog (*Rana boylei*). Both streams within the project area drain into Bell Canyon Creek, a Class I watercourse that supports central coast steelhead (*Oncorhynchus mykiss*). For any activity that will divert or obstruct the natural flow, change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, CDFW may require a Lake and Streambed Alteration Agreement (LSAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of an LSAA is subject to the CEQA. CDFW, as a responsible agency under CEQA, will consider the CEQA document for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of an LSAA. To obtain information about the LSAA notification process, please access our website at <http://www.dfg.ca.gov/habcon/1600/>; or to request a notification package, contact CDFW's Bay Delta Regional Office at (707) 944-5500.

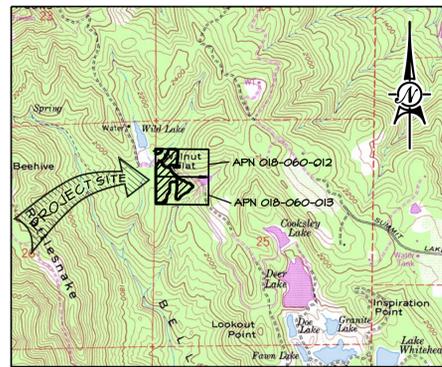
If you have any questions, please contact Ms. Suzanne Gilmore, Environmental Scientist, at (707) 944-5536; or Ms. Karen Weiss, Senior Environmental Scientist (Supervisory), at (707) 944-5525.

cc: State Clearinghouse

# ***APPENDIX B***

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## **EROSION CONTROL PLAN**



PORTION OF St. Helena 7.5 MIN. QUAD MAP

## Vicinity Map

1" = ±2000'

## Narrative

This project consists of the development of approximately ±13.38 gross acres (±10.43 net acres) of new vineyard within APN 018-060-012 and 018-060-013 a total of ±37.43 acres located at 1875 Friesen Drive, Angwin. The parcels include ±24.05 acres of tree canopy, brush, reservoir and resident grasses. There is existing access from Friesen Drive. Existing ground slopes within the project area range from 8% to 27% with ±0.94 acre of 30% or greater. The vineyards will be spaced 7' apart with row direction as shown on the ECP. Vineyard avenues/turnspaces shall be created to accommodate the vineyard operations. The proposed vineyard area in the south east corner of Block B may be hand farmed. The vineyard will be farmed with cultivation practices as described below under Permanent Erosion Control Measures #6. A drip irrigation system will be installed and wells will serve as the water source. Water use on the new vineyard is expected to be ±3.30 AF per annum.

The USGS St. Helena 7.5 minute Quad Map shows two "Blue-line" streams, one in the NW corner of APN 018-060-012 and the other SE corner of APN 018-060-013. These unnamed streams flow to Bell Canyon Creek; the project lies within the Bell Canyon Reservoir subwatershed. Stream setbacks have been established as prescribed in Napa County Conservation Regulations.

The Biological Resources Survey prepared by Kjeldsen Biological Consulting, revealed no special status species which will be impacted by this project.

Rock Disposal shall be accomplished by road surfacing, erosion control features, and disposal along vineyard perimeters where shown.

Soils within the block boundaries have been classified in the USDA Soil Conservation Service's, Napa County Soil Survey, as SCS# 138 Forward gravelly loam, and SCS# 177 Rock out crop-Kidd complex.

Vegetation removal consists of existing trees, brush and grasses. All organic material to be burned or chipped shall be stacked at strategic locations within the cleared area. Burning of the organic material shall take place only after obtaining approvals from all governing agencies.

Ground preparation - The ground may be ripped 36" and tilled, some areas of rock may need to be blasted. Rocks generated from the ripping or blasting shall be placed in rock disposal areas at the locations marked on the plan sheet, used in erosion control features, or crushed for road surfacing. Vineyard avenues and turnspaces shall be shaped during ground preparation. Winter cover crop shall be seeded and mulched prior to September 15 of year P-1.

Wildlife Exclusion Fencing shall be installed around the vineyard, as shown on the plan, with gates and/or turtle friendly cattle guards provided where convenient for vineyard access. For convenience, the fence may be routed around trees and other imposing physical features, and additional gates may be installed. Existing cattle fence around the property will remain in place and it may be augmented or replaced with wildlife exclusion fence where it is adjacent to proposed vineyard blocks. Wildlife exclusion fence shall be 6' with 8" X 8" square mesh with 2 strands of barbed wire above (total 8' height). Cattle guards installed must be pond turtle friendly allowing any turtle that falls between guards to walk out on it's own.

Temporary Erosion Control Measures consist of the installation of fiber rolls and the application of straw mulch where seeding occurs. The installation of all fiber rolls shall be completed in accordance with the appropriate detail along the contours at locations shown on the plan, no later than September 15 in years P-1 and P. They shall be left in place through the winter after planting, after which they may be removed. A straw mulch cover shall be applied over all open and/or disturbed and seeded areas at the rate specified in the seeding requirements.

Permanent Erosion Control Measures consist of the following:

- Clean, repair or replace existing drainage features as needed at the locations shown in the plan.
- Construction of water bars where shown in the plan in accordance with the appropriate detail.
- Construction of rock check where shown in the plan in accordance with the appropriate detail.
- Construction of rock disposal areas where shown in the plan in accordance with the appropriate detail.
- Construction of a rolling dips where shown in the plan and in accordance with the appropriate detail.
- Install culvert along Friesen road between existing culverts east of Block C, add energy dissipators to each culvert along Friesen road in accordance with the appropriate detail.
- A winter cover crop shall be seeded and mulched within the vineyard area in the fall after clearing. During fallow years, the cover crop may be mowed. A winter cover crop shall be planted within the Blocks in the fall immediately after planting (refer to cultivation chart under Project Notes). NO PREEMERGENT SPRAYS SHALL BE USED, but springtime applications of post-emergent contact sprays may be used as strip spraying centered on the vine rows. As a normal cultural practice, vineyard middles shall not be tilled, but may be mowed as described in Project Notes - Maintenance. A ground cover of 80% shall be obtained each winter, seed and mulch shall be applied as necessary to achieve this level of ground cover. From time to time (every three to four years), it may be necessary to disk the vine rows in order to open up the ground or to re-establish proper ground cover. Should this be necessary, the Napa County RCD shall be notified, and work shall proceed as prescribed in Napa County Conservation, Development and Planning Department guidelines, dated April 8, 2004, entitled "Protocol for Replanting/Renewal of Approved Non-Tilled Vineyard Cover Crops".
- Implementation and adherence to the Annual Winterization program presented in the Project Notes.

Costs: The total cost of all erosion control measures is estimated to be \$2500-3000/acre including equipment, materials, and labor.

The project site was last visited by the plan preparer in April, 2015 to inspect the site, and will be visited during and after redevelopment to check for proper erosion control features.

# DAVIS FAMILY ESTATE FRIESEN VINEYARD EROSION CONTROL PLAN FOR NEW VINEYARD

## SHEET INDEX

- TITLE SHEET
- PLAN & DETAILS

## Project Notes

APN & Owner: 018-060-012 Edward & Darleen Bercovich  
1591 Ellis St. #313  
Concord, Ca, 94520

018-060-013 Frostfire Vineyard II LLC  
15572 Computer Lane  
Huntington Beach, Ca. 92649

Site Address: 1875 Friesen Drive, Angwin

Contact: Davie Pina, @ 944-2229 Pina Vineyard Management  
PO Box 373  
Oakville, Ca. 94562

Drew L. Aspegren, P. E. @ 963-4927  
Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574

Mapping: Napa County GIS Data (2002)

Implementation Schedule: Work may begin during the first growing season after project approval and may be phased over several years. Preplant and planting year operations may be conducted simultaneously in different parts of the proposed vineyard or they may be conducted during the same year. The work will be scheduled as follows:

Year P-1 April 1 thru Sept 15	Clearing, rock and root removal, stacking vegetation for burning or other disposal, ripping, disking, installing appropriate permanent erosion control measures prior to vineyard layout, staking and installation of drip system, installing temporary erosion control measures. Ground disturbing activities shall be complete by Sept 1, and complete winterization, including seeding and mulching, shall be complete by September 15.
----------------------------------	--

Rainy Season Sept 15 thru March 31	Maintain erosion control measures, burning as allowed by government agencies.
---------------------------------------	---

Year P April 1 thru Sept 1	Complete unfinished pre-plant operations. Plant vineyard and begin cultural practices (refer to cultivation chart below). Maintain all erosion control features.
-------------------------------	--

### Cover Cropping and Cultivation Practices

Year	Cultivation during growing season	Cover Crop, planted/maintained at end of growing season
Pre-plant (P-1)	rip and disk	winter cover crop, mulch
Fallow Year	mow	winter cover crop, mulch
Planting (P)	full till	winter cover crop, mulch
P+1 Forward	alternate row till	alternate row cover crop, mulch

All ground disturbing activities shall be completed by September 1 of each year, and all erosion control measures shall be in place by September 15.

Seeding Requirements: All exposed or disturbed soils shall be seeded. Seed and fertilizer shall be applied by broadcasting methods at the rates specified below:

Davis Estate Mix @ 100 lbs/ac	Barley	45%
	Annual Rye Grass	45%
	Crimson Clover	10%

On all vineyard avenues/turnspaces which are not rocked, "Fawn" tall fescue shall be added to the mix @ 5 lbs/ac.

Fertilizer : Ammonium phosphate sulfate (16-20-0) 200-240 lbs/ac

An alternate seed mix and/or fertilizer may be used after review and approval by Napa County.

Straw Mulch shall be spread over all disturbed and seeded areas. The mulch shall be spread mechanically or by hand at the rate of 2 tons/acre.

Fiber Rolls shall be installed at the locations shown on the plan in accordance with the appropriate detail. Fiber Rolls shall be maintained through the winter after planting, after which they may be removed.

Diversion Ditches shall be constructed where shown in accordance with the detail. Ditch flowline shall be sloped to drain at 2 to 4%.

Rock Stabilization shall be constructed using RSP in the low spots located within the perimeter avenues, in accordance with the detail. Some are shown in the plan.

Rolling Dips shall be constructed where shown with the outboard direction and in accordance with the detail.

Water Bars shall be constructed where shown in the Plan, in accordance with the appropriate detail. Water bars shall remain as permanent structures and shall be reshaped as necessary prior to each rainy season.

Maintenance: As described in Narrative, Permanent Erosion Control Measures, Item 7, cover crops shall be planted prior to September 1. The cover crop may be mowed each spring after the seed has fully matured (hard dough stage) to ensure annual grass species regeneration for the following year. Minimum mowing height of 4" shall be maintained for establishing annual and perennial grasses. As a normal cultural practice, tillage shall take place within these areas after the vineyard is planted only as provided in the Narrative under Permanent Erosion Control Measures. The vineyard may be sprayed as described in the Narrative under Permanent Erosion Control Measures. The required 80% ground cover, or great, will be obtained, with the owner being responsible for reseeding and maintenance in order to reach the desired degree of cover.

Annual Winterization: No later than September 15 each year, the following winterization shall be completed:

- The condition of the cover crop shall be evaluated, including areas outside the vineyard, and the suitability and effectiveness of the seed mix shall be evaluated. Weak areas shall be reseeded as necessary; if addition of soil amendments is indicated, they shall be incorporated and those areas shall be seeded and mulched.
- All roads and avenues/turnspaces which are not rocked or paved shall be seeded as needed and mulched, and shall remain undisturbed throughout the rainy season.
- All ditches and existing culverts shall be inspected, cleaned and/or repaired as necessary.
- All other existing erosion control and drainage features shall be inspected, cleaned and/or repaired as necessary.

All erosion control measures shall be inspected after each storm event, and repairs shall be promptly performed.

## Special Notes

1) Bats: The following bat avoidance measures shall be implemented prior to the commencement of vineyard development and implementation activities:

A qualified biologist shall conduct a habitat assessment for potential suitable habitat within six months of project activities. If the habitat assessment reveals suitable habitat, a qualified biologist shall conduct a presence/absence survey during peak activity periods. If bats are found to be present during peak activity periods, the qualified biologist shall submit an avoidance plan to the County and California Department of Fish and Wildlife (DFW) for approval. The avoidance plan should evaluate the length of time disturbance, equipment noise and type of habitat present at the Project site. In the event the bat avoidance measures required by DFW result in a reduction or modification of vineyard block boundaries, the erosion control plan shall be revised by the applicant/engineer and submitted to the County.

2) Raptors: The following raptor preconstruction survey(s) shall be conducted prior to the commencement of vineyard development and implementation activities:

For earth-disturbing activities occurring between April 1 through September 15, a qualified wildlife biologist shall conduct preconstruction surveys for special status birds and their nests within 500-feet of earth moving activities. The preconstruction survey shall be conducted no more than 14 days prior to vegetation removal and ground disturbing activities are to commence (surveys shall be conducted a minimum of 3 separate days during the 14 days prior to disturbance).

If active nests are found during a preconstruction survey, a 300-foot disturbance buffer shall be created around active raptor nests and a 50-foot buffer zone shall be created around the nests of all other birds during the breeding/nesting season, or until it is determined by a qualified biologist that all young have fledged. These buffer zones may be modified in coordination with DFW based on existing conditions at the project site. Buffer zones shall be fenced with temporary construction fencing and remain in place until the end of the breeding season or until young have fledged.

If a 15 day or greater lapse of project-related work occurs during the breeding season, another bird preconstruction survey and consultation with DFW will be required before project work can be reinitiated.

REV. 7	8-18-15	REVISED PER C66 COMMENTS DATED 8-18-15
REV. 6	6-5-15	REVISED PER NCRCD COMMENTS DATED 5-15-15
REV. 5	4-13-15	REVISED PER NCRCD COMMENTS OF 2-2-15
REV. 4	1-21-15	REVISED PER HYDROLOGY REPORT
REV. 3	11-26-14	REVISED PER NAPA COUNTY COMMENTS OF 11-21-14
REV. 2	10-23-14	REVISED PER NCRCD COMMENTS OF 5-22-14 AND NAPA COUNTY COMMENTS OF 8-8-14
REV. 1	1-21-14	REVISED PER NAPA COUNTY COMMENTS OF 11-22-13

## Legend

(0.52)	AREA & ACREAGE WITH SLOPES GREATER THAN 30%
— — — — —	BLOCK BOUNDARY
— — — — —	AVENUE/TURNSPACE
— — — — —	VINEYARD BOUNDARY (APPROX.)
(2)	DETAIL 1, SHEET 2
(E)	EXISTING
○ ○ ○ ○	FIBER ROLL
MSB	MINIMUM SETBACK
P	PLANTING YEAR
— - - - -	PROPERTY LINE APPROXIMATE LOCATION
■ ■ ■ ■ ■	ROCK DISPOSAL AREA
□ □ □ □ □	ROLLING DIP
SCS	SOIL CONSERVATION SERVICE
(139)	SCS SOIL MAPPING UNIT
— S — — —	SCS SOIL TYPE BOUNDARY
TOB	TOP OF BANK
— — — — —	WATER BAR
— X — — —	WILDLIFE EXCLUSION FENCE

## DAVIS FAMILY ESTATE FRIESEN VINEYARD EROSION CONTROL PLAN FOR NEW VINEYARD

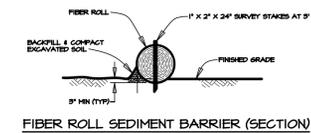
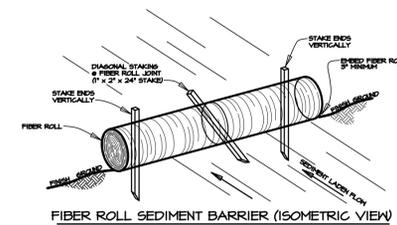
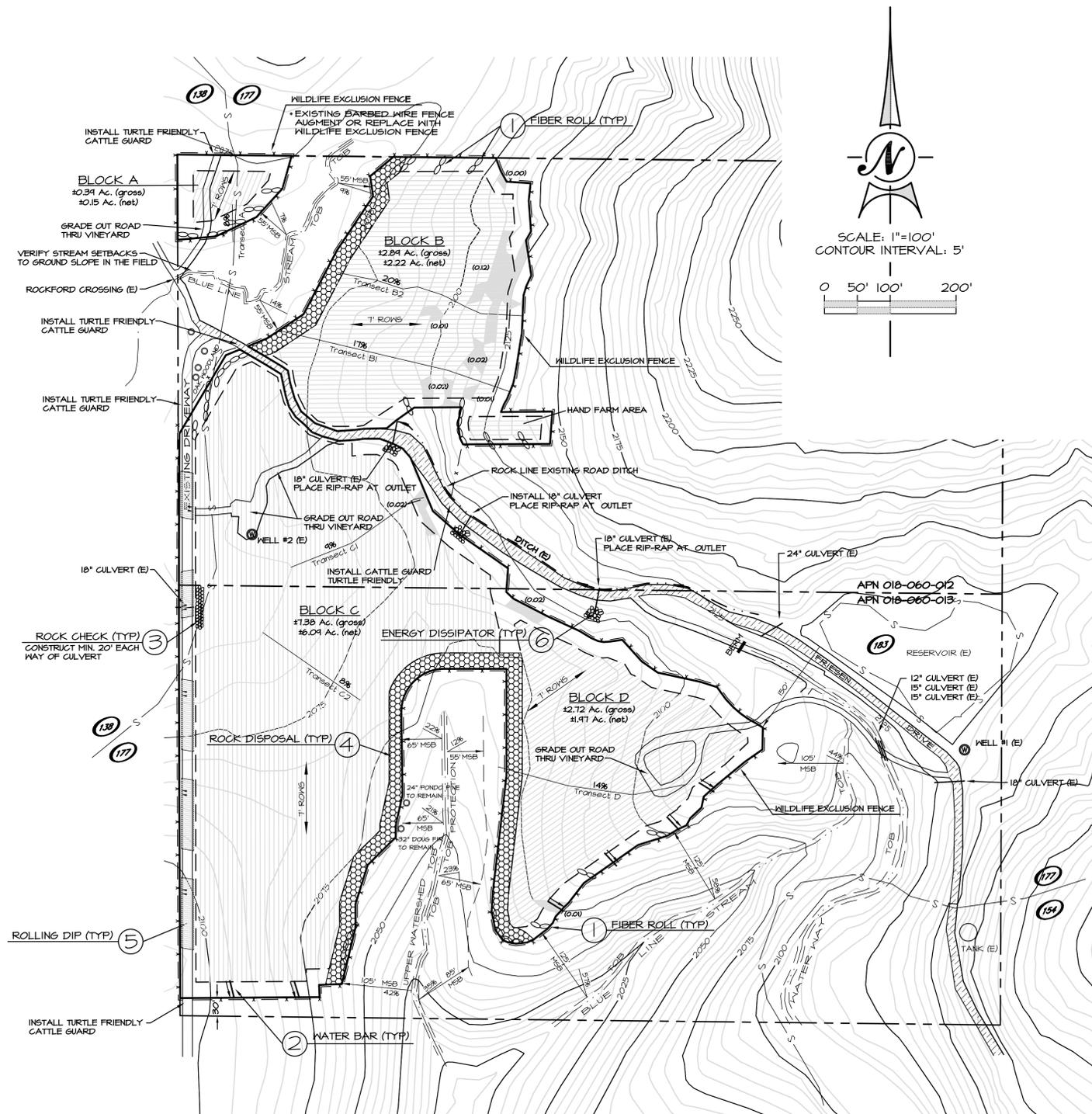
Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574  
(707) 963 4927



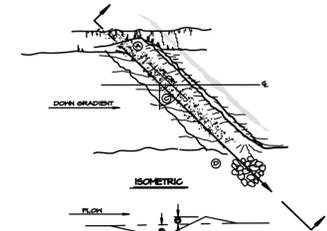
DREW L. ASPEGREN, PE  
R.C.E. 31418

October 22, 2013  
DATE

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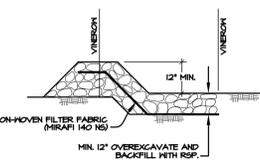


1 FIBER ROLL  
N.T.S.

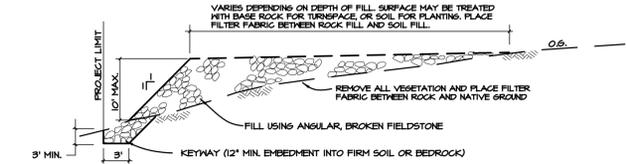


NOTES  
Waterbar construction for little or no traffic. Specifications are average and shall be adjusted to conditions.  
1 Tie-in to bank if appropriate.  
2 Cross drain berm height 4" to 6" above the roadbed.  
3 Angle drain 30° to 45° degrees downgrade with road centerline.  
4 Outfall structure as shown in plan.  
5 Depth minimum 8".  
6 5' to 4'.

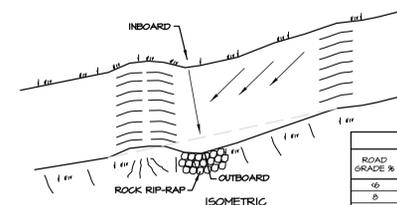
2 WATER BAR  
N.T.S.



3 ROCK CHECK  
N.T.S.



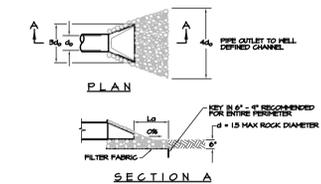
4 ROCK DISPOSAL AREA (TYP)  
N.T.S.



ROAD GRADE %	STEPPED GRADE DISTANCE	REVERSE GRADE DISTANCE	INBOARD DEPTH	OUTBOARD DEPTH
4%	9'	15'-20'	0.3'	0.4'
6%	6'	15'-20'	0.2'	0.2'
10%	7'	15'-20'	0.2'	1.1'
12%	8'	20'-25'	0.2'	1.2'
12%	10'	20'-25'	0.2'	1.3'

NOTE: EXTEND CREST GRADE TO NATURAL GRADE 10°-20°. SPACING BETWEEN ROLLING DIPS 150'

5 ROLLING DIP  
N.T.S.



PIPE DIAMETER (INCHES)	DISCHARGE (FT³/S)	APRON LENGTH (Lₐ)	RIP RAP D₅₀ DIAMETER (INCHES)
12	5	15	4
18	10	20	6
24	20	30	8

6 ENERGY DISSIPATOR  
N.T.S.

REV.	DESCRIPTION	BY	DATE
7	REVISIONS PER CGS COMMENTS DATED 8-18-15	DLA	8-18-15
6	REVISIONS PER NCRCD COMMENTS DATED 5-15-15	DLA	6-5-15
5	REVISIONS PER NCRCD COMMENTS ON 2-2-15	DLA	4-13-15
4	REVISIONS PER HYDROLOGY REPORT	DLA	1-27-15
3	REVISIONS PER NAPA COUNTY COMMENTS OF 11-21-14	DLA	11-26-14
2	REVISIONS PER NCRCD COMMENTS ON 5-22-14 AND NAPA COUNTY COMMENTS OF 8-8-14	DLA	10-23-14
1	REVISIONS PER NAPA COUNTY COMMENTS ON 11-22-13	DLA	1-21-14
REV.	DESCRIPTION	BY	DATE

TOPOGRAPHIC MAPPING FROM NAPA COUNTY GIS DATABASE (2002)

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Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574  
(707) 963 4927



DATE 10-22-13 SCALE AS SHOWN  
DRAWN JRJ CHECKED DLA  
APPROVED  
DREN L. ASPEGREN, PE R.C.E. 31418

DAVIS FAMILY ESTATE  
FRIESEN VINEYARD

EROSION CONTROL  
PLAN, DETAILS, NOTES

SHEET 2 OF 2

# ***APPENDIX C***

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CALEEMOD OUTPUT FILES

**Davis Friesen Vineyard**  
**Napa County, Summer**

## 1.0 Project Characteristics

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### 1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Commercial	14.50	User Defined Unit	14.50	0.00	15

### 1.2 Other Project Characteristics

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	3.6	<b>Precipitation Freq (Days)</b>	64
<b>Climate Zone</b>	4			<b>Operational Year</b>	2016
<b>Utility Company</b>	Pacific Gas & Electric Company				
<b>CO2 Intensity (lb/MWhr)</b>	641.35	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project Discription

Construction Phase - Project Discription

Trips and VMT - Similar Projects

Vehicle Trips - Estimate trip rate per like projects.

Off-road Equipment - project discription

Off-road Equipment - project discription

Off-road Equipment - Project Discription

Construction Off-road Equipment Mitigation - Mitigation

Off-road Equipment - Project Discription

Grading - Project Discription

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
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tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
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tblConstructionPhase	NumDays	10.00	32.00
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tblGrading	AcresOfGrading	20.00	14.00
tblGrading	AcresOfGrading	0.00	14.00
tblLandUse	LotAcreage	0.00	14.50
tblLandUse	Population	0.00	15.00
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## 2.0 Emissions Summary

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## 2.1 Overall Construction (Maximum Daily Emission)

### Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	6.5620	72.4830	47.5412	0.0560	8.8148	3.5443	12.3591	3.6340	3.2608	6.8948	0.0000	5,852.0549	5,852.0549	1.7128	0.0000	5,888.0238
<b>Total</b>	<b>6.5620</b>	<b>72.4830</b>	<b>47.5412</b>	<b>0.0560</b>	<b>8.8148</b>	<b>3.5443</b>	<b>12.3591</b>	<b>3.6340</b>	<b>3.2608</b>	<b>6.8948</b>	<b>0.0000</b>	<b>5,852.0549</b>	<b>5,852.0549</b>	<b>1.7128</b>	<b>0.0000</b>	<b>5,888.0238</b>

### Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	1.6429	26.6232	33.5266	0.0559	8.8148	1.1454	9.9602	3.6340	1.3349	4.9689	0.0000	5,846.8211	5,846.8211	1.7112	0.0000	5,882.7572
<b>Total</b>	<b>1.6429</b>	<b>26.6232</b>	<b>33.5266</b>	<b>0.0559</b>	<b>8.8148</b>	<b>1.1454</b>	<b>9.9602</b>	<b>3.6340</b>	<b>1.3349</b>	<b>4.9689</b>	<b>0.0000</b>	<b>5,846.8211</b>	<b>5,846.8211</b>	<b>1.7112</b>	<b>0.0000</b>	<b>5,882.7572</b>

	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
<b>Percent Reduction</b>	<b>74.96</b>	<b>63.27</b>	<b>29.48</b>	<b>0.09</b>	<b>0.00</b>	<b>67.68</b>	<b>19.41</b>	<b>0.00</b>	<b>59.06</b>	<b>27.93</b>	<b>0.00</b>	<b>0.09</b>	<b>0.09</b>	<b>0.09</b>	<b>0.00</b>	<b>0.09</b>

## 2.2 Overall Operational

### Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5000e-004	1.0000e-005	1.5200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1700e-003	3.1700e-003	1.0000e-005		3.3600e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5065	0.4299	2.0907	3.5500e-003	0.2455	5.5400e-003	0.2510	0.0655	5.0800e-003	0.0706		313.4530	313.4530	0.0151		313.7708
<b>Total</b>	<b>0.5066</b>	<b>0.4299</b>	<b>2.0922</b>	<b>3.5500e-003</b>	<b>0.2455</b>	<b>5.5500e-003</b>	<b>0.2510</b>	<b>0.0655</b>	<b>5.0900e-003</b>	<b>0.0706</b>		<b>313.4562</b>	<b>313.4562</b>	<b>0.0151</b>	<b>0.0000</b>	<b>313.7741</b>

### Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.5000e-004	1.0000e-005	1.5200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1700e-003	3.1700e-003	1.0000e-005		3.3600e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5065	0.4299	2.0907	3.5500e-003	0.2455	5.5400e-003	0.2510	0.0655	5.0800e-003	0.0706		313.4530	313.4530	0.0151		313.7708
<b>Total</b>	<b>0.5066</b>	<b>0.4299</b>	<b>2.0922</b>	<b>3.5500e-003</b>	<b>0.2455</b>	<b>5.5500e-003</b>	<b>0.2510</b>	<b>0.0655</b>	<b>5.0900e-003</b>	<b>0.0706</b>		<b>313.4562</b>	<b>313.4562</b>	<b>0.0151</b>	<b>0.0000</b>	<b>313.7741</b>

	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
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

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#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Timber Harvest	Site Preparation	5/1/2015	6/15/2015	5	32	
2	Post-Harvest Site Stabilization	Grading	6/16/2015	7/30/2015	5	33	
3	Erosion Control	Grading	7/31/2015	9/1/2015	5	23	
4	Vineyard Installation	Site Preparation	9/2/2015	10/19/2015	5	34	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0

#### OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Post-Harvest Site Stabilization	Excavators	2	8.00	162	0.38
Post-Harvest Site Stabilization	Graders	1	8.00	174	0.41
Erosion Control	Graders	1	8.00	174	0.41
Vineyard Installation	Other Material Handling Equipment	2	6.00	167	0.40
Erosion Control	Other Construction Equipment	1	7.00	226	0.29
Erosion Control	Tractors/Loaders/Backhoes	3	6.00	89	0.20
Erosion Control	Excavators	1	6.00	84	0.74
Erosion Control	Rubber Tired Dozers	1	8.00	255	0.40
Erosion Control	Scrapers	2	8.00	361	0.48
Vineyard Installation	Rubber Tired Dozers	1	3.00	255	0.40
Post-Harvest Site Stabilization	Rubber Tired Dozers	1	4.00	255	0.40
Erosion Control	Other Material Handling Equipment	1	5.00	97	0.37
Post-Harvest Site Stabilization	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Timber Harvest	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Timber Harvest	Rubber Tired Dozers	1	6.00	255	0.40
Post-Harvest Site Stabilization	Scrapers	1	6.00	361	0.48
Vineyard Installation	Tractors/Loaders/Backhoes	1	5.00	97	0.37
Timber Harvest	Other Material Handling Equipment	2	4.00	167	0.40
Timber Harvest	Scrapers	1	5.00	361	0.48
Post-Harvest Site Stabilization	Other Construction Equipment	2	4.00	171	0.42
Vineyard Installation	Other Construction Equipment	1	4.00	171	0.42

**Trips and VMT**

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Timber Harvest	5	13.00	1.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Post-Harvest Site Stabilization	8	13.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Erosion Control	10	15.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Vineyard Installation	5	13.00	2.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

### 3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

### 3.2 Timber Harvest - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9805	0.0000	4.9805	2.5328	0.0000	2.5328			0.0000			0.0000
Off-Road	2.7457	31.6388	21.3315	0.0241		1.5349	1.5349		1.4121	1.4121		2,526.634 2	2,526.634 2	0.7543		2,542.474 6
<b>Total</b>	<b>2.7457</b>	<b>31.6388</b>	<b>21.3315</b>	<b>0.0241</b>	<b>4.9805</b>	<b>1.5349</b>	<b>6.5154</b>	<b>2.5328</b>	<b>1.4121</b>	<b>3.9449</b>		<b>2,526.634 2</b>	<b>2,526.634 2</b>	<b>0.7543</b>		<b>2,542.474 6</b>

### 3.2 Timber Harvest - 2015

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Vendor	0.0304	0.1101	0.1471	2.4000e-004	6.5900e-003	1.7800e-003	8.3600e-003	1.8700e-003	1.6300e-003	3.5100e-003		23.7660	23.7660	2.1000e-004			23.7703
Worker	0.2712	0.0885	1.0504	1.4600e-003	0.1226	1.2400e-003	0.1238	0.0325	1.1200e-003	0.0336		127.6451	127.6451	8.4000e-003			127.8215
<b>Total</b>	<b>0.3015</b>	<b>0.1986</b>	<b>1.1976</b>	<b>1.7000e-003</b>	<b>0.1292</b>	<b>3.0200e-003</b>	<b>0.1322</b>	<b>0.0344</b>	<b>2.7500e-003</b>	<b>0.0372</b>		<b>151.4111</b>	<b>151.4111</b>	<b>8.6100e-003</b>			<b>151.5918</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					4.9805	0.0000	4.9805	2.5328	0.0000	2.5328			0.0000			0.0000	
Off-Road	0.5889	11.5851	14.5765	0.0240		0.4943	0.4943		0.5724	0.5724	0.0000	2,524.3161	2,524.3161	0.7536			2,540.1420
<b>Total</b>	<b>0.5889</b>	<b>11.5851</b>	<b>14.5765</b>	<b>0.0240</b>	<b>4.9805</b>	<b>0.4943</b>	<b>5.4748</b>	<b>2.5328</b>	<b>0.5724</b>	<b>3.1052</b>	<b>0.0000</b>	<b>2,524.3161</b>	<b>2,524.3161</b>	<b>0.7536</b>			<b>2,540.1420</b>

### 3.2 Timber Harvest - 2015

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0304	0.1101	0.1471	2.4000e-004	6.5900e-003	1.7800e-003	8.3600e-003	1.8700e-003	1.6300e-003	3.5100e-003		23.7660	23.7660	2.1000e-004		23.7703
Worker	0.2712	0.0885	1.0504	1.4600e-003	0.1226	1.2400e-003	0.1238	0.0325	1.1200e-003	0.0336		127.6451	127.6451	8.4000e-003		127.8215
<b>Total</b>	<b>0.3015</b>	<b>0.1986</b>	<b>1.1976</b>	<b>1.7000e-003</b>	<b>0.1292</b>	<b>3.0200e-003</b>	<b>0.1322</b>	<b>0.0344</b>	<b>2.7500e-003</b>	<b>0.0372</b>		<b>151.4111</b>	<b>151.4111</b>	<b>8.6100e-003</b>		<b>151.5918</b>

### 3.3 Post-Harvest Site Stabilization - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4610	0.0000	3.4610	1.7037	0.0000	1.7037			0.0000			0.0000
Off-Road	4.5899	52.2064	32.1327	0.0409		2.6053	2.6053		2.3969	2.3969		4,299.3260	4,299.3260	1.2835		4,326.2801
<b>Total</b>	<b>4.5899</b>	<b>52.2064</b>	<b>32.1327</b>	<b>0.0409</b>	<b>3.4610</b>	<b>2.6053</b>	<b>6.0662</b>	<b>1.7037</b>	<b>2.3969</b>	<b>4.1005</b>		<b>4,299.3260</b>	<b>4,299.3260</b>	<b>1.2835</b>		<b>4,326.2801</b>

### 3.3 Post-Harvest Site Stabilization - 2015

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2712	0.0885	1.0504	1.4600e-003	0.1226	1.2400e-003	0.1238	0.0325	1.1200e-003	0.0336		127.6451	127.6451	8.4000e-003		127.8215
<b>Total</b>	<b>0.2712</b>	<b>0.0885</b>	<b>1.0504</b>	<b>1.4600e-003</b>	<b>0.1226</b>	<b>1.2400e-003</b>	<b>0.1238</b>	<b>0.0325</b>	<b>1.1200e-003</b>	<b>0.0336</b>		<b>127.6451</b>	<b>127.6451</b>	<b>8.4000e-003</b>		<b>127.8215</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4610	0.0000	3.4610	1.7037	0.0000	1.7037			0.0000			0.0000
Off-Road	1.0026	19.5829	27.4061	0.0409		0.8820	0.8820		0.9585	0.9585	0.0000	4,295.3816	4,295.3816	1.2824		4,322.3109
<b>Total</b>	<b>1.0026</b>	<b>19.5829</b>	<b>27.4061</b>	<b>0.0409</b>	<b>3.4610</b>	<b>0.8820</b>	<b>4.3430</b>	<b>1.7037</b>	<b>0.9585</b>	<b>2.6622</b>	<b>0.0000</b>	<b>4,295.3816</b>	<b>4,295.3816</b>	<b>1.2824</b>		<b>4,322.3109</b>

### 3.3 Post-Harvest Site Stabilization - 2015

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2712	0.0885	1.0504	1.4600e-003	0.1226	1.2400e-003	0.1238	0.0325	1.1200e-003	0.0336		127.6451	127.6451	8.4000e-003		127.8215
<b>Total</b>	<b>0.2712</b>	<b>0.0885</b>	<b>1.0504</b>	<b>1.4600e-003</b>	<b>0.1226</b>	<b>1.2400e-003</b>	<b>0.1238</b>	<b>0.0325</b>	<b>1.1200e-003</b>	<b>0.0336</b>		<b>127.6451</b>	<b>127.6451</b>	<b>8.4000e-003</b>		<b>127.8215</b>

### 3.4 Erosion Control - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	6.2491	72.3809	46.3292	0.0543		3.5429	3.5429		3.2595	3.2595		5,704.772 2	5,704.772 2	1.7031		5,740.537 5
<b>Total</b>	<b>6.2491</b>	<b>72.3809</b>	<b>46.3292</b>	<b>0.0543</b>	<b>8.6733</b>	<b>3.5429</b>	<b>12.2162</b>	<b>3.5965</b>	<b>3.2595</b>	<b>6.8560</b>		<b>5,704.772 2</b>	<b>5,704.772 2</b>	<b>1.7031</b>		<b>5,740.537 5</b>

### 3.4 Erosion Control - 2015

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Worker	0.3129	0.1021	1.2120	1.6900e-003	0.1415	1.4300e-003	0.1429	0.0375	1.3000e-003	0.0388		147.2828	147.2828	9.6900e-003			147.4863
<b>Total</b>	<b>0.3129</b>	<b>0.1021</b>	<b>1.2120</b>	<b>1.6900e-003</b>	<b>0.1415</b>	<b>1.4300e-003</b>	<b>0.1429</b>	<b>0.0375</b>	<b>1.3000e-003</b>	<b>0.0388</b>		<b>147.2828</b>	<b>147.2828</b>	<b>9.6900e-003</b>			<b>147.4863</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000				0.0000
Off-Road	1.3300	26.5212	32.3146	0.0543		1.1439	1.1439		1.3336	1.3336	0.0000	5,699.5383	5,699.5383	1.7016			5,735.2709
<b>Total</b>	<b>1.3300</b>	<b>26.5212</b>	<b>32.3146</b>	<b>0.0543</b>	<b>8.6733</b>	<b>1.1439</b>	<b>9.8173</b>	<b>3.5965</b>	<b>1.3336</b>	<b>4.9301</b>	<b>0.0000</b>	<b>5,699.5383</b>	<b>5,699.5383</b>	<b>1.7016</b>			<b>5,735.2709</b>

### 3.4 Erosion Control - 2015

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3129	0.1021	1.2120	1.6900e-003	0.1415	1.4300e-003	0.1429	0.0375	1.3000e-003	0.0388		147.2828	147.2828	9.6900e-003		147.4863
<b>Total</b>	<b>0.3129</b>	<b>0.1021</b>	<b>1.2120</b>	<b>1.6900e-003</b>	<b>0.1415</b>	<b>1.4300e-003</b>	<b>0.1429</b>	<b>0.0375</b>	<b>1.3000e-003</b>	<b>0.0388</b>		<b>147.2828</b>	<b>147.2828</b>	<b>9.6900e-003</b>		<b>147.4863</b>

### 3.5 Vineyard Installation - 2015

#### Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.6950	0.0000	2.6950	1.2885	0.0000	1.2885			0.0000			0.0000
Off-Road	1.9834	21.4614	13.8409	0.0170		1.1671	1.1671		1.0737	1.0737		1,781.5316	1,781.5316	0.5319		1,792.7007
<b>Total</b>	<b>1.9834</b>	<b>21.4614</b>	<b>13.8409</b>	<b>0.0170</b>	<b>2.6950</b>	<b>1.1671</b>	<b>3.8621</b>	<b>1.2885</b>	<b>1.0737</b>	<b>2.3622</b>		<b>1,781.5316</b>	<b>1,781.5316</b>	<b>0.5319</b>		<b>1,792.7007</b>

### 3.5 Vineyard Installation - 2015

#### Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Vendor	0.0608	0.2202	0.2943	4.7000e-004	0.0132	3.5600e-003	0.0167	3.7400e-003	3.2700e-003	7.0100e-003		47.5319	47.5319	4.1000e-004			47.5406
Worker	0.2712	0.0885	1.0504	1.4600e-003	0.1226	1.2400e-003	0.1238	0.0325	1.1200e-003	0.0336		127.6451	127.6451	8.4000e-003			127.8215
<b>Total</b>	<b>0.3319</b>	<b>0.3087</b>	<b>1.3447</b>	<b>1.9300e-003</b>	<b>0.1358</b>	<b>4.8000e-003</b>	<b>0.1406</b>	<b>0.0363</b>	<b>4.3900e-003</b>	<b>0.0407</b>		<b>175.1770</b>	<b>175.1770</b>	<b>8.8100e-003</b>			<b>175.3621</b>

#### Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Fugitive Dust					2.6950	0.0000	2.6950	1.2885	0.0000	1.2885			0.0000				0.0000
Off-Road	0.4161	8.2109	12.0888	0.0169		0.3912	0.3912		0.4074	0.4074	0.0000	1,779.8972	1,779.8972	0.5314			1,791.0560
<b>Total</b>	<b>0.4161</b>	<b>8.2109</b>	<b>12.0888</b>	<b>0.0169</b>	<b>2.6950</b>	<b>0.3912</b>	<b>3.0861</b>	<b>1.2885</b>	<b>0.4074</b>	<b>1.6958</b>	<b>0.0000</b>	<b>1,779.8972</b>	<b>1,779.8972</b>	<b>0.5314</b>			<b>1,791.0560</b>

### 3.5 Vineyard Installation - 2015

#### Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e	
Category	lb/day										lb/day						
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000			0.0000
Vendor	0.0608	0.2202	0.2943	4.7000e-004	0.0132	3.5600e-003	0.0167	3.7400e-003	3.2700e-003	7.0100e-003		47.5319	47.5319	4.1000e-004			47.5406
Worker	0.2712	0.0885	1.0504	1.4600e-003	0.1226	1.2400e-003	0.1238	0.0325	1.1200e-003	0.0336		127.6451	127.6451	8.4000e-003			127.8215
<b>Total</b>	<b>0.3319</b>	<b>0.3087</b>	<b>1.3447</b>	<b>1.9300e-003</b>	<b>0.1358</b>	<b>4.8000e-003</b>	<b>0.1406</b>	<b>0.0363</b>	<b>4.3900e-003</b>	<b>0.0407</b>		<b>175.1770</b>	<b>175.1770</b>	<b>8.8100e-003</b>			<b>175.3621</b>

### 4.0 Operational Detail - Mobile

#### 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	lb/day										lb/day						
Mitigated	0.5065	0.4299	2.0907	3.5500e-003	0.2455	5.5400e-003	0.2510	0.0655	5.0800e-003	0.0706		313.4530	313.4530	0.0151			313.7708
Unmitigated	0.5065	0.4299	2.0907	3.5500e-003	0.2455	5.5400e-003	0.2510	0.0655	5.0800e-003	0.0706		313.4530	313.4530	0.0151			313.7708

### 4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
User Defined Commercial	40.60	0.00	0.00	82,865	82,865
Total	40.60	0.00	0.00	82,865	82,865

### 4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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	Primary	Diverted	Pass-by
User Defined Commercial	9.50	7.30	7.30	25.00	50.00	25.00	100	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.477217	0.074224	0.173915	0.159351	0.057860	0.008365	0.014485	0.020729	0.002313	0.001223	0.006741	0.000719	0.002858

### 5.0 Energy Detail

#### 4.4 Fleet Mix

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

Category	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
lb/day											lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

### 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/yr	lb/day										lb/day						
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

#### 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/yr	lb/day										lb/day						
User Defined Commercial	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>

### 6.0 Area Detail

#### 6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.5000e-004	1.0000e-005	1.5200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1700e-003	3.1700e-003	1.0000e-005		3.3600e-003
Unmitigated	1.5000e-004	1.0000e-005	1.5200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1700e-003	3.1700e-003	1.0000e-005		3.3600e-003

## 6.2 Area by SubCategory

### Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.5000e-004	1.0000e-005	1.5200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1700e-003	3.1700e-003	1.0000e-005		3.3600e-003
<b>Total</b>	<b>1.5000e-004</b>	<b>1.0000e-005</b>	<b>1.5200e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>3.1700e-003</b>	<b>3.1700e-003</b>	<b>1.0000e-005</b>		<b>3.3600e-003</b>

## 6.2 Area by SubCategory

### Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.5000e-004	1.0000e-005	1.5200e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		3.1700e-003	3.1700e-003	1.0000e-005		3.3600e-003
Architectural Coating	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>1.5000e-004</b>	<b>1.0000e-005</b>	<b>1.5200e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>3.1700e-003</b>	<b>3.1700e-003</b>	<b>1.0000e-005</b>		<b>3.3600e-003</b>

## 7.0 Water Detail

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### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

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### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

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Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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## 10.0 Vegetation

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**Davis Friesen Vineyard  
Napa County, Mitigation Report**

**Construction Mitigation Summary**

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Erosion Control	0.75	0.63	0.30	0.00	0.68	0.59	0.00	0.00	0.00	0.00	0.00	0.00
Post-Harvest Site Stabilization	0.74	0.62	0.14	0.01	0.66	0.60	0.00	0.00	0.00	0.00	0.00	0.00
Timber Harvest	0.70	0.63	0.30	0.00	0.68	0.59	0.00	0.00	0.00	0.00	0.00	0.00
Vineyard Installation	0.67	0.61	0.12	0.00	0.66	0.62	0.00	0.00	0.00	0.00	0.00	0.00

**OFFROAD Equipment Mitigation**

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Other Construction Equipment	Diesel	Tier 3	4	4	No Change	0.00
Excavators	Diesel	Tier 3	3	3	No Change	0.00
Other Material Handling Equipment	Diesel	Tier 3	5	5	No Change	0.00
Graders	Diesel	Tier 3	2	2	No Change	0.00
Rubber Tired Dozers	Diesel	Tier 3	4	4	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	Tier 3	6	6	No Change	0.00
Scrapers	Diesel	Tier 3	4	4	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Unmitigated tons/yr							Unmitigated mt/yr					
Excavators	1.85400E-002	2.08000E-001	1.48280E-001	2.20000E-004	1.14600E-002	1.05400E-002	0.00000E+000	2.09737E+001	2.09737E+001	6.26000E-003	0.00000E+000	2.11052E+001
Graders	2.97300E-002	3.04300E-001	1.39460E-001	1.70000E-004	1.71100E-002	1.57400E-002	0.00000E+000	1.66903E+001	1.66903E+001	4.98000E-003	0.00000E+000	1.67949E+001
Other Construction Equipment	1.76400E-002	1.97300E-001	1.07090E-001	1.50000E-004	1.03400E-002	9.51000E-003	0.00000E+000	1.46314E+001	1.46314E+001	4.37000E-003	0.00000E+000	1.47231E+001
Other Material Handling Equipment	2.80700E-002	2.98650E-001	1.84950E-001	2.60000E-004	1.67000E-002	1.53700E-002	0.00000E+000	2.48084E+001	2.48084E+001	7.41000E-003	0.00000E+000	2.49639E+001
Rubber Tired Dozers	4.85400E-002	5.48510E-001	4.18480E-001	3.40000E-004	2.55900E-002	2.35400E-002	0.00000E+000	3.23013E+001	3.23013E+001	9.64000E-003	0.00000E+000	3.25039E+001
Scrapers	6.54800E-002	8.43930E-001	5.25290E-001	6.80000E-004	3.40800E-002	3.13600E-002	0.00000E+000	6.44036E+001	6.44036E+001	1.92300E-002	0.00000E+000	6.48074E+001
Tractors/Loaders/Backhoes	1.72400E-002	1.64170E-001	1.16020E-001	1.50000E-004	1.28500E-002	1.18200E-002	0.00000E+000	1.42108E+001	1.42108E+001	4.24000E-003	0.00000E+000	1.42999E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Mitigated tons/yr							Mitigated mt/yr					
Excavators	5.43000E-003	1.08900E-001	1.67350E-001	2.20000E-004	5.52000E-003	5.52000E-003	0.00000E+000	2.09487E+001	2.09487E+001	6.25000E-003	0.00000E+000	2.10801E+001
Graders	4.22000E-003	8.16400E-002	1.30200E-001	1.70000E-004	3.94000E-003	3.94000E-003	0.00000E+000	1.66704E+001	1.66704E+001	4.98000E-003	0.00000E+000	1.67749E+001
Other Construction Equipment	3.80000E-003	7.33800E-002	1.17030E-001	1.50000E-004	3.54000E-003	3.54000E-003	0.00000E+000	1.46140E+001	1.46140E+001	4.36000E-003	0.00000E+000	1.47056E+001
Other Material Handling Equipment	6.41000E-003	1.25750E-001	1.97500E-001	2.60000E-004	6.20000E-003	6.20000E-003	0.00000E+000	2.47789E+001	2.47789E+001	7.40000E-003	0.00000E+000	2.49342E+001
Rubber Tired Dozers	8.22000E-003	1.58930E-001	1.78110E-001	3.40000E-004	6.03000E-003	7.67000E-003	0.00000E+000	3.22629E+001	3.22629E+001	9.63000E-003	0.00000E+000	3.24652E+001
Scrapers	1.66200E-002	3.21340E-001	3.60120E-001	6.80000E-004	1.21900E-002	1.55100E-002	0.00000E+000	6.43270E+001	6.43270E+001	1.92000E-002	0.00000E+000	6.47303E+001
Tractors/Loaders/Backhoes	3.63000E-003	8.28600E-002	1.11890E-001	1.50000E-004	4.84000E-003	4.84000E-003	0.00000E+000	1.41939E+001	1.41939E+001	4.24000E-003	0.00000E+000	1.42829E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Excavators	7.07120E-001	4.76442E-001	-1.28608E-001	0.00000E+000	5.18325E-001	4.76281E-001	0.00000E+000	1.19006E-003	1.19006E-003	1.59744E-003	0.00000E+000	1.18975E-003
Graders	8.58056E-001	7.31712E-001	6.63990E-002	0.00000E+000	7.69725E-001	7.49682E-001	0.00000E+000	1.18932E-003	1.18932E-003	0.00000E+000	0.00000E+000	1.18965E-003
Other Construction Equipment	7.84580E-001	6.28079E-001	-9.28191E-002	0.00000E+000	6.57640E-001	6.27760E-001	0.00000E+000	1.18991E-003	1.18991E-003	2.28833E-003	0.00000E+000	1.18997E-003
Other Material Handling Equipment	7.71642E-001	5.78939E-001	-6.78562E-002	0.00000E+000	6.28743E-001	5.96617E-001	0.00000E+000	1.18952E-003	1.18952E-003	1.34953E-003	0.00000E+000	1.18972E-003
Rubber Tired Dozers	8.30655E-001	7.10251E-001	5.74388E-001	0.00000E+000	7.64361E-001	6.74172E-001	0.00000E+000	1.18973E-003	1.18973E-003	1.03734E-003	0.00000E+000	1.18971E-003
Scrapers	7.46182E-001	6.19234E-001	3.14436E-001	0.00000E+000	6.42312E-001	5.05421E-001	0.00000E+000	1.18953E-003	1.18953E-003	1.56006E-003	0.00000E+000	1.18953E-003
Tractors/Loaders/Backhoes	7.89443E-001	4.95279E-001	3.55973E-002	0.00000E+000	6.23346E-001	5.90525E-001	0.00000E+000	1.18924E-003	1.18924E-003	0.00000E+000	0.00000E+000	1.18952E-003

**Fugitive Dust Mitigation**

Yes/No Mitigation Measure Mitigation Input Mitigation Input Mitigation Input

No	Soil Stabilizer for unpaved Roads	PM10 Reduction	0.00	PM2.5 Reduction	0.00	
No	Replace Ground Cover of Area Disturbed	PM10 Reduction	0.00	PM2.5 Reduction	0.00	
No	Water Exposed Area	PM10 Reduction	0.00	PM2.5 Reduction	0.00	Frequency (per day)
No	Unpaved Road Mitigation	Moisture Content %	0.00	Vehicle Speed (mph)	0.00	
Yes	Clean Paved Road	% PM Reduction	0.00			



**Operational Mobile Mitigation**

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.00	0.15		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			
No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			

		Land Use and Site Enhancement Subtotal	0.00		
No	Commute	Implement Trip Reduction Program			
No	Commute	Transit Subsidy			
No	Commute	Implement Employee Parking "Cash Out"			
No	Commute	Workplace Parking Charge			
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00		
No	Commute	Market Commute Trip Reduction Option	0.00		
No	Commute	Employee Vanpool/Shuttle	0.00	2.00	
No	Commute	Provide Ride Sharing Program			
	Commute	Commute Subtotal	0.00		
No	School Trip	Implement School Bus Program	0.00		
		Total VMT Reduction	0.00		

### Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	150.00
No	Use Low VOC Paint (Non-residential Interior)	100.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	% Electric Lawnmower	

No	% Electric Leafblower	
No	% Electric Chainsaw	

### Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

### Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	

No	Install low-flow Shower	20.00
No	Turf Reduction	
No	Use Water Efficient Irrigation Systems	6.10
No	Water Efficient Landscape	

**Solid Waste Mitigation**

Mitigation Measures	Input Value
Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

# ***APPENDIX D***

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## **BIOLOGICAL RESOURCES REPORT**

# **Biological Resources Report**

## **Friesen Drive THP/TCP**

### **APN: 018-060-012 & 013**

### **Napa County**



**Prepared  
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**For  
Scott Butler, R.P.F. #1851  
Environmental Resource Management**

**Revised March 2015**

**Biological Resource Survey  
Friesen Drive THP/TCP  
APN: 018-060-012 & 013  
Napa County**

**PROJECT NAME:** Friesen Drive  
THP/TCP  
APN: 018-060-012 & 013  
Napa County

**PROPERTY OWNER:** Mike Davis

**THP/TCP PLAN:** Scott Butler, R.P.F. #1851  
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**Biological Resource Survey  
Friesen Drive THP/TCP  
APN: 018-060-012 & 013  
Napa County**

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# **Biological Resource Survey**

## **Friesen Drive THP/TCP**

### **APN: 018-060-012 & 013**

### **Napa County**

## **Executive Summary**

This study was conducted at the request of Scott Butler, Environmental Resource Management on behalf of the property owner as part of the background studies for Napa County Conservation, Development and Planning Department and California Department of Forestry. The project proposes a Timber Harvest Plan / Timber Conversion Plan (THP/TCP) for conversion to vineyard. The project is within two parcels that total 37.43-acres within the USGS 7.5 Min. St. Helena Quadrangle. The THP/TCP consists of three blocks totaling 13.63-gross acres (10.53 net vineyard acres).

The project site is on a west-facing ridge that is at an elevation of approximately 2,200 feet. The property shows evidence of use as a seasonal camping area adjacent to Friesen Drive a private right of way open to the public. There is a reservoir on the east side of the property with a water conveyance system that channelizes water from the reservoir off site. The property is bisected by Friesen Drive a private right of way open to the public that serves adjoining properties.

Our survey follows the California Department of Fish and Wildlife (CDFW) Guidelines, and the California Native Plant Society (CNPS) Guidelines. This report incorporates and addresses the comments, request for further clarification and recommendations based on the THP/TCP submittal by Scott Butler. The findings presented below are the results of fieldwork conducted from February through June of 2013 and follow-up studies in February 2015 by Kjeldsen Biological Consulting:

- Seasonal surveys found one CNPS listed plant (4.3 Plants of Limited Distribution), Napa Lomatium (*Lomatium repostum*) and one animal CDFW Species of Special Concern, the Western Pond Turtle (*Emys marmorata*);
- We did not observe any State or Federal listed plants or animal species known for the Quadrangle, surrounding Quadrangles or the region associated with the proposed THP/TCP;
- We did not observe any Critical Habitat or Sensitive Natural Communities regulated by the CDFW, US Fish and Wildlife or listed by the County of Napa;
- In general the habitat types found on the property would be termed forest or woodland, and shrubland/chaparral. Our findings using the vegetation criteria of Sawyer et al 2009 show that the property consists of *Quercus* Forest Alliance Mixed Oak Forest, *Pseudotsuga menziesii* Forest Alliance Douglas fir Forest, *Adenostoma fasciculatum*

Shrubland Alliance Chamise Chaparral and *Arctostaphylos manzanita* Provisional Shrubland Alliance. All evidence indicates that the property vegetation alliances are seral stages (dead manzanita in the understory, aged and dead oaks, and abundant age classes of Douglas fir). It is noted that our on site analysis of the vegetation differs from the 2005 Napa County Baseline Data Report Maps;

- Approximately 64% of the property is outside of the project footprint and will be retained in a natural state and will continue to function as watershed, open space and wildlife habitat;
- Two unnamed seasonal “blue line” creeks are present on the property that are part of the watershed of Bell Canyon Reservoir. The creek on the south side of the property below the reservoir has been cut off from its upslope watershed by a drainage canal that conveys water flow off site (this creek has a lateral tributary that originates on the property). The creek on the north side bisects the northwest corner of the property. The creeks are ephemeral and do not support any in stream invertebrate or vertebrate aquatic life;
- The proposed project will not impact any riparian vegetation;
- The proposed project will not impact any federal or state protected wetlands, drainages, or vernal pools as defined by section 404 of the Clean Water Act;
- The proposed project will not interfere with native wildlife species, migratory corridors, and or native wildlife nursery sites;
- We found no evidence for the presence of bats. There are no large burned out trees, buildings, caves or bridges which would support roosting habitat for bats;
- Trees on the property have the potential to support raptor nesting. No sign or sighting of raptors was found. Friezen Road and use of adjoining properties may deter raptor use or direct raptor use to adjacent areas with better habitat; and
- All species observed on the property are listed in the appendix.

### **Assessment of Impacts**

The property and project site conditions are such that there is no reason to expect any significant impacts to special-status species on site or off site provided Best Management Practices (BMP) are implemented. *Lomatium repostum* is present in three populations along an access road in the manzanita chaparral alliance. This plant is listed by the Native Plant Society (4.3 plants of limited distribution) and is common in disturbed areas of chaparral communities. One population is within the reservoir setback buffer zone. It is our opinion that there is no need to avoid this species and anticipate removal of overstory will allow growth of this species around the edges of the vineyard blocks.

The reservoir with Western Pond Turtle (*Emys marmorata*) is outside of the proposed development. A buffer zone of 150 ft. separates the project from this reservoir. It is our opinion that the Western Pond Turtle is secure within this site. There is available upland estivation habitat surrounding the reservoir.

Standard Erosion control measures, BMP's, Napa County Stream Setbacks, Erosion Control Plan, and California Department of Forestry requirements will protect on site and off site biological resources.

# **Biological Resource Survey**

## **Friesen Drive THP/TCP**

### **APN: 018-060-012 & 013**

### **Napa County**

## **A PROJECT DESCRIPTION**

This study was conducted at the request of Scott Butler, Environmental Resource Management on behalf of the property owner as part of the background studies for Napa County Conservation, Development and Planning Department and California Department of Forestry.

The project proposes a Timber Harvest Plan / Timber Conversion Plan (THP/TCP) for conversion to vineyard. The project is within two parcels that total 37.43-acres. The proposed THP/TCP consists of three blocks totaling 13.63-gross acres (10.53 net acres).

### **A.1 Location**

The property is on a west-facing ridge that is at an elevation of approximately 2,200 feet within the USGS 7.5 Min. St. Helena Quadrangle (See Plate I). The study site is bisected by Friesen Drive a private right of way open to the public that serves adjoining properties. The property is within in the watershed of Bell Canyon Reservoir.

Maps provided by Scott Butler and Drew Aspegren, Napa Valley Vineyard Engineering, Inc. defined the primary study area. An initial site introduction and walk through was conducted in February 2013.

### **A.2 Purpose**

The purpose of this report is to identify biological resources that may be affected by the proposed project as listed below:

- To determine the presence of potential habitat for special-status species which would be impacted by the proposed project, including habitat types which may have the potential for supporting special-status species (target species that are known for the region, habitat, the Quadrangle and surrounding Quadrangles);
- To identify if the project will have a substantial adverse effect on Sensitive Habitats or Communities regulated by the California Department of Fish and Wildlife;
- To identify and assess potential impacts to Federal or State protected wetlands as defined by Section 404 of the Clean Water Act; and
- To determine if the project will substantially interfere with native wildlife species, wildlife corridors, and or native wildlife nursery sites;
- Identify any State or Federal biological permits required by the proposed project;

## **B SURVEY METHODOLOGY**

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Our survey and fieldwork was conducted to identify habitat on the project site, provide a faunal and floristic study of the project site with emphasis on any potential habitat for special-status animals, plants, unique plant populations and or biological resources associated with the property and the proposed project.

### **B.1 Project Scoping**

The scoping for the project considered location and type of habitat and or vegetation types present on the property or associated with potential special-status plant species known for the Quadrangles, surrounding Quadrangles the County or the region. Our scoping also considered records in the most recent version of the Department of Fish and Wildlife California Natural Diversity Data Base (CDFW CNDDDB Rare Find-5), Biogeographic Information and Observation System Online mapping tool, and the California Native Plant Society (CNPS) Electronic Inventory of Rare or Endangered Plants, and Board of Forestry Sensitive Species and Listed Species. “Target” special-status species are those listed by the State, the Federal Government or the California Native Plant Society or considered threatened in the region. Our scoping is also a function of our familiarity with the local flora and fauna as well as previous projects on other properties in the area.

The California Wildlife Habitat Relationship System Species Summary Report by Habitat Present was run to review the potential species that could be present (Table VI).

Aerial photographs and Napa County Baseline Data Report Vegetation Layers are included within our scoping for the project.

Tables IV and V present CDFW CNDDDB Rare Find species within five miles.

We also considered species which are known for the nine surrounding Quadrangles which would potentially be present based on habitat available on property (Appendix B). The special-status species listed in Appendix B with habitat requirements that are present on the project sites or immediate vicinity are considered and included in our findings and comments below. Those species with specific habitat conditions not present within the project footprint such as vernal pools or hot springs are not discussed.

Vegetation cover was evaluated in the field using membership rules defined in the Manual of California Vegetation Second Edition (Sawyer et. al. 2009).

### **B.2 Field Survey Methodology**

A site and project introduction was provided by Mr. Scott Butler, Registered Professional Forester, Environmental Resource Management. Our studies were made by walking transects through and around the project sites. Non-project areas of the property were only

opportunistically studied from access roads and trails. Our fieldwork focused on locating suitable habitat for organisms or indications that such habitat exists on the project sites. Digital photographs were taken during our studies to document conditions and selected photographs are included within this report.

**Table I. Time and Date of Field Work**

<b>Date</b>	<b>Personnel</b>	<b>Person-hr.</b>	<b>Time</b>	<b>Conditions</b>
February 22, 2013	Chris K. and Daniel T. Kjeldsen	3.0 person-hours	15:00 to 16:30	High clouds cool light breeze.
March 19, 2013	Chris K. and Daniel T. Kjeldsen	4.0 person-hours	10:45 to 12:45	Clear, clear cool temperatures.
April 17, 2013	Chris K. and Daniel T. Kjeldsen	3.0 person-hours	15:00 to 16:30	Overcast, no wind, with mild temperatures.
May 13, 2013	Chris K. and Daniel T. Kjeldsen	3.0 person-hours	12:00 to 13:30	Clear, windy with warm temperatures.
June 3, 2013	Chris K. and Daniel T. Kjeldsen	3.5 person-hours	09:30 to 11:15	Clear, no wind, with mild temperatures.
February 25, 2015	Chris K. and Daniel T. Kjeldsen	4.25 person-hours	10:00 to 12:15	Clear, no wind, with cool temperatures.

**Plants**

Field surveys were conducted recording identifying all species on the site and in the near proximity. Transects through the proposed project sites were made methodically by foot. Transects were established and scrutinized to cover topographic and vegetation variations within the study area. The Intuitive Controlled approach calls for the qualified surveyor to conduct a survey of the area by walking through it and around its perimeters, and closely examining portions where target species are especially likely to occur.

Surveys were floristic in nature and were conducted following Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural communities (November 24 2009).

The fieldwork for identifying special-status plant species is based on our knowledge and many years of experience in conducting special-status plant species surveys in the region. Plants were identified in the field or reference material was collected, when necessary, for verification using laboratory examination with a binocular microscope and reference materials. Herbarium specimens from plants collected on the project site were made when relevant. Voucher material for selected individuals is in the possession of the authors and shown in the attached plant list (Appendix A) with an @ in front of the taxon. All plants observed (living and/or remains from last season's growth) were recorded in field notes.

Typically, blooming examples are required for identification however; it is not the only method for identifying the presence of or excluding the possibility of rare plants. Vegetative morphology and dried flower or fruit morphology, which may persist long after the blooming

period, may also be used. Skeletal remains from previous season's growth can also be used for identification. Some species do not flower each year or only flower at maturity and therefore must be identified from vegetative characteristics. Algae, fungi, mosses, lichens, ferns, Lycophyta and Sphenophyta have no flowers and there are representatives from these groups that are now considered to be special-status species, which require non-blooming identification. For some plants unique features such as the aromatic oils present are key indicator. For some trees and shrubs with unique vegetative characteristics flowering is not needed for proper identification. The vegetative evaluation as a function of field experience can be used to identify species outside of the blooming period to verify or exclude the possibility of special-status plants in a study area.

Habitat is also a key characteristic for consideration of special-status species in a study area. Many special-status species are rare in nature because of their specific and often very narrow habitat or environmental requirements. Their presence is limited by specific environmental conditions such as: hydrology, microclimate, soils, nutrients, interspecific and intraspecific competition, and aspect or exposure. In some situations special-status species particularly annuals may not be present each year and in this case one has to rely on skeletal material from previous years. A site evaluation based on habitat or environmental conditions is therefore a reliable method for including or excluding the possibility of special-status species in an area.

### **Plant Reference sites**

Reference sites for Napa False Indigo, *Hesperolinon* and Holly-leaf Ceanothus were visited.

### **Animals**

Animals were identified in the field by their sight, sign, or call. Our field techniques consisted of surveying the area with binoculars and walking the perimeter of the project site. Existing site conditions were used to identify habitat, which could potentially support special status animal species. Transects were made through the project sites and the property. Surrounding properties were reviewed from the property lines or available public access roads. We did not trespass on adjoining parcels. Wildlife surveys involved walking and remaining stationary looking for movement and or sign of wildlife.

Trees were surveyed visually and with binoculars to determine whether occupied raptor nests were present within the proximity of the project site (i.e., within a minimum 500 feet of the areas to be disturbed). Surveys consisted of scanning the trees on the property (500 ft +) with binoculars searching for nest or bird activity. Our search was conducted from the property and by walking under existing trees looking for droppings or nest scatter from nests that may be present that were not observable by binoculars.

Trees were assessed for bats using 10x42 roof-prism binoculars. All trees planned for removal, as well as those within 50 feet of project activities, were examined for evidence of suitable potential colonial bat roosting habitat, comprised of cavities, crevices, and exfoliating bark.

All animal life observed was recorded and is presented in Appendix A.

### **Wildlife Movement**

Aerial photos were reviewed to look at the habitat surrounding the site and the potential for wildlife movement, or wildlife corridors from adjoining properties onto or through the property. Our field methodology for identifying corridors for movement searched for game trails or habitat which would favor movement of wildlife or potential gene flow. We also looked for barriers which would prevent movement or direct movement to particular areas. No game cameras, trackplates, or other field equipment were used.

Criteria for evaluating the corridors - Corridors are considered suitable for wildlife movements if they provide avenues along which:

1. Wide-ranging animals can travel, migrate and meet mates.
2. Plants can propagate.
3. Generic interchange can occur.
4. Populations can move in response to environmental changes and natural disasters.
5. Individuals can recolonize habitats from which populations have been locally extirpated.

These five functions were be used to evaluate potential wildlife corridors on the property and if the project would interrupt any corridors.

### **Wetlands**

The project site was reviewed to determine from existing environmental conditions with a combination of vegetation, soils, and hydrologic information if seasonal wetlands were present. Wetlands were evaluated using the ACOE's three-parameter approach: Vegetation, Hydrology, and Soils.

### **Tributaries to Waters of the US**

Tributaries to Waters of the US are determined by the evaluation of continuity and “ordinary high water mark.” The ordinary high water mark is determined based on the top of scour marks and high flow impacts on vegetation.

### **Streams /Drainages**

In the area there are two types of streams or drainages; 1) perennial flowing waters and 2) seasonal ephemeral creeks or drainages that convey water during and shortly after rainfall. USGS 7.5 Min Quadrangle maps for the site were analyzed for the presence of “blue line” creeks. On site topography and evidence of bed and bank was used for evaluating ephemeral drainages. Drainages were walked and visually evaluated for continuity of bed and bank as well as signs of aquatic life. Representative photographs were made. The streambed was evaluated for flow, pools, substrate, bank and quality of habitat recorded in field notes. Vegetation in the streambed was recorded if present and quality and quantify of riparian conditions as distinct from surrounding vegetation noted.

### **Reservoir**

The edge of the reservoir was walked and surveyed with binoculars. The surrounding upland habitat was evaluated for evidence of wildlife and potential habitat for upland estivation. The presence of vegetation within and surrounding the reservoir was recorded and photographs taken to document conditions.

## **C RESULTS / FINDINGS**

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Our results and findings are based on our fieldwork, literature search, and the background material available for the proposed vineyard blocks.

### **C.1 Site Description and Biological Resources Evaluation Area**

The property is located above the Napa Valley within the inner North Coast Range Mountains, a geographic subdivision of the larger California Floristic Province (Hickman, 1993). The property and surrounding region is strongly influenced storms and fog from the Pacific Ocean. The region is in climate Zone 14 “Ocean influenced Northern and Central California” characterized as an inland area with ocean or cold air influence. The climate of the region is characterized by hot, dry summers and cool, wet winters, with precipitation that varies regionally from less than 30 to more than 60 inches per year. This climate regime is referred to as a “Mediterranean Climate.” The average annual temperature ranges from 45 to 90 degrees Fahrenheit. The variations of abiotic conditions including geology results in a high level of biological diversity per unit area in the region.

The property is on a west-facing ridge that is at an elevation of approximately 2,200 feet within the St. Helena 7.5 Min USGS Quadrangle, north of the town of Angwin.

The project site and proposed vineyard blocks are shown in Figures 1 to 6.

The survey area is shown on Plate III. Our survey focused on the proposed project footprint, and immediate surrounding habitat. The aerial photo illustrates the site (Plate III) and the photographs that follow further document existing conditions of the project sites.

### **C.2 Habitat Types Present**

The vegetation of California has been considered to be a mosaic with major changes present from one area to another often with distinct vegetation changes within short distances. The variation in vegetation is a function of topography, geology, climate and biotic factors. It is generally convenient to refer to the vegetation associates on a site as a plant community or alliance. Typically plant communities or vegetation alliances are identified or characterized by the dominant vegetation form or plant species present. There have been numerous community classification schemes proposed by different authors using different systems for the classification of vegetation. A basic premise for the designation of plant communities, associations or alliances is that in nature there are distinct plant populations occupying a site that are stable at any one time (climax community is a biotic association, that in the absence of disturbance maintains a stable assemblage over long periods of time). There is also evidence that vegetation on the site is part of a continuum without well-defined boundaries.

Biotic Communities integrate the concept of assemblages of plants and animals in a discrete area of the landscape associated with particular soils climate and topographic conditions. The Plant Community on the parcel would be classified by California Native Plant Society (CNPS) and

Department of Fish and Wildlife California Natural Diversity Data Base (CNDDDB) as: Cismontane Woodland and Valley and Foothill Grassland.

Our analysis of the vegetation cover on the property using the Manual of California Vegetation Second Edition (Sawyer et al 2009) shows that the property and the project sites (THP/TCP) consist of Forest or Woodland Alliances and Shrubland Chaparral Alliances. Forest or Woodland Alliances are *Quercus* Forest Alliance Mixed Oak Forest, *Pinus sabiniana* Woodland Alliance Ghost Pine Woodland, and *Pseudotsuga menziesii* Forest Alliance Douglas fir Forest. The Shrubland Chaparral Alliances are *Adenostoma fasciculatum* Shrubland Alliance Chamise Chaparral and *Arctostaphylos manzanita* Provisional Shrubland Alliance (see Plate IV).

In the sections below each of the vegetation habitat types present on the property are described and further categorized with the vegetation classification of Sawyer *et al* (2009).

### **Forest or Woodland Alliances**

Woodland Alliances are characterized by a dominant tree overstory and different degrees of understory development. Fire management, canopy age and degree of closure, windfalls, historic use, present use, substrate base, invasive species, aspect and rainfall are variables that control the degree of understory shrubs, herbs and tree recruitment.

The woodland alliances on the Friesen property consist of the following:

***Pinus sabiniana*** Woodland Alliance Ghost Pine Woodland; *Pinus sabiniana* is dominant or co-dominant tree in the canopy with *Aesculus californica*, *Quercus chrysolepis*, *Q. douglasii*, and *Q. wislizeni* (membership rules *Pinus sabiniana* >10% absolute cover and dominant in the tree canopy). Trees >20m; canopy open to intermittent and one or two tiered. Shrubs are common or infrequent. Herbaceous layer is sparse or grassy. *Pinus sabiniana* is a drought-tolerant and fire sensitive conifer that occupies foothill slopes intermixed with stands of chaparral and it is also a common and important member of stands of *Quercus douglasii*. This alliance is found typically on ridges and slopes that have shallow soils that are rocky infertile and moderately to excessively drained. Sawyer et al 2009 “A vegetation map of Napa Co. underestimated the extent of the alliance (*P sabiniana* is difficult to interpret with the available imagery).

***Pseudotsuga menziesii*** Forest Alliance Douglas fir Forest; *Pseudotsuga menziesii* is dominant or co-dominant with hardwoods in the tree canopy with *Abies concolor*, *Acer macrophyllum*, *Alnus rhombifolia*, *Arbutus menziesii*, *Calocedrus decurrens*, *Chamaecyparis lawsoniana*, *Chrysolepis chrysophylla*, *Cornus nuttallii*, *Pinus contorta*, *P. lambertiana*, *P. jefferyi*, *Quercus agrifolia*, *Q. chrysolepis*, *Q. garryana*, *Q. kelloggii*, and *Sequoia sempervirens* (membership rules >50% relative cover in the tree canopy and reproducing successfully, though hardwoods may dominate or co-dominate in the subcanopy and regeneration layer). Trees > 75 m; canopy is intermittent to continuous, and it may be two tiered. Shrubs are infrequent or common. Herbaceous layer is sparse or abundant.

***Quercus (agrifolia, douglasii, garryana, kelloggii, lobata, wislizeni)*** Forest Alliance Mixed Oak Forest; *Quercus agrifolia*, *Q. douglasii*, *Q. garryana*, *Q. kelloggii*, *Q. lobata* and/or *Q. wislizeni* are co-dominant in the tree canopy with *Aesculus californica*, *Arbutus menziesii*, *Pinus*

*sabiniana*, *Pseudotsuga menziesii*, and *Umbellularia californica*. The canopy is intermittent to continuous. Shrubs are infrequent or common, herbaceous layer is sparse or abundant, may be grassy. This Alliance is found in valley and on gentle to steep slopes. The membership rules require three or more *Quercus* species present at >30% constancy and they are co-dominant in the tree canopy.

Willows surrounding the reservoir are noted on the vegetation map but are not considered an alliance and not treated as a habitat type on the property.

### **Chaparral/Scrub Alliance**

This vegetation type has been divided by numerous authors into Mixed Chaparral/Scrub, Serpentine Chaparral, and Chamise Chaparral. Chaparral is a vegetation type that is restricted to dry, exposed slopes (usually south facing) and is typical for the ridges and slopes of the interior Coast Range Mountains of Napa County (Figure 4). The dominant plant species that define the chaparral habitat sub-type will be dependent on the soil substrate, such as serpentinite or volcanic geologic formations. Chaparral habitat types tend to be low in biotic diversity, as they do not provide rich habitat value. Chaparral vegetation consists mainly of shrubs that are woody and with leaves adapted to xeric conditions (Holland and Kiel, 1986). Periodic fires are characteristic of this community. Many of the species stump sprout after fires, which is characteristic of this habitat and this community, and as a seral stage, is threatened by the absence of a normal fire regime. The principal shrub constituents of Chaparral/Scrub are; chamise (*Adenostoma fasciculatum*), manzanita, (*Arctostaphylos* ssp.), sticky monkey flower (*Mimulus aurantiacus*), yerba-santa (*Eriodictyon californicum*) ceanothus (*Ceanothus* ssp.), scrub oak (*Quercus berberidifolia*), and pitcher sage (*Lepchinia calycina*).

The chaparral Shrubland alliance on the property consist of the following:

***Arctostaphylos manzanita*** Provisional Shrubland Alliance. *Arctostaphylos manzanita* is a variable Manzanita with subspecies. The most widely ranging subspecies is ssp. *manzanita*, and it occurs in many chaparral and woodland types. *Arctostaphylos manzanita* is dominant in the shrub canopy with *Adenostoma fasciculatum*, *Ceanothus* ssp., and *Heteromeles arbutifolia*. Emergent *Quercus douglasii* trees may be present at low cover. Shrubs <6m. canopy is intermittent. Herbaceous layer is sparse.

***Adenostoma fasciculatum*** Shrubland Alliance Chamise Chaparral; *Adenostoma fasciculatum* is dominant in the shrub canopy with *Arctostaphylos glandulosa*, *A. manzanita*, *Ceanothus* ssp., *Diplacus aurantiacus*, *Eriodictyon californicum*, *Eriogonum fasciculatum*, *Heteromeles arbutifolia*, *Quercus berberidifolia*, *W. wislizeni*, and *Toxicodendron diversilobum*. Emergent trees may be present at low cover. Shrubs < 4 m; canopy is intermittent to continuous. Herbaceous layer is sparse to intermittent. (Membership Rules *Adenostoma fasciculatum* >50% relative cover in the shrub canopy: codominance of *A. fasciculatum* with the following species *Arctostaphylos glandulosa* and *Ceanothus cuneatus*). This alliance occurs across cismontane California in a variety of topographic settings. *Adenostoma fasciculatum* Is a long-lived, shade intolerant shrub that grows to 3.5 m. Stands over 60 years old produce little new growth as dead stem biomass accumulates.

A complete list of all plants encountered on the project site and immediate vicinity is included in Appendix A. The vegetation mapping shown on Plate III provides a visual indication of the major alliances.

**Table II. Approximate Acreage of Plant Communities or Alliances Impacted**

<b>Plant Community or Vegetation Alliance</b>	<b>Acreage on Property (37.43-acres)</b>	<b>Acreage To Be Planted (Total 13.63 - acres)</b>	<b>Estimated Percentage to be removed</b>	<b>Estimated Percentage to Remain</b>
Woodland Alliance Douglas fir Forest Alliance	<b>6.5</b>	<b>3</b>	<b>68%</b>	<b>32%</b>
Woodland Alliance Ghost Pine Woodland	<b>10.2</b>	<b>1</b>	<b>11%</b>	<b>89%</b>
Woodland Alliance Mixed Oak Alliance	<b>9.3</b>	<b>4.9</b>	<b>52%</b>	<b>48%</b>
Shrubland/Chaparral Alliance Manzanita Chaparral Alliance	<b>5.00</b>	<b>4.3</b>	<b>86%</b>	<b>14%</b>
Shrubland/Chaparral Alliance Chamise Chaparral Alliance	<b>5.5</b>	<b>0.53</b>	<b>10%</b>	<b>90%</b>
Ruderal (open areas and access roads)	<b>0.80</b>			

**Table III Respective Characteristics Of Plant Communities (See Plate IV as well as the photographs below which illustrate the distribution and characteristics of each alliance).**

<b>Plant Community or Vegetation Alliance</b>	<b>Respective Characteristics Approximate tree density (Average trees and species per acre)</b>
Douglas fir Forest Alliance	Douglas fir forest on the site is a result of modified fire regime and represents a succession where they are replacing the Oak Woodlands. The understory is limited. Douglas firs are on a < 10-foot spacing. There are occasional Ponderosa Pines mixed with this Alliance but their canopy cover does not meet the criteria for considering this as a separate alliance.
Ghost Pine Woodland Alliance	The Ghost Pine Woodland Alliance is apparent as tall trees extending above the Oaks and Chaparral. There does not appear to have been any recent timber or firewood harvesting. The Ghost Pines are average 6” to 30” DBH and are on 40 foot spacing.
Mixed Oak Alliance	The trees in this alliance are of mixed age classes. Several different Oak species are present mixed with Doug-Fir and Ghost Pine. This Mixed Oak Alliance differs from the Oak Woodlands found in the Valley and classic Oak Woodlands as they contain many different shrubs and tree species. The canopy is intermittent to continuous. Shrubs are infrequent or common, herbaceous layer is sparse. Oaks 6 to 20” DBH dominate the site on 10 to 20 foot spacing.
Manzanita Chaparral Alliance	<i>Arctostaphylos manzanita</i> is the dominant shrub with other chaparral species. The cover is dense with occasional openings and the population is primarily of one age class. The herbaceous layer is sparse to intermittent. The cover is dense and complete with occasional openings.
Chamise Chaparral Alliance	The <i>Adenostoma fasciculatum</i> alliance contains dominant of Chamise with open areas of grassland, rock and contains areas with Ghost Pines. Emergent trees are present at low cover apparently a result of the absence of fire. Herbaceous layer is sparse to intermittent. The cover is dense and complete with occasional openings.



**Figure 1.** View of typical habitat associated with the THP/TCP illustrating mixed chaparral alliance.



**Figure 2.** Manzanita alliance on the project site.



**Figure 3.** Douglas fir and Ponderosa pine trees with in Douglas fir alliance.



**Figure 4.** Reservoir on the property with perimeter band of willows. No removal of vegetation within 100-feet.



**Figure 5.** Grey Pine and Chamise chaparral alliance.



**Figure 6.** Mixed Oak Woodland Alliance with Douglas fir alliance in the background.

The aerial photograph, Plate III illustrates the site and the surrounding environment.

The dominant land cover types in the vicinity of the property consist of oak and conifer woodlands and chaparral.

### **Forest Characteristics Surrounding The Property**

Our study focused on the property and the project sites. Aerial interpretation and observations from access roads show that the surrounding vegetation cover consists of;

- On the north side of the property-Ghost Pine Woodland Alliance, Grassland Semi-natural Herbaceous Stands and Mixed Oak Alliance;
- On the east side of the property-Ghost Pine Woodland Alliance, Douglas fir Forest Alliance and Mixed Oak Alliance;
- On the south side of the property- Ponderosa Pine Forest Alliance and Douglas fir Forest Alliance;
- On the west side of the property- Douglas fir Forest Alliance and Mixed Oak Alliance.

All indications show that the surrounding forest alliances are seral stages as a result of previous harvests or fire.

### **C.3 Special-Status Species**

Special-status organisms are plants or animals that have been designated by Federal or State agencies as rare, endangered, or threatened. Section 15380 of the California Environmental Quality Act [CEQA (September, 1983)] has a discussion regarding non-listed (State) taxa. This section states that a plant (or animal) must be treated as Rare or Endangered even if it is not officially listed as such. If a person (or organization) provides information showing that the taxa meets the State's definitions and criteria, then the taxa should be treated as such.

#### **Plants**

A map from the CDFW CNDDDB Rare Find shows known special-status species in the proximity of the project as shown on Plate II. These taxa as well as those listed in Appendix B Special-status Species known for the Quadrangle and Surrounding Quadrangles were considered and reviewed as part of our scoping for the project site and property. Reference sites were reviewed as part of our scoping for some of the species.

Table IV below provides a list of species that are known to occur (CDFW CNDDDB Rare Find 5 mile search). The table includes an analysis / justification for concluding absence.

**Table IV.** Analysis of CDFW CNDDDB target plant species. Columns are arranged alphabetically by scientific name.

Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Justification for Concluding Absence on Project Site
<i>Amorpha californica</i> var. <i>napensis</i> Napa False Indigo	Cismontane Woodland	Yes	April- July	No	Requisite habitat, and Species was not observed.
<i>Amsinkia lunularis</i> Bent-flowered Fiddleneck	Cismontane Woodland, Valley and Foothill Grassland	No	March- June	No	Potential for project site. No indications for presence during our fieldwork.
<i>Astragalus claranus</i> Clara Hunt's Milk- vetch	Chaparral, Cismontane Woodland, Valley and Foothill Grassland	No	March- May	No	Absence of requisite micro-habitat, vegetation associates and closed canopy. Lack of finding during our fieldwork.
<i>Brodiaea leptandra</i> Narrow-anthered Brodiaea	Cismontane Woodland	Yes	May- June	Yes	Species was not observed.
<i>Calystegia collina</i> ssp. <i>oxyphylla</i> Mt. St. Helena Morning-glory	Chaparral Serpentinite	Yes	April- June	No	Requisite habitat and edaphic conditions absent. Species was not observed.
<i>Ceanothus confusus</i> Rincon Ridge Ceanothus	Closed Cone Conifer Forests, Chaparral	No	Feb.- April	No	Absence of typical habitat and vegetation associates.
<i>Ceanothus divergens</i> Calistoga Ceanothus	Chaparral, Serpentinite or Volcanic-Rocky.	No	May- Sept.	No	Absence of typical habitat and vegetation associates.
<i>Ceanothus purpureus</i> Holly-leaved Ceanothus	Chaparral	No	March- May	No	Absence of typical habitat and vegetation associates. Lack of finding during our fieldwork.
<i>Ceanothus sonomensis</i> Sonoma Ceanothus	Chaparral, Serpentinite or rocky Volcanic	Yes	Feb.- March	No	Absence of typical habitat and vegetation associates. Species was not observed.

Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Justification for Concluding Absence on Project Site
<i>Centromadia parryi</i> ssp. <i>parryi</i> Pappose Tarplant	Grassland salt or alkaline Marshes	No	March- June	No	Requisite mesic conditions absent.
<i>Harmonia hallii</i> Hall's Harmonia	Open Areas in Serpentinite Chaparral	No	April- June	No	Absence of requisite edaphic conditions and Chaparral.
<i>Hesperolinon</i> <i>bicarpellatum</i> Two-carpellate Western Flax	Chaparral	No	May- July	No	Requisite edaphic habitat absent on the site or in the immediate vicinity precludes presence.
<i>Hesperolinon</i> <i>tehamense</i> Tehema County Western Flax	Chaparral, Serpentinite	No	May- July	No	Requisite edaphic habitat absent on the site or in the immediate vicinity.
<i>Juncus luciensis</i> Santa Lucia Dwarf Rush	Seeps, Meadows, Vernal Pools, Stream sides	No	April- June	No	Absence of requisite mesic habitat.
<i>Leptosiphon jepsonii</i> Jepson's Leptosiphon	Chaparral, Cismontane Woodland, Valley and Foothill Grassland	Yes	April- May	No	Requisite habitat absent on the site as well as closed canopy. Lack of finding during our fieldwork.
<i>Limnanthes floccosea</i> ssp. <i>floccosa</i> Woolly Meadowfoam	Meadows and Seeps, Valley and Foothill Grassland, Cismontane Woodland Vernal Pools	No	April- May	No	Requisite mesic habitat absent on the site or in the immediate vicinity.
<i>Limnanthes vinculans</i> Sebastopol Meadowfoam	Meadows and Seeps, Valley and Foothill Grassland, Vernal Pools	No	April- May	No	Requisite mesic habitat absent on the site or in the immediate vicinity.

Scientific Name Common Name	Species Habitat Association or Plant Community	Habitat present on Project Site	Bloom Time	Obs. on or Near Site	Justification for Concluding Absence on Project Site
<i>Lupinus sericatus</i> Cobb Mountain Lupine	Broadleaved upland forest, chaparral, cismontane woodland	No	March- June	No	Absence of requisite vegetation associates as well as historical use of project site precludes presence.
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> Baker's Navarretia	Meadows and Seeps Cismontane Woodland, Valley and Foothill Grassland, Vernal Pools	No	May- July	No	Absence of typical habitat and vegetation associates. Lack of finding during our fieldwork.
<i>Navarretia rosulata</i> Marin County Navarretia	Closed Cone Coniferous Forest, Chaparral, Serpentinite	Yes	May- July	No	Requisite edaphic conditions absent on the site or in the immediate vicinity.
<i>Penstemon newberryi</i> var. <i>sonomensis</i> Sonoma Beardtongue	Cismontane Woodland, exposed rock outcrops/ talus of peaks.	Yes	April- Aug.	No	No findings during our fieldwork. Closed canopy also precludes presence.
<i>Plagiobothrys strictus</i> Calistoga Popcorn- flower	Vernal pools near thermal springs	No	March- June	No	Requisite mesic habitat absent on the site or in the immediate vicinity.
<i>Sidalcea oregana</i> ssp. <i>hydrophila</i> Marsh Checkerbloom	Meadows and seeps, Riparian scrub mesic	No	June- Aug.	No	Requisite mesic habitat absent.
<i>Streptanthus hisperidis</i> Green Jewel-flower	Rocky Chaparral, Grassland	No	April- July	No	Lack of edaphic habitat and historic use of project site precludes presence
<i>Trichostema ruygtii</i> Napa Bluecurls, Vinegar Weed	Grassland	No	June- Aug.	No	Requisite habitat absent on the site. Historic use of the site precludes presence.

The CDFW CNDDDB shows a confidence interval for the Cobb Mountain Lupine (*Lupinus sericatus*) that overlaps the project site. Cobb Mountain Lupine is easily identified in flower or in its vegetative state. We found no evidence for presence of this species on the property or the project sites.

Other taxa in the table above that are known to occur within five miles of the project site are reasonably precluded from being present based on the lack of wetlands, absence of serpentinite soils or rock, habitat and vegetation present.

One special-status species was found on the property. The Napa County Lomatium (*Lomatium repostum*) is present along an access road in the manzanita chaparral alliance. This Lomatium is a northern California and Bay Area endemic that is a member of the carrot family. This plant is listed by the California Native Plant Society as (4.3 plants of limited distribution) and is common in disturbed areas of chaparral communities. It does not have state or federal listing but must be addressed as per CEQA. We found three populations (two to three individuals) of this plant. One of the populations is within the buffer zone for the reservoir and will be retained.

**Animals**

A map from the CDFW CNDDDB Rare Find-3 shows known special-status species in the proximity of the project as shown on Plate II. These taxa as well as those listed in Appendix B Special-status Species known for the Quadrangle and Surrounding Quadrangles were considered and reviewed as part of our scoping for the project site and property.

Table V below provides a list of species that are known to occur (CDFW CNDDDB Rare Find 3-5 mile search). The table includes an analysis / justification for concluding absence.

**Table V.** Analysis of target animal species. Columns are arranged alphabetically by scientific name.

Scientific Name Common Name	Habitat	Potential for Property	Obs. or Potential for Project Site	Findings Relative to Potential Project Impacts
<i>Agelaius tricolor</i> Tricolored Blackbird	Tule Marshes	No	No	Lack of habitat in reservoir. Tules are not dense enough to support nesting.
<i>Antrozous pallidus</i> Pallid Bat	Roosts in Buildings and Overhangs, woodlands	No	No	No evidence for presence observed. Trees contain low potential habitat.
<i>Corynorhinus townsendii</i> Townsend’s Big-eared Bat	Caves, late seral stage conifers, bridges, old Buildings	No	No	Site does not contain trees with large cavities or late seral stage trees. Trees contain low potential habitat.

Scientific Name Common Name	Habitat	Potential for Property	Obs. or Potential for Project Site	Findings Relative to Potential Project Impacts
<i>Emys marmorata</i> Western Pond Turtle	Slow moving water or ponds	Yes	No	Present in reservoir. Not likely to be associated with proposed project footprint.
<i>Falco mexicanus</i> Prairie Falcon	Nests on cliffs	No	No	May fly over. Lack of habitat for nesting and feeding.
<i>Falco peregrinus</i> <i>anatum</i> American Peregrine Falcon	Nests on cliffs	No	No	May fly over. Lack of habitat for nesting and feeding.
<i>Myotis thysanodes</i> Fringed Myotis	Montane Forests or Montane Meadows	No	No	No evidence for presence observed during our fieldwork.
<i>Oncorhynchus mykiss</i> <i>irideus</i> Steelhead-central California Coast	Aquatic	No	No	No Aquatic habitat on property.
<i>Pekania pennanti</i> Fisher-West Coast	Tree or snag cavities, Mixed Conifer-hardwood Forests preferably late succession.	No	No	Project site does not contain suitable large cavities or late seral stage trees for this species.
<i>Progne subis</i> Purple Martin	Cavity nesters, Likes open areas near water	No	No	Habitat associated with proposed project is unlikely to contain feeding or nesting potential.
<i>Rana boylei</i> Foothill Yellow-legged Frog	Streams with pools	No	No	Lack of habitat precludes presence.
<i>Rana draytonii</i> California Red-legged Frog	Creeks, Rivers, Permanent flowing water.	No	No	Lack of habitat.
<i>Strix occidentalis</i> <i>caurina</i> Northern Spotted Owl	Old Growth Forests	No	No	Lack of habitat.
<i>Vandykes tuberculata</i> Serpentine Cypress Long-horned Beetle	Cypress Trees	No	No	Lack of habitat. No Cypress Trees.

We observed one adult Western Pond Turtle (*Emys marmorata*) basking on the edge of the reservoir during one of our surveys.

Our fieldwork did not find any other special-status animal species known for the Quadrangle surrounding Quadrangles or for the region that would be impacted by the proposed project. The present conditions of the project site are such that there is little reason to expect the occurrence of any special-status animal species within the footprint of the project.

**Table VI.** California Wildlife Habitat Relationship System Query for Project Site. The table shows species predicted to occur within habitat types on the property.

<b>Taxa Common Name</b>	<b>Potential for Habitats on project site</b>	<b>Species Observed On Site</b>	<b>Impact of THP/TCP on Species Habitat</b>
California Tiger Salamander	No	No	None
California Newt	Yes	No	Low
Common Ensatina	Yes	No	Low
Western Spadefoot	No	No	None
Foothill Yellow-legged Frog	No	No	None
California Red-legged Frog	Yes	No	Low
Common Loon	No	No	None
American White Pelican	No	No	None
Greater White-fronted Goose	No	No	None
Redhead	Yes	No	Low
Barrow's Goldeneye	No	No	None
White-tailed Kite	Yes	No	Low
Bald Eagle	No	No	None
Northern Harrier	Yes	No	Low
Golden Eagle	No	No	None
Peregrine Falcon	No	No	None
California Quail	Yes	No	Low
Black Rail	No	No	None
Clapper Rail	No	No	None
Snowy Plover	No	No	None
Burrowing Owl	No	No	None
Spotted Owl	No	No	None
Long-eared Owl	No	No	None
Short-eared Owl	No	No	None
Olive-sided Flycatcher	Yes	No	Low
Purple Martin	Yes	No	Low
Bank Swallow	No	No	None
Bewick's Wren	Yes	No	Low
Loggerhead Shrike	No	No	None

<b>Taxa Common Name</b>	<b>Potential for Habitats on project site</b>	<b>Species Observed On Site</b>	<b>Impact of THP/TCP on Species Habitat</b>
Hutton's Vireo	Yes	No	Low
Yellow Warbler	Yes	No	Low
Spotted Towhee	Yes	No	Low
California Towhee	Yes	No	Low
Rufous-crowned Sparrow	Yes	No	Low
Vesper Sparrow	Yes	No	Low
Sage Sparrow	Yes	No	Low
Savannah Sparrow	No	No	None
Song Sparrow	Yes	No	Low
Yellow-headed Blackbird	Yes	No	Low
Ornate Shrew	Yes	No	Low
Broad-footed Mole	Yes	No	Low
Western Red Bat	No	No	None
Townsend's Big-eared Bat	No	No	Low
Pallid Bat	Yes	No	Low
Brush Rabbit	No	No	None
Black-tailed Jackrabbit	No	No	None
San Joaquin Pocket Mouse	No	No	None
California Kangaroo Rat	No	No	None
Deer Mouse	Yes	No	Low
Dusky-Footed Woodrat	Yes	Yes	Low
California Vole	Yes	No	Low
Ringtail	Yes	No	Low
Western Spotted Skunk	Yes	No	Low
Mountain Lion	Yes	No	Low
Western Pond Turtle	Yes	No	Low
Western Skink	Yes	No	Lows
Striped Racer	Yes	No	Low
Gopher Snake	Yes	No	Low
California Mountain Kingsnake	Yes	No	Low
Common Garter Snake	Yes	No	Low

#### **C.4 Discussion of Sensitive Habitat Types**

The Napa County Baseline Data Report defines Biotic communities as the characteristic assemblages of plants and animals that are found in a given range of soil, climate, and topographic conditions across a region. Sensitive biotic communities in the County were identified using a two-step process for the Napa County Baseline Data Report.

*The Napa County Baseline Data Report as well as the California Department of Fish and Wildlife Natural Diversity Data Base (CDFW CNDDDB) lists recognized Sensitive Biotic*

*Communities. The Napa County Baseline Data Report lists twenty-three communities which are considered sensitive by CDFW due to their rarity, high biological diversity, and/or susceptibility to disturbance or destruction. The Sensitive Biotic Communities in Napa County are the following:*

*Serpentine bunchgrass grassland, Wildflower field (located within native grassland), Creeping ryegrass grassland, Purple Needlegrass grassland, One-sided bluegrass grassland, Mixed serpentine chaparral, McNab cypress woodland, Oregon white oak woodland, California bay forests and woodlands, Fremont cottonwood riparian forests, Arroyo willow riparian forests, Black willow riparian forests, Pacific willow riparian forests, Red willow riparian forests, Narrow willow riparian forests, Mixed willow riparian forests, Sargent cypress woodland, Douglas fir-ponderosa pine forest (old-growth), Redwood forest, Coastal and valley freshwater marsh, Coastal brackish marsh, Northern coastal salt marsh, and Northern vernal pool.*

*Napa County biotic communities of limited distribution that are sensitive include: Native grassland; Tanbark oak alliance; Brewer willow alliance; Ponderosa pine alliance; Riverine, lacustrine, and tidal mudflats; and Wet meadow grasses super alliance.*

Kjeldsen Biological Consulting did not identify any Sensitive Biotic Communities and or Biotic Communities of Limited Distribution as defined in the County Baseline Data Report or listed by CDFW.

Napa County GIS sensitivity layers indicate coniferous forest/ woodland within the project site. Conifer forest / woodlands exist on the project site but do not meet the criteria established by Sawyer, 2009 classifications for Sensitive Biotic Communities or Biotic Communities of Limited Distribution as defined in the County Baseline Data Report.

The woodlands on the site and surrounding the project area consist of a mix of conifers and broad leaf trees. The chaparral is not a *Mixed Serpentine Chaparral* and the small areas of understory grasslands are ruderal with a dominance of non-native annuals. The Napa County Baseline Report identifies *Douglas fir-ponderosa pine forest (old-growth)*, native *Grasslands* and *Ponderosa pine Alliance* as sensitive woodland communities.

Ponderosa pine forests are considered sensitive communities because they are rare within the County, covering less than 200 acres, and occur at the edge of their regional distribution. Ponderosa pine forests in the County are concentrated in the Angwin area. Ponderosa pines are often a significant element of Douglas fir-Ponderosa pine forests, which cover almost 9,200 acres, or almost 2% of the County.

Ponderosa pine is commonly associated with Douglas fir and sometimes with knobcone pine. Associated shrubs include manzanita, ceanothus, and poison oak. Grasses and forbs include onesided bluegrass, bedstraw (*Galium* spp.), and bracken fern.

Ponderosa pines are present on the property but they do not meet the dominance criteria, size criteria or canopy cover requirements for this forest type or alliance based on the percent canopy

within the area of the proposed THP/THC (see below for the Sawyer criteria). They are a part of the Douglas fir Alliance.

***Pinus ponderosa*** Forest Alliance Ponderosa Pine Forest; *Pinus ponderosa* is the dominant or co-dominant in the tree canopy with *Pseudotsuga menziesii* and *Quercus kelloggii*. Trees >50 m: canopy is open to continuous. Shrub layer is open to continuous with a herbaceous layer that is sparse, abundant or grassy (membership rules *Pinus ponderosa*, the principle canopy species, >10% absolute cover in the tree layer. *Quercus kelloggii*, if present substantially lower cover than *P. ponderosa*. *Pinus ponderosa* >50% relative cover, hardwoods such as *Q. kelloggii* are low in cover, if present (Sawyer, 2009).

Old Growth Douglas fir is considered in the Napa County Baseline Report as a sensitive woodland community in the county. The Douglas fir on the property consists of seral stages with areas with dense regeneration and different age classes. Mature Douglas fir individual are present but they do not constitute an “Old growth Forest.”

There is no evidence of an old growth forest of Douglas fir Forest Alliance on the property.

The grasslands within the footprint of the project do not consist of any of the sensitive grassland communities listed by the County Baseline Data Report or CDFW. Sawyer, J. O., T. Keeler-Wolf and Julie M. Evans 2009 A Manual of California Vegetation Second Edition was used in defining grassland types found on the project. There are scattered individual patches (clones) of native bunch grasses within the fringing woodlands but they do not constitute a grassland per say. The following grassland alliances within the project footprint (the boundaries and extent of each of these alliances vary depending on, topography, soils, exposure and biological conditions, and are within the understory of the Forest of Woodland Alliance on the property (note that these are all non-native introduced species and denoted as Semi-natural stands):

***Avena* ssp.** Semi-natural Herbaceous Stand, Wild oats grasslands;  
***Bromus diandrus*** Semi-Natural Herbaceous Stands Annual brome grassland;  
***Cynosurus echinatus*** Semi-Natural Herbaceous Stands Annual Dogtail Grasslands;  
***Lolium perenne*** Semi-Natural Herbaceous Stands Perennial Rye Grass Field; and  
***Phalaris aquatica*** Semi-Natural Herbaceous Stands Harding grass swards.

There is no evidence of sensitive grassland Alliances or communities on the property.

The California Department of Fish and Wildlife Natural Diversity Database five-mile search shows that Northern Vernal Pool and Serpentine Bunchgrass are present near the project site. There are no vernal pools or serpentine soils associated with the project sites.

### **Wetlands**

The project site does not support any wetlands. Rainfall either percolates directly or runs off by sheet flow into the seasonal creeks described below. There are no wetlands or wetland features on the project sites that fall within the jurisdiction of the USACE or RWQCB and CDFW.

### **Reservoir (Figure 4)**

The reservoir adjacent to Friesian Road retains water year-around. It is a local wildlife resource for summer water. Small mouth bass and Sunfish were observed in significant numbers along with Northwestern Pond Turtle(s). Bullfrogs were also present. The vegetation surrounding the edge of the reservoir consisted of willows and caryx. Emergent aquatic vegetation was sparse. The overflow from the reservoir is diverted from the creek drainage below by a diversion channel that conveys water off of the property to the south. We are told that this is a part of the old water system of Angwin.

### **Stream Analysis**

The property contains an unnamed reservoir that is part of the Friesen Lakes, one Class III watercourse and two blue line streams. The creeks on the property are ephemeral drainages.

Two blue line streams are present on the property (Figures 7 to 11). These streams are seasonal intermittent ephemeral drainages, they do not contain in-stream riparian vegetation, but have limited riparian vegetation as an overstory which provides shade. None of the streams or drainages on the property would support fish.

The southeast blue line drainage (Figure 9) Class III, and Class II is downstream from the reservoir on the property but water has been diverted. (Figure 8). This creek contains woodland vegetation or chaparral on the top of banks. The drainage contains a shallow cut channel with rock, mud or gravel bed present. The Class III watercourse (Figure 10) is a small tributary to this blue line creek.

The northwest blue line drainage (Figure 11) has a low gradient and is open in sections. This creek contains woodland vegetation or grasslands on the top of its banks. The drainage contains a shallow cut channel with rock, mud or gravel bed present.

The vegetation associated with these ephemeral drainages is no different than the upland vegetation (typical riparian trees, shrubs and herbs are not present). The only vegetation within the channel consists of poikliohydric bryophytes on the larger more stable boulders in the streambed. The bank below the high water mark consists of unvegetated rock or soil.

We found no evidence of in channel aquatic life. The southeast drainage has been altered by diversion to the local water system and is further altered by the reservoir above the road which appears to have been constructed to impound water on the property. The THP/TCP has been designed to provide standard buffers along these drainages. All roads exist and no expansion is contemplated.



**Figure 7.** Reservoir over flow below Friesen Drive with excavated channel that diverts flow from the creek on the south side of the property.



**Figure 8.** Water diversion channel on property.



**Figure 9** Blue Line Creek channel below reservoir on the south side of the property.



**Figure 10** Class III Watercourse tributary to southern blue line creek.



**Figure 11.** Blue Line Creek on the northwest corner of the property.

## **D. POTENTIAL BIOLOGICAL IMPACTS**

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The project's effect to onsite or regional biological resources is considered to be significant if the project results in:

- Alteration of unique characteristics of the area, such as sensitive plant communities and habitats (i.e. serpentine habitat, wetlands, riparian habitat);
- Adverse impacts to special-status plant and animal species;
- Adverse impacts to important or vulnerable resources as determined by scientific opinion or resource agency concerns (i.e. sensitive biotic communities, special-status habitats; e.g. wetlands);
- Loss of critical breeding, feeding or roosting habitat; or
- Interference with migratory routes or habitat connectivity.

In the sections below a discussion of potential impacts of the project on the biological resources is presented.

### **D.1 Analysis of Potential Impacts to Special-status Species**

A map from the CDFW CNDDDB records of special-status species in the vicinity of the project is shown on Plate II. Two special-status species were found on the property Western Pond Turtle (*Emys marmorata*) and Napa Lomatium (*Lomatium repostum*)

**Western Pond Turtle** (*Emys marmorata*) was observed in the reservoir on the property. This reservoir is outside of the proposed development. Water from the reservoir will not be used on the vineyard. There is no need for protective measures due to the available upland estivation habitat surrounding the reservoir. It is unlikely that turtles would move into or use the proposed vineyard block habitat.

The pond turtle is found throughout California and is listed by the State as a Species of Concern. It does not have Federal status. Suitable habitat consists of any permanent or nearly permanent body of water or slow moving stream with suitable refuge, basking sites and nesting sites. Refuge sites include partially submerged logs or rocks or mats of floating vegetation. Basking sites can be partially submerged rocks or logs, as well as shallow-sloping banks with little or no cover. Nesting can occur in sandy banks or in soils up to 100 meters away from aquatic habitat. The project site is down slope from the reservoir and separated by Friesen Drive a private right of way open to the public. The soils down slope are dry associated with chaparral which are not the preferred sandy soils essential for nesting. Clearing of vegetation will not occur within 100-feet of the reservoir.

Nesting can occurs up to 100 meters away from aquatic habitat. Given the habitat surrounding the reservoir and 100-foot buffer we do not expect any impact to Western Pond Turtles in the area. It is concluded that this population will not be affected by the proposed project.

There is a reservoir on the adjacent property to the northwest. This reservoir is larger and is over 200-feet from the proposed project. This adjacent aquatic resource is protected by the local land trust and therefore any potential breeding habitat surrounding the pond will be protected.

It is our experience that pond turtles are common in the area and are most likely present in all ponds and reservoirs in the area. It is unknown if adjacent property with ponds or reservoirs contain Western Pond Turtle. Adjacent ponds on private or public property were not surveyed.

**Napa Lomatium** (*Lomatium repostum*) is present within the proposed conversion area. Napa Lomatium is present within the chaparral alliance in areas that have been cleared of overstory specifically the construction of the roads. This Lomatium is a northern California and Bay Area endemic that is a member of the carrot family. It is listed by the California Native Plant Society as (4.3 plants of limited distribution) and is common in disturbed areas of chaparral communities. It does not have state or federal listing but must be addressed as per CEQA. Three occurrences were present on the property two are within the proposed conversion area.

Future clearing has the potential to release more of this species. This species is a seral species that appears after clearing and then will be outcompeted over time as the shrub overstory canopy develops and leaf litter accumulates (the Lomatium is a prostrate plant that grows from a rosette).

If left to natural vegetation growth patterns this species would not be present. If avoided it will eventually become shaded out. Routine maintenance of roads and clearing will allow this species to remain on the property. We find that there is no need to avoid this species and anticipate that it will grow around the edges of roads as the overstory is cleared.

**Napa False Indigo** (*Amorpha californica* var. *napensis*) Reference sites for Napa False Indigo were visited south of Angwin where there is an abundant population.

A map from the DFW CNDDDB records of special-status species in the vicinity of the project is shown on Plate II. The following species are addressed based on their sensitivity to habitat loss.

**California Red-legged Frog** (*Rana draytonii*) inhabits permanent or nearly permanent water sources (quiet streams, marshes, and reservoirs). They are highly aquatic and prefer shorelines with extensive vegetation. There are two known occurrences for the California Red-legged Frog within five miles of the property 2.88-miles to the east and 3.0 miles to the north. Both of the occurrences are within different watersheds and drain into Pope Valley. There is no potential habitat associated with the proposed conversion area. The reservoir on the property contains limited potential habitat. The reservoir contains bull frogs, sunfish and bass which are predators on Red-legged frogs if present. Banks surrounding the reservoir do not contain potential upland estivation habitat. The shallow ephemeral drainage on the property provides poor habitat for this species. No California Red-legged Frogs were observed within the reservoir and it is unlikely that the proposed project would result in take of this species. The project site is approximately 150-feet away from the reservoir that it is unlikely Red-legged frogs would use this area for upland estivation or for movement.

Day time surveys were conducted on February 22, March 19, April 17, May13, and June 3, 2013. Surveys were conducted by scanning the perimeter of the reservoir with binoculars and walking to edge of the reservoir listening for any clues of amphibians entering the water. The perimeter of the reservoir was also scanned for the presence of egg masses. Bull frog were recorded entering the water and large Bass and bull frog tadpoles were observed in the reservoir. No night time surveys were conducted.

The property and project site fall under Scenario IV of the California Red Legged Frog Take Avoidance Scenario dated 3-25-08. “*IV. Scenario IV: Suitable habitat within 2 miles of harvest units or in units and harvest activities planned within 300 feet of suitable habitat during the dry season.*”

- i. *All suitable habitat must maintain a 30 foot no cut buffer: no equipment within the no cut buffer: trees felled away from suitable habitat.*

Suitable habitat does exist within two miles of the project area. The limited habitat contained in the pond is located within 300 feet of the reservoir. The project has been set back from the existing reservoir 150 ft. As such this project meets the conditions of Scenario IV.

The following mitigation measures are proposed to minimize potential impact;

1. Pile burning must be outside of a 300 foot buffer of the reservoir;
2. No herbicide use allowed within 300 feet of the reservoir except for direct applications;
3. No new roads and landings shall be constructed within at least 300 feet from the reservoir, construction must occur in the dry season; and
4. There shall be no water drafting from the reservoir.

**Foothill Yellow-legged Frog** (*Rana boylei*) are found in or near rocky streams with riffles and sunny banks in a variety of habitats from sea level to approximately 6,300 feet elevation. Yellow-legged frogs require shorelines with dense, overhanging vegetation such as willow trees. There is no habitat associated with the project sites or on the property which would support the Foothill Yellow-legged Frog (*Rana boylei*). Foothill Yellow-legged Frogs require permanent flowing water. The drainages on the property do not provide suitable habitat for this species. There was no pools or flowing water in the creeks during the summer months.

**Tricolored Blackbird** (*Agelaius tricolor*) is a State Candidate species and as per Fish and Wildlife Code has the same protection as threatened and endangered species during their candidacy period. This is a colonial species. Populations of this taxon are associated with tule and or cattail marshes with open water. The small pond on the property is not suitable habitat for this species. The project site does not contain habitat or sufficient space for feeding or nesting which would support this species.

**Pallid Bat** (*Antrozous pallidus*): The Pallid Bat occupies a wide variety of habitats, such as grasslands, shrublands, and forested areas of oak and pine, but prefer rocky outcrops with desert scrub. The pallid bat roosts in caves, mines, crevices, and occasionally in hollow trees or buildings. They forage over open country and in woodland areas. Pallid Bats area typically associated with rock outcrops. No potential roosting habitat was observed within the proposed

project area. It is, therefore, unlikely that that the proposed project would result in take of this species.

**Townsend's Big-Eared Bat** (*Corynorhinus townsendii*) A petition to list Townsend's big-eared bat as Threatened or Endangered under the California Endangered Species Act (CESA) was received by the California Fish and Game Commission on November 1, 2012. On June 26, 2013, the Commission voted to designate Townsend's big-eared bat as a candidate for listing. Townsend's big-eared bats are more abundant in mesic habitats and range throughout the State. Their primary roost in caves, mines, abandoned dwellings, and large basal hollows of trees. Potential habitat for this species on the property would include large burned out hollow out mature trees. The site was surveyed for large cavities, or hollow basins, large enough for bats to roost in within 500 feet of the project site. It is unlikely that this species would be present and it is unlikely that the proposed project would result in take of this species.

**American Peregrine Falcon** (*Falco peregrinus anatum*): Peregrine falcons require protected cliffs and ledges for cover. Peregrines often breed near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes or mounds (Zeiner et al. 1990a); however, they will nest on human-made structures and will occasionally use snag cavities or old nests of other raptors. Suitable habitat in the form of cliffs over 70' high do not exist on the property. Peregrine falcons were not observed during this field survey within the project area. No habitat for this species is associated with the proposed project.

**Northern Spotted Owl** (*Strix occidentalis caurina*): Is listed as a candidate species as threatened or endangered species under the California Endangered Species Act. Northern spotted owls require mature forest patches with permanent water and suitable nesting trees and snags. Northern spotted owls use dense, old-growth forests, or mid- to late- seral stage forests, with a multi-layered canopy for breeding. Mixed conifer, redwood, and Douglas fir habitats are required for nesting and roosting. The project and property do not contain potential nesting habitat and the project sited do not contain potential foraging habitat. Woodlands on the site are at a seral stage, which is not suitable for the requirements for nesting of this species. Surrounding woodlands do not contain structural characteristics which would support this species.

Our fieldwork did not find any special-status animal species that are known for the Quadrangle surrounding Quadrangles or for the region that would be impacted by the proposed project. The present conditions of the project site are such that there is little reason to expect the occurrence of any special-status animal species within the footprint of the project.

Habitat impacted by the proposed project is such that it will not substantially reduce or restrict the range of listed animals.

## **D.2 Analysis of Potential Impacts on Sensitive Habitat**

The woodlands on the site and surrounding the project area consist of a mix of conifers and broad leaf trees. The Napa County Baseline Report identifies *Douglas fir-ponderosa pine forest (old-growth)* and *Ponderosa pine Alliance* as sensitive woodland communities.

### **Ponderosa pine Alliance**

Ponderosa pines are present as part of the Douglas fir Alliance within the proposed vineyard block on the south west side of the property. The dominant cover within the proposed block is that of Douglas fir. There are occasional Ponderosa Pines mixed with this Alliance but their canopy cover does not meet the criteria for considering this as a separate alliance (Sawyer et. al. 2009 membership rules require *Pinus ponderosa* presence as the principal canopy species >10% absolute cover). The ponderosa pines within the THP/TCP do not meet the criteria for a Napa County Sensitive Woodland Community.

### **Douglas fir-ponderosa pine forest (old-growth)**

The Napa County Baseline Report identifies this forest type as a sensitive woodland community. Historic use and harvest and or fire has eliminated this community on the project site and property. There is no evidence of an old growth forest of Douglas fir Forest Alliance on the property.

### **Native Grassland**

Napa County Data base vegetation mapping, shows a small area of California Annual Grasslands Alliance on the property. We did not observe this alliance on the property. There are no CDFW Sensitive Communities or Napa County Sensitive Biotic Communities present on project site. The understory Festuca bunch grasses are not considered to be a sensitive community but a common understory element of woodlands. The grasslands within the footprint of the project do not consist of any of the sensitive grassland communities listed by the County Baseline Data Report or DFG. Sawyer, J. O., T. Keeler-Wolf and Julie M. Evans 2009. Native grasses on the project site do not meet the definition of Native Grass Grassland and would not be considered a species with limited distribution or a sensitive natural plant communities for the following reasons: Lack of typical native grassland species and diversity. The grasses present are within an understory and not associated with historic grasslands. The project will not impact any native grassland.

### **Seasonal Wetland**

Seasonal wetlands are generally areas where the soil is seasonally saturated and/or inundated by fresh water for a significant portion of the wet season, and then seasonally dries during the dry season. To be classified as “Wetland,” the duration of saturation and/or inundation must be long enough to cause the soils and vegetation to become altered and adapted to the wetland conditions. Varying degrees of pooling or ponding, and saturation will produce different edaphic and vegetative responses. These soil and vegetative clues, as well as hydrological features, are used to define the wetland type. Seasonal wetlands typically take the form of shallow depressions and swales that may be intermixed with a variety of upland habitat types. Seasonal wetlands fall

under the jurisdiction of the U.S. Army Corps of Engineers. There are no potential seasonal wetlands or vernal pools associated with the project footprint.

### **“Waters of the State”**

Waters of the State include drainages which are characterized by the presence of definable bed and bank that meet ACOE, and RWQCB definitions and or jurisdiction.

Napa County Definition for a Defined Drainages is a watercourse designated by a solid line or dash and three dots symbol on the largest scale of the United States Geological Survey maps most recently published, or any replacement to that symbol, and or any watercourse which has a well-defined channel with a depth greater than four feet and banks steeper than 3:1 and contains hydrophilic vegetation, riparian vegetation or woody-vegetation including tree species greater than ten feet in height.

There are no Napa County Defined Drainages associated with the proposed project sites. Two blue line creeks are present on the property. The ECP and project footprint avoid these and provide setbacks as per Napa County and Department of Forestry Guidelines.

Drainage is by sheet flow into unnamed drainages of Bell Canyon Creek, thence Bell Canyon Reservoir, thence the Napa River.

The unnamed seasonal drainage on the property will not be impacted by the proposed project.

### **Riparian Vegetation**

Riparian vegetation consists of trees and shrubs that have high moisture requirements and are distinct from upland vegetation alliances. Riparian vegetation is by all standards considered sensitive. Riparian Vegetation functions to control water temperature, regulate nutrient supply (biofilters), bank stabilization, rate of runoff, wildlife habitat (shelter and food), release of allochthonous material, release of woody debris which functions as habitat and slow nutrient release, and protection for aquatic organisms. Riparian vegetation is also a moderator of water temperature has a cascade effect in that it relates to oxygen availability. The project will not impact any riparian vegetation.

### **Trees**

The project will remove native Oaks within a Mixed Oak Woodland habitat. The majority of the trees proposed to be removed are of a relative young age class and are 6-20 inches DBH.

The project should comply with the Oak Woodlands Preservation Act (PRC Section 21083.4) regarding oak woodland preservation to conserve the integrity and diversity of oak woodlands, and retain, to the maximum extent feasible, existing oak woodland communities, and the project should also comply with Napa County General Plan Policy CON-24 Paragraph (c) stated that a project should “provide replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio.

The project 13.63-acre gross within a 37.43-acre parcel will retain approximately 64% of the property in its present condition.

### **Wildlife Habitat and Wildlife Corridors**

Natural areas interspersed with developed areas are important for animal movement, increasing genetic variation in plant and animal populations, reduction of population fluctuations, and retention of predators of agricultural pests and for movement of wildlife and plant populations. Wildlife corridors have been demonstrated to not only increase the range of vertebrates including avifauna between patches of habitat but also facilitate two key plant-animal interactions: pollination and seed dispersal. Corridors also provide ecosystem services such as preservation of watershed connectivity. Corridor users can be grouped into two types: passage species and corridor dwellers. The data from various studies indicate that corridors should be at least 100 feet wide to provide adequate movement for passage species and corridor dwellers in the landscape.

Game trails are present but there was no evidence for distinct corridors passing through the property. Riparian zones are functional as corridors in many biomes. The riparian zone along the drainages on the property did not show any evidence of functionality as a wildlife corridor.

Wildlife will continue to move around and through the property. Deer fencing should be designed with exit gates and limited to vineyard blocks. There are no identifiable significant wildlife corridors associated with the property.

### **Raptor Nests, Bird Rookeries, Bat Roosts, Wildlife Dens or Burrows**

Raptors were observed in the area although no raptor nests were identified during our survey. We found no indications of nesting raptors on the property or in the near vicinity of the project sites. We did not observe any nests, whitewash or nest droppings, perching associated with the project site. No bird rookeries were present on the property or within the project footprint. We found no raptor nests or whitewash from nests on the property.

Trees on the project site are primarily small and do not contain cracks or cavities which would provide suitable bat roosting habitat.

Very few gopher or mole burrows were observed, but small mammals and songbirds likely utilize habitats on the project site for foraging and cover. No significant wildlife dens or burrows were observed.

### **Unique Species that are Endemic, Rare or Atypical for the Area**

*Emys marmorata* (Western Pond Turtle) was observed in the reservoir on the property and the Napa Lomatium (*Lomatium repostum*) is present with in the chaparral alliance in areas that have been cleared of overstory specifically the construction of the roads.

No other unique or unusual populations of plants or animals were present on the property or the project site.

### **Habitat Fragmentation**

Habitat fragmentation is a local and global concern. The project will incrementally reduce a small amount of habitat in the area. The proposed change in land use will result in less than significant changes in avifauna and rodent utilization in the area. The proposed project will not lead to

significant impacts to habitat fragmentation in the region, significant species exclusion, or significant change in species composition in the region.

Habitat fragmentation can result in a net-loss of habitat and genetic isolation. Small clearings can increase the edge habitat and can be beneficial for wildlife and botanical resources.

The project site is surrounded by extensive open habitat and approximately 64% of the property will be retained as wildlife habitat, watershed, and open space. The project will not result in significant habitat fragmentation.

### **D.3 Potential Off-site Impacts of the Project**

A potential impact is the movement of silt, dust and the creation of noise during site construction. Construction and Erosion Control BMP's during development of the site will prevent any significant off-site impacts.

There is nothing to indicate any significant potential impacts to off-site biological resources off site by the proposed project.

### **D.4 Potential Cumulative Impacts**

Cumulative biological effects are the result of incremental losses of biological resources within a region. The site location, small size of the proposed project, lack of development of surrounding properties in the area negates the potential for significant cumulative biological impacts. There is nothing to indicate that there will be any significant cumulative biological impacts of the project provided the BMP's are observed.

Removal of vegetation can reduce the abundance and diversity of species in an area. Vineyards provide limited foraging, cover, and breeding habitat for native wildlife species. Vineyards can be used by wildlife but the diversity is low within vineyards and foraging may be difficult. Loss of habitat can also be an important factor affecting the long-term survival of rare, threatened and endangered species.

The project is surrounded by extensive open habitat of similar species and vegetation alliances. Vineyards and urban development is sparse surrounding the project site. Removal of vegetation by this project will not significantly reduce the available foraging, nesting and habitat for wildlife in the area. Properties surrounding the proposed project site do not have deer fencing and do not restrict movement of large mammals.

There are no potential significant impacts to migratory corridors or wildlife nursery sites associated with the proposed project. The impact to local wildlife will be undetectable on a regional scale. The loss of habitat on the project site is less than significant in relation to the amount of habitat in the area.

## **D.5 State and Federal Permit**

Any impact to unnamed seasonal drainages on property will require agency consultation and permits from the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, and Regional Water Quality Control Board for impacts to “Waters of the State”.

During development of the site best management and standard construction practices must be used. All Napa County set backs must be followed in the development of the project.

## **E. SUMMARY**

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This study is provided as background information necessary for evaluating potential impacts of the project on local biological resources.

We find that the proposed project will not 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 Wildlife or U.S. Fish and Wildlife Service.

We find that the project as proposed will not 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 Wildlife or US Fish and Wildlife Service.

We find that the project as proposed will not 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. No wetlands or vernal pools are associated with the proposed project.

We find that the proposed project will not 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.

In order for the proposed project to not conflict with any local policies or ordinances protecting biological resources, the project must comply with the Oak Woodlands Preservation Act and Napa County General Plan Policy CON-24 Paragraph (c).

The proposed project will not conflict with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.

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## **F.2 Qualifications of Field Investigators**

**Chris K. Kjeldsen, Ph.D., Botany**, Oregon State University, Corvallis, Oregon. He has over forty years of professional experience in the study of California flora. He was a member of the Sonoma County Planning Commission and Board of Zoning (1972 to 1976). He has over thirty years of experience in managing and conducting environmental projects involving impact assessment and preparation of compliance documents, Biological Assessments, CDFW Habitat Assessments, CDFW Mitigation projects, ACOE Mitigation projects and State Parks and Recreation Biological Resource Studies. Experience includes conducting special-status species surveys, jurisdictional wetland delineations, general biological surveys, 404 and 1600 permitting, and consulting on various projects. He taught Plant Taxonomy at Oregon State University and numerous botanical science and aquatic botany courses at Sonoma State University including sections on wetlands and wetland delineation techniques. He has supervised numerous graduate theses, NSF, DOE and local agency grants and served as a university administrator. He has a valid CDFW collecting permit.

**Daniel T. Kjeldsen, B. S., Natural Resource Management**, California Polytechnic State University, San Luis Obispo, California. He spent 1994 to 1996 in the Peace Corps managing natural resources in Honduras, Central America. His work for the Peace Corps in Central America focused on watershed inventory, mapping and the development and implementation of a protection plan. He has over ten years of experience in conducting Biological Assessments, CDFW Habitat Assessments, ACOE wetland delineations, wetland rehabilitation, and development of and implementation of mitigation projects and mitigation monitoring. He has received 3.2 continuing education units MCLE 27 hours in Determining Federal Wetlands Jurisdiction from the University of California Berkeley Extension. Attended Wildlife Society Workshop Falconiformes of Northern California Natural History and Management California Tiger Salamander 2003, Natural History and Management of Bats Symposium 2005, Western Pond Turtle Workshop 2007, and Western Section Bat Workshop 2011. Laguna Foundation & The Wildlife Project Rare Pond Species Survey Techniques 2009. A full resume is available upon request.

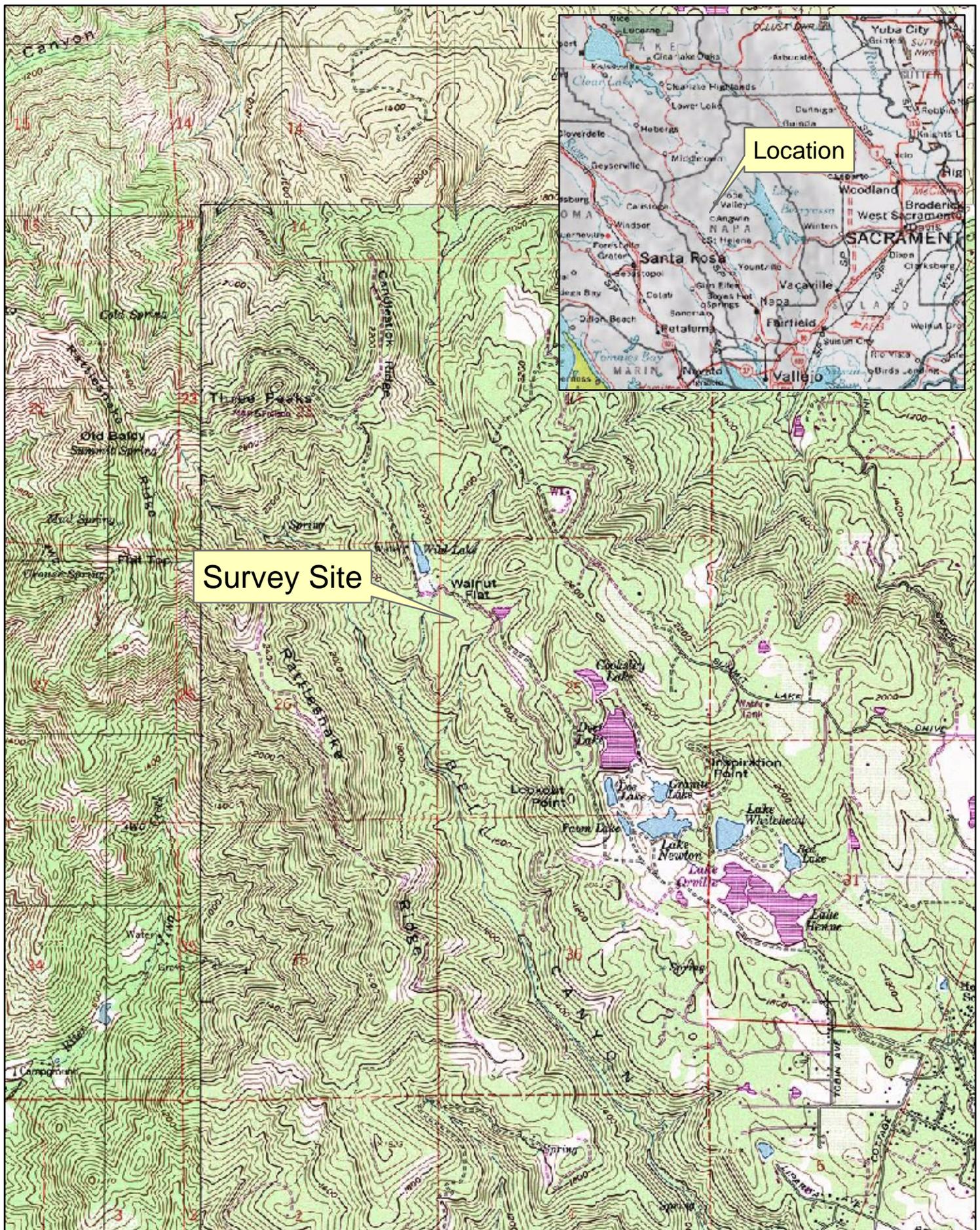


Plate I. Site / Location Map

( St Helena Quadrangle)



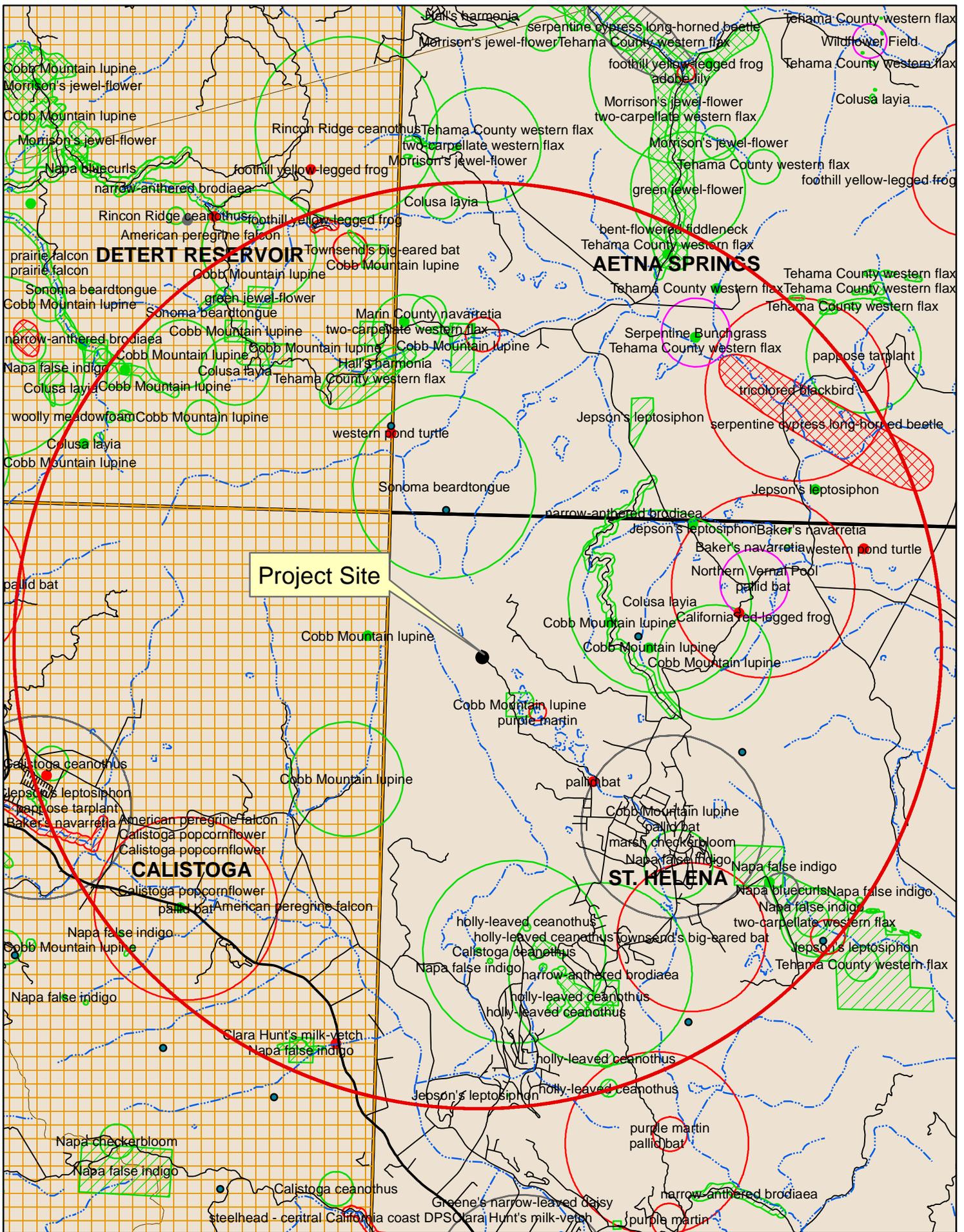
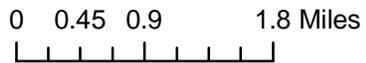


Plate II DFG CNDDDB 5-Mile Search



(Data Date July 2013)

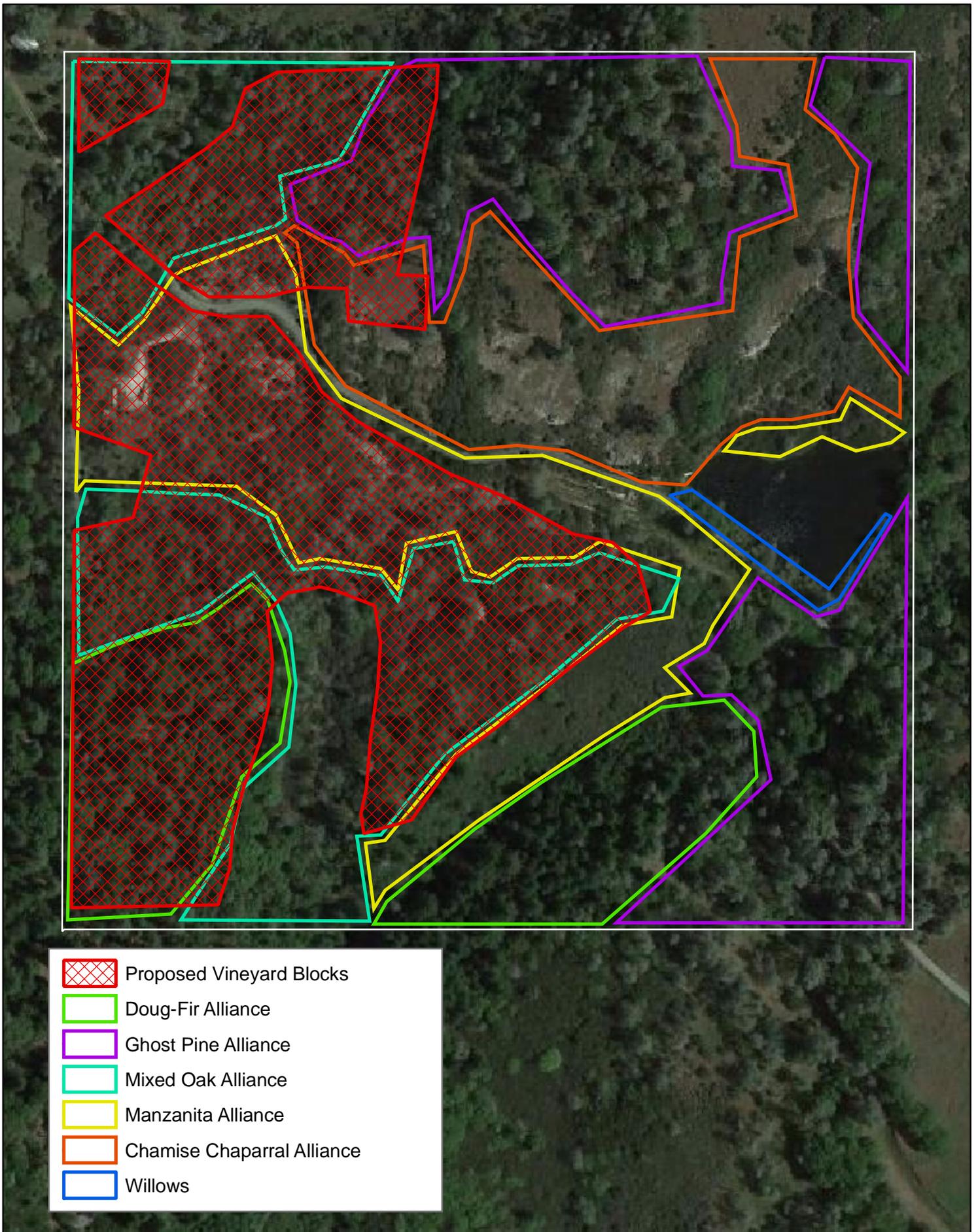


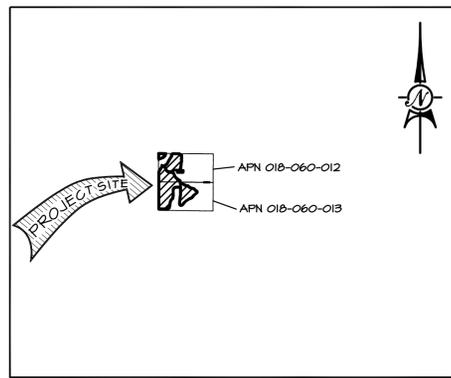
Plate III. Aerial Photo / Vegetation Map



Plate IV. Location of Napa Lomatium

# DAVIS FAMILY ESTATE FRIESEN VINEYARD EROSION CONTROL PLAN FOR NEW VINEYARD

SHEET INDEX  
1. TITLE SHEET  
2. PLAN & DETAILS



PORTRION OF St. Helena 7.5 MIN. QUAD MAP

Vicinity Map

1" = ±2000'

## Narrative

This project consists of the development of approximately ±13.63 gross acres (±10.53 net acres) of new vineyard within APN 018-060-012 and 018-060-013 a total of ±37.43 acres located at 1875 Friesen Drive, Angwin. The parcels includes ±22.3 acres of tree canopy, brush, reservoir and resident grasses. There is existing access from Friesen Drive. Existing ground slopes within the project area range from 8% to 27% with ±0.94 acre of 30% or greater. The vinerows will be spaced 7' apart with row direction as shown on the ECP. Vineyard avenues/turnspaces shall be created to accommodate the vineyard operations. The proposed vineyard area in the south east corner of Block B may be hand farmed. The vineyard will be farmed with cultivation practices as described below under Permanent Erosion Control Measures #6. A drip irrigation system will be installed and wells will serve as the water source. Water use on the new vineyard is expected to be ±3.30 AF per annum.

The USGS St. Helena 7.5 minute Quad Map shows two "Blue-line" streams, one in the NW corner of APN 018-060-012 and the other SE corner of APN 018-060-013. These unnamed streams flow to Bell Canyon Creek; the project lies within the Bell Canyon Reservoir subwatershed. Stream setbacks have been established as prescribed in Napa County Conservation Regulations.

The Biological Resources Survey prepared by Kjeldsen Biological Consulting, revealed no special status species which will be impacted by this project.

Rock Disposal shall be accomplished by road surfacing, erosion control features, and disposal along vineyard perimeters where shown.

Soils within the block boundaries have been classified in the USDA Soil Conservation Service's, Napa County Soil Survey, as SCS# 138 Forward gravelly loam, and SCS# 177 Rock out crop-Kidd complex.

Vegetation removal consists of existing trees, brush and grasses. All organic material to be burned or chipped shall be stacked at strategic locations within the cleared area. Burning of the organic material shall take place only after obtaining approvals from all governing agencies.

Ground preparation - The ground may be ripped 36" and tilled, some areas of rock may need to be blasted. Rocks generated from the ripping or blasting shall be placed in rock disposal areas at the locations marked on the plan sheet, used in erosion control features, or crushed for road surfacing. Vineyard avenues and turnspaces shall be shaped during ground preparation. Winter cover crop shall be seeded and mulched prior to September 15 of year P-1.

Wildlife Exclusion Fencing shall be installed around the vineyard, as shown on the plan, with gates and/or turtle friendly cattle guards provided where convenient for vineyard access. For convenience, the fence may be routed around trees and other imposing physical features, and additional gates may be installed. Existing cattle fence around the property will remain in place and it may be augmented or replaced with wildlife exclusion fence where it is adjacent to proposed vineyard blocks. Wildlife exclusion fence shall be 6" with 8" X 8" square mesh with 2 strands of barbed wire above (total 8" height). Cattle guards installed must be pond turtle friendly allowing any turtle that falls between guards to walk out on its own.

Temporary Erosion Control Measures consist of the installation of fiber rolls and the application of straw mulch where seeding occurs. The installation of all fiber rolls shall be completed in accordance with the appropriate detail along the contours at locations shown on the plan, no later than September 15 in years P-1 and P. They shall be left in place through the winter after planting, after which they may be removed. A straw mulch cover shall be applied over all open and/or disturbed and seeded areas at the rate specified in the seeding requirements.

Permanent Erosion Control Measures consist of the following:

- 1) Clean, repair or replace existing drainage features as needed at the locations shown in the plan.
- 2) Construction of water bars where shown in the plan in accordance with the appropriate detail.
- 3) Construction of rock check where shown in the plan in accordance with the appropriate detail.
- 4) Construction of rock disposal areas where shown in the plan in accordance with the appropriate detail.
- 5) Construction of a rolling dips where shown in the plan and in accordance with the appropriate detail.
- 6) Install culvert along friesen road between existing culverts east of Block C, add energy dissipators to each culvert along friesen road in accordance with the appropriate detail.
- 7) A winter cover crop shall be seeded and mulched within the replanting vineyard area in year P-1. During fallow years, the cover crop may be mowed. A winter cover crop shall be planted within the Blocks in the fall immediately after planting (refer to cultivation chart under Project Notes). NO PREEMERGENT SPRAYS SHALL BE USED, but springtime applications of post-emergent contact sprays may be used by spot spraying around the vines. As a normal cultural practice, alternate vineyard middles may be disked/tilled annually. No later than September 15, the disked/tilled middles shall be reseeded, using broadcasting methods, and straw mulched at 2 tons/acre. Every year, the tilled/non-tilled middles may be rotated, resulting in an "alternate middle-alternate year" cultivation scheme (refer to cultivation chart under Project Notes). Optimally, a ground cover of 80% or greater will be obtained each winter.
- 8) Implementation and adherence to the Annual Winterization program presented in the Project Notes.

Costs: The total cost of all erosion control measures is estimated to be \$2500-3000/acre including equipment, materials, and labor.

The project site was last visited by the plan preparer in March, 2013 to inspect the site, and will be visited during and after redevelopment to check for proper erosion control features.

## Project Notes

APN & Owner: 018-060-012 Edward & Darleen Bercovich  
1591 Ellis St. #313  
Concord, Ca, 94520

018-060-013 Frostfire Vineyard II LLC  
15572 Computer Lane  
Huntington Beach, Ca. 92649

Site Address: 1875 Friesen Drive, Angwin

Contact: Davie Pina, @ 944-2229 Pina Vineyard Management  
PO Box 373  
Oakville, Ca. 94562

Drew L. Aspegren, P. E. @ 963-4927  
Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574

Mapping: Napa County GIS Data (2002)

Implementation Schedule: Work may begin during the first growing season after project approval and may be phased over several years. Preplant and planting year operations may be conducted simultaneously in different parts of the proposed vineyard or they may be conducted during the same year. The work will be scheduled as follows:

Year P-1	Clearing, rock and root removal, stacking vegetation for burning or other disposal, ripping, disking, installing appropriate permanent erosion control measures prior to vineyard layout, staking and installation of drip system, installing temporary erosion control measures. Ground disturbing activities shall be complete by Sept 1, and complete winterization, including seeding and mulching, shall be complete by September 15.
April 1 thru Sept 15	

Rainy Season	Maintain erosion control measures, burning as allowed by government agencies.
Sept 15 thru March 31	

Year P	Complete unfinished pre-plant operations. Plant vineyard and begin cultural practices (refer to cultivation chart below). Maintain all erosion control features.
April 1 thru Sept 1	

### Cover Cropping and Cultivation Practices

Year	Cultivation during growing season	Cover Crop, planted/maintained at end of growing season
Pre-plant (P-1)	rip and disk	winter cover crop, mulch
Fallow Year	mow	winter cover crop, mulch
Planting (P)	full till	winter cover crop, mulch
P+1 Forward	alternate row till	alternate row cover crop, mulch

All ground disturbing activities shall be completed by September 1 of each year, and all erosion control measures shall be in place by September 15.

Seeding Requirements: All exposed or disturbed soils shall be seeded. Seed and fertilizer shall be applied by broadcasting methods at the rates specified below:

Davis Estate Mix @ 100 lbs/ac	Barley	45%
	Annual Rye Grass	45%
	Crimson Clover	10%

On all vineyard avenues/turnspaces which are not rocked, "Fawn" tall fescue shall be added to the mix @ 5 lbs/ac.

Fertilizer : Ammonium phosphate sulfate (16-20-0) 200-240 lbs/ac

An alternate seed mix and/or fertilizer may be used after review and approval by Napa County.

Straw Mulch shall be spread over all disturbed and seeded areas. The mulch shall be spread mechanically or by hand at the rate of 2 tons/acre.

Fiber Rolls shall be installed at the locations shown on the plan in accordance with the appropriate detail. Fiber Rolls shall be maintained through the winter after planting, after which they may be removed.

Diversion Ditches shall be constructed where shown in accordance with the detail. Ditch flowline shall be sloped to drain at 2 to 4%.

Rock Stabilization shall be constructed using RSP in the low spots located within the perimeter avenues, in accordance with the detail. Some are shown in the plan.

Rolling Dips shall be constructed where shown with the outboard direction and in accordance with the detail.

Water Bars shall be constructed where shown in the Plan, in accordance with the appropriate detail. Water bars shall remain as permanent structures and shall be reshaped as necessary prior to each rainy season.

Maintenance: A winter cover crop shall be planted within the Blocks in the fall immediately after planting. (refer to cultivation chart under Project Notes). NO PREEMERGENT SPRAYS SHALL BE USED, but springtime applications of post-emergent contact sprays may be used by spot spraying around the vines. As a normal cultural practice, alternate vineyard middles may be disked/tilled annually. No later than September 15, the disked/tilled middles shall be reseeded, using broadcasting methods, and straw mulched at 2 tons/acre. Every year, the tilled/non-tilled middles may be rotated, resulting in an "alternate middle-alternate year" cultivation scheme (refer to cultivation chart under Project Notes). Optimally, a ground cover of 80% or greater will be obtained each winter.

Annual Winterization: No later than September 15 each year, the following winterization shall be completed:

- 1) The condition of the cover crop shall be evaluated, including areas outside the vineyard, and the suitability and effectiveness of the seed mix shall be evaluated. Weak areas shall be reseeded as necessary; if addition of soil amendments is indicated, they shall be incorporated and those areas shall be seeded and mulched.
- 2) All roads and avenues/turnspaces which are not rocked or paved shall be seeded as needed and mulched, and shall remain undisturbed throughout the rainy season.
- 3) All ditches and existing culverts shall be inspected, cleaned and/or repaired as necessary.
- 4) All other existing erosion control and drainage features shall be inspected, cleaned and/or repaired as necessary.

All erosion control measures shall be inspected after each storm event, and repairs shall be promptly performed.

## Special Notes

1) Bats: The following bat avoidance measures shall be implemented prior to the commencement of vineyard development and implementation activities:

A qualified biologist shall conduct a habitat assessment for potential suitable habitat within six months of project activities. If the habitat assessment reveals suitable habitat, a qualified biologist shall conduct a presence/absence survey during peak activity periods. If bats are found to be present during peak activity periods, the qualified biologist shall submit an avoidance plan to the County and California Department of Fish and Wildlife (DFW) for approval. The avoidance plan should evaluate the length of time disturbance, equipment noise and type of habitat present at the Project site. In the event the bat avoidance measures required by DFW result in a reduction or modification of vineyard block boundaries, the erosion control plan shall be revised by the applicant/engineer and submitted to the County.

2) Raptors: The following raptor preconstruction survey(s) shall be conducted prior to the commencement of vineyard development and implementation activities:

For earth-disturbing activities occurring between April 1 through September 15, a qualified wildlife biologist shall conduct preconstruction surveys for special status birds and their nests within 500-feet of earth moving activities. The preconstruction survey shall be conducted no more than 14 days prior to vegetation removal and ground disturbing activities are to commence (surveys shall be conducted a minimum of 3 separate days during the 14 days prior to disturbance).

If active nests are found during a preconstruction survey, a 300-foot disturbance buffer shall be created around active raptor nests and a 50-foot buffer zone shall be created around the nests of all other birds during the breeding/nesting season, or until it is determined by a qualified biologist that all young have fledged. These buffer zones may be modified in coordination with DFW based on existing conditions at the project site. Buffer zones shall be fenced with temporary construction fencing and remain in place until the end of the breeding season or until young have fledged.

If a 15 day or greater lapse of project-related work occurs during the breeding season, another bird preconstruction survey and consultation with DFW will be required before project work can be reinitiated.

REV. 5 3-13-15 REVISED PER NCRCD COMMENTS OF 2-2-15  
REV. 4 1-21-15 REVISED PER HYDROLOGY REPORT  
REV. 3 11-26-14 REVISED PER NAPA COUNTY COMMENTS OF 11-21-14  
REV. 2 10-23-14 REVISED PER NCRCD COMMENTS OF 5-22-14  
AND NAPA COUNTY COMMENTS OF 8-8-14  
REV. 1 1-21-14 REVISED PER NAPA COUNTY COMMENTS OF 11-22-13

## Legend

(0.52)	AREA & ACREAGE WITH SLOPES GREATER THAN 30%
	BLOCK BOUNDARY
	AVENUE/TURNSPACE
	VINEYARD BOUNDARY (APPROX.)
②	DETAIL 1, SHEET 2
(E)	EXISTING
	FIBER ROLL
MSB	MINIMUM SETBACK
P	PLANTING YEAR
	PROPERTY LINE APPROXIMATE LOCATION
	ROCK DISPOSAL AREA
	ROLLING DIP
SCS	SOIL CONSERVATION SERVICE
139	SCS SOIL MAPPING UNIT
S	SCS SOIL TYPE BOUNDARY
TOB	TOP OF BANK
	WATER BAR
X	WILDLIFE EXCLUSION FENCE

DAVIS FAMILY ESTATE  
FRIESEN VINEYARD  
EROSION CONTROL PLAN  
FOR NEW VINEYARD

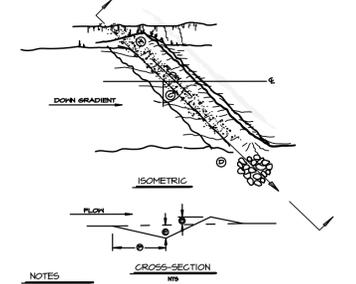
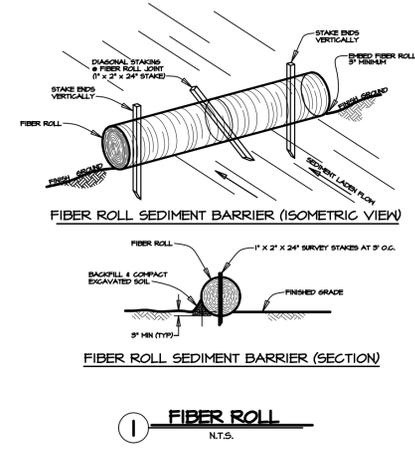
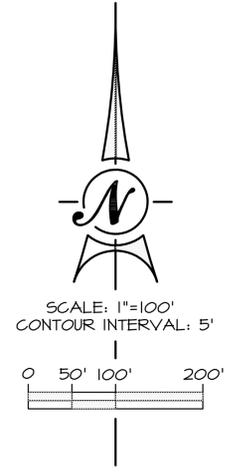
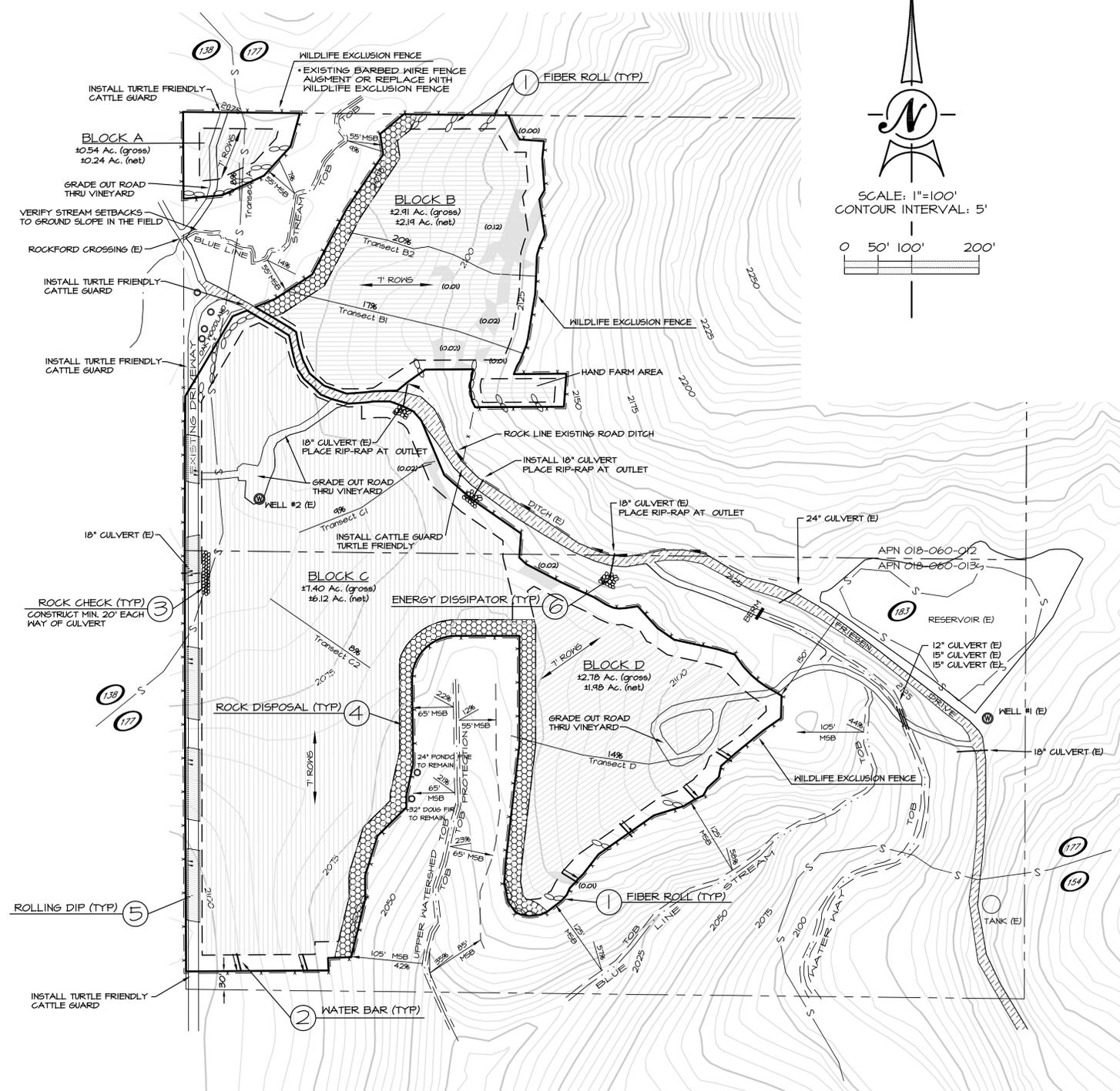
Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574  
(707) 963 4927



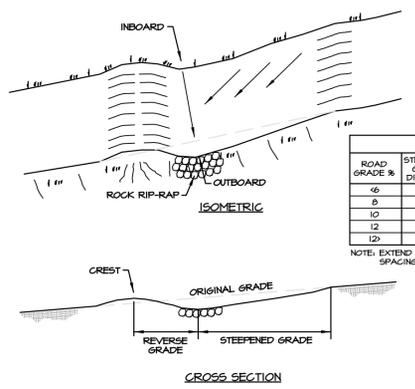
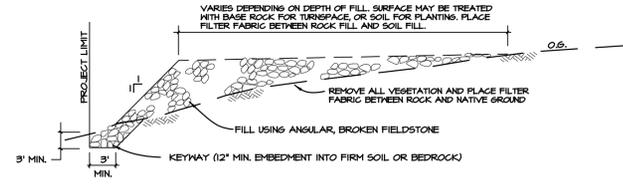
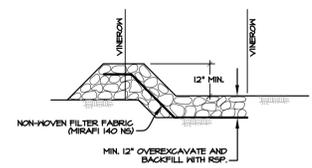
DREW L. ASPEGREN, PE  
R.G.E. 31418

October 22, 2013  
DATE

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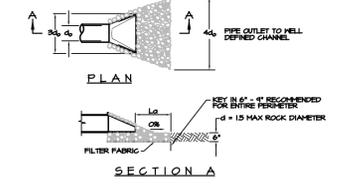


NOTES  
 Waterbar construction for little or no traffic. Specifications are coverage and shall be adjusted to conditions.  
 1 Tie-in to bank if appropriate.  
 2 Cross drain berm height 4\"/>



ROAD GRADE #	STEPPED GRADE DISTANCE	REVERSE GRADE DISTANCE	INBOARD DEPTH	OUTBOARD DEPTH
6	5'	15'-20'	0.3'	0.4'
8	6.5'	15'-20'	0.2'	1.0'
10	7.5'	15'-20'	0.01'	1.1'
12	8.5'	20'-25'	0.01'	1.2'
12	10.0'	20'-25'	0.01'	1.3'

NOTE: EXTEND CREST GRADE TO NATURAL GRADE 10'-20'. SPACING BETWEEN ROLLING DIPS 150'



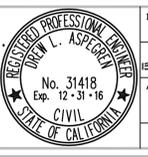
PIPE DIAMETER INCHES	DISCHARGE FT <sup>3</sup> /S	APRON LENGTH L <sub>a</sub> FT	RIP RAP D <sub>50</sub> DIAMETER INCHES
12	5	10	4
	10	15	6
15	10	15	6
	20	20	8
	30	25	10
	40	25	12
24	30	16	8
	40	20	10
	50	25	12
	60	30	15

TOPOGRAPHIC MAPPING FROM NAPA COUNTY GIS DATABASE (2002)

REV.	DESCRIPTION	BY	DATE
5	REVISIONS PER NCRCD COMMENTS ON 2-2-15	DLA	3-13-15
4	REVISIONS PER HYDROLOGY REPORT	DLA	1-21-15
3	REVISIONS PER NAPA COUNTY COMMENTS OF 11-21-14	DLA	11-26-14
2	REVISIONS PER NCRCD COMMENTS ON 5-22-14 AND NAPA COUNTY COMMENTS OF 8-9-14	DLA	10-23-14
1	REVISIONS PER NAPA COUNTY COMMENTS ON 11-22-13	DLA	1-21-14

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Napa Valley Vineyard Engineering, Inc.  
 176 Main St., Suite B  
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 (707) 963 4927



DATE	SCALE	
10-22-13	AS SHOWN	
DRAWN	CHECKED	
DRBEPD\davisfriesen.dwg	JRJ	DLA
APPROVED		
DREN L. ASPEGREN, PE	R.C.E. 31418	

DAVIS FAMILY ESTATE  
 FRIESEN VINEYARD

EROSION CONTROL  
 PLAN, DETAILS, NOTES

SHEET  
**2**  
 OF 2

# APPENDIX A

## Plants and Animals Observed Associated With The Project Site

### PLANTS

The nomenclature for the list of plants found on the project site and the immediate vicinity follows: Brodo, Irwin M., Sylvia Duran Sharnoff and Stephen Sharnoff, 2001, for the lichens; S Norris and Shevrock - 2004, for the mosses; Doyle and Stotler - 2006 for liverworts and hornworts and Baldwin, B.G., D.H. Goldman, D.J.Keil, R.Patterson, T.J.Rosati, and D.H.Wilkins, editors, 2012 - for the vascular plants.. The plant list is organized by major plant group.

**Habitat type** indicates the general associated occurrence of the taxon on the project site or in nature.

**Abundance** refers to the relative number of individuals on the project site or in the region.

<b><u>MAJOR PLANT GROUP</u></b>		
<b>Family</b>		
<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @= Voucher Specimen

### CYANOBACTERIA

<i>Nostoc</i> ssp.	On Soil	Common
NCN		

### FUNGI

#### Basidiomycota- Club Fungi

#### HYMENOGASTRALES

<i>Rhizopogon</i> ssp.	Woodlands	Common
False Truffle		

#### HYDNACEAE

<i>Auriscalpium vulgare</i>	Woodlands on Doug Fir Cones	Common
Ear Pick Fungus		
<i>Dentinum repandum</i>	Coastal Pine Woodlands	Common
Hedgehog Mushroom		
<i>Hericium erinaceus</i>	On Hardwoods	
Occasional		
Lion's mane		

#### POLYPORACEAE

<i>Laetiporus conifericola</i>	On Dead Logs and Stumps	Common
Sulfur Shelf; Chicken of the Woods		
<i>Phaeolus schweinitzii</i>	Woodlands Parasite of D Fir	Common
Dyer's Polypore		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @ = Voucher Specimen

<i>Schizophyllum commune</i> Split-gill	Woodlands on Dead Wood	Common
<i>Stereum hirsutum</i> False Turkey Tail	Woodlands on Dead Wood	Common

**FUNGI****Ascomycota - Sac Fungi**

## HELVELLACEAE

<i>Morchella deliciosa</i> White Morel	Edge of Woodlands	Occasional
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**MOSSES**

## MINACEAE

<i>Alsia californica</i> (W.J.Hooker&Arnott) NCN	Sullivant Coastal Forests	On Trees Common
<i>Dendroalsia abietina</i> (Hook.) Brit. NCN	Woodlands	Common
<i>Fontinalis antipyretica</i> Hedw. NCN	In Stream on Property	Common
<i>Funaria hygrometrica</i> Hedw. NCN	Ruderal, Burned Areas	Common
<i>Grimmia leibergii</i> Paris NCN	On exposed Rocks	Common
<i>Hedwigia stellata</i> Hedenas NCN	Grasslands on Rocks	Common
<i>Homalothecium nuttallii</i> (Wilson) NCN	Jaeger Epiphytic on Trees	Common
<i>Orthotrichum lyellii</i> Hook & Tayl. NCN	Woodlands, Upper Canopy	Common
<i>Polytrichum juniperinum</i> Hedw. Occasional	Woodlands	
Haircap Moss		
<i>Scleropodium touretii</i> (Brid.) L Koch. NCN	Woodlands	Common

**LIVERWORTS: "COMPLEX THALLOID"**

## TARGIONIACEAE

<i>Targionia hypophylla</i> L. NCN	On Cut Banks	Common
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**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @ = Voucher Specimen

**LICHENS****FOLIOSE**

<i>Ahtiana pallidula</i> (Tuck. ex Riddle) Goward & A. Thel	Limbs	Occasional
NCN		
<i>Flavoparmelia caperata</i> (L.) Hale	On Oaks	Common
NCN		
<i>Flavopunctilia flaventor</i> (Stirt.) Hale	On Oaks	Common
NCN		
@ <i>Melanelixia glabera</i> (Scher.) Essl.	On Oaks	Common
California Camouflage Lichen	NCN (= <i>Melanelia</i> )	
@ <i>Hypogymnia imshaugii</i> Krog	On Conifers, Oaks	Common
NCN		
@ <i>Hypogymnia tubulosa</i> (Schaer.) Hav.	On Oaks, Conifers	Common
NCN		
<i>Parmelia sulcata</i> Taylor	On Oaks	Common
NCN		
@ <i>Physcia adscendens</i> (Fr.) H. Olivier	On Oaks	Common
NCN		
<i>Physconia americana</i> Essl.	On Oak Limbs	Common
Fancy Frost Lichen		
<i>Pseudocyphellaria anthraspis</i> (Ach.) H. Magn.	On Oaks	Common
NCN		
<i>Vulpicidia canadensis</i> (Räsänen) J.-E. Mattsson & M. J. Lai	On Conifers	Occasional
Brown-eyed sunshine lichen		
<i>Xanthoparmelia mexicana</i> (Gyeln.) Hale	On Rocks	Common
NCN		
@ <i>Xanthoria polycarpa</i> (Hoffm.) Rieber	On Oaks Young Twigs	Common
Pin-cushion Sunburst Lichen		

**UMBILICATE**

<i>Umbilicaria phaea</i> Tuck.	On Rocks	Common
NCN		

**FRUTICOSE**

<i>Cladonia</i> ssp.	On Soil	Common
NCN		
@ <i>Cladonia pyxidata</i> (L.) Hoffm.	On Soil	Occasional
NCN		
@ <i>Evernia prunastri</i> (L.) Ach.	On Oaks	Common
NCN		
@ <i>Letharia vulpina</i> (L.) Hue	On Old Manzanita	Occasional
Wolf lichen		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @ = Voucher Specimen

*Ramalina farinacea* (L.) Ach. On Oaks Common

NCN

@*Teloschistes chrysophthalmus* (L.) Th. Fr. On Oaks Common

NCN

@*Usnea intermedia*=*U. arizonica* On Oaks Common

NCN

**CRUSTOSE**

*Leicidia atrobrunnea* (Ramond ex Lam. & DC.) Schaer. On Rocks Common

NCN

*Leicidia tessellata* Flörke On Rocks With Rings of Apothecia Common

NCN

*Pertusaria armara* (Ach.) Nyl. On Oaks Common

NCN

**VASCULAR PLANTS FERNS****PTERIDACEAE**

*Pentagramma triangularis* (Kaulf.) G. Yatsk. subsp. *triangularis* Woodlands Common

Goldback Fern

**VASCULAR PLANTS DIVISION CONIFEROPHYTA--GYMNOSPERMS****PINACEAE**

*Pinus ponderosa* Laws. Woodlands-Planted Occasional

Ponderosa Pine

*Pinus sabiniana* Douglas Dry Ridges Occasional

Gray or Foothill Pine

*Pseudotsuga menziesii* (Vassey) Mayr var. *menziesii* Woodlands Common

Douglas fir

**VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS****CLASS--DICOTYLEDONAE- TREES****MAGNOLIIDS****LAURACEAE**

*Umbellularia californica* (Hook. & Arn.) Nutt. Conifer & Oak Woodlands Occasional

California Laurel, Sweet Bay, Pepperwood, California Bay

**EUDICOTS****ERICACEAE Heath Family**

*Arbutus menziesii* Pursh Woodlands Common

Madrone

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @ = Voucher Specimen

## FAGACEAE Oak Family

<i>Quercus douglasii</i> Hook.&Arn.	Woodlands	Common
Blue Oak (Hybridizes with <i>Q. garryana</i> and <i>Q. lobata</i> )		
<i>Quercus kelloggii</i> Newb.	Woodlands	Common
Black Oak		
<i>Quercus lobata</i> Nee.	Valley Grasslands	One
Valley Oak		
<i>Quercus wislizenii</i> A.D.C.	Woodlands	Occasional
Interior Live Oak		

## SAPINDACEAE Soapberry Family

<i>Acer macrophyllum</i> Prush	Riparian, Stream Banks, Canyons	Common
Big-leaf Maple		
<i>Aesculus californica</i> (Spach) Nutt.	Woodlands, Riparian	Common
California Buckeye		

**VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS****CLASS--DICOTYLEDONAE-SHRUBS AND WOODY VINES****MAGNOLIIDS**

## ADOXACEAE Muskroot Family

<i>Sambucus nigra</i> subsp <i>caerulea</i> (Raf.) Bolli	Shrub/Scrub	Occasional
Blue Elderberry (= <i>S. mexicana</i> , <i>S. caerulea</i> )		

## ARISTOLOCHIACEAE Pipevine Family

<i>Aristolochia californica</i> Torrey	Woodlands	Occasional
Dutchman's Pipe, Pipevine		

**EUDICOTS**

## ANACARDIACEAE Sumac Family

<i>Toxicodendron diversilobum</i> (Torrey&Gray) E.Green	Woodlands	Common
Poison Oak		

## ASTERACEAE (Compositae) Sunflower Family

<i>Baccharis pilularis</i> deCandolle	Woodlands, Grasslands	Common
Coyote Brush		

## BORAGINACEAE Borage or Waterleaf Family

<i>Eriodictyon californicum</i> (Hook.&Arn.) Torr.	Chaparral	Common
Yerba Santa		

## CAPRIFOLIACEAE Honeysuckle Family

<i>Lonicera interrupta</i> Bentham	Woodlands	Occasional
Chaparral Honeysuckle		
<i>Symphoricarpos albus</i> (L.) SF Blake var. <i>laevigatus</i>	Riparian, Shrub/Scrub	Common
Snowberry		
	Woodlands	

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @ = Voucher Specimen

<i>Symphoricarpos mollis</i> Nuttall	Woodlands	Common
Creeping Snowberry, Trip Vine		
ERICACEAE Heath Family		
<i>Arctostaphylos manzanita</i> Parry ssp. <i>manzanita</i>	Woodlands	Common
Common Manzanita		
<i>Arctostaphylos stanfordiana</i> C. Parry ssp. <i>stanfordiana</i>	Chaparral	Common
Stanford Manzanita		
FABACEAE (Leguminosae) Legume Family		
<i>Pickeringia montana</i> Nutt.	Chaparral	Common
Chaparral Pea		
FAGACEAE Oak Family		
<i>Quercus berberidifolia</i> Liebm.	Chaparral	Common
California Scrub Oak		
PHRYMACEAE Lopseed Family		
* <i>Genista monspessulana</i> (L.) Johnson	Woodlands	Common
Broom, French Broom		
<i>Mimulus aurantiacus</i> Curtis	Woodlands	Occasional
Bush Monkey Flower		
RHAMNACEAE Buckthorn Family		
<i>Ceanothus cuneatus</i> Nutt. var. <i>cuneatus</i>	Chaparral	Common
Buckbrush		
<i>Ceanothus foliosus</i> Parry var. <i>foliosus</i>	Chaparral	Common
Wavyleaf Ceanothus		
<i>Ceanothus intergerrimus</i> Hook.& Arn. var. <i>integerrimus</i>	Chaparral	Common
Deer Brush		
<i>Frangula californica</i> (Eschsch.) A.Gray ssp. <i>californica</i>	Shrub/Scrub	Common
California Coffee Berry (= <i>Rhamnus californica</i> )		
ROSACEAE Rose Family		
<i>Adenostoma fasciculatum</i> Hooker&Arn.	Shrub/Scrub	Common
Chamise		
@ <i>Cercocarpus betuloides</i> Nutt. var. <i>betuloides</i>	Shrub/Scrub, Chaparral	Common
Mountain-mahogany		
* <i>Cotoneaster frigidus</i> Lindl.	Ruderal	Common
Tree Cotoneaster		
<i>Heteromeles arbutifolia</i> (Lind.) M. Rome.	Shrub/Scrub	Common
Christmas Berry, Toyon		
<i>Rosa californica</i> Cham.& Schlidl.	Grasslands, Edge of Woodlands	Common
Rose		
* <i>Rubus armeniacus</i> Focke	Ruderal	Common
Himalayan Blackberry		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

NCN = No Common Name, \* = Non-native, @ = Voucher Specimen

**VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS****CLASS--DICOTYLEDONAE-HERBS****EUDICOTS**

## APIACEAE (Umbelliferae) Carrot Family

<i>Lomatium repostum</i> (Jeps.) Mathias	Chaparral	Rare
Napa County Lomatium		
<i>Osmorhiza bertoli</i> DC.	Woodlands, Ruderal	Common
Sweet Cicely (= <i>Osmorhiza chilense</i> )		
<i>Sanicula crassicaulis</i> DC.	Woodlands	Common
Pacific Sanicle		
* <i>Torilis arvensis</i> (Huds.) Link	Grasslands Woodlands	Common
Hedge-parsley		

## ASTERACEAE (Compositae) Sunflower Family

<i>Achyrachaena mollis</i> Schauer	Grasslands	Occasional
Blow-wives		
<i>Arnica discoidea</i> Benth.	Chaparral, Foothill Woodland	Occasional
Rayless Arnica		
* <i>Carduus pycnocephalus</i> L. subsp. <i>pycnocephalus</i>	Woodlands	Common
Italian Thistle		
* <i>Centaurea solstitialis</i> L.	Grasslands, Ruderal	Common
Yellow Star Thistle		
* <i>Cichorium intybus</i> L.	Ruderal	Occasional
Chicory		
* <i>Cirsium vulgare</i> (Savi) Ten.	Grasslands, Ruderal	Common
Bull Thistle		
<i>Gamochaeta ustulata</i> (Nutt.) Holub.	Ruderal, Grasslands	Common
Purple Cudweed (= <i>Gnaphalium purpureum</i> )		
<i>Helianthella californica</i> A. Gray var. <i>californica</i>	Open Grass Areas	Occasional
California Helianthella		
<i>Hieracium albiflorum</i> Hook.	Woodlands, Grasslands	Occasional
White-flowered Hawkweed		
* <i>Hypochaeris glabra</i> L.	Ruderal	Common
Cat's Ear		
@ <i>Lasthenia californica</i> Lindl. ssp. <i>californica</i>	Grasslands	Common
Goldfields		
<i>Micropus californicus</i> var. <i>californicus</i> Fisch.&C.A.Mey	Grasslands, On Roads	Occ.
Slender Cottonweed		
<i>Microseris laciniata</i> (Hook.) Sch.Bip.	Grasslands, Ruderal	Occasional
NCN		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
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* <i>Senecio vulgaris</i> L.	Ruderal	Occasional
NCN		
* <i>Sonchus asper</i> (L.) Hill var. <i>asper</i>	Ruderal	Common
Prickly Sow Thistle		
* <i>Sonchus oleraceus</i> L.	Ruderal	Common
Common Sow Thistle		
* <i>Taraxacum officinale</i> F.H.Wigg	Ruderal	Common
Dandelion		
@ <i>Uropappus lindleyi</i> (DC.) Nutt.	Ruderal Grasslands	Common
Silver Puffs		
<i>Wyethia glabra</i> A.Gray	Edge of Woodlands	Common
Coast Mules Ears		
BORAGINACEAE Borage or Waterleaf Family		
<i>Cyanoglossum grande</i> Lehm.	Woodlands	Common
Hound's Tongue		
<i>Plagiobothrys bracteatus</i> (Howell) I.M.Johnst.	Grasslands, Moist areas	Common
Bracted Popcorn Flower		
<i>Plagiobothrys nothofulvus</i> (A.Gray) A. Gray	Grasslands, Woodlands	Common
Popcorn Flower		
BRASSICACEAE Mustard Family		
<i>Cardamine oligosperma</i> Nutt.	Ruderal	Common
Bitter-cress		
<i>Rorippa palustreis</i> L. var. <i>hispida</i>	Wet Woods Depressions	Common
Bog Yellow Cress		
CARYOPHYLLACEAE Pink Family		
* <i>Stellaria media</i> (L.) Vill.	Ruderal	Common
Chickweed		
CONVOLVULACEAE Morning-glory Family		
<i>Calystegia occidentalis</i> (A.Gray) Brum. subsp. <i>occidentalis</i>	Chaparral, Woodlands	Occ.
Morning-glory		
CRASSULACEAE Stoncrop Family		
<i>Dudleya cymosa</i> (Lem. Britt.&Rose) subsp. <i>cymosa</i>	Rock Outcrops	Occasional
NCN		
EUPHORBIACEAE Spurge Family		
<i>Croton setigerus</i> Hook.	Ruderal	Common
Turkey Mullein, Dove Weed (= <i>Eremocarpus setigerus</i> )		
FABACEAE (Leguminosae) Legum Family		
<i>Acmispon brachycarpus</i> (Benth.) Sokoloff	Grasslands, Ruderal	Common
NCN (= <i>Lotus humistratus</i> )		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

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<i>Acmispon micranthus</i> (Torr.&A. Gray)	Grasslands, Ruderal	Common
Small Flowered Lotus (= <i>Lotus micranthus</i> )		
<i>Hosackia crassifolia</i> Benth var. <i>crassifolia</i>	Along Roads Chaparral	Occasional
NCN (= <i>Lotus crassifolia</i> )		
* <i>Lotus corniculatus</i> L.	Grasslands, Ruderal	Common
Birdfoot Trefoil		
<i>Lupinus bicolor</i> Lindl.	Grassland	Common
Miniature lupine		
<i>Lathyrus vestitus</i> Nutt. var. <i>vestitus</i>	Woodlands	Occasional
Hillside Pea		
* <i>Medicago arabica</i> (L.) Huds	Ruderal	Common
Spotted Bur Clover		
* <i>Trifolium hirtum</i> All.	Ruderal	Common
Rose Clover		
* <i>Vicia sativa</i> L. subsp. <i>nigra</i>	Grasslands, Ruderal	Common
Narrow Leaved-vetch		
GERANIACEAE Geranium Family		
* <i>Erodium botrys</i> (Cav.) Bertol.	Grasslands	Common
Broadleaf Filaree, Long-beaked Filaree		
* <i>Geranium dissectum</i> L.	Grasslands	Common
Common Geranium		
HYPERICACEAE St John's Wort Family		
* <i>Hypericum perforatum</i> L. subsp. <i>perforatum</i>	Ruderal/Grasslands	Occasional
Klamath Weed		
LAMIACEAE (Labiatae) Mint Family		
<i>Monardella viridis</i> Benth. subsp. <i>viridis</i>	Chaparral	Occasional
Green Monardella		
<i>Stachys ajugoides</i> Benth.	Moist Open Places	Occasional
Hedge-nettle		
LIMNANTHACEAE Meadowfoam Family		
<i>Limnanthes douglasii</i> R.Br. subsp. <i>douglasii</i>	Wet Meadows	Occasional
Meadow Foam		
MONTIACEAE Miner's lettuce Family		
<i>Claytonia perfoliata</i> Willd. ssp. <i>perfoliata</i>	Woodlands, Riparian	Common
Miners Lettuce		
<i>Montia fontana</i> L.	Palustrine	Common
Water Chickweed, Blinks		
ONAGRACEAE Evening-primrose Family		
<i>Clarkia amoena</i> (Lehm.) Nels.&Macbr. subsp. <i>huntiana</i>	Grasslands	Common
Farewell to Spring		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

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<i>Clarkia purpurea</i> (Curtis) Nels.&Macbr. subsp. <i>quadrivulnera</i>	Grasslands	Common
Godetia, Wine-cup Clarkia		
OROBANCHACEAE Broomrape Family		
<i>Castilleja attenuata</i> (A.Gray) Chuang&Heckard	Grasslands	Common
Valley Tassels		
@ <i>Castilleja densiflora</i> (Benth.) Chuang& Heckard subsp. <i>densiflora</i>	Chaparral	Com.
Owl's Clover		
<i>Castilleja foliolosa</i> Hook&Arn.	Chaparral	Common
Chaparral Paintbrush, Wooley Indian Paintbrush		
<i>Pedicularis densiflora</i> Hook.	Woodlands, Chaparral	Common
Indian Warrior		
<i>Triphysaria eriantha</i> (Benth.) Chuang&Heckard subsp. <i>eriantha</i>	Grassland	Common
Butter and Eggs		
PLANTAGINACEAE Plantain Family		
<i>Collinsia heterophylla</i> Graham var. <i>heterophylla</i>	Woodlands, Grasslands	Occasional
Chinese Houses		
<i>Collinsia sparsiflora</i> Fisch&Mey var. <i>sparsiflora</i>	Grasslands	Occasional
Blue-eyed Mary		
@ <i>Penstemon heterophyllus</i> Lindl. var. <i>heterophyllus</i>	Chaparral, Grassland	Occasional
Penstemon		
<i>Plantago erecta</i> E.Morris	Grassland, Open Woodland	Common
California Plantain		
* <i>Plantago lanceolata</i> L.	Ruderal	Common
English Plantain		
POLEMONIACEAE Phlox Family		
@ <i>Leptosiphon bicolor</i> Nutt.	Grassland, Chaparral- Open Areas	Occasional
NCN (= <i>Linanthus</i> )		
@ <i>Navarretia pubescens</i> (Benth.) Hook.&Arn.	Open Slopes Grasslands	Common
Downey Navarretia		
<i>Navarretia squarrosa</i> (Eschsch.) Hook.&Arn.	Ruderal, Grasslands	Common
Skunkweed		
POLYGONACEAE Buckwheat Family		
* <i>Polygonum agryrocoleon</i> Kunze	Ruderal Wet Ground	Occasional
Persian Wireweed		
@ <i>Polygonum bolanderi</i> W.H. Brewer	Open Dry Rockey, Chaparral	Common
Bolander's Knotweed-Perennial Shrub		
* <i>Rumex acetosella</i> L.	Ruderal	Common
Sheep Sorrel		
* <i>Rumex crispus</i> L.	Ruderal	Common
Curly Dock		

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
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## PHRYMACEAE Lopseed Family

@ <i>Mimulus angustatus</i> (A.Gray) A.Gray	Wet Depressions Vernal Pools	Occasional
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Pansy Monkey Flower

<i>Mimulus brevipfloris</i> DC.	Moist Areas	Common
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Common Monkey Flower

<i>Mimulus guttatus</i> DC.	Moist Areas	Common
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Common Monkey Flower

## POLYGALACEAE Milkwort Family

<i>Polygala californica</i> Nutt.	Woodlands, Shrub/Scrub	Occasional
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Milkwort

## PRIMULACEAE Primrose Family

<i>Dodecatheon hendersonii</i> A. Gray	Woodlands	Common
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Shooting Star, Mosquito Bills

## RANUNCULACEAE Buttercup Family

<i>Ranunculus californicus</i> Benth.	Grasslands, Woodlands	Common
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Buttercup

## ROSACEAE Rose Family

<i>Fragaria vesca</i> L.	Woodlands/Grasslands	Common
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Wood Strawberry

## RUBIACEAE Madder Family

<i>Galium aparine</i> L.	Woodlands, Riparian, Ruderal	Common
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Goose Grass

@* <i>Galium divaricatum</i> Lam.	Grasslands	Occasional
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Lamarck's Bedstraw, Tiny Bedstraw

* <i>Galium parisiense</i>	Grasslands, Woodlands	Common
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Wall Bedstraw

## SCROPHULARIACEAE Figwort Family

* <i>Verbascum thapsus</i> L.	Ruderal	Occasional
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Wooley Mullein

## VISCACEAE Mistletoe Family

<i>Phoradendron serotinum</i> (Raf.) Johnst. subsp. <i>tomentosum</i>	Woodlands	Common
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Oak Mistletoe

## VIOLACEAE Violet Family

<i>Viola pedunculata</i> Torr.&A. Gray	Woodlands	Occasional
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Johnny-jump-up

**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
<b>Common Name</b>		

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**VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS****CLASS--MONOCOTYLEDONAE-GRASSES**

## POACEAE Grass Family

* <i>Aira caryophylla</i> L. Silver European Hairgrass	Grassland	Common
* <i>Avena fatua</i> L. Wild Oat	Grasslands	Common
* <i>Briza minor</i> L. Small Quaking Grass	Grasslands, Ruderal	Common
* <i>Bromus diandrus</i> Roth Ripgut Grass	Ruderal, Grasslands	Common
* <i>Bromus hordeaceus</i> L. Soft Chess, Blando Brome	Grasslands	Common
* <i>Bromus madritensis</i> L. ssp. <i>rubens</i> Foxtail Chess	Grasslands, Ruderal	Common
* <i>Cynosurus echinatus</i> L. Hedgehog, Dogtail	Ruderal	Common
<i>Elymus glaucus</i> Buckley ssp. <i>glaucus</i> Blue Wildrye	Woodlands	Common
* <i>Festuca bromoides</i> L. Six-weeks Fescue (= <i>Vulpia bromoides</i> )	Ruderal, Moist Flats become Dry	Common
<i>Festuca californica</i> Vassey California Fescue	Grasslands, Woodlands	Common
* <i>Festuca myuros</i> L. Rattail Fescue, Zorro Annual Fescue (= <i>Vulpia myuros</i> )	Grasslands	Common
<i>Hordeum brachyantherum</i> Nevski subsp. <i>brachyantherum</i> Meadow Barley	Grasslands	Occasional
<i>Hordeum depressum</i> (Scribn. & Sm.) Rydb Low Barley	Grasslands	Occasional
<i>Melica torreyana</i> Schribn. Torrey's Melic	Woodlands	Occasional
* <i>Phalaris aquatica</i> L. Harding Grass	Grasslands	Common

**VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS****CLASS--MONOCOTYLEDONAE-SEDGES AND RUSHES**

## CYPERACEAE Sedge Family

<i>Cyperus eragrostis</i> Lam. Nut-grass	Ruderal Moist Areas	Common
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**MAJOR PLANT GROUP****Family**

<b>Genus</b>	<b>Habitat Type</b>	<b>Abundance</b>
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<i>Eleocharis macrostachya</i> Britton	Riparian, Aquatic	Common
Spike Rush		
<b>JUNCACEAE</b>		
<i>Juncus acuminatus</i> Michx.	Palustrine	Common
Wire Rush		
<i>Juncus bufonius</i> L.var. <i>bufonius</i>	Ruderal Moist Areas, Grasslands	Common
Toad Rush		
<i>Juncus xiphioides</i> Mey	Grasslands, Seeps	Common
Flat Leafed Rush		
<i>Luzula comosa</i> Mey var. <i>comosa</i>	Grasslands, Woodlands	Common
Wood Rush		
<b><u>VASCULAR PLANTS DIVISION ANTHOPHYTA --ANGIOSPERMS</u></b>		
<b><u>CLASS--MONOCOTYLEDONAE-HERBS</u></b>		
<b>AGAVACEAE</b> Centuray Plant Family		
<i>Chlorogalum pomeridianum</i> (DC.) Kunth var. <i>pomeridianum</i>	Woodlands, Grasslands	
Soap Plant		
Common		
<b>ALISMATACEAE</b> Water-plantain Family		
<i>Alisma triviale</i> Pursh	Aquatic	Common
Water Plantain (= <i>Alisma plantago-aquatica</i> )		
<b>ALLIACEAE</b> Onion or Garlic Family		
<i>Allium amplexans</i> Torr.	Grassland	Common
Wild Onion		
<b>IRIDACEAE</b> Iris Family		
<i>Iris macrosiphon</i> Torr.	Sunny Woody or Grassy Hillsides	Occasional
Long-tubed Iris		
<i>Sisyrinchium bellum</i> Watson	Grasslands	Common
Blue-eyed Grass		
<b>LILIACEAE</b> Lily Family		
<i>Calochortus albus</i> (Benth.) Benth.	Chaparral SNF	Occasional
White Globe Lily Fairy Lantern		
<i>Calochortus amabilis</i> Purdy	Grasslands, Woodlands	Occasional
Yellow Globe Lily, Diogenes' Lantern		
<b>THEMIDACEAE</b> Brodiaea Family		
<i>Dichelostemma capitatum</i> (Benth.)	Wood Grasslands, Open Woodlands	Occasional
Blue Dicks		
<i>Triteleia laxa</i> Greene	Grasslands	Occasional
Ithuriel's Spear		

## Fauna Species Observed in the Vicinity of the Project Site

The nomenclature for the animals found on the project site and in the immediate vicinity follows: Mc Ginnis –1984, for the fresh water fishes; Stebbins -1985, for the reptiles and amphibians; and Udvardy and Farrand – 1998, for the birds; and Jameson and Peeters - 1988 for the mammals.

### OSTEICHTHYES

#### ORDER

Common Name	Genus	Observed
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### ACTINOPTERYGII

Green Sunfish	<i>Lepomis cyanellus</i>	X
Largemouth Bass	<i>Micropterus salmoides</i>	X

### AMPHIBIA AND REPTILIA

#### ORDER

Common Name	Genus	Observed
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### SQUAMATA

Western Fence Lizard	<i>Sceloporus occidentalis</i>	X
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### AVES

#### ORDER

Common Name	Genus	Observed
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### AVES

Bullock's Oriole	<i>Icterus bullockii</i>	X
California Quail	<i>Callipepla californica</i>	X
Common Crow	<i>Corvus brachyrhynchos</i>	X
Oregon Junco	<i>Junco oreganus</i>	X

### MAMMALS

#### ORDER

Common Name	Genus	Observed
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### RODENTIA

Pocket Gopher	<i>Thomomys bottae</i>	Sight
Dusky-footed Wood Rat	<i>Neotoma fuscipes</i>	Den

# **APPENDIX B**

**CNPS Special Status-species Listed for the Project Quadrangle and Surrounding Quadrangles**

**U.S. Fish and Wildlife Service Listed Species for the Quadrangle**

**California Wildlife Habitat Relationship System Species Summary Report by Habitat Present**

**California Department of Fish and Wildlife Rare Find 5 Species list for the Quadrangle and Surrounding Quadrangles for Habitat found on the project site**



# Inventory of Rare and Endangered Plants - 7th edition interface

v7-13jul 7-8-13

Status: search results - Wed, Jul. 24, 2013 15:54 ET c

Your Quad Selection: **St. Helena (516C) 3812254**, Yountville (500A) 3812243, Rutherford (500B) 3812244, Calistoga (517D) 3812255, Detert Reservoir (517A) 3812265, Kenwood (501A) 3812245, Chiles Valley (516D) 3812253, Walter Springs (516A) 3812263, Aetna Springs (516B) 3812264

scientific	common	family	CNPS
<u><a href="#">Allium peninsulare</a></u> var. <u><a href="#">franciscanum</a></u>	Franciscan onion	Alliaceae	List 1B.2
<u><a href="#">Alopecurus aequalis</a></u> var. <u><a href="#">sonomensis</a></u>	Sonoma alopecurus	Poaceae	List 1B.1
<u><a href="#">Amorpha californica</a></u> var. <u><a href="#">napensis</a></u>	Napa false indigo	Fabaceae	List 1B.2
<u><a href="#">Amsinckia lunaris</a></u>	bent-flowered fiddleneck	Boraginaceae	List 1B.2
<u><a href="#">Arctostaphylos canescens</a></u> ssp. <u><a href="#">sonomensis</a></u>	Sonoma canescent manzanita	Ericaceae	List 1B.2
<u><a href="#">Arctostaphylos manzanita</a></u> ssp. <u><a href="#">elegans</a></u>	Konocti manzanita	Ericaceae	List 1B.3
<u><a href="#">Arctostaphylos stanfordiana</a></u> ssp. <u><a href="#">decumbens</a></u>	Rincon Ridge manzanita	Ericaceae	List 1B.1
<u><a href="#">Astragalus claranus</a></u>	Clara Hunt's milk-vetch	Fabaceae	List 1B.1
<u><a href="#">Astragalus rattanii</a></u> var. <u><a href="#">jepsonianus</a></u>	Jepson's milk-vetch	Fabaceae	List 1B.2
<u><a href="#">Brodiaea leptandra</a></u>	narrow-anthered brodiaea	Themidaceae	List 1B.2
<u><a href="#">Calycadenia micrantha</a></u>	small-flowered calycadenia	Asteraceae	List 1B.2
<u><a href="#">Castilleja ambigua</a></u> var. <u><a href="#">meadii</a></u>	Mead's owl's-clover	Orobanchaceae	List

			1B.1
<b><u>Ceanothus confusus</u></b> 	Rincon Ridge ceanothus	Rhamnaceae	List 1B.1
<b><u>Ceanothus divergens</u></b> 	Calistoga ceanothus	Rhamnaceae	List 1B.2
<b><u>Ceanothus purpureus</u></b> 	holly-leaved ceanothus	Rhamnaceae	List 1B.2
<b><u>Ceanothus sonomensis</u></b> 	Sonoma ceanothus	Rhamnaceae	List 1B.2
<b><u>Centromadia parryi</u></b> ssp. <b><u>parryi</u></b> 	pappose tarplant	Asteraceae	List 1B.2
<b><u>Cryptantha dissita</u></b>	serpentine cryptantha	Boraginaceae	List 1B.2
<b><u>Downingia pusilla</u></b> 	dwarf downingia	Campanulaceae	List 2B.2
<b><u>Erigeron biolettii</u></b> 	streamside daisy	Asteraceae	List 3
<b><u>Erigeron greenei</u></b>	Greene's narrow-leaved daisy	Asteraceae	List 1B.2
<b><u>Eryngium constancei</u></b> 	Loch Lomond button-celery	Apiaceae	List 1B.1
<b><u>Eryngium pinnatisectum</u></b> 	Tuolumne button-celery	Apiaceae	List 1B.2
<b><u>Fritillaria liliacea</u></b> 	fragrant fritillary	Liliaceae	List 1B.2
<b><u>Fritillaria pluriflora</u></b> 	adobe-lily	Liliaceae	List 1B.2
<b><u>Harmonia hallii</u></b> 	Hall's harmonia	Asteraceae	List 1B.2
<b><u>Hesperolinon bicarpellatum</u></b>	two-carpellate western flax	Linaceae	List 1B.2
<b><u>Hesperolinon sharsmithiae</u></b>	Sharsmith's western	Linaceae	List

	flax		1B.2
<b><u>Hesperolinon</u> <u>tehamense</u></b> 📷	Tehama County western flax	Linaceae	List 1B.3
<b><u>Juncus</u> <u>luciensis</u></b> 📷	Santa Lucia dwarf rush	Juncaceae	List 1B.2
<b><u>Lasthenia</u> <u>burkei</u></b> 📷	Burke's goldfields	Asteraceae	List 1B.1
<b><u>Lasthenia</u> <u>conjugens</u></b> 📷	Contra Costa goldfields	Asteraceae	List 1B.1
<b><u>Layia</u> <u>septentrionalis</u></b> 📷	Colusa layia	Asteraceae	List 1B.2
<b><u>Leptosiphon</u> <u>jepsonii</u></b> 📷	Jepson's leptosiphon	Polemoniaceae	List 1B.2
<b><u>Lessingia</u> <u>hololeuca</u></b> 📷	woolly-headed lessingia	Asteraceae	List 3
<b><u>Limnanthes</u> <u>vinculans</u></b> 📷	Sebastopol meadowfoam	Limnanthaceae	List 1B.1
<b><u>Lupinus</u> <u>sericatus</u></b> 📷	Cobb Mountain lupine	Fabaceae	List 1B.2
<b><u>Micropus</u> <u>amphibolus</u></b> 📷	Mt. Diablo cottonweed	Asteraceae	List 3.2
<b><u>Navarretia</u> <u>leucocephala</u> ssp. <u>bakeri</u></b> 📷	Baker's navarretia	Polemoniaceae	List 1B.1
<b><u>Navarretia</u> <u>leucocephala</u> ssp. <u>pauciflora</u></b> 📷	few-flowered navarretia	Polemoniaceae	List 1B.1
<b><u>Navarretia</u> <u>leucocephala</u> ssp. <u>plieantha</u></b> 📷	many-flowered navarretia	Polemoniaceae	List 1B.2
<b><u>Navarretia</u> <u>myersii</u> ssp. <u>deminuta</u></b>	small pincushion navarretia	Polemoniaceae	List 1B.1
<b><u>Navarretia</u> <u>rosulata</u></b> 📷	Marin County navarretia	Polemoniaceae	List 1B.2

<b><u>Penstemon newberryi</u> var. <u>sonomensis</u></b> 📷	Sonoma beardtongue	Plantaginaceae	List 1B.3
<b><u>Plagiobothrys strictus</u></b>	Calistoga popcorn-flower	Boraginaceae	List 1B.1
<b><u>Poa napensis</u></b>	Napa blue grass	Poaceae	List 1B.1
<b><u>Sidalcea hickmanii</u> ssp. <u>napensis</u></b>	Napa checkerbloom	Malvaceae	List 1B.1
<b><u>Sidalcea oregana</u> ssp. <u>hydrophila</u></b>	marsh checkerbloom	Malvaceae	List 1B.2
<b><u>Sidalcea oregana</u> ssp. <u>valida</u></b> 📷	Kenwood Marsh checkerbloom	Malvaceae	List 1B.1
<b><u>Streptanthus batrachopus</u></b> 📷	Tamalpais jewel-flower	Brassicaceae	List 1B.3
<b><u>Streptanthus brachiatus</u> ssp. <u>brachiatus</u></b>	Socrates Mine jewel-flower	Brassicaceae	List 1B.2
<b><u>Streptanthus hesperidis</u></b>	green jewel-flower	Brassicaceae	List 1B.2
<b><u>Streptanthus morrisonii</u> ssp. <u>elatus</u></b> 📷	Three Peaks jewel-flower	Brassicaceae	List 1B.2
<b><u>Streptanthus vernalis</u></b> 📷	early jewel-flower	Brassicaceae	List 1B.2
<b><u>Trichostema ruygtii</u></b> 📷	Napa bluecurls	Lamiaceae	List 1B.2
<b><u>Trifolium amoenum</u></b> 📷	two-fork clover	Fabaceae	List 1B.1
<b><u>Trifolium hydrophilum</u></b>	saline clover	Fabaceae	List 1B.2
<b><u>Viburnum ellipticum</u></b> 📷	oval-leaved viburnum	Adoxaceae	List 2B.3

**U.S. Fish & Wildlife Service**

**Sacramento Fish & Wildlife Office**

**Federal Endangered and Threatened Species that Occur in  
or may be Affected by Projects in the  
ST. HELENA (516C)  
U.S.G.S. 7 1/2 Minute Quad**

Database last updated: September 18, 2011

Report Date: July 24, 2013

Listed Species

Invertebrates

Desmocerus californicus dimorphus  
valley elderberry longhorn beetle (T)

Syncaris pacifica

California freshwater shrimp (E)

Fish

Hypomesus transpacificus  
delta smelt (T)

Oncorhynchus mykiss

Central California Coastal steelhead (T) (NMFS)

Central Valley steelhead (T) (NMFS)

Critical habitat, Central California coastal steelhead (X) (NMFS)

Oncorhynchus tshawytscha

Central Valley spring-run chinook salmon (T) (NMFS)

winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana draytonii

California red-legged frog (T)

## Birds

*Strix occidentalis caurina*

northern spotted owl (T)

## Plants

*Astragalus clarianus*

Clara Hunt's milk-vetch (E)

---

## Key:

- (E) Endangered - Listed as being in danger of extinction.
- (T) Threatened - Listed as likely to become endangered within the foreseeable future.
- (P) Proposed - Officially proposed in the Federal Register for listing as endangered or threatened.
- (NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](#). Consult with them directly about these species.
- Critical Habitat - Area essential to the conservation of a species.
- (PX) Proposed Critical Habitat - The species is already listed. Critical habitat is being proposed for it.
- (C) Candidate - Candidate to become a proposed species.
- (V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
- (X) Critical Habitat designated for this species

Supported by  
**CALIFORNIA INTERAGENCY WILDLIFE TASK GROUP**  
 and maintained by the  
**CALIFORNIA DEPARTMENT OF FISH AND GAME**  
 Database Version: 8.2 (2008)

**SPECIES SUMMARY REPORT**

1=Federal Endangered      2=Federal Threatened      3=California Endangered      4=California Threatened      5=California Fully Protected      6=California Protected      7=California Species of Special Concern      8=Federally-Proposed Endangered      9=Federally-Proposed Threatened      10=Federal Candidate      11=BLM Sensitive      12=USFS Sensitive      13=CDF Sensitive      14=Harvest

Note: Any given status code for a species may apply to the full species or to only one or more subspecies or distinct population segments.

ID	SPECIES NAME	STATUS														
A001	CALIFORNIA TIGER SALAMANDER	2						7								
A007	CALIFORNIA NEWT							7								
A012	COMMON ENSATINA							7			11	12				
A028	WESTERN SPADEFOOT							7			11					
A043	FOOTHILL YELLOW-LEGGED FROG							7			11	12				
A071	CALIFORNIA RED-LEGGED FROG	2						7								
B003	COMMON LOON							7								
B042	AMERICAN WHITE PELICAN							7								
B070	GREATER WHITE-FRONTED GOOSE							7							14	
B090	REDHEAD							7							14	
B102	BARROW'S GOLDENEYE							7							14	
B111	WHITE-TAILED KITE								5							
B113	BALD EAGLE			3					5						13	
B114	NORTHERN HARRIER								7							
B126	GOLDEN EAGLE												11		13	
B129	PEREGRINE FALCON			3					5					12	13	
B140	CALIFORNIA QUAIL								7						14	
B143	BLACK RAIL													4	5	
B144	CLAPPER RAIL			1										3	4	5
B154	SNOWY PLOVER			2					7							
B269	BURROWING OWL								7				11			
B270	SPOTTED OWL			2					7				11	12	13	
B272	LONG-EARED OWL								7							
B273	SHORT-EARED OWL								7							
B309	OLIVE-SIDED FLYCATCHER								7							
B338	PURPLE MARTIN								7							
B342	BANK SWALLOW														4	
B368	BEWICK'S WREN								7							
B410	LOGGERHEAD SHRIKE			1					7							
B417	HUTTON'S VIREO								7							
B430	YELLOW WARBLER								7							
B483	SPOTTED TOWHEE								7							
B484	CALIFORNIA TOWHEE			2											3	
B487	RUFIOUS-CROWNED SPARROW								7							
B494	VESPER SPARROW								7							
B497	SAGE SPARROW			2					7							
B499	SAVANNAH SPARROW														3	
B505	SONG SPARROW								7							
B522	YELLOW-HEADED BLACKBIRD								7							
M006	ORNATE SHREW			1					7							
M018	BROAD-FOOTED MOLE								7							
M033	WESTERN RED BAT								7							12
M037	TOWNSEND'S BIG-EARED BAT								7				11	12		
M038	PALLID BAT								7				11	12		
M045	BRUSH RABBIT			1											3	
M051	BLACK-TAILED JACKRABBIT								7							14
M087	SAN JOAQUIN POCKET MOUSE								7				11			
M105	CALIFORNIA KANGAROO RAT								7				11			
M117	DEER MOUSE								7							

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**SPECIES SUMMARY REPORT**

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2=Federal Threatened	4=California Threatened	8=Federally-Proposed Endangered	12=USFS Sensitive
	5=California Fully Protected	9=Federally-Proposed Threatened	13=CDF Sensitive
	6=California Protected	10=Federal Candidate	14=Harvest

Note: Any given status code for a species may apply to the full species or to only one or more subspecies or distinct population segments.

ID	SPECIES NAME	STATUS															
M127	DUSKY-FOOTED WOODRAT	1													7		
M134	CALIFORNIA VOLE	1		3											7	11	
M147	RED FOX					4										12	14
M152	RINGTAIL							5									
M160	AMERICAN BADGER														7		14
M161	WESTERN SPOTTED SKUNK														7		14
M165	MOUNTAIN LION														7		
R004	WESTERN POND TURTLE														7	11	12
R036	WESTERN SKINK														7	11	
R053	STRIPED RACER																
R057	GOPHER SNAKE														7		
R059	CALIFORNIA MOUNTAIN KINGSSNAKE														7		12
R061	COMMON GARTER SNAKE														7		
	<b>Total Number of Species:</b>	<b>62</b>															



# Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database



Query Criteria: Quad is (St. Helena (3812254) or Yountville (3812243) or Rutherford (3812244) or Calistoga (3812255) or Detert Reservoir (3812265) or Kenwood (3812245) or Chiles Valley (3812253) or Walter Springs (3812263) or Aetna Springs (3812264)) and Habitat is (Cismontane woodland or Chaparral)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Accipiter striatus</i></b> sharp-shinned hawk	ABNKC12020	None	None	G5	S3	WL
<b><i>Allium peninsulare var. franciscanum</i></b> Franciscan onion	PMLIL021R1	None	None	G5T2	S2.2	1B.2
<b><i>Amorpha californica var. napensis</i></b> Napa false indigo	PDFAB08012	None	None	G4T2	S2.2	1B.2
<b><i>Amsinckia lunaris</i></b> bent-flowered fiddleneck	PDBOR01070	None	None	G2?	S2?	1B.2
<b><i>Antrozous pallidus</i></b> pallid bat	AMACC10010	None	None	G5	S3	SSC
<b><i>Aquila chrysaetos</i></b> golden eagle	ABNKC22010	None	None	G5	S3	FP
<b><i>Arctostaphylos canescens ssp. sonomensis</i></b> Sonoma canescent manzanita	PDERI04066	None	None	G3G4T2	S2.1	1B.2
<b><i>Arctostaphylos manzanita ssp. elegans</i></b> Konocti manzanita	PDERI04271	None	None	G5T2	S2.3	1B.3
<b><i>Arctostaphylos stanfordiana ssp. decumbens</i></b> Rincon Ridge manzanita	PDERI041G4	None	None	G3T1	S1	1B.1
<b><i>Astragalus claranus</i></b> Clara Hunt's milk-vetch	PDFAB0F240	Endangered	Threatened	G1	S1	1B.1
<b><i>Astragalus rattanii var. jepsonianus</i></b> Jepson's milk-vetch	PDFAB0F7E1	None	None	G4T3	S3	1B.2
<b><i>Brodiaea leptandra</i></b> narrow-anthered brodiaea	PMLIL0C022	None	None	G2G3	S2S3.2	1B.2
<b><i>Calycadenia micrantha</i></b> small-flowered calycadenia	PDAST1P0C0	None	None	G2G3	S2S3.2	1B.2
<b><i>Calystegia collina ssp. oxyphylla</i></b> Mt. Saint Helena morning-glory	PDCON04032	None	None	G4T3	S3.2	4.2
<b><i>Ceanothus confusus</i></b> Rincon Ridge ceanothus	PDRHA04220	None	None	G2	S2.2	1B.1
<b><i>Ceanothus divergens</i></b> Calistoga ceanothus	PDRHA04240	None	None	G2	S2.2	1B.2
<b><i>Ceanothus purpureus</i></b> holly-leaved ceanothus	PDRHA04160	None	None	G2	S2	1B.2
<b><i>Ceanothus sonomensis</i></b> Sonoma ceanothus	PDRHA04420	None	None	G2	S2.2	1B.2
<b><i>Corynorhinus townsendii</i></b> Townsend's big-eared bat	AMACC08010	None	None	G3G4	S2S3	SSC



Selected Elements by Scientific Name  
California Department of Fish and Wildlife  
California Natural Diversity Database



Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
<b><i>Cryptantha dissida</i></b> serpentine cryptantha	PDBOR0A0H2	None	None	G2	S2	1B.2
<b><i>Elanus leucurus</i></b> white-tailed kite	ABNKC06010	None	None	G5	S3	FP
<b><i>Erigeron greenei</i></b> Greene's narrow-leaved daisy	PDAST3M5G0	None	None	G2	S2	1B.2
<b><i>Fritillaria pluriflora</i></b> adobe-lily	PMLIL0V0F0	None	None	G3	S3	1B.2
<b><i>Harmonia hallii</i></b> Hall's harmonia	PDAST650A0	None	None	G2	S2?	1B.2
<b><i>Hesperolinon bicarpellatum</i></b> two-carpellate western flax	PDLIN01020	None	None	G2	S2.2	1B.2
<b><i>Hesperolinon tehamense</i></b> Tehama County western flax	PDLIN010C0	None	None	G3	S3	1B.3
<b><i>Juncus luciensis</i></b> Santa Lucia dwarf rush	PMJUN013J0	None	None	G2G3	S2S3	1B.2
<b><i>Lasiurus cinereus</i></b> hoary bat	AMACC05030	None	None	G5	S4?	
<b><i>Layia septentrionalis</i></b> Colusa layia	PDAST5N0F0	None	None	G2	S2.2	1B.2
<b><i>Leptosiphon jepsonii</i></b> Jepson's leptosiphon	PDPLM09140	None	None	G2	S2	1B.2
<b><i>Limnanthes floccosa ssp. floccosa</i></b> woolly meadowfoam	PDLIM02043	None	None	G4T4	S3.2	4.2
<b><i>Lupinus sericatus</i></b> Cobb Mountain lupine	PDFAB2B3J0	None	None	G2	S2.2	1B.2
<b><i>Navarretia leucocephala ssp. bakeri</i></b> Baker's navarretia	PDPLM0C0E1	None	None	G4T2	S2	1B.1
<b><i>Navarretia rosulata</i></b> Marin County navarretia	PDPLM0C0Z0	None	None	G2?	S2?	1B.2
<b><i>Penstemon newberryi var. sonomensis</i></b> Sonoma beardtongue	PDSCR1L483	None	None	G4T1	S2	1B.3
<b><i>Rana boylei</i></b> foothill yellow-legged frog	AAABH01050	None	None	G3	S2S3	SSC
<b><i>Sidalcea hickmanii ssp. napensis</i></b> Napa checkerbloom	PDMAL110A6	None	None	G1	S1	1B.1
<b><i>Streptanthus brachiatus ssp. brachiatus</i></b> Socrates Mine jewel-flower	PDBRA2G072	None	None	G2T1	S1	1B.2
<b><i>Streptanthus hesperidis</i></b> green jewel-flower	PDBRA2G510	None	None	G2	S2	1B.2
<b><i>Streptanthus morrisonii</i></b> Morrison's jewel-flower	PDBRA2G0S0	None	None	G2	S2	



**Selected Elements by Scientific Name**  
**California Department of Fish and Wildlife**  
**California Natural Diversity Database**



<b>Species</b>	<b>Element Code</b>	<b>Federal Status</b>	<b>State Status</b>	<b>Global Rank</b>	<b>State Rank</b>	<b>Rare Plant Rank/CDFW SSC or FP</b>
<b><i>Streptanthus vernalis</i></b> early jewel-flower	PDBRA2G120	None	None	G1	S1	1B.2
<b><i>Trichostema ruygtii</i></b> Napa bluecurls	PDLAM220H0	None	None	G2	S2	1B.2
<b><i>Viburnum ellipticum</i></b> oval-leaved viburnum	PDCPR07080	None	None	G5	S2.3	2B.3

**Record Count: 43**

# ***APPENDIX E***

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## HYDROLOGIC ANALYSIS

Hydrologic Analysis for Davis Friesen Vineyards  
APNs 018-060-012 and 018-060-013, Friesen Road  
Napa County, California

Prepared for  
Davis Family Vineyards  
Napa, California

Prepared by



A handwritten signature in blue ink, appearing to read 'Matthew O'Connor', written over a horizontal line.

Matthew O'Connor, PhD, CEG #2449

A handwritten signature in blue ink, appearing to read 'Michael Sherwood', written over a horizontal line.

Michael Sherwood, PG #8839

O'Connor Environmental, Inc.  
P.O. Box 794,  
Healdsburg, California 95448

June 2014  
Revised April 7, 2015



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Appendix C-Time of Concentration Calculations	

## Introduction

A hydrologic analysis was performed with the TR 55 model to assess Project impacts on storm runoff in the Bell Canyon Planning watershed (Figure 1), a tributary to the Napa River. The Project is the proposed Davis Friesen Vineyard which consists of the conversion of approximately 13.38 gross acres ( $\pm 10.43$  net acres) of mixed brush and forest to commercial vineyard within APNs 018-060-012 and 018-060-013. The project parcels cover a total of about 39 acres and are located at 1875 Friesen Road in northern Napa County (Figure 1). This hydrologic analysis is intended as a supporting document for evaluation of project compliance with County of Napa regulations, State regulations administered by CALFIRE relating to forest conversion, and as a component of the Project Environmental Impact Report under preparation per the California Environmental Quality Act (CEQA).

County of Napa General Plan Conservation Element Policy CON-50(c) states that: “[T]he County shall require discretionary projects to meet performance standards designed to ensure peak runoff in 2-, 10-, 50-, and 100-year events following development is not greater than predevelopment conditions. We worked closely with Napa Valley Vineyard Engineering (NVVE) and Napa County Resources Conservation District in the development of drainage design plans to mitigate potential increases in runoff from the site. We also utilized the Erosion Control Plan (ECP) prepared by NVVE to help define Project hydrologic conditions. Additional information regarding the Project and its environmental setting is available in other Project documents. The scope of this analysis is limited to hydrologic processes; a geologic report has been prepared by another Professional Geologist.

TR 55 is a U.S. Department of Agriculture hydrologic model that is commonly used in Napa County to estimate runoff and peak discharges and develop hydrographs for small basins using unit hydrograph theory and routing procedures that depend on runoff travel time through segments of the watershed (USDA, 1986). This analysis was performed using the GIS interface in the Watershed Modeling System (WMS 9.1) software developed by Aquaveo. A number of parameters are required as inputs for the development of the model including rainfall, soil hydrologic groups, ground cover types along with channel characteristics and dimensions.

TR 55 has been used in Napa County for many years to evaluate potential changes in runoff associated with vineyard development. TR 55 tends to provide relatively high magnitudes of runoff relative to some other methods, notably including the USGS National Streamflow Statistics. Nevertheless, TR 55 provides a relatively simple means to evaluate the relative magnitude of change in runoff associated with vineyard conversion. The TR 55 model generates a runoff hydrograph based on hypothetical rainfall events corresponding to the recurrence intervals specified by County of Napa, and has proved a useful tool in evaluating hydrologic impacts of alternative project designs

## Site Conditions

The Project site is located in northwestern Napa County in the Bell Canyon Planning watershed, and drains to two unnamed tributary streams of Bell Canyon Creek (Figure 1). Bell Canyon Creek flows into Bell Canyon Reservoir which lies approximately 5.1 miles downstream of the Project

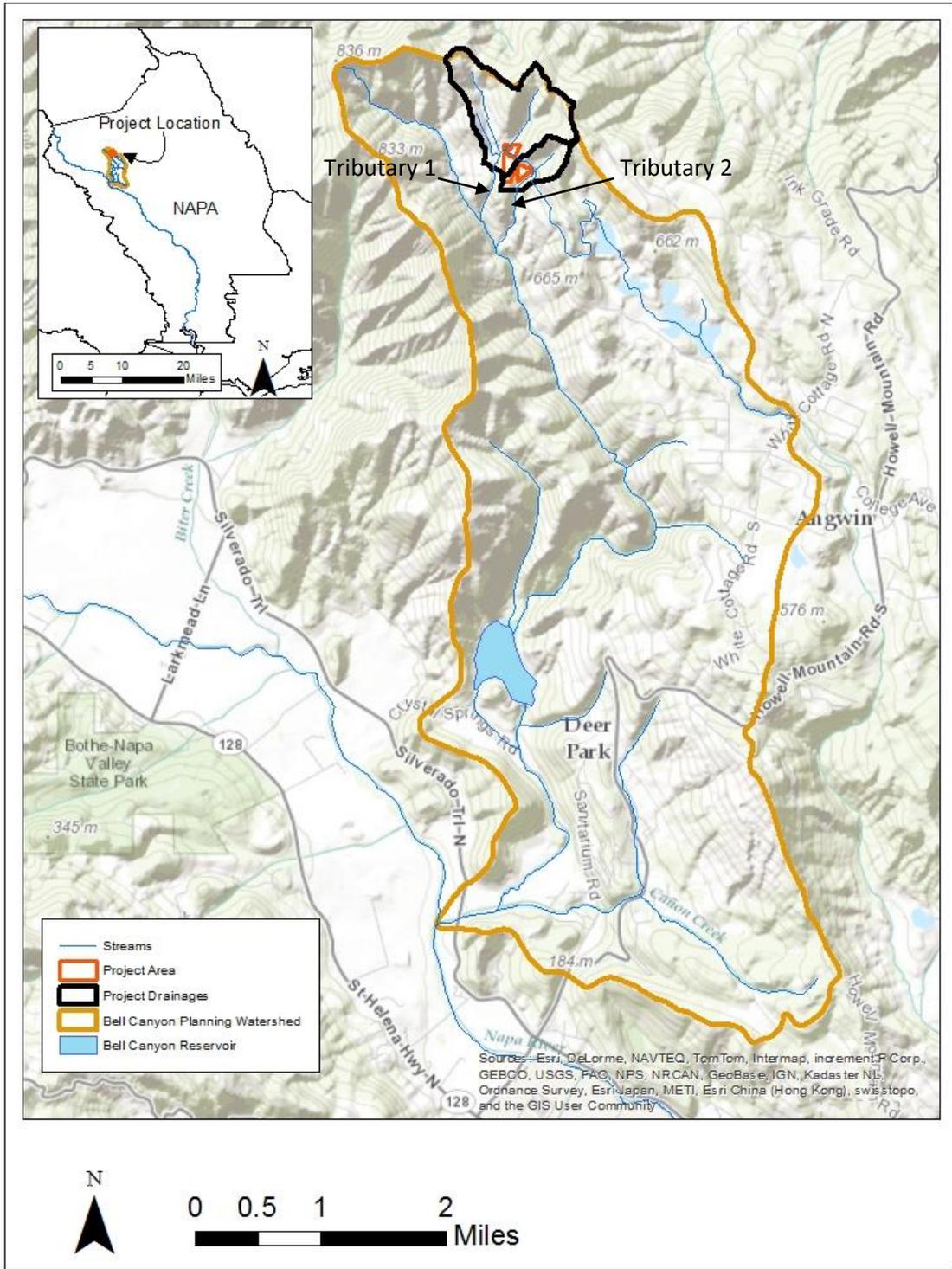


Figure 1 - Site location map.

site. The confluence with the Napa River is 1.7 miles downstream of the outlet of Bell Canyon Reservoir (Figure 1). At the confluence with the main channel of Bell Canyon Creek, the western-most unnamed tributary (Tributary 1) drains about 230 acres. The other unnamed tributary to the south of the project site (Tributary 2) meets the main channel of Bell Canyon Creek about 3,000 feet downstream and drains about 93 acres. The Project site lies in the upper portion of the watershed (Figure 1), with very little existing development upstream from the Project site.

A number of storage ponds and diversion ditches are located near the Project site; most of these are located to the southeast of the site and are visible from Friesen Road. These ponds and waterways are operated by the Howell Mountain Mutual Water Company. One of the diversion ditches is mapped on the Project property beginning just below the reservoir on the eastern edge of parcel 018-060-013 (Figure 2). It appears that this ditch diverts flows from the pond to storage facilities operated by Howell Mountain Mutual Water Company. In any case, outflows from the pond are routed by the ditch away from the Project boundary such that pond outflow does not enter or cross the project site.

The Project site is located on moderately sloping terrain and is comprised of a mixture of divergent, planar and convergent slope shapes and convex, planar and concave flow lines. All of the proposed vineyard blocks are located on planar- to convex-shaped slopes with average slopes ranging from 8 to 27%. Based on interpretation of an aerial photograph of the site dated 2010, vegetation at the Project site is a mixture of approximately 70% hardwood brush (mainly manzanita) and 25% conifer/oak forest with the remaining 5% comprised of grassland.<sup>1</sup> The geology of the Project site is mapped as Pumiceous ash-flow tuff (Tst), Tuff (Tsft) and Rhyolite flows (Tsr) all units of the Pliocene and late Miocene aged Sonoma Volcanics. Soils mapped at the site and within the contributing drainage areas are the Forward Gravelly Loam (138) and Rock outcrop of the Kidd Complex (177).

## Approach to Analysis

The objective of this analysis is to evaluate potential Project effects on peak runoff resulting from rainstorms. A hydrologic model of the site under existing conditions, including upstream contributing drainage area, is used to establish the baseline hydrologic conditions. Post-Project peak runoff is simulated by modifying the hydrologic model to represent proposed changes to drainage patterns (Figure 2), along with the changes in land cover (vegetation). All runoff from the project site is simulated, and runoff leaving the project site is quantified at the project boundary. Comparisons of peak flow leaving the project site is accomplished by summing all resultant sub-basin hydrographs to create one composite hydrograph representing runoff at the Project boundary for existing conditions and one for proposed conditions. This approach allows for analysis of runoff at the project scale. Since the Project area drains into two distinct "Blue-line" channels (Tributaries 1 and 2, Figure 1) composite hydrographs for the drainage areas flowing into each tributary are also compared.

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<sup>1</sup> These estimates of vegetation cover were developed to determine the appropriate Curve Numbers for use in the TR 55 analysis; the cover estimates are consistent with, but do not directly correspond with, cover type analyses conducted by NVVE based on 1992 aerial photographs to demonstrate compliance with County regulations pertaining to vegetation conversion limits in the Bell Canyon Reservoir watershed.

## Modeling

The USDA model TR 55 is the primary hydrologic model used for this analysis. It requires inputs to describe rainfall for design storms, topographic definition of drainage basins, and description of vegetative cover and soils to determine runoff characteristics.

### Rainfall

Rainfall distributions for 24-hour rainstorms in the northwestern coastal United State are classified as Type IA (USDA, 1986). Rainfall events of 24 hour duration were simulated with the model for the 2, 10, 50 and 100 year recurrence interval storms. Rainfall depths (Table 1) were determined from queries of the NOAA Atlas 14 Volume 6 Version 2 (NOAA, 2011).

**Table 1 - Rainfall depths for typical recurrence interval storms at the project site.**

Recurrence Interval Storm (24 hour Duration)	Precipitation Depth (in)
2 year	4.51
10 year	6.59
50 year	8.67
100 year	9.54

### Drainage Basins

The portion of the Bell Canyon Watershed evaluated in this analysis includes all contributing areas to the down-slope edge of the proposed vineyard boundaries where flow is leaving the Project area as sheet flow. In the cases of Drainage Basins 6 and 7 which leave the area as concentrated and/or channelized flow, some area below the proposed vineyard boundaries is included (Figures 1 and 2). The process of subdividing these areas into sub-catchments for the pre- and post-Project conditions for peak flow comparison is described below.

A detailed Erosion Control Plan (ECP) has been developed for the Project by NVVE to comply with Napa County General Plan requirements. The ECP proposes some modifications of runoff patterns on the Project site including the addition of a number of water bars along vineyard avenues in Blocks C and D and rolling dips along the driveway on the west edge of the project site. While these road features will locally alter drainage patterns to reduce potential erosion they will not affect peak flow calculations. A new 18 inch ditch relief culvert is to be installed between proposed vineyard blocks C and D along Friesen Rd. Flows will be directed into proposed vineyard Block C and then leave the project site via the culvert under the existing road on the west edge of the site. Due to the location of this culvert and the nature of the TR55 analysis peak flow calculations (using the longest flow path within a drainage sub basin) will not be affected.

Pre-Project drainage basins were initially defined based on a topographic analysis of a 10-ft square grid LiDAR-based digital elevation model (DEM) of Napa County using WMS software. Adjustments were made to the boundaries based on field observations of the Project site on April 4th, 2013. For pre-Project baseline conditions, eight sub-catchments were defined (Figure 2). Basin drainage areas range from approximately 0.4 to 12 acres. Six of the eight sub-catchments (1-5 and 8) are bounded on the downhill edge by the proposed vineyard/Project

boundary; flows crossing these boundaries are all assumed to be sheet flow. As noted above, Drainage Basins 6 and 7 both are modeled as channelized flows (Figure2).

It was not necessary to adjust the post-project drainage basins because there are no significant changes in flow paths proposed in the ECP (Figure 2). The addition of the new ditch relief culvert along Friesen Lane does not change the longest flow path within its respective drainage basin and keeps all of the water within the same watershed. The post-Project basin total area is identical to that of the pre-Project area, which allows for direct pre- and post-Project comparison.

## Runoff

### ***Curve Number Assignment***

The most important parameter the modeler must decide upon when building a TR 55 model is the Runoff Curve Number assigned to each land use type. Curve numbers are dependent on land cover types and the hydrologic soil groups found in the area and are used in the calculations of runoff.

Six land cover types were used to help determine the composite curve numbers for each drainage basin for current and proposed conditions at the project site. Land cover maps made for the project area were created from interpretation of 2007 Napa County digital orthophotos and the ECP drawings (Figure 3) using ESRI ArcGIS. Land cover types found within the project sub-catchments are summarized in Table 2.

Tables 2-2 a-d in the TR 55 guidance manual provide runoff curve number for varying types of land uses (USDA, 1986). Additional values were used from Exhibit 2.1-3 "Runoff Curve Numbers For Hydrologic Soil-Cover Complexes" (NRCS, 2008). Land cover types were selected specifically from Table 2-2a "Runoff curve numbers for urban areas", Table 2-2b "Runoff curve numbers for cultivated agricultural lands" and Table 2-2c "runoff curve numbers for other agricultural lands". The undeveloped land cover types used were selected from Table 2-2b. These were: "Grassland", "Brush", and "Forest", all with "good" hydrologic conditions ("good" conditions encourage average and better than average infiltration and tend to decrease runoff). All roads were simulated as "Gravel Road" from Table 2-2a and developed areas with buildings or disturbed grounds due to anthropogenic influences were placed in the "Farmstead" land cover category from Table 2-2c. To simulate the proposed alternate tillage, vineyard land cover the "Annual grass" cover type with a "Fair" hydrologic condition was chosen from Exhibit 2.1-3 (pg 2.1-7).

Soils data were obtained in GIS format from the National Resources Conservation Service Soil Survey Geographic (SSURGO) database for Napa County (Figure 3). The hydrologic soils group classification is based on the minimum infiltration rate obtained for bare soil after prolonged wetting (USDA, 1986). Soils mapped at the site and within the contributing drainage areas are the Forward Gravelly Loam (138) and Rock outcrop of the Kidd Complex (177). The Forward Gravelly Loam is categorized in hydrologic soil group C described as having "moderately high runoff potential when thoroughly wet," (USDA, 2007). The Rock outcrop of the Kidd Complex is in hydrologic soil group D which "have high runoff potential when thoroughly wet," (USDA, 2009). In preparation for planting all soils within the proposed vineyard areas will be ripped and tilled (See NVVE ECP Pg 1) to a depth of 36 inches. In a memo entitled "Effect of Ripping on

Hydrologic Soil Group, Updated" circulated earlier this year USDA soil scientist Ken Oster stated that effects of ripping the Kidd soils group to a depth of 36" would change the hydrologic soil group from D to B (Oster, 2014). In light of this statement all areas within the proposed vineyards mapped as the Rock outcrop of the Kidd Complex were changed to hydrologic soil group B for the analysis of post-project conditions. The hydrologic soil group for each soil was attached to this spatial dataset using ESRI ArcGIS software; this information was imported to the WMS software to calculate curve numbers.

Area-weighted composite curve numbers for each basin were calculated in the WMS software using the spatial distribution of the land use and soils within each drainage basin as accounted for in GIS representation of these data. Runoff Curve Number reports generated by WMS for both existing and proposed conditions are provided in Appendix A.

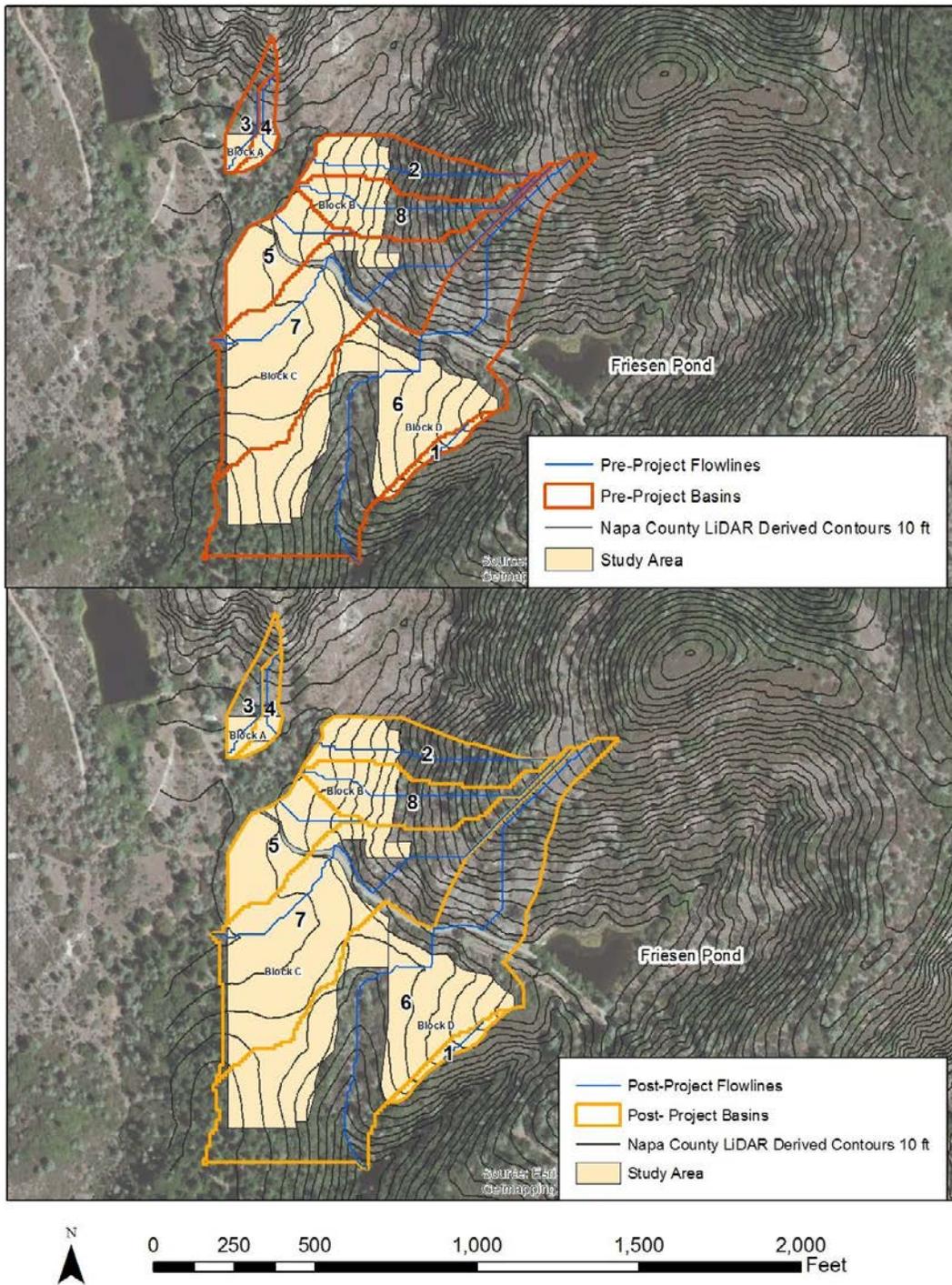


Figure 2 - Pre- and post-Project sub-catchment locations.

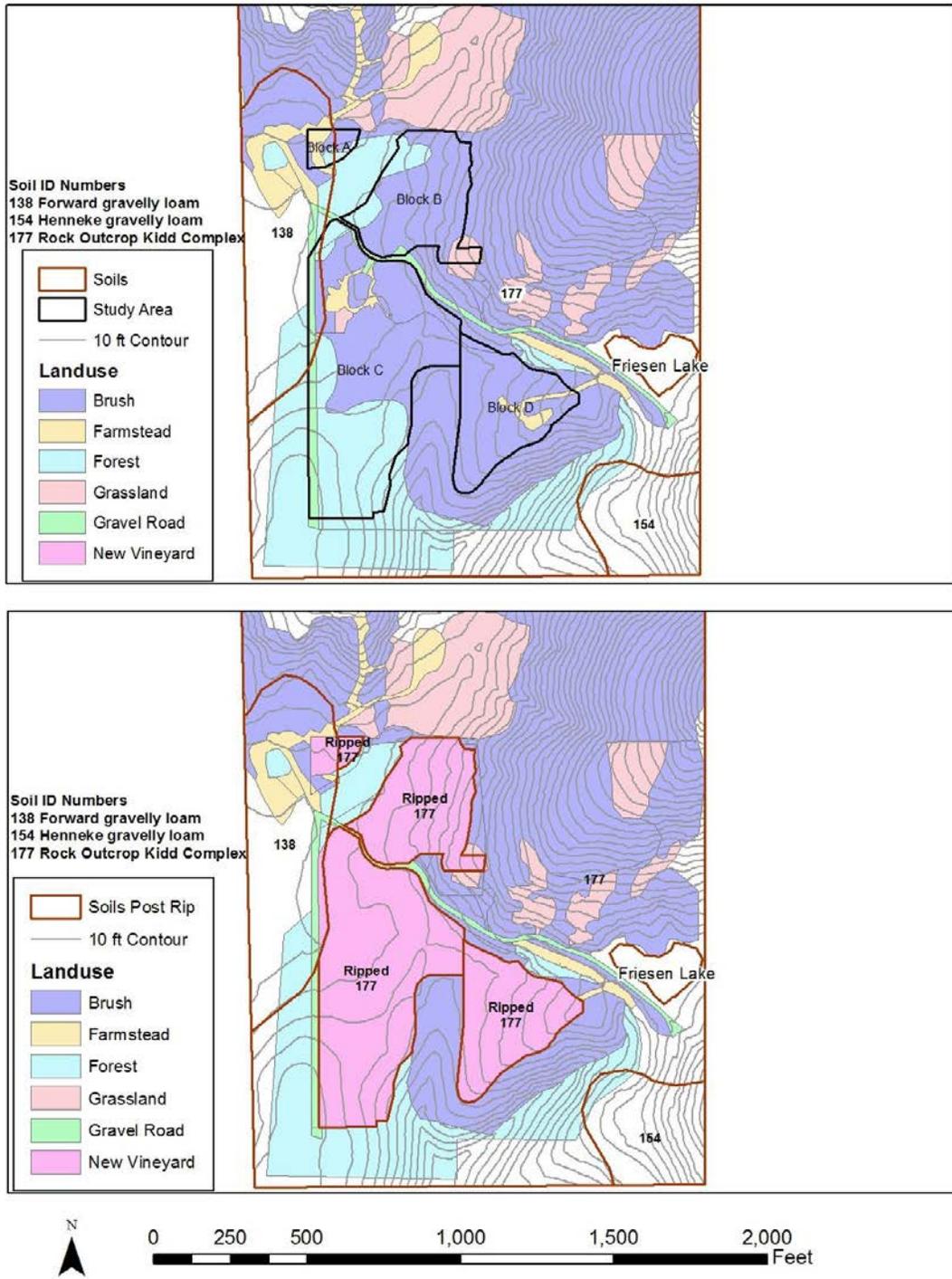


Figure 3 – Pre- and post-Project land use and soils.

**Hydraulic Parameters**

Time of concentration ( $T_c$ ) is the time it takes for runoff to travel to a point of interest from the hydraulically most distant point of the basin. The flow path taken from the hydraulically most distant point is called the time of concentration arc in the WMS hydrologic modeling tool. Time of concentration is the sum of travel times for each flow segment representing flow types beginning with sheet flow, then shallow concentrated flow, followed by open channel flow. Flow paths were digitized in WMS using automated methods for the pre-project scenario and manually digitized for the proposed scenario (Figure 2). Flow paths for existing and proposed conditions are displayed in Figure 2. Appendix C contains summaries of the  $T_c$  calculations made in WMS.

The maximum length of sheet flow as defined by the TR-55 manual is 300 ft, after which it is assumed shallow concentrated flow begins and continues until open channel flow begins. Open channel flow occurs in basins six and seven in naturally developed channels in both the pre- and post-Project scenarios. Flow through the existing roadside ditches, proposed diversion ditches and rock lined ditches were also modeled as open channel flow.

Flow lengths and slope are calculated by the WMS software; other specific channel characteristics are required as inputs by the modeler. Manning's roughness values were required to calculate  $T_c$  for sheet flow and open channel flow. Table 3-1 in the TR 55 Manual (USDA, 1986) provides roughness coefficients for various surface types. A roughness value for "Dense Grass" of 0.24 was used for sheet flow in both the pre- and post-project scenarios; this may over-estimate roughness under pre-project conditions, which would result in a conservative analysis of runoff because pre-project peak flow estimates would be higher. Shallow concentrated flow did not require a roughness value to calculate  $T_c$  as its velocity is determined from a relationship defined by TR 55 and presented in Figure 3-1 (USDA, 1986).

For the open channel flow segments in the natural channels, a roughness value of 0.04 was assigned for the natural channels and a roughness of 0.03 was assigned for existing road ditches. A roughness value of 0.04 is appropriate for "mountain streams with rocky beds and rivers with variable sections and some vegetation along banks" (Table 16-1, Dunne and Leopold, 1978, p. 593). Roughness for existing road ditches was set to 0.03, less rough than the natural channels due to straighter alignment and fewer roughness elements in the ditches relative to natural channels. The value 0.03 lies at the upper end of the range of values for "excavated or dredged channel with gravel, a uniform section and clean" (Chow, 1959). Channel and ditch dimensions were observed in the field for Basins 6 and 7, and used to calculate the representative hydraulic radius for each segment. The project ECP states that the existing road ditch will be rock lined so for the open channel flow in the ditch with rock lining a larger roughness value of 0.04 was used to accommodate the addition of more roughness elements.

**Table 2-Land cover type summary table.**

Pre Project Landuse				Post Project Landuse			
Basin	Landuse	Area Acres	Percent Total	Basin	Landuse	Area Acres	Percent Total
1	Brush (Good)	0.28	95.36%	1	Vineyard(Annual Grass Fair)	0.3	99.81%
1	Farmstead	0.01	4.64%	1	Brush (Good)	0.000	0.19%
2	Brush (Good)	1.8	87.00%	2	Vineyard(Annual Grass Fair)	0.78	37.57%
2	Grassland (Good)	0.01	0.44%	2	Brush (Good)	1.28	61.98%
2	Forest (Good)	0.26	12.56%	2	Grassland (Good)	0.01	0.44%
3	Brush (Good)	0.39	62.86%	2	Forest (Good)	0	0.01%
3	Grassland (Good)	0	0.22%	3	Vineyard(Annual Grass Fair)	0.2	33.49%
3	Forest (Good)	0.01	2.16%	3	Brush (Good)	0.32	52.02%
3	Farmstead	0.22	34.77%	3	Grassland (Good)	0	0.22%
4	Brush (Good)	0.2	48.45%	3	Farmstead	0.09	14.28%
4	Grassland (Good)	0.03	7.71%	4	Vineyard(Annual Grass Fair)	0.18	44.97%
4	Forest (Good)	0.07	18.28%	4	Brush (Good)	0.1	23.90%
4	Farmstead	0.1	25.56%	4	Grassland (Good)	0.03	7.71%
5	Gravel Road	0.22	11.98%	4	Forest (Good)	0	0.07%
5	Brush (Good)	1.11	60.54%	4	Farmstead	0.1	23.36%
5	Forest (Good)	0.36	19.49%	5	Gravel Road	0.18	9.55%
5	Farmstead	0.15	7.99%	5	Vineyard(Annual Grass Fair)	1.67	90.45%
6	Gravel Road	0.31	2.64%	5	Forest (Good)	0	0.00%
6	Brush (Good)	6.58	55.56%	6	Gravel Road	0.28	2.37%
6	Grassland (Good)	1.04	8.79%	6	Vineyard(Annual Grass Fair)	4.72	39.82%
6	Forest (Good)	3.53	29.84%	6	Brush (Good)	3.75	31.69%
6	Farmstead	0.38	3.17%	6	Grassland (Good)	1.04	8.79%
7	Gravel Road	0.43	6.40%	6	Forest (Good)	1.88	15.86%
7	Brush (Good)	4.54	67.68%	6	Farmstead	0.17	1.46%
7	Grassland (Good)	0.58	8.70%	7	Gravel Road	0.38	5.70%
7	Forest (Good)	1.06	15.76%	7	Vineyard(Annual Grass Fair)	4.09	60.94%
7	Farmstead	0.1	1.46%	7	Brush (Good)	1.66	24.69%
8	Brush (Good)	2.04	98.70%	7	Grassland (Good)	0.38	5.59%
8	Grassland (Good)	0.02	1.04%	7	Forest (Good)	0.21	3.08%
8	Forest (Good)	0.01	0.26%	8	Vineyard(Annual Grass Fair)	1.0	48.51%
				8	Brush (Good)	1.04	50.45%
				8	Grassland (Good)	0.02	1.04%

## Results

Hydrographs were computed for all rainfall events in WMS using the TR 55 tabular hydrograph method (USDA, 1986). A composite hydrograph was calculated for existing conditions by summing the TR 55 output hydrographs for all 8 drainage basins. The composite hydrograph for proposed conditions summed the TR 55 output hydrographs for the 8 post-project basins. A comparison of the peak flows of the composite hydrographs for each storm event analyzed is presented in Table 3. Change in peak runoff over the entire Project area ranges from -8.7% (100-year 24-hour event) to -17.5% (2-year 24-hour event). Composite hydrographs for pre-and post-Project scenarios are displayed in Figure 5. Tables 4 and 5 show comparisons of the peak flows separated into basins draining to Tributary 1 (the western basins, 2, 3, 4, 5, 7 and 8 shown in Fig. 2) and those draining to Tributary 2 (the eastern basins, 1, and 6 in Fig. 2).

**Table 3 - Composite peak flow comparisons for entire project area.**

24 Hour Rainfall event	Existing Conditions Q (CFS)	Proposed Conditions Without Detention Q (CFS)	% Change
100 year	43.2	39.4	-8.7%
50 year	37.2	33.7	-9.5%
10 year	23.5	20.7	-12.2%
2 year	11.3	9.3	-17.5%

**Table 4 - Composite peak flow comparisons:**

**For the Western Project basins which drain to Tributary 1.**

24 Hour Rainfall event	Existing Conditions Q (CFS)	Proposed Conditions Without Detention Q (CFS)	% Change
100 year	23.5	20.9	-10.9%
50 year	20.2	17.9	-11.5%
10 year	12.7	10.9	-13.8%
2 year	6.1	4.9	-19.7%

**For the Eastern Project Basins which drain to Tributary 2.**

24 Hour Rainfall event	Existing Conditions Q (CFS)	Proposed Conditions Without Detention Q (CFS)	% Change
100 year	19.9	18.5	-7.2%
50 year	17.2	15.8	-7.8%
10 year	10.9	9.7	-10.2%
2 year	5.2	4.4	-14.4%

A summary of basin areas and TR 55 curve numbers are presented in Appendix B. Peak runoff for existing and proposed project site conditions are compared in each basin in Appendix B.

## Conclusion

Simulation of potential Project effects on runoff using TR 55 to estimate runoff changes and simulating the effects of proposed erosion control and soil preparation measures, specifically

the ripping the Kidd Complex soils to a depth of 36" indicates that peak runoff rates will decline for all design storms.

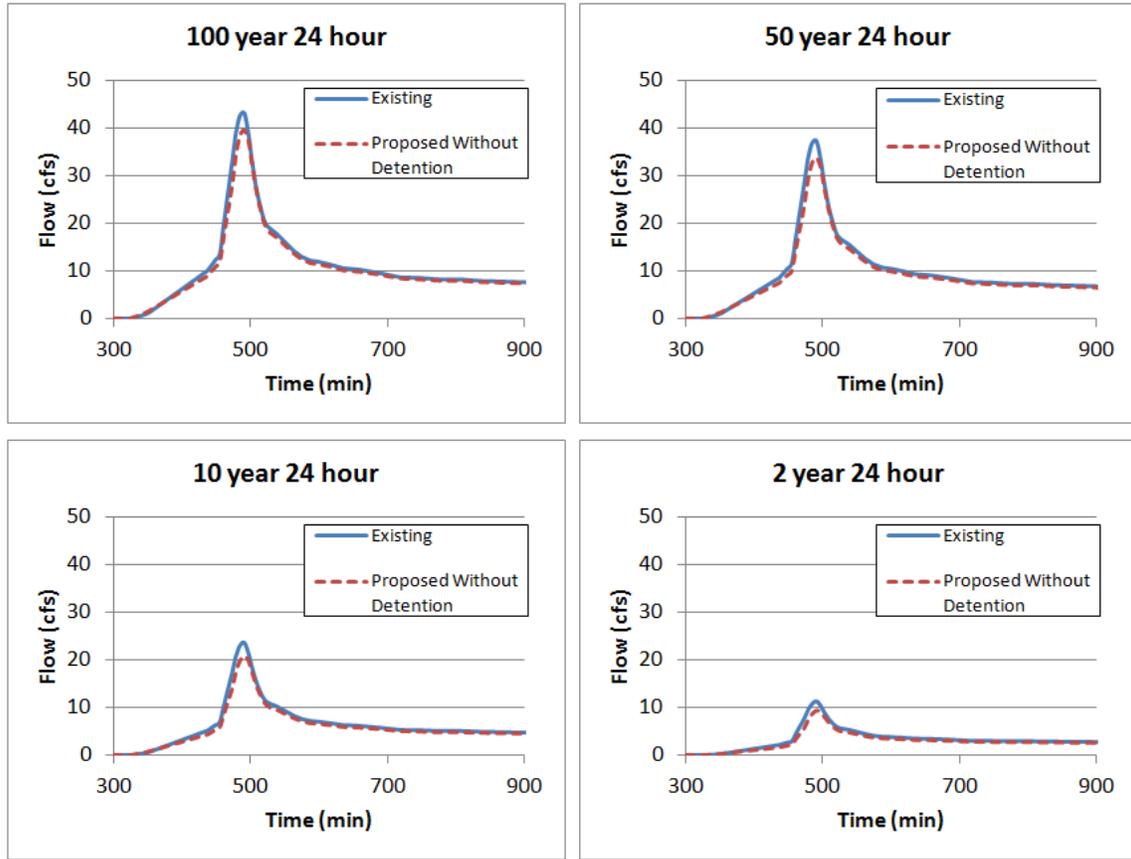


Figure 6-Composite hydrographs displaying peak runoff events for the 100, 50, 10 and 2 year 24 hour events comparing existing conditions to proposed conditions for the entire Project area with and without detention basins.

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# Appendix A

Runoff Curve Number Reports

Runoff Curve Number Report  
 (Generated by WMS)  
 Existing Pre-Project

Wed Apr 01 12:25:38 2015

Runoff Curve Number Report for Basin 8

HSG Land Use Description	acres	CN Area CN x A	Product
D Forest(good)	77	0.005	0.395
D Brush (good)	73	2.031	148.241
D Grassland(good)	80	0.021	1.694

CN (Weighted) = Total Product \ Total Area  
 =====  
 73.082

Runoff Curve Number Report for Basin 7

HSG Land Use Description	acres	CN Area CN x A	Product
C Forest(good)	70	0.101	7.041
D Forest(good)	77	0.955	73.547
C Road"	89	0.073	6.532
D Road"	91	0.357	32.492
C Brush (good)	65	0.043	2.798
D Brush (good)	73	4.487	327.575
D Farmstead	86	0.097	8.379
D Grassland(good)	80	0.582	46.561

CN (Weighted) = Total Product \ Total Area  
 =====  
 75.4069

Runoff Curve Number Report for Basin 6

HSG Land Use Description	acres	CN Area CN x A	Product
D Forest(good)	77	3.566	274.555
D Road"	91	0.315	28.669
D Brush (good)	73	6.646	485.142
D Farmstead	86	0.378	32.549

D Grassland(good) 80 1.053 84.244

CN (Weighted) = Total Product \ Total Area

=====  
75.6948

Runoff Curve Number Report for Basin 5

HSG Land Use Description	acres	CN Area CN x A	Product
C Road"	89	0.130	11.609
C Forest(good)	70	0.034	2.384
C Brush (good)	65	0.114	7.395
D Forest(good)	77	0.374	28.777
D Brush (good)	73	1.154	84.223
D Farmstead	86	0.167	14.328
D Road"	91	0.122	11.071

CN (Weighted) = Total Product \ Total Area

=====  
76.3072

Runoff Curve Number Report for Basin 4

HSG Land Use Description	acres	CN Area CN x A	Product
C Farmstead	82	0.014	1.133
C Brush (good)	65	0.010	0.657
C Forest(good)	70	0.041	2.896
D Forest(good)	77	0.067	5.180
D Brush (good)	73	0.280	20.462
D Farmstead	86	0.138	11.903
D Grassland(good)	80	0.046	3.659

CN (Weighted) = Total Product \ Total Area

=====  
76.866

Runoff Curve Number Report for Basin 3

HSG Land Use Description	acres	CN Area CN x A	Product
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C	Farmstead	82	0.189	15.479
C	Brush (good)	65	0.150	9.775
C	Forest(good)	70	0.014	0.966
D	Brush (good)	73	0.259	18.924
D	Farmstead	86	0.041	3.483
D	Grassland(good)	80	0.001	0.104

CN (Weighted) = Total Product \ Total Area

=====  
74.5138

Runoff Curve Number Report for Basin 2

HSG	Land Use Description		CN	Area	Product
		acres	Area	Product	
			acres	acres	
D	Forest(good)	77	0.249	19.197	
D	Brush (good)	73	1.721	125.648	
D	Grassland(good)	80	0.008	0.679	

CN (Weighted) = Total Product \ Total Area

=====  
73.5339

Runoff Curve Number Report for Basin 1

HSG	Land Use Description		CN	Area	Product
		acres	Area	Product	
			acres	acres	
D	Brush (good)	73	0.353	25.786	
D	Farmstead	86	0.019	1.614	

CN (Weighted) = Total Product \ Total Area

=====  
73.656

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Runoff Curve Number Report for Basin 8

HSG Land Use Description	acres	CN Area CN x A	Product
B Vineyard(AnnualGrass Fair)	69	0.998	68.852
D Brush (good)	73	1.038	75.772
D Grassland(good)	80	0.021	1.694

CN (Weighted) = Total Product \ Total Area

=====  
71.1317

Runoff Curve Number Report for Basin 7

HSG Land Use Description	acres	CN Area CN x A	Product
C Forest(good)	70	0.089	6.214
D Forest(good)	77	0.120	9.244
C Road"	89	0.073	6.532
D Road"	91	0.311	28.264
C Vineyard(AnnualGrass Fair)	79	0.055	4.333
B Vineyard(AnnualGrass Fair)	69	4.024	277.690
D Brush (good)	73	1.650	120.454
D Grassland(good)	80	0.374	29.903

CN (Weighted) = Total Product \ Total Area

=====  
72.078

Runoff Curve Number Report for Basin 6

HSG Land Use Description	acres	CN Area CN x A	Product
D Forest(good)	77	1.891	145.624
D Road"	91	0.283	25.758
B Vineyard(AnnualGrass Fair)	69	4.758	328.329
D Brush (good)	73	3.797	277.197
D Farmstead	86	0.175	15.056
D Grassland(good)	80	1.053	84.244

CN (Weighted) = Total Product \ Total Area

=====  
73.2738

Runoff Curve Number Report for Basin 5

HSG	Land Use Description	acres	CN	Area	Product
			CN x A		
C	Road"	89	0.130	11.609	
C	Vineyard(AnnualGrass Fair)		79	0.148	11.679
B	Vineyard(AnnualGrass Fair)		69	1.745	120.409
D	Road"	91	0.071	6.429	
D	Forest(good)	77	0.000	0.002	

CN (Weighted) = Total Product \ Total Area

=====  
71.6941

Runoff Curve Number Report for Basin 4

HSG	Land Use Description	acres	CN	Area	Product
			CN x A		
C	Vineyard(AnnualGrass Fair)		79	0.065	5.155
C	Forest(good)	70	0.000	0.002	
B	Vineyard(AnnualGrass Fair)		69	0.203	14.025
D	Brush (good)	73	0.144	10.508	
D	Farmstead	86	0.138	11.903	
D	Grassland(good)	80	0.046	3.659	
D	Forest(good)	77	0.000	0.028	

CN (Weighted) = Total Product \ Total Area

=====  
75.8464

Runoff Curve Number Report for Basin 3

HSG	Land Use Description	acres	CN	Area	Product
			CN x A		
C	Farmstead	82	0.054	4.447	
C	Vineyard(AnnualGrass Fair)		79	0.218	17.187
C	Brush (good)	65	0.081	5.276	
D	Brush (good)	73	0.257	18.761	
D	Farmstead	86	0.041	3.483	
B	Vineyard(AnnualGrass Fair)		69	0.002	0.155

D Grassland(good) 80 0.001 0.104

CN (Weighted) = Total Product \ Total Area

=====  
75.5547

Runoff Curve Number Report for Basin 2

HSG	Land Use Description	acres	CN	Area	Product
			CN x A		
B	Vineyard(AnnualGrass Fair)	69	0.744	51.333	
D	Forest(good)	77	0.000	0.022	
D	Brush (good)	73	1.226	89.524	
D	Grassland(good)	80	0.008	0.672	

CN (Weighted) = Total Product \ Total Area

=====  
71.5266

Runoff Curve Number Report for Basin 1

HSG	Land Use Description	acres	CN	Area	Product
			CN x A		
B	Vineyard(AnnualGrass Fair)	69	0.371	25.629	
D	Brush (good)	73	0.001	0.041	

CN (Weighted) = Total Product \ Total Area

=====  
69.006

# Appendix B

Summary of Predicted Runoff Rates

Western Basins								
					Peak Flow CFS			
	Basin	Area acres	TC hours	Weighted CN	2 year	10 year	50 year	100 year
Pre-Project	2	1.98	0.17	73.53	0.8	1.7	2.7	3.2
	3	0.65	0.26	74.51	0.3	0.5	0.9	1.0
	4	0.60	0.20	76.87	0.3	0.6	0.9	1.1
	5	2.09	0.21	76.31	1.0	2.0	3.1	3.6
	7	6.70	0.25	75.41	3.0	6.2	9.8	11.4
	8	2.06	0.21	73.08	0.8	1.7	2.8	3.3
Peaks from Pre-Project composite hydrograph					6.07	12.67	20.18	23.49
Post-Project	2	1.98	0.17	71.53	0.68	1.54	2.53	2.98
	3	0.65	0.26	75.56	0.27	0.57	0.91	1.05
	4	0.60	0.20	75.85	0.27	0.56	0.88	1.03
	5	2.09	0.21	71.69	0.73	1.64	2.70	3.17
	7	6.70	0.25	72.08	2.25	5.03	8.28	9.71
	8	2.06	0.21	71.13	0.69	1.57	2.60	3.06
Peaks from Post-Project composite hydrograph					4.9	10.9	17.9	20.9

Eastern Basins								
					Peak Flow CFS			
	Basin	Area acres	TC hours	Weighted CN	2 year	10 year	50 year	100 year
Pre-Project	1	0.37	0.16	73.66	0.1	0.3	0.5	0.6
	6	11.96	0.25	75.70	5.1	10.5	16.7	19.4
Peaks from Pre-Project composite hydrograph					5.19	10.86	17.18	19.94
Post-Project	1	0.37	0.16	69.01	0.11	0.26	0.43	0.51
	6	11.96	0.25	73.27	4.34	9.49	15.40	18.00
Peaks from Post-Project composite hydrograph					4.44	9.7	15.8	18.5

# Appendix C

Time of Concentration Calculations

## Pre-Project Time of Concentration Calculations

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BASIN 1 AREA 0.37 acres

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ARC 17 Travel Time

0.16 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.1240

L Length 189.98 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

---

Time of Concentration for 1 0.16 hrs.

---

---

BASIN 2 AREA 1.98 acres

---

ARC 2 Travel Time

0.15 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.3495

L Length 303.68 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

ARC 4 Travel Time

0.02 hrs

TYPE: TR55 Shallow Concentrated Flow

$$\text{EQN: } L / (3600 * V)$$

S Slope 0.2564

L Length 470.94 ft

Paved NO

V Velocity 8.169 ft/s

---

Time of Concentration for 2 0.17 hrs.

---

---

BASIN 3 AREA 0.65 acres

---

ARC 3 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

EQN:  $L/(3600 * V)$

S Slope 0.0007  
L Length 13.95 ft  
Paved NO  
V Velocity 0.428 ft/s

ARC 21 Travel Time

0.25 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$

S Slope 0.1037  
L Length 296.38 ft  
n Manning's n 0.2400  
P 2 yr 24 hr Rainfall 4.51 in

---

Time of Concentration for 3 0.26 hrs.

---

---

---

BASIN 4 AREA 0.60 acres

---

ARC 1 Travel Time

0.20 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$

S Slope 0.1661  
L Length 281.30 ft  
n Manning's n 0.2400  
P 2 yr 24 hr Rainfall 4.51 in

---

Time of Concentration for 4 0.20 hrs.

---

-----  
BASIN 5 AREA 2.09 acres  
-----

ARC 9 Travel Time

0.21 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$

S Slope 0.1344

L Length 281.96 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

-----  
Time of Concentration for 5 0.21 hrs.  
-----

-----  
BASIN 6 AREA 11.96 acres  
-----

ARC 14 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

EQN:  $L/(3600*V)$

S Slope 0.3078

L Length 441.82 ft

Paved NO

V Velocity 8.951 ft/s

ARC 15 Travel Time

0.02 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$

S Slope 0.1193

L Length 594.64 ft

n Manning's n 0.0400

r Hydraulic Radius 0.40 ft

ARC 16 Travel Time

0.00 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$   
S Slope 0.1015  
L Length 181.37 ft  
n Manning's n 0.0300  
r Hydraulic Radius 0.67 ft

ARC 18 Travel Time

0.02 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$   
S Slope 0.1345  
L Length 292.18 ft  
n Manning's n 0.0400  
r Hydraulic Radius 0.25 ft

ARC 19 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

EQN:  $L/(3600*V)$   
S Slope 0.0558  
L Length 85.04 ft  
Paved NO  
V Velocity 3.812 ft/s

ARC 20 Travel Time

0.19 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$   
S Slope 0.2158  
L Length 302.55 ft  
n Manning's n 0.2400  
P 2 yr 24 hr Rainfall 4.51 in

-----  
Time of Concentration for 6 0.25 hrs.  
-----

-----  
BASIN 7 AREA 6.70 acres  
-----

ARC 10 Travel Time

0.02 hrs

TYPE: TR55 Shallow Concentrated Flow

EQN:  $L/(3600*V)$

S Slope 0.2911  
L Length 513.83 ft  
Paved NO  
V Velocity 8.705 ft/s

ARC 11 Travel Time

0.04 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$

S Slope 0.0485  
L Length 503.80 ft  
n Manning's n 0.0400  
r Hydraulic Radius 0.30 ft

ARC 12 Travel Time

0.19 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$

S Slope 0.2169  
L Length 309.28 ft  
n Manning's n 0.2400  
P 2 yr 24 hr Rainfall 4.51 in

ARC 13 Travel Time

0.01 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$

S Slope 0.0677  
L Length 230.95 ft  
n Manning's n 0.0300  
r Hydraulic Radius 0.67 ft

-----  
Time of Concentration for 7 0.25 hrs.  
-----

-----  
BASIN 8 AREA 2.06 acres  
-----

ARC 5 Travel Time

0.18 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.2334

L Length 300.00 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

ARC 6 Travel Time

0.02 hrs

TYPE: TR55 Open Channel Flow

$$\text{EQN: } (L * n) / (3600 * 1.486 * (r^{.6667}) * (s^{.5}))$$

S Slope 0.1386

L Length 195.60 ft

n Manning's n 0.0500

r Hydraulic Radius 0.17 ft

ARC 7 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

$$\text{EQN: } L / (3600 * V)$$

S Slope 0.3489

L Length 394.49 ft

Paved NO

V Velocity 9.531 ft/s

---

Time of Concentration for 8 0.21 hrs.

---

## Post Project Time of Concentration Calculations

---

BASIN 1 AREA 0.37 acres

---

ARC 17 Travel Time

0.16 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.1240

L Length 189.98 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

---

Time of Concentration for 1 0.16 hrs.

---

---

BASIN 2 AREA 1.98 acres

---

ARC 2 Travel Time

0.16 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.3495

L Length 303.68 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

ARC 4 Travel Time

0.02 hrs

TYPE: TR55 Shallow Concentrated Flow

$$\text{EQN: } L / (3600 * V)$$

S Slope 0.2564

L Length 470.94 ft

Paved NO

V Velocity 8.169 ft/s

---

Time of Concentration for 2 0.17 hrs.

---

---

BASIN 3 AREA 0.65 acres

---

ARC 3 Travel Time

0.25 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.1037

L Length 296.38 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

ARC 8 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

$$\text{EQN: } L / (3600 * V)$$

S Slope 0.0014

L Length 13.95 ft

Paved NO

V Velocity 0.612 ft/s

---

Time of Concentration for 3 0.25 hrs.

---

---

---

BASIN 4 AREA 0.60 acres

---

ARC 1 Travel Time

0.20 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007 * ((n * L)^{.8}) * (P^{-.5}) * (s^{-.4})$$

S Slope 0.1660

L Length 281.45 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

---

Time of Concentration for 4 0.20 hrs.

---

-----  
BASIN 5 AREA 2.09 acres  
-----

ARC 9 Travel Time

0.21 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$$

S Slope 0.1344

L Length 281.96 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

-----  
Time of Concentration for 5 0.21 hrs.  
-----

-----  
BASIN 6 AREA 11.96 acres  
-----

ARC 14 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

$$\text{EQN: } L/(3600*V)$$

S Slope 0.3078

L Length 441.82 ft

Paved NO

V Velocity 8.951 ft/s

ARC 15 Travel Time

0.02 hrs

TYPE: TR55 Open Channel Flow

$$\text{EQN: } (L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$$

S Slope 0.1193

L Length 594.64 ft

n Manning's n 0.0400

r Hydraulic Radius 0.40 ft

ARC 16 Travel Time

0.01 hrs

TYPE: TR55 Open Channel Flow

$$\text{EQN: } (L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$$

S Slope 0.1015  
L Length 181.37 ft  
n Manning's n 0.0400  
r Hydraulic Radius 0.67 ft

ARC 18 Travel Time

0.02 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$

S Slope 0.1345  
L Length 292.18 ft  
n Manning's n 0.0400  
r Hydraulic Radius 0.25 ft

ARC 19 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

EQN:  $L/(3600*V)$

S Slope 0.0558  
L Length 85.04 ft  
Paved NO  
V Velocity 3.812 ft/s

ARC 20 Travel Time

0.19 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$

S Slope 0.2158  
L Length 302.55 ft  
n Manning's n 0.2400  
P 2 yr 24 hr Rainfall 4.51 in

-----  
Time of Concentration for 6 0.25 hrs.  
-----

-----  
BASIN 7 AREA 6.70 acres  
-----

ARC 10 Travel Time

0.02 hrs

TYPE: TR55 Shallow Concentrated Flow

EQN:  $L/(3600*V)$

S Slope 0.2911  
L Length 517.56 ft  
Paved NO  
V Velocity 8.705 ft/s

ARC 11 Travel Time

0.04 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$

S Slope 0.0485  
L Length 503.80 ft  
n Manning's n 0.0400  
r Hydraulic Radius 0.30 ft

ARC 12 Travel Time

0.19 hrs

TYPE: TR55 Sheet Flow

EQN:  $.007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$

S Slope 0.2169  
L Length 309.28 ft  
n Manning's n 0.2400  
P 2 yr 24 hr Rainfall 4.51 in

ARC 13 Travel Time

0.01 hrs

TYPE: TR55 Open Channel Flow

EQN:  $(L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$

S Slope 0.0667  
L Length 218.69 ft  
n Manning's n 0.0400  
r Hydraulic Radius 0.67 ft

-----  
Time of Concentration for 7 0.25 hrs.  
-----

-----  
BASIN 8 AREA 2.06 acres  
-----

ARC 5 Travel Time

0.18 hrs

TYPE: TR55 Sheet Flow

$$\text{EQN: } .007*((n*L)^{.8})*(P^{-.5})*(s^{-.4})$$

S Slope 0.2334

L Length 304.18 ft

n Manning's n 0.2400

P 2 yr 24 hr Rainfall 4.51 in

ARC 6 Travel Time

0.02 hrs

TYPE: TR55 Open Channel Flow

$$\text{EQN: } (L*n)/(3600*1.486*(r^{.6667})*(s^{.5}))$$

S Slope 0.1386

L Length 195.60 ft

n Manning's n 0.0500

r Hydraulic Radius 0.17 ft

ARC 7 Travel Time

0.01 hrs

TYPE: TR55 Shallow Concentrated Flow

$$\text{EQN: } L/(3600*V)$$

S Slope 0.3489

L Length 394.49 ft

Paved NO

V Velocity 9.531 ft/s

-----  
Time of Concentration for 8 0.21 hrs.  
-----

# ***APPENDIX F***

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## **EROSION ASSESSMENT**

Erosion Assessment  
Davis Family Estate  
Friesen Vineyard

by

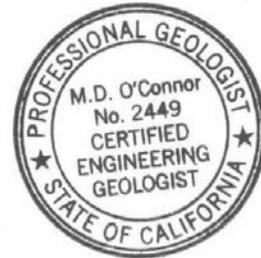


**O'Connor Environmental, Inc.**  
**P.O. Box 794, Healdsburg, CA 95448**

A handwritten signature in blue ink that reads "Matt O'Connor".

---

Matt O'Connor, PhD, CEG #2449



June 2014  
Revised April 2015

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Appendix A - USLE Analyses Provided by Napa Valley Vineyard Engineering



## Overview

This assessment addresses the requirement that the Davis Family Estate Friesen Vineyard Erosion Control Plan (prepared by Napa Valley Vineyard Engineering) satisfy County of Napa General Plan land use Policy CON-48:

*Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control (i.e., Basin Plan) requirements and are protective of the County's sensitive domestic supply watersheds.*

This erosion assessment benefits from our prior analysis of hydrology and peak runoff for this Project. The hydrologic analysis (prepared by O'Connor Environmental, Inc.) supplemented the Erosion Control Plan (ECP) in that it provided guidance regarding the need for and design of on-site runoff detention basins. It also familiarized us with site runoff characteristics and erosion processes under both existing and proposed Project conditions.

The following assessment first describes general site characteristics considered, including precipitation, geology, soils and vegetation. Specific erosion processes expected to be relevant for the project area then considered, followed by a review of the USLE erosion estimates prepared for the ECP by Napa Valley Vineyard Engineering. Finally, major features of the ECP that control soil loss from the site not accounted for in the USLE calculations are described. The ultimate conclusion of this assessment is that post-project erosion rates will be reduced relative to existing conditions.

## Site Characteristics

This site is comprehensively characterized for purposes of the California Environmental Quality Act (CEQA) in a series of separate analyses compiled in the Project Environmental Impact Report. A brief summary of characteristics pertaining to precipitation, geology, soils, and vegetation are presented in the following section.

### Precipitation

The Napa County Soil Survey isohyetal map of mean annual precipitation indicates that the site receives 45 to 50 inches of precipitation. More recent data (PRISM Climate Group, Oregon State University, 2013) estimates that for the period 1981 to 2010, annual rainfall was 36 to 40 inches. In either case, this ridge top upland area receives high amounts of rainfall relative to most of Napa County.

Rainfall intensity for 24 hour duration storms ranging from 2- to 100-year recurrence intervals are reported in the hydrologic analysis.

## Geology

The site is underlain by various units of the Tertiary-age Sonoma Volcanics<sup>1</sup>. The proposed vineyard blocks lie atop rocks mapped as pumiceous ash-flow tuff (map unit Tst), which is comprised of locally welded and agglomeratic tuff, andesite and basalt flow rocks. The slopes above the vineyard blocks are primarily tuff of similar character to Tst, but thinly interbedded with basalt or andesite flows (map unit Tsft). The lower- most portions of the site, possibly including the southern portion of Block C and southwest edge of Block D, are mapped as rhyolite flows with intercalated rhyolite tuff in places (map unit Tsr). Field observations of the site generally confirm the foregoing description, with significant exposures of tuff visible along Friesen Road and volcanic bedrock (andesite, basalt or rhyolite) exposed in the stream bed between Blocks C and D.

With respect to erosion processes, the relevant characteristics of bedrock geology are that much of the site has bedrock exposed at or near the surface, overlain by relatively thin soils. These characteristics would be expected to produce relatively high rates of surface runoff under existing conditions.

## Soils

The Napa County Soil Survey indicates that most of the soil unit on the site is “Rock outcrop-Kidd complex 50-75% slopes” (soil unit 177) with a narrow strip of “Forward gravelly loam 2 to 9% slopes” (soil unit 138) along the western edge of Blocks A, B and C as shown on the Erosion Control Plan (Sheet 2). The Forward soil is typically 35 inches deep. Within soil unit 177, 70% of the unit is expected to be rock outcrop and 25% of the unit is expected to be Kidd loam 15 to 30% slopes”. The Kidd soil is typically about 14 inches deep. Field observations suggest that although soils are generally thin, the proportion of rock outcrop on the ground surface in the proposed vineyard area is much less than 70%.

## Vegetation

Vegetation cover at the project site has considerable variability, but is mostly dense brush (e.g. manzanita) with scattered hardwoods and digger pines and grassy or bare understory. The most concentrated forest stand, including conifers, is located in the southwest portion of Block C. Another smaller area dominated by forest canopy is located along the west edge of Block B. For purposes of USLE calculations, the vineyard blocks were considered to be 25% “woods” and 75% “brush” with a mixture of grasses and weeds in the understory.

---

<sup>1</sup> Graymer, RW et al. (2007) Geologic Map and Map Database of Eastern Sonoma and Western Napa Counties, California. US Geological Survey Scientific Investigations Map 2958.

## Erosion Processes

Observations at the project site indicated limited erosion from the project site. In locations where concentrated surface runoff occurs, erosion and sedimentation occurs. Vegetation cover in areas dominated by brush is limited in that there is very little understory (grasses); in these areas, organic litter is present to reduce the energy of raindrop impacts, but shallow surface root systems (e.g. grass roots) are not common leaving the soil surface potentially vulnerable to surface erosion. Given the extent of rock outcrops and shallow soil, it is likely that surface runoff would occur during relatively intense rainstorms that would be capable of eroding surface soil where runoff concentrates.

Erosion of stream beds and banks was observed in the short reach of stream that passes between Block A and B. The contributing drainage area for this stream is predominantly from offsite. A discontinuous ephemeral channel was observed along the eastern edge of this channel from proposed vineyard Block B. Erosion of alluvium in the stream bed and soil and alluvium in stream banks in this channel is controlled by runoff from offsite.

Bed and banks of two other streams draining from the southern portion of the project site are dominated by bedrock. The stream channel that separates proposed vineyard Blocks C and D is relatively steep, very well armored by bedrock in both bed and banks, and has generally small patches of sediment deposits in the stream bed. The stream channel lying on the southeast edge of proposed vineyard Block D has abundant bedrock and boulders in the bed and banks, but has larger and more frequent patches of sediment deposited on the stream bed. Neither of these channels are vulnerable to bed and bank erosion.

Concentrated runoff from Friesen Road enters the project site from the inboard road drainage ditch at two points via two culverts. An additional culvert is proposed to be placed between the two existing culverts adjacent to vineyard block C. The addition of this culvert is expected to reduce the amount of concentrated flows entering the project site through each culvert therefore decreasing potential for erosion. The quantity of sediment transported in these ditches is relatively small because the road ditches and cut slopes are hewn into tuff bedrock hence there is little potential erosion of the ditch. Runoff from hillslopes above and from the road surface are the primary sources of sediment transported through the road ditches.

No evidence of mass wasting (landslides) was observed on this site during field reconnaissance and in review of aerial imagery.

## Soil Loss Estimate

County of Napa procedures for vineyard development specify that the Universal Soil Loss Equation (USLE) as adapted for vineyards<sup>2</sup> be used to estimate soil loss from the project site's proposed vineyard fields. Tables summarizing the USLE calculations for the project site prepared by Napa Valley Vineyard Engineering for existing site conditions and proposed project conditions are attached in Appendix A. Blocks A, C and D are represented by a single representative hillslope profile. Block B has more variable slope lengths and is represented by four representative hillslope profiles.

USLE parameters rainfall erosivity (R), soil erosiveness (K), slope length, gradient (S), calculated length-slope factor (LS), soil cover (C) and management practice (P) are multiplied together to produce an estimate of erosion rate (tons/acre/year). In the post-project environment, the cover (C) and management practice (P) factors are determined by provisions of the ECP. Specifically, vineyard cover crops with spot spraying along vine rows will maintain 80% soil cover and, in proposed Block D, vine rows are oriented substantially across the vineyard slope, introducing a P factor of 0.6. In the other proposed blocks, the vine rows are oriented substantially up-and-down hill, and the P factor is 1.0.

The result of the USLE analysis prepared for the ECP is summarized in Table 1. The erosion rate predicted for each vineyard block in pre- and post-project conditions is multiplied by gross acreage in each block to estimate annual erosion in each block. The erosion rates in Table 1 for Blocks B and C are the mean of two separate calculations for representative transects within the blocks. For Block B rates are 9.34 and 10.46 t/ac/yr under pre-project conditions and 4.1 and 4.59 t/ac/yr for post-project conditions. For Block C rates are 1.96 and 2.33 t/ac/yr under pre-project conditions and 1.36 and 1.02 t/ac/yr for post-project conditions(see Appendix A). Post-project conditions are expected to reduce surface erosion from about 63t/yr to about 30 t/yr, a decline of over 50%.

Table 1-Summary of Project Site Erosion Analysis (USLE)

Vineyard Area		USLE Erosion Rate (t/ac/yr)		Erosion (t/yr)	
Block	Gross acres	Pre-project	Post-project	Pre-project	Post-project
A	0.54	0.45	0.34	0.24	0.19
B	2.91	9.9	4.34	28.8	12.64
C	7.50	2.15	1.19	16.09	8.93
D	2.78	6.42	2.82	17.86	7.83
			Total	62.9	29.6

<sup>2</sup> USDA Natural Resources Conservation Service (1994). The Universal Soil Loss Equation USLE. Special Applications for Napa County, California. May, 1994. 17 pages.

### **Supplemental Control of Off-site Sediment Delivery**

The project ECP includes two features that are expected to further reduce sediment delivery from the site. First, substantial rock-disposal structures border downslope portions of the perimeters of Blocks B, C and D adjacent to each of the major stream-side setbacks. The design of these rock-disposal structures will provide significant sediment retention potential. In addition, these structures will also provide substantial function as flow spreaders. Additionally, the undisturbed soil and vegetation within streamside setbacks will provide an additional deposition zone within which sediment potentially mobilized within vineyard blocks may be deposited prior to reaching a stream channel. The significant features of the ECP are expected to provide substantial supplemental reduction in sediment delivery from the project site.

### **Summary and Conclusion**

The preceding summary of site conditions, erosion processes, and erosion control measures embodied in the project ECP demonstrates that this project complies with County of Napa County land use Policy CON-48. Erosion rates on the project site are expected to be reduced relative to existing conditions and potential for off-site transport of eroded sediment are substantially reduced.

# ***APPENDIX G***

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## **ENGINEERING GEOLOGICAL AND GEOTECHNICAL EVALUATION**

January 27, 2014  
91567.01

Drew Aspegren  
Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574

**Subject:      Engineering Geological and Geotechnical Evaluation  
                 Friesen Vineyard (APN 018-060-012 & 013)  
                 Davis Family Estate  
                 1875 Friesen Drive  
                 Angwin, California**

Dear Mr. Aspegren:

We are pleased to present the results of our engineering geological and geotechnical evaluation of the proposed planting of the Friesen Vineyards near Angwin, California. We understand that this evaluation will supplement the "Davis Family Estate Friesen Vineyard Erosion Control Plan for New Vineyard", prepared by Napa Valley Vineyard Engineering, Inc. (NVVE, 2013). The site is located on Friesen Drive northwest of the Town of Angwin (Figure 1). We understand the project consists of planting new vineyard on approximately 15 acres. The site is located within the Bell Canyon Reservoir Municipal Watershed.

## **SCOPE OF SERVICES**

The purpose of this investigation was to review the proposed vineyard development and evaluate the potential impact to local surface erosion and slope stability. In order to accomplish this, we performed the following tasks:

- reviewed published and unpublished reports and maps of the site;
- reviewed aerial photographs in order to evaluate the surficial geological features on the site;
- reviewed the Napa Valley Vineyard Engineering, Inc. Erosion Control Plan, dated 22 October 2013; and,
- performed a geologic reconnaissance on 15 January 2013.

## REGIONAL GEOLOGY

The site is located in the Coast Ranges geomorphic province, which is characterized by northwest-southeast trending valleys and ridges (Figure 2). These are controlled by folds and faults that resulted from the collision of the Farallon and North American plates and subsequent shearing along the San Andreas fault. The bedrock in the site vicinity is mapped as Sonoma Volcanics ash flow tuff with basaltic and andesitic lava flow interlayered (Fox and others, 1973). This unit is characterized by an assortment of volcanic deposits including tuff, andesite or basaltic flows breccias, and bedded tuff deposits.

The site lies on the large plateau formed by volcanic deposits that trends roughly northwest-southeast at elevations between 1,600 and 2,000 feet (USGS, 1960), and comprise the crest of Howell Mountain. The numerous and various sized knolls on Howell Mountain represent harder more erosion-resistant bodies of bedrock that form the relief of up to 100 feet above the gently north- and south- dipping plateau surface. At the northwest end of the plateau in the site vicinity, series of man-made lakes are located in some of the closed drainages of the low relief plateau.

No landslides have been mapped on the site; however a small slide is mapped in the swale just to the east of the site (Dwyer and others, 1976). The soil mapped at the site is Rock Outcrop Kidd Complex with only an estimated 30 percent of the area expected to have significant soil development on the volcanic tuff and rhyolite units; the rest of the area has bedrock close to the ground surface (USDA, 1978).

Active faults have been mapped in the vicinity. The closest active fault to the site is the Hunting Creek-Berryessa Fault approximately 8.4 miles east of the site. The Hunting Creek-Berryessa fault is classified as a type B fault by the UBC, (ICBO, 1988) and is capable of generating a Moment Magnitude 6.9 earthquake.

## SITE CONDITIONS

We evaluated site conditions based on air photo interpretation and a geological reconnaissance. No subsurface exploration was conducted.

The site is characterized by a moderate southwest-facing slope divided by Friesen Drive. The proposed vineyard blocks extend from Elevation 2050 to 2150 feet (NVVE, 2013). An existing reservoir lies just northeast of Friesen Drive at approximate Elevation 2125. Friesen Drive road fill provides the reservoir embankment that is approximately 15 feet high.

Two blue-line stream channels flow southwest and cut through the site; one bounding the southeast side of the site and the other, separating Block A and Block B at the northwest end of the site. There is a low-flow stream crossing that provides access to Block A. A tributary to the southern channel drains both Blocks C and D.

Friesen Drive has a soil-lined drainage ditch along most of its upslope edge that is drained southwest into a culvert and to the northeast into the existing reservoir. We noted a 7- to 10-foot-deep by approximately 12-foot-wide trench excavated into bedrock between Block D and Friesen Drive, presumably part of the man-made reservoir and drainage improvements constructed in the area in the 1900s.

We did not observe any surface erosion or slope instability in the proposed vineyard area during our review of the site conditions.

## CONCLUSIONS AND RECOMMENDATIONS

Based on our research and review of the site conditions, the proposed vineyard development appears feasible from the standpoint of engineering geological and geotechnical evaluation. We observed moderate southwest-facing slopes underlain by shallow bedrock that is strong to very strong tuff and little weathered associated volcanic deposits. We did not observe any evidence of significant surface erosion, nor slope instability such as landslides or soil creep. Based on our evaluation we do not believe the proposed planting will adversely impact the slope stability of the site and adjacent areas.

The Erosion Control Plan shows two attenuation basins at the base of Blocks C and D. The attenuation basin typical detail shown on Sheet 3 (NVVE, 2013) shows rock berms to be constructed at the downslope toe of the basin to provide containment. The berm should be keyed a minimum of 12 inches into firm soil or bedrock. Likewise, on the rock disposal area typical detail, the note for the keyway should specify a minimum embedment of 12 inches **into firm soil or bedrock**.

The plans also show other surface drainage improvements such as rock-lined ditches, diversion ditches, and water bars. These features collect surface runoff and direct it to erosion-protected outlets downslope of the vineyard improvements. We find the Napa Valley Vineyard Engineering Erosion Control Plan adequate for maintaining the site soil stability.

## LIMITATIONS

Our services have been performed in accordance with generally accepted principles and practices of the geological and geotechnical engineering profession. This warranty is in lieu of all other warranties, either expressed or implied. In addition, the conclusions and recommendations presented in this report are professional opinions based on the indicated project criteria and data described in this report. They are intended only for the purpose, site location and project indicated.

We trust that this provides you with the information you need. If you have any questions, please call.

Sincerely,

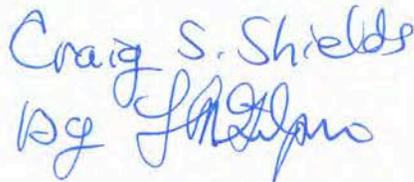
GILPIN GEOSCIENCES, INC.



4/30/14

Lou M. Gilpin, PhD  
Engineering Geologist

## ROCKRIDGE GEOTECHNICAL



Craig Shields  
Geotechnical Engineer

Attachments:

References

Figure 1

Location Map

Figure 2

Regional Geology Map

## REFERENCES

Dwyer, M. J., Noguchi, N., and O'Rourke, J., 1976, Reconnaissance photointerpetation map of landslides in 24 selected 7.5 minute quadrangles in Lake, Napa, Solano, and Sonoma Counties, California: U.S. Geological Survey Open File Report 76-74, St. Helena Quadrangle, scale 1:24,000.

Fox, K.T., Sims, J.D., Bartow, J.A., and Helley, E.J., 1973, Preliminary Geologic map of Eastern Sonoma County and western Napa County, California: U.S. Geological Survey Miscellaneous Field Studies MF-483, scale 1:62500.

International Conference of Building Officials, 1988, Maps of known active fault near-source zones in California and adjacent portions of Nevada: prepared by California Division of Conservation Division of Mines and Geology, p. 19, with maps.

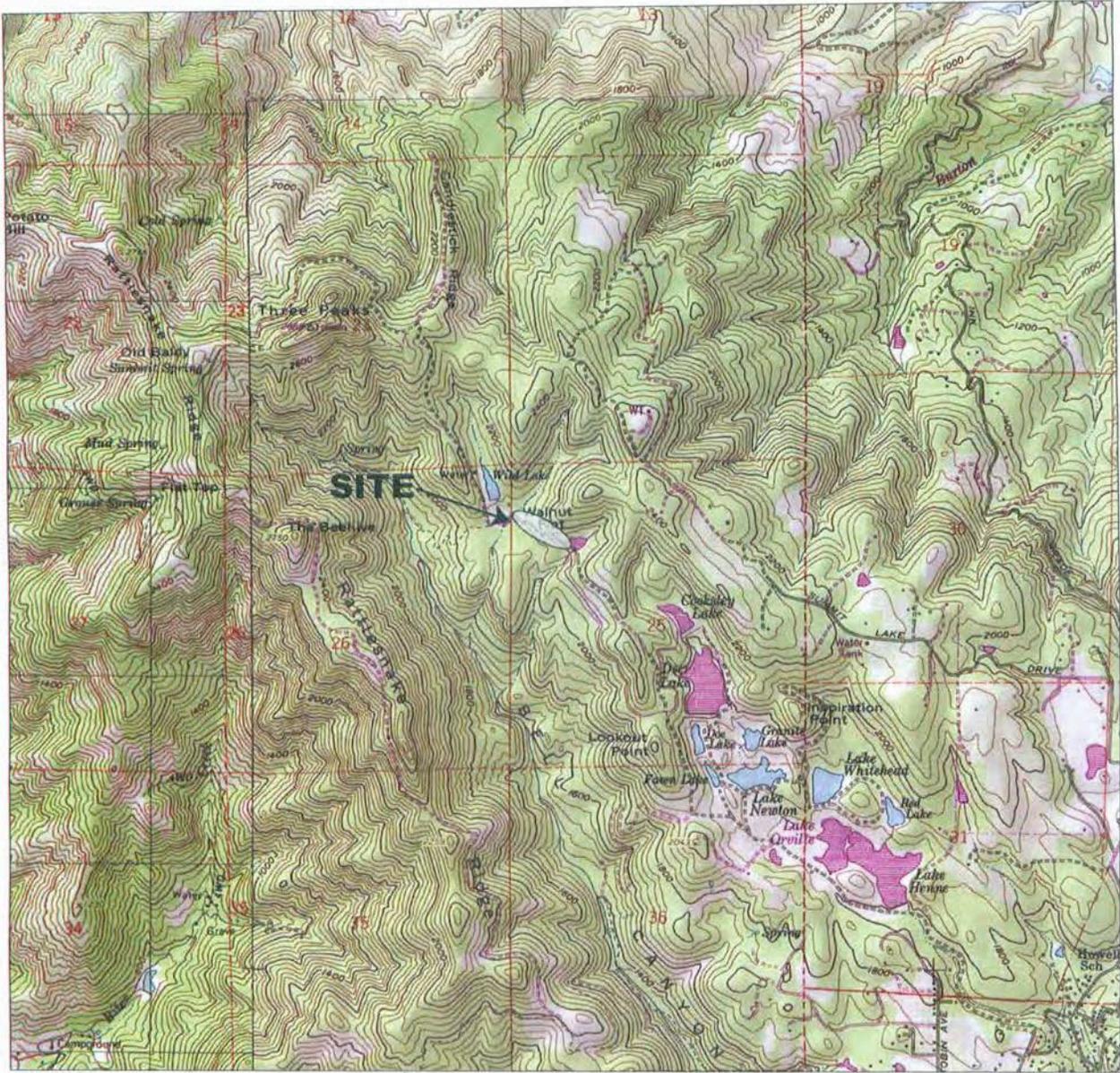
Napa Valley Vineyard Engineering, Inc., 2014, Friesen Vineyard, Davis Family Estate, Erosion Control Plan New Vineyard, 2 Sheets, scale 1-inch=100-feet, dated August 20, 2013.

U.S. Department of Agriculture, 1978, Soil Survey of Napa County, California: U.S. Department of Agriculture Soil Conservation Service, Washington, D.C.

U.S. Geological Survey, 1960, St. Helena Quadrangle California 7.5 Minute Series (Topographic), scale 1:24,000.

## Aerial Photographs

<u>Date</u>	<u>Photo Number</u>	<u>Scale</u>	<u>Source</u>
10/8/99	CIR 6323-11-6, 7, & 8	1:12,000	Pacific Aerial Survey



TN 15°

0 1000 FEET 0 500 1000 METERS  
 0 5 1 MILE  
 Printed from TOPOI ©2001 National Geographic Holdings (www.topo.com)



SITE LOCATION MAP

Friesen Vineyard  
 Davis Family Estate  
 Angwin, California

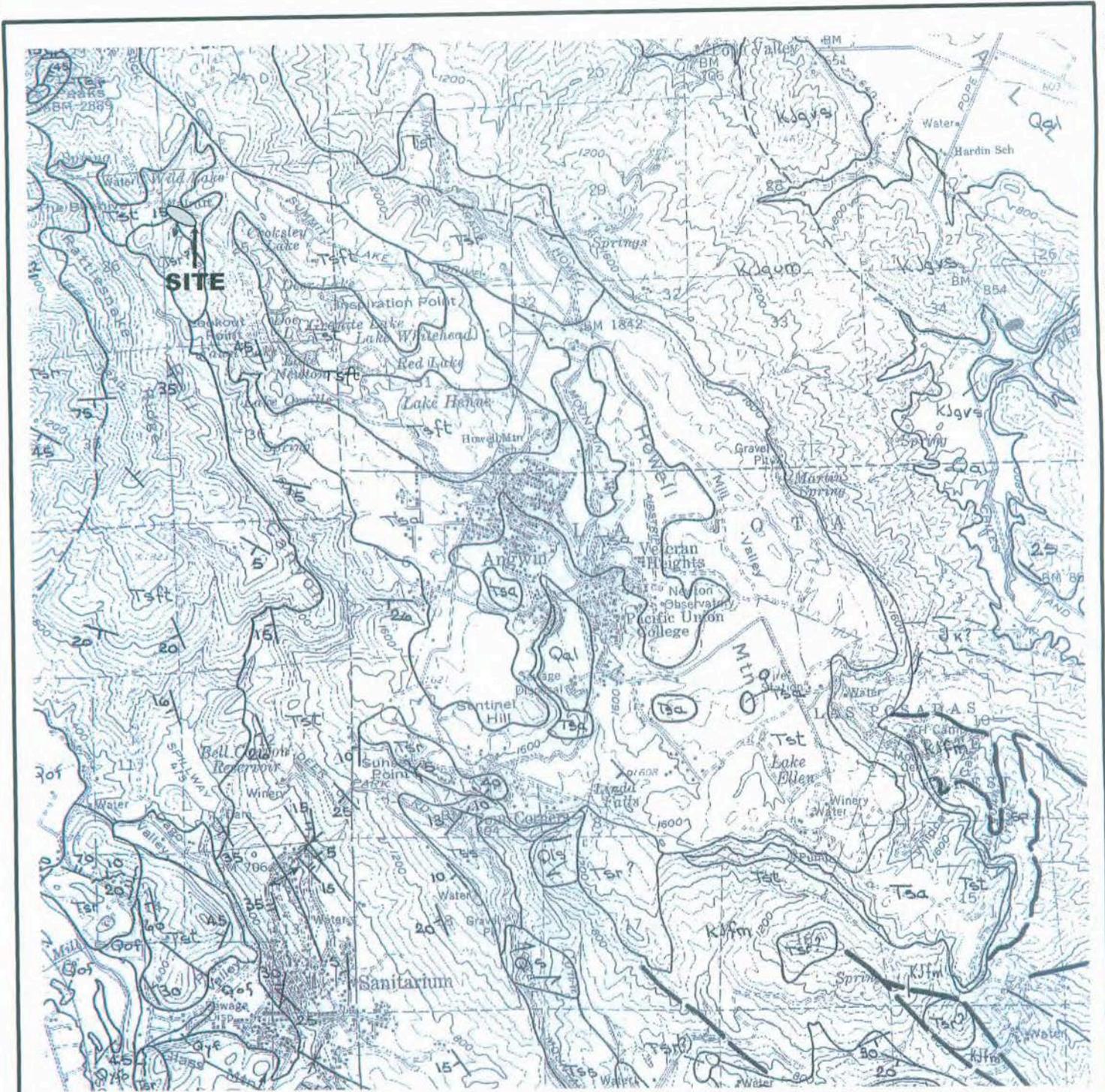
FIGURE

1

 **Gilpin Geosciences, Inc.**  
 Earthquake & Engineering Geology Consultants

JOB NUMBER  
 91567.01

DATE  
 1/27/14



**EXPLANATION**

**Geologic Units**

- Qal - Alluvium
- Qls - landslide deposits
- Sonoma Volcanics
- Tsft - ash-flow tuff
- Tsa - andesitic lava
- Tst - pumucitic ash-flow tuff
- Tsr - rhyolite lava flows

0 1 mile

Approximate Scale



Base Map: Fox, et al., 1973; U.S.G.S. St Helena Quad.

**REGIONAL GEOLOGY MAP**

Friesen Vineyard  
 Davis Family Estate  
 Angwin, California

FIGURE

**2**

**Gilpin Geosciences, Inc.**  
 Earthquake & Engineering Geology Consultants

JOB NUMBER  
 91567.01

DATE  
 1/27/14

Gilpin Geosciences, Inc  
Earthquake & Engineering Geology

March 19, 2015  
91567.01

Drew Aspegren  
Napa Valley Vineyard Engineering, Inc.  
176 Main St., Suite B  
St. Helena, CA 94574

**Subject: Response to Comments**  
Engineering Geological and Geotechnical Evaluation  
Friesen Vineyard (APN 018-060-012 & 013)  
Davis Family Estate  
1875 Friesen Drive  
Angwin, California

Dear Mr. Aspegren:

We are pleased to present our response to the comments and recommendations outlined in the 16 January 2015 letter by California Geological Survey geologists titled: *Review of Administrative Draft Environmental Impact Report (DEIR), Davis Family Estates, Friesen Vineyard Project*. We quote the pertinent comment / recommendation and respond below.

- 1) *The Project Geologist should evaluate and disclose if debris slide slope geomorphology exists on the northeastern portion of the property and draw a conclusion that the proposed plan will avoid operations on or above those slopes.*

We agree with the reviewer that the slopes above the reservoir and part of Friesen Road appear gullied and hummocky, indicative of shallow debris slide scars and deposits. However, we believe potential instability on these slopes will have no impact on the proposed project vineyard development, nor does the development affect the stability of these slopes. We did not observe any similar features within the project vineyard development, Blocks A – D, during our site reconnaissance, nor during our aerial photograph review.

- 3) *An evaluation of the existing condition of the reservoir embankment should be included in the EIR and THP. The evaluation should include determination of equipment and vehicle weight limitations on top of the embankment and discuss any necessary mitigations.*

The Friesen Road alignment includes an embankment for the on-site reservoir. The Block D vineyard lies downslope of the road embankment and reservoir. The embankment is approximately 250 feet long and up to 15 feet high. The upstream side is inclined at approximately 5:1 horizontal to vertical (H:V) and the downstream side is

inclined between 2:1 to 3:1 (H:V). Very competent volcanic bedrock crops out in cuts adjacent to the embankment.

The road on the embankment is performing adequately; we observe no signs of erosion or instability during our site reconnaissance. In our opinion, traffic from heavy equipment used for grading of Blocks A – D would not adversely impact the embankment stability. There is no need for the heavy equipment, such as a single-tooth ripper D-9 Caterpillar, to use the road since it would be able to access the blocks from the delivery drop point.

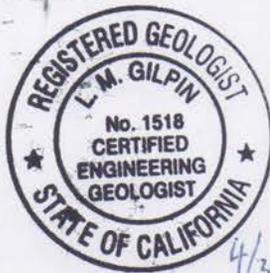
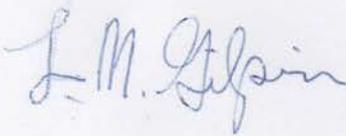
5b) *Please indicate a maximum thickness of the proposed rock fill disposal face and discuss if the fill face should be laid back to a 1.5:1 gradient.*

The rock fill disposal areas are intended to provide on-site storage for large rock fragments excavated during the vineyard preparation. The size of the rock will depend on its hardness and the effectiveness of the ripping operations. Typically, rock fragments from 1 to 4 feet in diameter boulders are stockpiled. The disposal areas are not subject to sucharging of any kind; different from conventional rip rap placement. When designing armor for slopes supporting large fills we use 1.5:1 as a conventional slope inclination. However, in the case of rock disposal areas that are placed on low inclination slopes, it is our experience that slopes of less than 10 feet tall, inclined at 1:1 can be used.

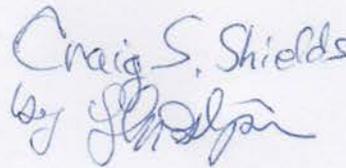
We trust that this provides you with the information that you require at this time. If you have questions please call.

Sincerely,  
GILPIN GEOSCIENCES, INC.

ROCKRIDGE GEOTECHNICAL



Lou M. Gilpin, PhD  
Engineering Geologist



Craig S. Shields  
Geotechnical Engineer

# ***APPENDIX H***

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## TIMBER HARVEST PLAN

**THP Index**

<b>Section</b>	<b>Description</b>	<b>Location</b>	<b>Page #</b>
	Maps, THP etc.	<b>End of document</b>	<b>155+</b>
I	1. Signature Pages		<b>3</b>
	8. Location		<b>5</b>
II	14. Silviculture		<b>12</b>
	THP maps		<b>13 - 14</b>
	38. LTO Responsibilities		<b>76</b>
	CAL FIRE Approval Signature		<b>3</b>
III	Project description		<b>86</b>
	Alternatives		<b>94</b>
IV	Assessment Areas		<b>119</b>
V	Confidential Archeological addendum	<b>Appendix K</b>	<b>146</b>
VI	NSO	<b>Appendix P</b>	
	Timber Owner notification		<b>148</b>
	Adjacent Landowner & Down stream water user letter		<b>158</b>
	Legal notice posting		<b>167</b>
	NOI		<b>169</b>

**Explanation of additional documentation.**

The project is located in Napa County California, as such an Erosion Control Plan (ECP) has been designed to meet Napa County regulations and is attached to this THP. An Environmental Impact Report has been prepared by Analytical Environmental Services to satisfy CEQA requirements for the Timberland Conversion. Frequent reference to the Draft EIR will be made throughout this document.

**Additional Reports Attached to the THP and Draft EIR.**

<b>Report Name</b>	<b>Appendix</b>	<b>Author</b>
Draft Davis Friesen EIR	A	Analytical Environmental Services
Erosion Control Plan	B	Napa Valley Vineyard Engineering
Intentionally left blank		
Biological Resources Report	D	Kjeldsen Biological
Hydrologic analysis	E	O'Connor Environmental
Erosion Assessment	F	O'Connor Environmental
Engineering Geological Evaluation	G	Gilpin Geosciences
Timber Harvest Plan	H	Environmental Resources Mgnt.
Timber Conversion Plan	I	Environmental Resources Mgnt
Integrated Pest Management	J	Pina Vineyard Management
Archaeological Survey Report, CAA (confidential)	K	Origer and Associates
Technical Adequacy	L	Napa County RCD
NRCS	M	Web Soil Survey
Adjacent Landowners and Friesen Road	N	Environmental Resource Mgnt.
Water Demand and Water Availability Analysis	O	Napa Valley Vineyard Engineering
Northern Spotted Owl Survey and Report	P	Forest Ecosystem Management
Pictures	Q	Kjeldsen Biological
Vineyard Soils Technology	R	Paul Anamosa

FOR ADMIN. USE ONLY  
Amendments-date & S or M

**TIMBER HARVESTING PLAN**  
STATE OF CALIFORNIA  
DEPARTMENT OF FORESTRY  
AND FIRE PROTECTION  
RM-63 (02-03)

FOR ADMIN. USE ONLY

- 1. \_\_\_\_\_ 7. \_\_\_\_\_
- 2. \_\_\_\_\_ 8. \_\_\_\_\_
- 3. \_\_\_\_\_ 9. \_\_\_\_\_
- 4. \_\_\_\_\_ 10. \_\_\_\_\_
- 5. \_\_\_\_\_ 11. \_\_\_\_\_
- 6. \_\_\_\_\_ 12. \_\_\_\_\_

THP Name: **Davis Estates, Friesen Vineyards**

(In the CAL FIRE FPS, this is "THP Description")

If this is a Modified THP, check box: [ ]

THP No. \_\_\_\_\_  
 Dates Rec'd \_\_\_\_\_  
 \_\_\_\_\_  
 Date Filed \_\_\_\_\_  
 Date Approved \_\_\_\_\_  
 Date Expires \_\_\_\_\_  
 Extensions 1) [ ] 2) [ ]

This Timber Harvesting Plan (THP) form, when properly completed, is designed to comply with the Forest Practice Act (FPA) and Board of Forestry and Fire Protection rules. See separate instructions for information on completing this form. NOTE: The form must be printed legibly in ink or typewritten. The THP is divided into six sections. If more space is necessary to answer a question, continue the answer at the end of the appropriate section of your THP. If writing an electronic version, insert additional space for your answer. Please distinguish answers from questions by *font change*, **bold** or underline.

SECTION I - GENERAL INFORMATION

This THP conforms to my/our plan and upon approval, I/we agree to conduct harvesting in accordance therewith. Consent is hereby given to the Director of Forestry and Fire Protection, and his or her agents and employees, to enter the premises to inspect timber operations for compliance with the Forest Practice Act and Forest Practice Rules.

1. TIMBER OWNER(S) OF RECORD:

	<u>North Parcel</u>	<u>South Parcel</u>
Name(s)	<u>Bercovich Edward L &amp; Darleen</u>	<u>Frost Fire Vineyards II, LLC</u>
Address(s)	<u>1591 Ellis Street, Apt 313</u> <u>Concord, CA 94520</u>	<u>15572 Computer Ln.</u> <u>Huntington Beach, CA 92649</u>
Phone	<u>(510) 206-4533</u>	<u>(714) 815-2811</u>
Signature	<u>See page 3 for signatures</u>	

**NOTE:** The timber owner is responsible for payment of a yield tax. Timber Yield Tax information may be obtained at the Timber Tax Section, MIC: 60, State Board of Equalization, P.O. Box 942879, Sacramento, California 94279-0060; phone 1-800-400-7115; BOE Web Page at [http:// www.boe.ca.gov](http://www.boe.ca.gov).

2. TIMBERLAND OWNER(S) OF RECORD:

	<u>North Parcel</u>	<u>South Parcel</u>
Name(s)	<u>Bercovich Edward L &amp; Darleen</u>	<u>Frost Fire Vineyards II, LLC</u>
Address(s)	<u>1591 Ellis Street, Apt 313</u> <u>Concord, CA 94520</u>	<u>15572 Computer Ln.</u> <u>Huntington Beach, CA 92649</u>
Phone	<u>(510) 206-4533</u>	<u>(714) 815-2811</u>
Signature	<u>See page 3 for signatures</u>	

3. LICENSED TIMBER OPERATOR(S): Name To be determined at a later date Lic. No. LTO #

(If unknown, so state. You must notify CAL FIRE of LTO prior to start of operations)

Address \_\_\_\_\_  
 City \_\_\_\_\_ State CA Zip \_\_\_\_\_ Phone \_\_\_\_\_  
 Signature See Page 3 for signature Date \_\_\_\_\_

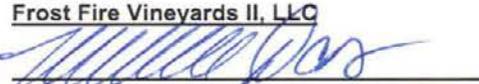
4. PLAN SUBMITTER(S): Name Mike Davis, Frost Fire Vineyards II, LLC

Address 15572 Computer Lane  
 City Huntington Beach State CA Zip 92649 Phone (714) 815-2811  
 Signature See page 3 for signatures

# THP Signature page

For Office Use Only	
THP #:	
Date Rec'd:	

1. TIMBER OWNER(S) OF RECORD:

	<u>North Parcel</u>	<u>South Parcel</u>	
Name	<u>Edward and Darleen Bercovich</u>	<u>Frost Fire Vineyards II, LLC</u>	
Signature			Date <u>5/9/14</u>
Signature	<u>Darleen Bercovich</u>		Date _____

NOTE: The timber owner is responsible for payment of a yield tax. Timber Yield Tax information may be obtained at the Timber Tax Section, MIC: 60, State Board of Equalization, P.O. Box 942879, Sacramento, California 94279-0060; phone 1-800-400-7115; BOE Web Page at [http:// www.boe.ca.gov](http://www.boe.ca.gov).

2. TIMBERLAND OWNER(S) OF RECORD:

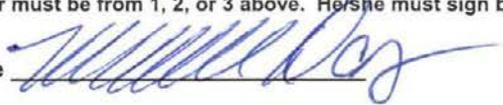
	<u>North Parcel</u>	<u>South Parcel</u>	
Name	<u>Edward and Darleen Bercovich</u>	<u>Mike Davis, Frost Fire Vineyards II, LLC</u>	
Signature			Date <u>5/9/14</u>
Signature	<u>Darleen Bercovich</u>		Date _____

3. LICENSED TIMBER OPERATOR(S): Name Unknown at this time Lic. No. \_\_\_\_\_ LTO # \_\_\_\_\_

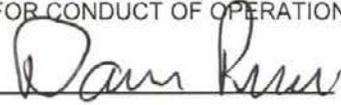
Signature \_\_\_\_\_ Date \_\_\_\_\_

4. PLAN SUBMITTER(S): Name Mike Davis, Frost Fire Vineyards II, LLC

(Submitter must be from 1, 2, or 3 above. He/she must sign below. Ref. Title 14 CCR 1032.7 (a))

Signature  Date 5/9/14

5. RESPONSIBLE FOR CONDUCT OF OPERATION: Name <sup>Pina</sup> Davie ~~Pine~~, Pina Vineyard Management

Signature  Date 5/16/14

13. REGISTERED PROFESSIONAL FORESTER: Name Scott R. Butler Lic. No. 1851

Signature  Date 5-16-14

**DIRECTOR OF FORESTRY AND FIRE PROTECTION**

This Timber Harvesting Plan conforms to the rules and regulations of the Board of Forestry and Fire Protection and the Forest Practice Act:

By: \_\_\_\_\_  
(Signature)  
\_\_\_\_\_  
(Date)

- 5. a. List person to contact on-site who is responsible for the conduct of the operation. If unknown, so state and name must be provided for inclusion in the THP prior to start of timber operations.

Name **Davie Pina, Pina Vineyard Management**

Address **P. O. Box 373**

City **Oakville,** State **CA** Zip **94562** Phone **(707) 944-2229**

Signature **See page 3 for signatures** Date \_\_\_\_\_

LTO listed under item #3 will be present on site during timber harvesting operations. The landings and skid trails, if any, will be maintained by the listed LTO until a Notice of Completion is filed. The landowner listed in item #1 will be responsible for vineyard development after the Notice of Completion is filed.

- b.  Yes  No Will the timber operator be employed for the construction and maintenance of roads and landings during conduct of timber operations? If no, who is responsible?

The timber operator will be responsible for the maintenance of erosion control facilities on the timber harvest plan and timberland conversion. This includes all landings, skid trails and roads, up to the time of completion. After the completion has been filed and approved, the responsible person will be the landowner and implementation of the erosion control plan (**See attached ECP appendix B**). It should be pointed out that a 3-year maintenance period exists on this THP, see below.

- c. Who is responsible for erosion control maintenance after timber operations have ceased and until certification of the Work Completion Report? If not the LTO, then a written agreement must be provided per 14 CCR 1050 (c).

Same as number three above

The Licensed Timber Operator shall also:

- a. Inform the RPF of any site conditions, which in the LTO's opinion, prevent implementation of the approved plan, including amendments.
- b. Keep a copy of the approved plan and amendments available, at all times, at the site of active timber operations.
- c. Maintain the location of all flagging during the conduct of operations (skid trails, watercourse protection, stream crossings, harvest boundary etc.).

After the completion has been filed and approved, the responsible person will be the landowner for the balance of the 3-year maintenance period.

Completion meeting:

There shall be a meeting at the end of timber harvesting operations between the RPF, LTO and the vineyard manager to discuss each person's responsibilities when logging is complete. CAL FIRE and any other reviewing agency may be invited to this meeting. **THP mitigation #1, Completion meeting, see item #38 of the THP.**

**Maintenance and Monitoring of Logging Roads and Landings.** 923.7 (j) In watersheds with listed anadromous salmonids and in planning watersheds immediately upstream of, and contiguous to, any watershed with listed anadromous salmonids, the prescribed maintenance period for deactivated or abandoned roads shall be one year unless otherwise prescribed by the Director pursuant to 14 CCR § 1050. The prescribed maintenance period for logging roads and associated landings, including roads, shall be three years.

6. a. Expected date of commencement of timber operations:  
 date of THP conformance, or  \_\_\_\_\_(date)
- b. Expected date of completion of timber operations:  
 3 years from date of THP conformance, or  \_\_\_\_\_(date)

7. The timber operation will occur within the:
- |   |   |
|---|---|
| <input type="checkbox"/> COAST FOREST DISTRICT                      | <input type="checkbox"/> The Tahoe Regional Planning Authority Jurisdiction |
| <input type="checkbox"/> Southern Subdistrict of the Coast F. D.    | <input type="checkbox"/> A County with Special Regulations, identify:       |
| <input type="checkbox"/> SOUTHERN FOREST DISTRICT                   | <input type="checkbox"/> Coastal Zone, no Special Treatment Area            |
| <input type="checkbox"/> High use subdistrict of the Southern F. D. | <input type="checkbox"/> Special Treatment Area(s), type and identify:      |
| <input checked="" type="checkbox"/> NORTHERN FOREST DISTRICT        | <input type="checkbox"/> Other  |

8. Location of the timber operation by legal description:  
 Base and Meridian:  Mount Diablo  Humboldt  San Bernardino

<u>Section</u>	<u>Township</u>	<u>Range</u>	<u>Acreage</u>	<u>County</u>	<u>Assessor's Parcel Number (Optional)</u>
<b>Por. 25</b>	<b>T9N</b>	<b>R6W</b>	<b>10</b>	<b>Napa</b>	<b>APN# 018-060-012 and 018-060-013</b>
TOTAL ACREAGE <u>13.6</u> (Logging Area Only)					<b><u>Portion of the St. Helena quadrangle</u></b>

**Acreage explanation**

Block	Project Acreage		Parcel	Project Acreage	
	Gross	Net Vineyard		Forest Conversion	Other
A	0.5	0.2	North	3.1	6.1
B	2.9	2.2	South	6.9	7.5
C	7.4	6.1		<hr/>	
D	2.8	2.0		10.0	13.6
	<hr/>	<hr/>			
	13.6	10.5			

The total project area is 13.6 acres, of which 10 acres are forested and will be converted. The balance of the project site's 13.6 acres is composed of grass, brush and ruderal acreage. The net area of the vineyard will be 10.5 acres. The acreage difference between 13.6 gross acres and 10.5 net acres of vineyard are comprised of avenues, turn spaces and existing roads.

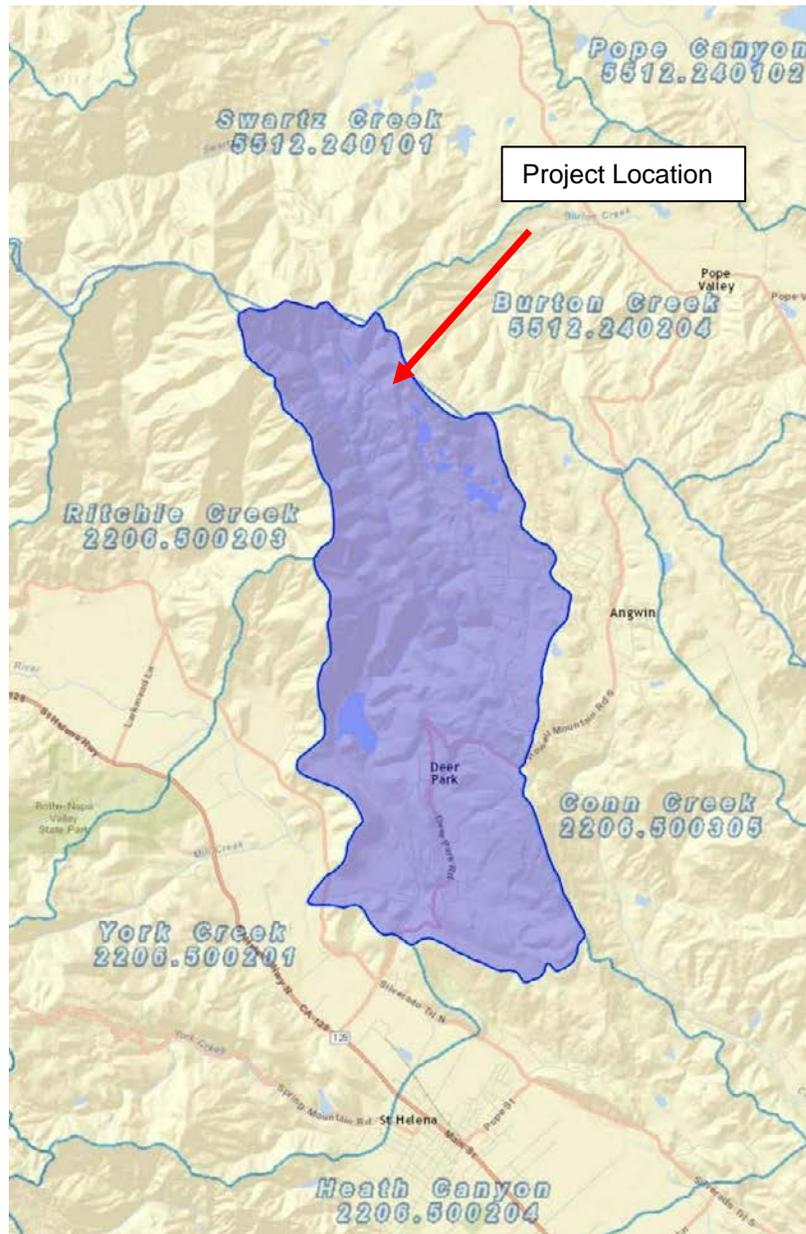
See General location map **Page 13**

See THP map **Page 14**

**Calwater ID v2.2:** Bell Canyon Reservoir Watershed, #2206.500202, 6830 acres

<b>Watershed Name:</b>	Bell Canyon Reservoir		
<b>Calwater ID v2.2:</b>	2206.500202		
<b>Calwater ID v1.2:</b>	206.500200		
<b>Average Annual Rainfall:</b>	38	Coho	Chinook
<b>Evolutionarily Significant Units:</b>		No	No

Bell Canyon Reservoir Watershed



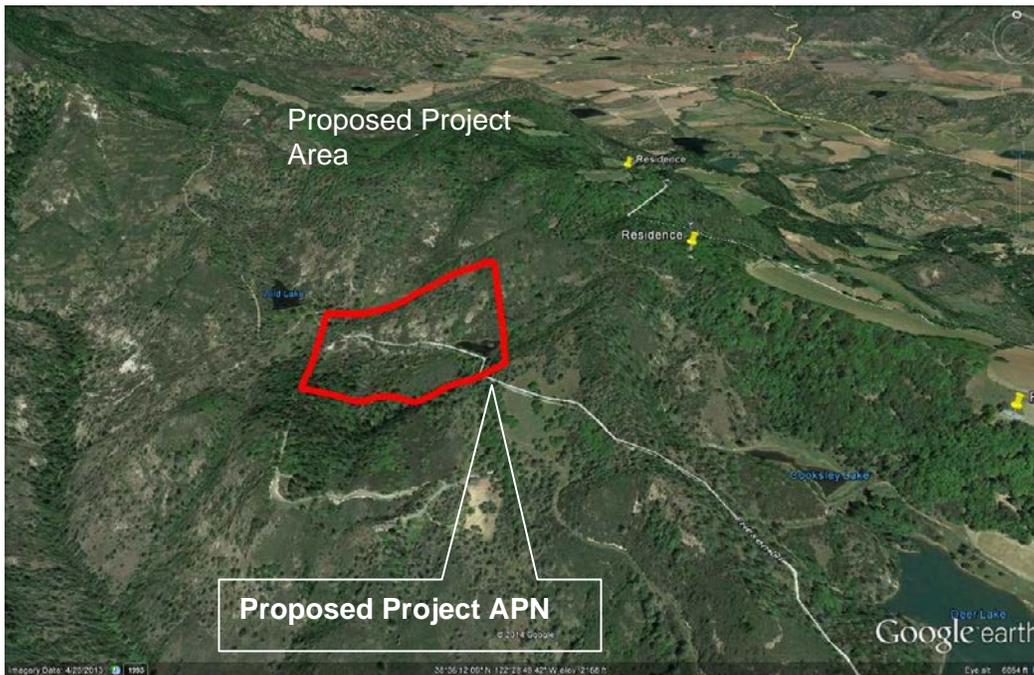
**Zoning**

See aerial photo of adjacent landowners existing uses, **below**. The property is zoned AW-AC, Agriculture-Watershed by Napa County.

**AW Agricultural Watershed**

“The AW district classification is intended to be applied in those areas of the county where the predominant use is agriculturally oriented, where watershed areas, reservoirs and floodplain tributaries are located, where development would adversely impact on all such uses, and where the protection of agriculture, watersheds and floodplain tributaries from fire, pollution and erosion is essential to the general health, safety and welfare.”

Agricultural use, such as timber harvesting and vineyard production, is a permitted use. The Napa County Code of Regulations requires preparation of an Erosion Control Plan for any development or changed land use unless exempted. An Erosion Control Plan is being prepared to Napa County Technical Standards by a professional vineyard engineering firm for this project. See **ECP Appendix B**; the ECP will meet county technical standards, see Technical Adequacy **Appendix L**. The ECP has been made a part of this plan. An approved copy of the ECP will be submitted to CAL FIRE upon approval by Napa County Planning Department. The major land uses in the area are agricultural, open space, college, airport and rural residential. Most of the agricultural use is vineyard production of ultra premium grapes. The residential use is primarily rural residences. Substantial areas of undeveloped wildland are present.



9.  Yes  No Has a Timberland Conversion been submitted? If yes, list expected approval date or permit number and expiration date if already approved.

The conversion application was submitted to CAL FIRE Sacramento; approval expected prior to THP approval.

10.  Yes  No Is there an approved Sustained Yield Plan for this property? Number \_\_\_\_\_ Date app.

Yes  No Has a Sustained Yield Plan been submitted but not approved? Number \_\_\_\_\_ Date sub.

11.  Yes  No Is there a THP or NTMP on file with CAL FIRE for any portion of the plan area for which a Report of Satisfactory Stocking has not been issued by CAL FIRE?  
If yes, identify the THP or NTMP number(s):

Yes  No Is there a contiguous even aged unit with regeneration less than five years old or less than five feet tall? If yes, explain. Ref. Title 14 CCR 913.1 (933.1, 953.1) (a)(4).

12.  Yes  No Is a Notice of Intent necessary for this THP?

Yes  No If yes, was the Notice of Intent posted as required by 14 CCR 1032.7 (g)?

**Adjacent Land Owners**

A list of all landowners located within 300 feet of the THP boundary can be found on **page 155 of the THP**. Notice was also sent to all landowners located within 300 feet of the Friesen Drive, see **page 158 and 159 of the THP** for an example of the adjacent landowner letter. Responses can be found on **page 162 of the THP**. The letter was mailed to landowners located within 300 feet of the THP boundary on **10-10-2014**.

**Down Stream Water Users**

Several adjacent landowners exist within 1,000 feet downstream of the THP boundary. As such a notice by letter was sent to these downstream water users. See the a copy of the letter **page 155**. The notice was published in a newspaper of general circulation. Forest practice rules, 14 CCR section 1032.10. A copy of this legal notice can be found on **page 167**.

**Friesen Drive**

Friesen Drive and Buckeye Lane are private roads accessing the project area. This road system is shown on the THP map **page 13 and 14 of the THP**. Notice of intent was also sent to all landowners owning property within 300' of the Friesen Drive. This letter was mailed on **10-10-2014**. Responses, if any can be found on **page 158 of the THP**

**Notice of Intent, Posting**

The notice of intent was posted (**7-9-2015**) at the entrance to the property on Friesen Rd. See **page 169 of the THP**.

13. RPF preparing the THP: Name Scott R. Butler RPF Number RPF #1851

Address 889 Hwy 20-26

City Ontario State OR Zip 97914 Phone (707) 468-8466

a.  Yes  No I have notified the plan submitter(s), in writing, of their responsibilities pursuant to 14 CCR 1035 of the Forest Practice Rules See attached letter on page 148 of the THP. Mailed 10-10-2014.

Yes  No I have notified the timber owner and the timberland owner of their responsibilities for compliance with the Forest Practice Act and rules, specifically the stocking requirements of the rules and the maintenance of erosion control structures of the rules. See attached letter on page 148 of the THP. Mailed 10-10-2014.

b.  Yes  No I will provide the timber operator with a copy of the portions of the approved THP as listed in 14 CCR 1035 (e). If "no", who will provide the LTO a copy of the approved THP?

I, or my supervised designee, will meet with the LTO prior to commencement of operations to advise of sensitive conditions and provisions of the plan pursuant to 14 CCR 1035.2.

c. I have the following authority and responsibilities for preparation and administration of the THP and timber operation. (Include both work completed and work remaining to be done):

I am responsible for the preparation of this THP and coordination with the regulatory agencies to gain its approval. I will provide any additional information needed for plan approval or amendment. I will provide field assistance to the timber owner, CAL FIRE and the Timber Operator in carrying out the provisions of the plan as requested or as required by 14 CCR 1035.1 and 2. I will be available, on request, to provide professional assistance during timber operations as required by CCR 1035 (d)(1). I will have no responsibility for execution of the plan. I have done no survey work and have accepted the existing boundaries as represented by the landowner.

d. Additional required work requiring an RPF, which I do not have the authority or responsibility to perform:

**None at this time**

e. After considering the rules of the Board of Forestry and Fire Protection, review of the EIR and the mitigation measures incorporated in this THP, I have determined that the timber operation:

will have a significant adverse impact on the environment. (Statement of reasons for overriding considerations contained in Section III).

will not have a significant adverse impact on the environment.

Registered Professional Forester: I certify that I, or my supervised designee, personally inspected the THP area, and this plan complies with the Forest Practice Act, the Forest Practice Rules and the Professional Foresters Law. If this is a Modified THP, I also, certify that: 1) the conditions or facts stated in 14 CCR 1051 (a) (1) - (16) exist on the THP area at the time of submission, preparation, mitigation, and analysis of the THP and no identified potential significant effects remain undisclosed; and 2) I, or my supervised designee, will meet with the LTO at the THP site, before timber operations commence, to review and discuss the contents and implementation of the Modified THP.

Signature See page 3 for signature Date \_\_\_\_\_

**LICENSED TIMBER OPERATOR RESPONSIBILITY ACKNOWLEDGEMENT**

(As per 14 CCR §§ 1035.3(a)(1)-(2), 1092.14(a)(1)-(2).)

Harvesting Plan Number: Unknown at this time

Licensed Timber Operator Information

Name: Unknown at this time

Street Address/PO Box: \_\_\_\_\_ City: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone Number: \_\_\_\_\_ LTO Number: \_\_\_\_\_

I hereby agree to abide by the terms and specifications of the plan. I have read and understand my responsibility as LTO, as described under 14 CCR §§ 1022.4, 1090.12 and 1092.14. I agree to fulfill my responsibilities as an LTO as they pertain to this plan.

LTO Signature: See Signature page 3 of the THP Title: \_\_\_\_\_

**Responsible On-Site Contact (if different)**

Name: N/A

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Street Address/PO Box: \_\_\_\_\_ City: \_\_\_\_\_ Zip: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

**REGISTERED PROFESSIONAL FORESTER (RPF) RESPONSIBILITY ACKNOWLEDGEMENT**

(As per 14 CCR § 1035.1)

**RPF Certified to Provide Professional Advice:**

Name: Scott R. Butler

Street Address/PO Box: 889 Hwy 20-26 City: Ontario Zip Code: 97914

Telephone Number: 707 468-8466 RPF Number: 1851

I have read and understand my responsibility as RPF, as described under 14 CCR § 1035.1(a)-(g). I agree to fulfill my responsibilities as an RPF as they pertain to this plan.

Yes  No I have been retained as the RPF available to provide professional advice to the licensed timber operator and timberland owner upon request throughout the active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

RPF Signature: See Signature page 3 of the THP

**PLAN SUBMITTER RESPONSIBILITY ACKNOWLEDGEMENT**

(As per 14 CCR § 1035)

**Plan Submitter**

Name: Mike Davis, Frost Fire Vineyards II, LLC  
Street Address/PO Box: 15572 Computer Ln. City: Huntington Beach, CA Zip Code: 92649

Telephone Number: (714) 815-2811

I have read and understand my responsibilities as Plan Submitter as described under 14 CCR § 1035. I certify that I have fulfilled my legal obligation as stated in the forest practice rules and agree to fulfill my responsibility as the plan submitter as it pertains to this plan.

Yes  No I have retained the services of an RPF to provide professional advice to the LTO and timberland owner upon request throughout active timber operations regarding: (1) the plan, (2) the forest practice rules, (3) and other associated regulations pertaining to timber operations.

Yes  No I have authorized the timberland owner to perform the services of a professional forester, understanding that the services will be provided personally on lands owned by the timberland owner.

Plan Submitter Signature: See page 3 for signature

**TIMBERLAND OWNER RESPONSIBILITY ACKNOWLEDGEMENT**

(As 14 CCR § 1035(d)(2)(B))

Timberland Owner

Name: Not Applicable

Street Address/PO Box: \_\_\_\_\_ City: \_\_\_\_\_ Zip Code: \_\_\_\_\_

Telephone Number: \_\_\_\_\_

I have read and understand my responsibilities as timberland owner as described under 14 CCR § 1035(d)(2)(A)–(C). I certify that I have fulfilled my legal obligation as stated in the forest practice rules, and agree to fulfill my responsibilities as the timberland owner as it pertains to this plan.

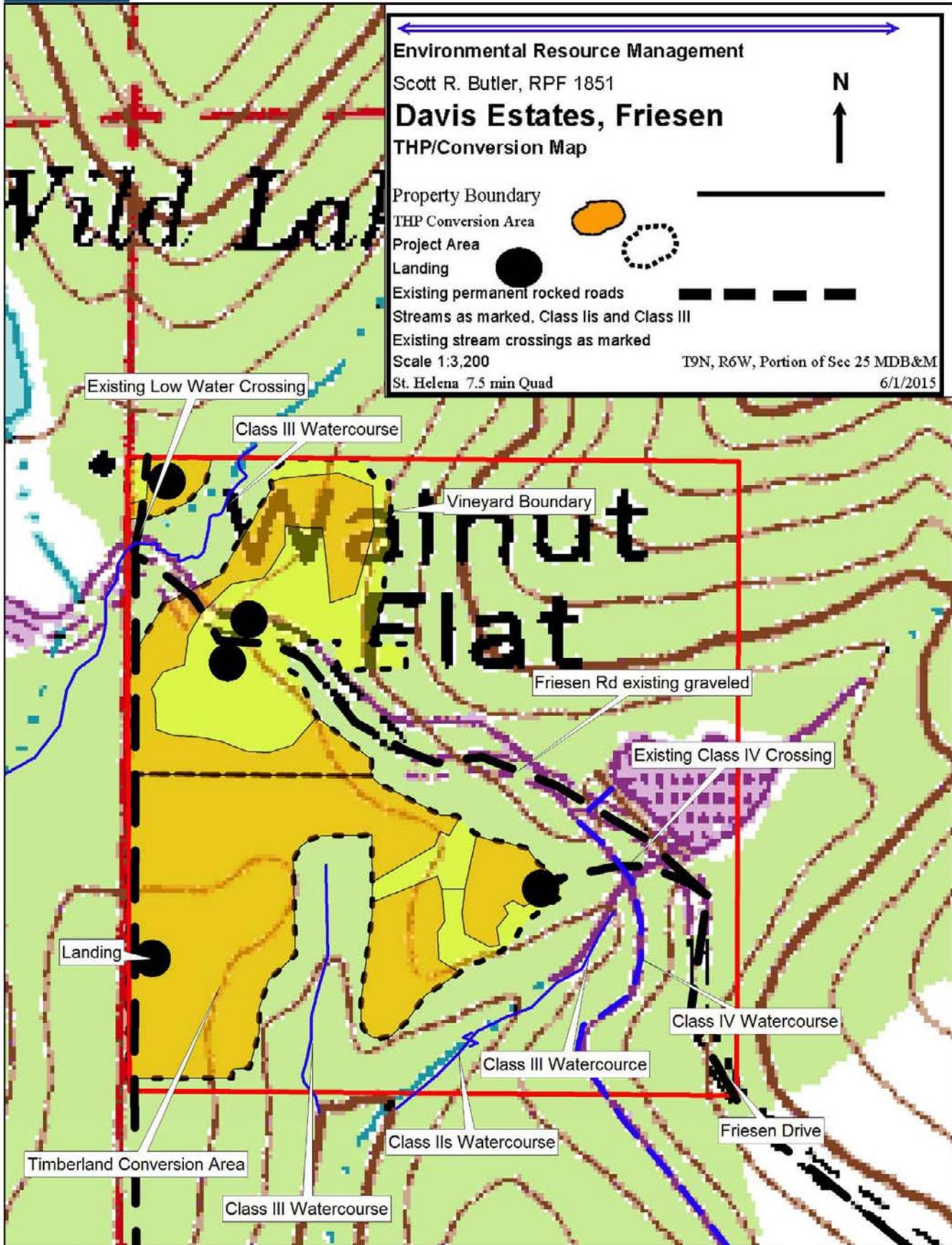
I understand that I have been authorized by the plan submitter to perform the services of a professional forester pursuant to the Landowner exception in PRC § 757, and such services will be personally performed only on those lands that I own.

Timberland Owner's Signature: Not Applicable





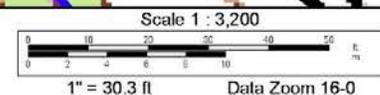
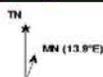
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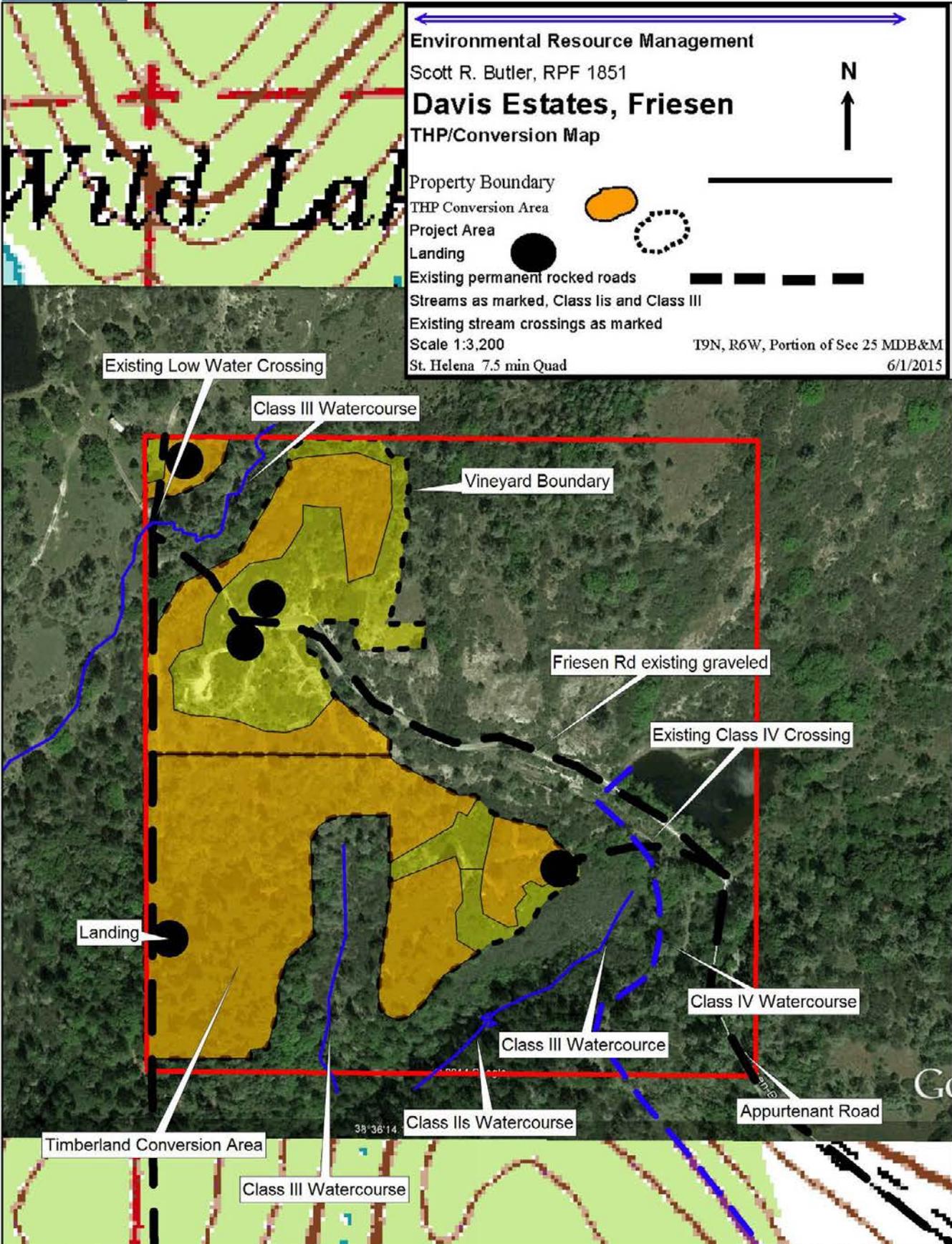
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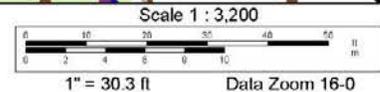
XMap® 8



Data use subject to license.

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Yes  No Is a waiver of marking by the RPF requirement requested? If yes, how will LTO determine which trees will be harvested or retained? If yes and more than one silvicultural method, or Group Selection is to be used, how will LTO determine boundaries of different methods or groups?

e. Forest products to be harvested: **Sawlogs, Fuelwood, Pulpwood, Poles, and Chips**

**The landowner proposes to mill all logs onsite. No logs will be transported from the proposed project.**

- f.  Yes  No Are group B species proposed for management?  
 Yes  No Are group B or non-indigenous A species to be used to meet stocking standards?  
 Yes  No Will group B species need to be reduced to maintain relative site occupancy of A species?

If any answer is yes, list the species, describe treatment, and provide the LTO with necessary felling and slash treatment guidance. Explain who is responsible and what additional follow-up measures of manual treatment or herbicide treatment are to be expected to maintain relative site occupancy of A species. Explain when a licensed Pest Control Advisor shall be involved in this process.

g. Other instructions to LTO concerning felling operations. **None**

h.  Yes  No Will artificial regeneration be required to meet stocking standards?

i.  Yes  No Will site preparation be used to meet stocking standards? If yes, provide the information required for a site preparation addendum, as per 14 CCR 915.4 (935.4, 955.4).

j. If the rehabilitation method is chosen provide a regeneration plan as required by 14 CCR 913 (933, 953) .4 (b).

PESTS

15. a.  Yes [ ] No Is this THP within an area that the Board of Forestry and Fire Protection has declared a Zone of Infestation or Infection, pursuant to PRC 4712 - 4718? If yes, identify feasible measures being taken to mitigate adverse infestation or infection impacts from the timber operation. See 14 CCR 917 (937, 957) .9 (a).

**Sudden Oak Death**

The proposed project is in Napa County and in a declared zone of infestation for Sudden Oak Death (SOD). See **map figure next page**. This map shows the project location has no known locations of SOD within 3 miles of the project area. However, since the plan is within the declared zone of infestation, it has limitations placed on the shipment of vegetation from the plan area. These limitations have been placed in the THP document, see below. For a current list of **Regulated Hosts and Plants** proven to be associated with *Phytophthora ramorum* (SOD), see below. Neither the RPF nor the botanist found evidence of SOD on, or adjacent to, the project area.

**Regulations**

The following California counties have confirmed *Phytophthora ramorum* findings and are under State and federal quarantine:

**Alameda, Contra Costa, Humboldt, Lake, Marin, Mendocino, Monterey, Napa, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano, Sonoma and Trinity County.**

The organism has also been found in Curry County, southwestern Oregon. These quarantined areas are subject to regulations regarding the movement and use of susceptible plants. County Agricultural Commissioners enforce both California and federal regulations.

**Best Management Practices, BMP's for SOD****Infested forests**

If possible, avoid working in areas that are known or appear to be diseased. If you cannot avoid infested areas, follow the sanitation practices below when working in the known infested areas. If you don't know if the site is infested, play it safe and assume that it is. Maps of infested areas are available online (see **page 17** and resources **page 145**). These maps do not note every diseased area, but can give you a general idea of the infested areas in California.

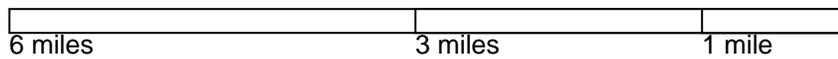
**Pathogen biology and risk of spread**

*Phytophthora ramorum* prefers moist environments and cool temperatures, and can be found in living, dying, or recently dead plants. During wet periods, the organism seems to be most active and therefore most likely to start new infections. Its spores can be found in soil, water, and plant material. The risk of movement and spread of the organism is greatest in muddy areas and during rainy weather. If possible, do not work in infested forests during the wet, rainy and cool times of the year. Generally, avoid working in muddy conditions.

**SOD Mitigation (Sudden Oak Death),**

Timber operations which minimize or avoid the introduction, build-up, or spread of SOD are considered Best Management Practices (BMP's). Specific state and federal regulations must be followed, but BMP's should be incorporated, and could act as timber harvest plan mitigations. Infected host material (especially foliage) can be carried on logging equipment and vehicles, and transferred to other sites. Mitigation measures to minimize the unintended movement of host material are recommended. The following (or similar) mitigation measures should be implemented to the extent practical and may be required for timber operations regulated by the State. Even if

regulated articles do not move from the ZOI and are therefore not subject to state or federal regulations, CCR 917.9(a) still requires mitigation in timber harvest plans on state or private property for a pest covered by a ZOI.



Confirmed Location of *Phytophthora ramorum*

Confirmed isolations of *Phytophthora ramorum* provided by UC Davis, UC Berkeley, and CDFA.  
Updated 7-8-2014 by UC Berkeley GIF  
<http://www.suddenoakdeath.org/>  
<http://www.oakmapper.org/>

**THP mitigation #2, Sudden Oak Death Syndrome**

1. RPF (or LTO for most Exemptions) should inform personnel that they are working in an area with Sudden Oak Death disease, unauthorized movement of plant material is prohibited, and the intent of mitigation measures is to prevent disease spread (14 CCR 1035.2). If some sites in the general operating area are found to be disease-free or have a low incidence of disease, consider initiating operations on these sites before moving to more heavily infested sites.
2. To the extent practical and feasible, route equipment away from host plants and trees, especially in areas with disease symptoms. Locate landings, log decks, logging roads, tractor roads, and other sites of equipment activity away from host plants, especially in areas with disease symptoms.
3. Each time equipment or vehicles leave the site, the equipment or vehicles should be inspected by operations personnel for host plant debris (leaves, twigs, and branches). Host plant debris should be removed from equipment and vehicles prior to their departure. This applies to all equipment and vehicles associated with the operation, including logging equipment, log-hauling trucks, pick-up trucks, employee's personal vehicles, etc. An exception will be granted for equipment or vehicles that leave the site temporarily and will not be traveling to uninfested areas prior to their return.
4. Conduct operations during the dry season. Utilize paved and rocked roads and landings to the extent possible.
5. After working in an infested area, remove or wash off accumulations of soil, mud, and organic debris from shoes, boots, vehicles and heavy equipment, etc. before traveling to an area that is not infested with Sudden Oak Death. Lysol® or a bleach solution can be used to disinfect shoes and boots after cleaning.
6. Inspect loads of logs and equipment leaving the site to ensure that no host material is being transported without a permit. This may require cleaning mud from vehicle to remove host plant material imbedded in mud, depending on conditions when the timber harvest is conducted. Consider establishing an equipment power wash station. The station should be: located within the generally infested area, paved or rocked, well drained so that vehicles exiting the station do not become contaminated by the wash water, located where wash water and displaced soil does not have the potential to carry fines to a watercourse (see "Saturated Soil Conditions" in 14 CCR 895.1), pay particular attention to sites where soil and organic debris may accumulate.

**Firewood**

If firewood from host material is being removed from the site for commercial or private use, a compliance agreement must be in place. The information as to where and what is being removed, how it will be transported, specifically where it will be moved to, and during what time period should be included in the harvest document if the document will act as the compliance agreement. If this information is not included in the plan, a separate compliance agreement will be necessary prior to movement of host material. Compliance agreements not associated with a CAL FIRE harvest document are issued by the local County Agricultural Commissioner. Secure loads completely when transporting firewood or other materials. No unprocessed less than 4" diameter material shall be removed from the project site. All processed firewood must be free of leaves and small branches.

Host material may be moved from the plan area in the form of firewood. Destinations of firewood is limited to SOD quarantined counties (See the top of page 14 for a list of guaranteed counties). Transportation will be in ten wheelers, pickup trucks and trailers, and transportation is limited to locations within the SOD guaranteed counties.

Transportation of firewood is limited to the non winter period. See **THP page 16** for a list of guaranteed counties.

**Treatments**

There are treatments or processing protocols that can be used to minimize the risk of spread. Removing the bark allows the wood to dry and permits movement within the state and out of state with a certificate. If bark is removed or other parts are not used, burn the excess materials if possible. If burning is done, make sure it is done in a safe and approved manner. Burning poses no risk of spread since the organism is killed in the fire. When storing material, keep it dry and out of any standing water. Kiln drying will also kill the organism.

**Drafted water**

Infested water has not been proven to be a pathway for *P. ramorum* to cause new infections in forested areas, but has been shown to cause new infections in nurseries. Hence, drafted water has the potential to spread spores of the pathogen onto roadside hosts during dust abatement operations. Spores of the pathogen have been recovered from water collected beneath infected hosts, as well as from creeks and streams in infested areas. Water is not regulated under either state or federal quarantine regulations. However, the following practices may minimize the unintentional introduction of the pathogen:

- If water is drafted and used for dust control, draft water from areas upstream of known infestations or from uninfested drainages.
- If drafting from known infested watercourses, do not water roads with that source in areas that are not known to be infested.
- If water is being drafted under a 1600 Series agreement with the California Department of Fish and Game and/or used in both infested and non-infested areas, it may require treatment with Ultra Clorox, similar to the recommended water treatment for *P. lateralis*, which causes Port-Orford Cedar Root Disease. The registration rate is 1 gallon of Ultra Clorox Bleach per 1,000 gallons of drafted water.
- Do not use untreated water from infested areas for irrigation of host species nursery stock. Off-road approaches to drafting sites should be sufficiently rocked to minimize accumulating infested soil on drafting vehicles.

**Snag retention**

As stem-infected oaks and tanoaks decline and die, they are invaded by other wood decaying organisms and bark beetles. Such trees are prone to early structural failure, often breaking off several feet above ground. When selecting snags or recruitment trees for snags as a benefit for wildlife use, do not select SOD-infected trees.

**Operations personnel**, as used in this section of the THP, will be under the direction of the LTO.

**LTO Responsibility:** Prior to the start-up of initial operations during any given year, the LTO is responsible for reviewing current SOD hosts, regulated area and operational requirements necessary to be in conformance with this compliance agreement.

**SOD mitigations** as proposed are valid for one year, if SOD mitigations change after one year the THP will be amended to include the most current SOD information and mitigations.

## Host Species List

## Regulated *Phytophthora ramorum* Hosts of Concern when Filing Timber Harvest Documents

Plants on the federal *P. ramorum*-Regulated Host list should be addressed by Registered Professional Foresters (RFPs) in harvest documents. These plants are: naturally infected by *P. ramorum*; found in California's forests; and have had Koch's postulates completed, documented, reviewed, and accepted. Further details on regulated plants and plant parts can be found at <http://www.aphis.usda.gov/ppq/ispm/pramorum/>.

Plants on the federal *P. ramorum* Associated Host list are regulated in nurseries only and not in wildland settings; therefore, they do not have to be addressed by RFPs.

*Note: As new hosts are found, they will be added to the host or associated host list. As Koch's postulates are successfully completed on associated hosts, they will be reclassified as hosts. As neither list is static, it is important to check for updates frequently.*

<u>Scientific Name</u>	<u>Common Name</u>
<i>Acer macrophyllum</i> -----	Bigleaf maple
<i>Adiantum aleuticum</i> -----	Western maidenhair fern
<i>Adiantum jordanii</i> -----	California maidenhair fern
<i>Aesculus californica</i> -----	California buckeye
<i>Arbutus menziesii</i> -----	Madrone
<i>Arctostaphylos manzanita</i> -----	Manzanita
<i>Frangula californica</i> (=Rhamnus californica)-----	California coffeeberry
<i>Frangula purshiana</i> (=Rhamnus purshiana)-----	Cascara
<i>Heteromeles arbutifolia</i> -----	Toyon
<i>Lithocarpus densiflorus</i> -----	Tanoak
<i>Lonicera hispidula</i> -----	California honeysuckle
<i>Maianthemum racemosum</i> (=Smilacina racemosa)-----	False Solomon's seal
<i>Pseudotsuga menziesii</i> var. <i>menziesii</i> -----	Douglas-fir
<i>Quercus agrifolia</i> -----	Coast live oak
<i>Quercus chrysolepis</i> -----	Canyon live oak
<i>Quercus kelloggii</i> -----	California black oak
<i>Quercus parvula</i> var. <i>shrevei</i> -----	Shreve's oak
<i>Rhododendron</i> spp.-----	Rhododendron (including azalea)
<i>Rosa gymnocarpa</i> -----	Wood rose
<i>Sequoia sempervirens</i> -----	Coast redwood
<i>Trientalis latifolia</i> -----	Western starflower
<i>Umbellularia californica</i> -----	California bay laurel/pepperwood
<i>Vaccinium ovatum</i> -----	Evergreen huckleberry

## Pine Slash Treatment

The project area proposes the removal of Ponderosa Pine trees. The project area lies within a Board declared Zone of Infestation. Pine slash will be treated as listed below.

### **917.9, 937.9, 957.9 Prevention Practices. [All Districts]**

(c) The Board of Forestry has determined that insects breeding in pine logging slash can be a significant problem if they are not managed. Board of Forestry Technical Rule Addendum Number 3 describes the considerations that the RPF preparing a THP shall use in developing alternatives for treating pine brood material. The addendum also describes methods of treating pine brood material that may be used to meet the objectives of this rule. The RPF may propose or the Director may require hazard reduction treatments to mitigate significant adverse impacts of insects breeding in pine brood material at any time during the life of a THP.

### **BOARD OF FORESTRY TECHNICAL RULE ADDENDUM NO. 3 BROOD MATERIAL**

#### **A. Hazard Determination**

- Tree mortality and top killing result when Ips beetle populations reproduce and increase in pine brood material and then leave this material and attack pines in the residual stand. Hazard increases with the amount of pine brood material present.
- Any suitable breeding material, including pine logs from recently felled trees, represents a hazard as long as it remains on site long enough for the beetles to complete a life cycle in it. During suitable weather, the life cycle may be as short as five weeks. Piling of brood material is more hazardous than leaving it spread-out on the ground.
- Timing of brood material production may influence hazard. Hazard is presumed to be highest when pine brood material is produced from February through June and moderate when produced at other times of the year. At no time is hazard presumed to be low. In some parts of the Southern Forest District, hazard is presumed to be high year round, regardless of when the brood material was produced.
- Age, size, and species of residual trees influence hazard. Young pole size stands of pine are most susceptible to damage. Tree species other than pine are not damaged by insects that breed in pine brood material. Brood material from tree species other than pine generally does not contribute to the build-up of damaging beetle populations.
- Low vigor residual trees are at greatest risk. Historically, drought stressed, suppressed, and overstocked stands have been identified as high risk. Off-site, diseased, damaged, and overmature trees are also at risk.
- If damaging insect populations are high, hazard will be greater. High beetle populations have the potential to damage more than just low vigor trees. Chronic pine mortality in the area should be evaluated to determine if high beetle populations are present. An established Zone of Infestation for pine bark beetles implies that conditions are appropriate for the build-up of beetle populations.
- Potential for the spread of damaging insects to adjacent ownerships should be considered. The closer the ownership, the greater the risk. Generally, ownerships beyond one quarter of a mile will have little or no risk.
- Value of residual trees should be considered. How much loss to residuals is acceptable?

**B. Pest Hazard Reduction Treatment Alternatives applied to Pine Slash**

Any treatment to reduce hazard should apply to the entire area where a hazard has been determined to exist, including the area where lopping for fire hazard reduction has been used. Treatment alternatives include modification of the brood material so that it is less suitable as a breeding site for beetles or methods to reduce beetle populations that have developed. Specific Treatment Alternatives applied to pine brood material are as follows:

- (1) The following treatments are acceptable provided they are completed before insect broods emerge from infested material. During weather that is suitable for brood development, a five week window is the maximum time that should elapse between creation of brood material and its treatment by one of the following methods: brood material can be removed from the site for processing or disposal; if left on-site, it can be piled and burned, chipped, debarked, treated with an appropriate pesticide, or piled and covered with clear plastic. If brood material is piled and covered, the plastic used must be a minimum of 6 mil thick; piles must be completely sealed by the plastic so that there are no openings to the outside and remain covered for 6 months (or 4 months if at least 2 summer months are included).
- (2) The following treatment is acceptable, provided it is completed as soon after brood material creation as is practical, but not later than one week. Lop all branches from the sides and tops of those portions of main stems which are 3" or more in diameter. Branches shall be scattered so that stems have maximum exposure to solar radiation. Do not pile brood material. Lopped stems could also be cut into short segments to decrease drying time and further reduce hazard.
- (3) Burying brood material will prevent it from being colonized by beetles, but may not prevent emergence of the beetles. Therefore, it must be buried before becoming infested. During suitable weather, brood material must be buried concurrent with its creation. "Suitable" weather depends upon location. In areas that receive snowfall, suitable weather generally exists from April 15-October 15. In other areas, suitable weather exists from March 1-November 30.

**THP Mitigation #3, Pine Slash reduction, see THP page 22**

Pine Slash Hazard Reduction Mitigations implemented under this THP/Conversion

Treatment of Pine slash as directed by Board Of Forestry Technical Rule Addendum No. 3 See **THP page 21** for details.

**Sustainable Integrated Pest Management (IPM) Plan**

The project proposes the use of a **Sustainable Integrated Pest Management Plan (IPM)**. See the IPM developed by Justin Leigon Viticulturist for Pina Vineyard Management. **Attached IPM, Appendix J**. Best management practices have been incorporated into the plan and will be part of the vineyard management activities. These best management practices are also part of the Erosion Control Plan application with Napa County, see **Attached ECP, Appendix B**.

**Excerpt form IPM**

Farming Philosophy

Our intention on this site is to use a multi-pronged approach to farming and management, derived from the best possible combination of sustainable practices, integrated pest management (IPM), and the use of certified organic materials wherever possible.

Over the past decade, the farming community has made large strides toward a more sustainable model. The focus has been on building soil health, reducing chemical inputs, and measuring the impact on the local ecosystem. We believe that the production of ultra-premium wine grapes does not have to come at the cost of the environment. In fact, by using a more balanced approach, the lifespan of a vineyard is lengthened and the need for intervention is decreased. All farming decisions are based on a holistic approach with an increase in biodiversity as a main objective.

**THP Mitigation #4, Integrated Pest Management Plan, see THP page 23**

Implementation of the Integrated Pest Management Plan, see the **IPM, Appendix J**.

- b.  Yes  No      If outside a declared zone, are there any insect, disease or pest problems of significance in the THP area? If yes, describe the proposed measures to improve the health, vigor, and productivity of the stand(s).

HARVESTING PRACTICES

16. Indicate type of yarding system and equipment to be used:

- | GROUND BASED*   | CABLE  | SPECIAL                                |
|---|--|--|
| a. <input checked="" type="checkbox"/> Tractor, including end/long lining | d. <input type="checkbox"/> Cable, ground lead | g. <input type="checkbox"/> Animal     |
| b. <input checked="" type="checkbox"/> Rubber tired skidder, Forwarder    | e. <input type="checkbox"/> Cable, high lead   | h. <input type="checkbox"/> Helicopter |
| c. <input checked="" type="checkbox"/> Feller buncher                     | f. <input type="checkbox"/> Cable, Skyline     | i. <input type="checkbox"/> Other      |

\* All tractor operations restrictions apply to ground based equipment.

17. Erosion Hazard Rating: Indicate Erosion Hazard Ratings present on THP. (Must match EHR worksheets)

- Low                       Moderate                       High                       Extreme

If more than one rating is checked, areas must be delineated on map down to 20 acres in size (10 acres for high and Extreme EHRs in the Coast District).

**See EHR worksheet Below.** All soils are rated medium on the EHR worksheet.

**The following excerpt is from a soil report by Anamosa Inc. Vineyard Soil Technologies, Appendix R**

### ***Soil Distribution***

**“Soil Types:** The United States Department of Agriculture and the National Resource Conservation Service (formerly the Soil Conservation Service) have published the Napa County Soil Survey. This survey describes the characteristics and locations of soils throughout the county. Each soil **map unit** is named after a soil series, but may contain more than just one soil type. In many cases soils that are closely associated with one another are found within a map unit. Additionally, soils may vary in the characteristics that are described in the survey. There may be differences in soil textures and depths and colors of horizons. Because of these differences in the soil properties in the real-world landscape, these maps and descriptions are recommended to be used as first order diagnostic tools in planning land use activities, and that any planned land management activities be preceded by a detailed site analysis by a qualified soil scientist prior to implementation.

- The soils of this vineyard site are mapped by the Napa County Soil Survey as being predominantly the Rock-Outcrop-Kidd complex with just a sliver of Forward loam along the western border and Henneke loam in the southeast corner.
- The Kidd loam consists of well drained soils on mountain terraces derived from weathered rhyolite. The Kidd is characterized by a brown surface horizon to a depth of 8” to 12” of friable medium angular blocky structured loam. The upper subsoil to a depth of 18” is brown to strong brown (reddish yellow brown) loam of firm to friable massive structure. The lower subsoil is composed of white shattered rhyolitic tuffa.
- The Forward gravelly loam consists of well drained soils on uplands and mountain slopes and is formed in materials weathered from rhyolite. The surface layer is light gray to dark grayish brown gravelly (10-30% angular rhyolite) granularly structured loam to 10” to 18” over an upper subsoil of gravelly (20- 40% angular rhyolite) grayish brown to brown medium blocky to granular loam. The lower subsoil is weak granular to very fine angular blocky gravelly weathered rhyolite or volcanic tuffa.
- The data generated for this report strongly supports the Kidd throughout most of the property. The data also supports the Forward loam, but not as uniformly as the map would indicate. The data also support the Aiken loam in the southwest portions of the study area.
- The Aiken series consists of well drained soils on uplands. These soils are derived from material weathered from volcanic rhyolite. The soils are characterized by a surface horizon of dark brown or dark reddish brown granularly structured friable loam to a depth of 8” to 14” depth. The upper subsoil is reddish brown or dark reddish brown loam or clay loam with firm weakly developed coarse angular blocky structure. This upper subsoil may also have fine to very fine angular blocky if the larger (coarse) blocky structured has not developed. The lower subsoil is from a depth of about 36’ to 40” is yellowish red clay loam or clay. Below a depth of 44’ to 60” is slightly to moderately fractured and/or weathered volcanic andesite.”

ESTIMATED SURFACE SOIL EROSION HAZARD STATE OF CALIFORNIA								
RM-87 (4/84)		BOARD OF FORESTRY						
Napa County Soils		MAP UNIT		SOIL SERIES NAME				
	<b>A</b>	<b>101</b>		<b>Aiken Loam 15-30%</b>				
	<b>B</b>	<b>138</b>		<b>Forward Gravelly Loam 30-75%</b>				
	<b>C</b>	<b>154</b>		<b>Henneke Gravelly Loam 30-75%</b>				
	<b>D</b>	<b>177</b>		<b>Rock Outcrop-Kidd Complex 50-75%</b>				
FACTOR RATING BY AREA								
I. SOIL FACTORS								
A. SOIL TEXTURE	FINE	MEDIUM	COURSE		A	B	C	D
1. Detachability	Low	Moderate	High					
Rating	1-9	10-18	19-30		10	10	10	10
2. Permeability	Slow	Moderate	Rapid					
Rating	5-4	3-2	1		2	2	1	2
B. DEPTH TO RESTRICTIVE LAYER OR BEDROCK								
	Shallow	Moderate	Deep					
	1"- 19"	20" -39"	40"- 60" (+)					
Rating	15-9	8-4	3-1		3	5	11	11
C. PERCENT SURFACE COURSE FRAGMENTS GREATER THAN 2MM IN SIZE INCLUDING ROCKS OR STONES								
	Low	Moderate	High					
	(-) 10-39%	40-70%	71-100%					
Rating	10-6	5-3	2-1		8	8	8	8
II. SLOPE FACTOR								
Slope	5-15%	16-30%	31-40%	41-50%	51-70%	71-80% +		
Rating	1-3	4-6	7-10	11-15	16-25	26-35		4 4 4 4
III. PROTECTIVE VEGETATIVE COVER REMAINING AFTER DISTURBANCE								
	Low	Moderate	High					
Percent	0-40%	41-80%	81-100%					
Rating	15-8	7-4	3-1		15	15	15	15
IV. TWO-YEAR, ONE – HOUR RAINFALL INTENSITY (Hundredths Inch)								
	Low	Moderate	High	Extreme				
Inches	(-) 30-39	40-59	60-69	70-80 (+)				
Rating	1-3	4-7	8-11	12-15		11	11	11 11
TOTAL SUM OF FACTORS					53	55	60	61
EROSION HAZARD RATING								
	<50	50-65	66-75	>75				
	LOW (L)	MODERATE (M)	HIGH (H)	EXTREME (E)				
THE DETERMINATION IS					M	M	M	M

18. **Soil Stabilization:** In addition to the standard waterbreak requirements describe soil stabilization measures or additional erosion control measures to be implemented and the location of their application. See requirements of 14 CCR 916.7 (936.7, 956.7), and 923.2 (943.2, 963.2) (m), and 923.5 (943.5, 963.5) (f).

**Soil Stabilization:**

Soils within the property and the project area are classified by the USDA Soil Conservation Service's, Napa County Soil Survey, as SCS 100 Aiken Loam, 138 Forward Gravelly Loam, 154 Henneke Gravelly Loam and 177 Rock Outcrop-Kidd Complex. These soils have an erosion hazard rating of moderate, see EHR worksheet above. The mean annual precipitation is 30 to 50 inches, and the mean annual temperature is 54° to 55° F. Summers are warm and dry while winters are cool and moist. The frost-free season is 200 to 250 days. **See the Websoil survey attached, Appendix M.**

See erosion control measures proposed in the **Erosion Control Plan (ECP), Appendix B attached.** The ECP is attached and made a part of the plan. **(ECP #P13-00373-ECPA)** The ECP is in the process of being reviewed by the Napa County Resource Conservation District (RCD) and Napa County Planning. Once RCD has found the plan “technically adequate for erosion and sediment”, the plan will go back to the county and await approval of the CEQA (EIR) document before approval of the ECP

Soil stabilization will take place as required by the Forest Practice Rules up to the completion of the timber harvest plan. All exposed soil surfaces greater than 100 sq. ft shall be straw mulched and grass seeded, this applies to landing surfaces and road surfaces unless rocked. All permanent road surfaces shall be rocked upon completion. A three-year erosion control maintenance period applies to all roads and skid trails within this project area until implementation of the ECP, at which time all ECP measures shall apply. Sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the landing and which has access to a watercourse or lake shall be seeded, planted, mulched, removed or treated to adequately reduce soil erosion. All roads involved with this project are existing, no new roads are proposed.

**Grass seed and straw requirements for the THP:**

Seeding Requirements: All exposed or disturbed soils shall be seeded. Seed and fertilizer shall be applied hydraulically or broadcast at the rates specified below. The THP shall not use grass seed considered invasive by the California Pest Plant council. Once the Erosion Control Plan is implemented, erosion control measures will be directed by the ECP and Napa County.

Napa Valley Ag supply	Ball Beans	40%
“Plowdown legumes”	Forage Peas, VNS	20%
@ 100 lbs/ac	Forage Peas, VNS	20%
	Common Vetch	20%

**Straw Mulch:** During the life of plan, straw mulch shall be spread annually over all disturbed and seeded areas. The mulch shall be spread mechanically or by hand at the rate of 2 tons/acre. Straw mulch may be crimped in place after spreading. Straw spread after reseeding or repair may also be crimped.

After logging and slash control has been completed and the completion report filed, the **ECP** will direct soil stabilization procedures. It should be pointed out that no operations will take place within a WLPZ. There are no stream crossings proposed for the plan.

**Note:** Excavation of soil or stump removal constitutes grading operations under Napa County's Grading permit, and as such, implementation of the ECP applies. Once the ECP has begun, all aspects of the ECP must be completed within the time frame allowed under the ECP, see the ECP for details. To eliminate any confusion as to responsibility and implementation of the THP and ECP, there shall be a meeting at the end of timber harvesting operations between the RPF, LTO and the vineyard manager to discuss each person's responsibilities when logging is complete. CAL FIRE and any other reviewing agency may be invited to this meeting. **THP Mitigation #1**. See THP completion meeting requirements, **Item #38 of the THP**.

### **Dust Abatement**

As a result of input from Napa County Planning the following mitigations have been proposed for dust abatement.

### **THP Mitigation #5, Dust abatement see THP page 27**

The Applicant shall implement a fugitive dust abatement program during the construction of the county ECP #P05-0376-ECPA, which shall include the following elements:

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Cover all exposed dirt stockpiles.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent paved streets.
- Limit traffic speeds on unpaved roads to **15 miles per hour (mph)**.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

In addition to the above measures, the Applicant shall also implement the required basic construction mitigation measures as recommended by the BAAQMD during the construction of the Proposed Project, which shall include the following elements:

- All exposed surfaces (e.g., parking areas, staging areas, and unpaved access roads) shall be watered as needed to ensure dust abatement.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- All heavy duty construction equipment shall be fitted with diesel particulate matter filters and use only aqueous diesel fuel.

The measures above are in addition to the permanent erosion control measures specified in #P13-0376-ECPA, which include establishing a permanent no till cover crop on all disturbed areas. As shown in Draft **EIR**, construction of the

Proposed Project would exceed the NO<sub>x</sub> significance threshold if no mitigation measures were incorporated. With the mitigation measures included in the EIR, construction would not exceed the BAAQMD criteria pollutant threshold. The permanent erosion control measures would avoid the creation of nuisance dust and PM<sub>10</sub> during operation of the Proposed Project, which would reduce these potentially significant impacts to a less than significant level. These measures are additive to those required during the timber harvest prior to conversion.

19. [ ] Yes [X] No Are tractor or skidder constructed layouts to be used? If yes, specify the location and extent of use:
20. [ ] Yes [X] No Will ground based equipment be used within the area(s) designated for cable yarding? If yes, specify the location and for what purpose the equipment will be used. See 14 CCR 914.3 (934.3, 954.3) (e).
21. Within the THP area will ground based equipment be used on:
- a. [ ] Yes [X] No Unstable soils or slide areas? Only allowed if unavoidable.
- b. [ ] Yes [X] No Slopes over 65%?
- c. [ ] Yes [X] No Slopes over 50% with high or extreme EHR?
- d. [ ] Yes [X] No Slopes between 50% and 65% with moderate EHR where heavy equipment use will not be restricted to the limits described in 14 CCR 914 (934, 954) .2 (f) (2) (i) or (ii)?
- e. [ ] Yes [X] No Slopes over 50% which lead without flattening to sufficiently dissipate water flow and trap sediment before it reaches a watercourse or lake?

If a. is yes, provide site specific measures to minimize effect of operations on slope stability below. Provide explanation and justification in section III as required per 14 CCR 914 (934, 954) .2 (d). CAL FIRE requests the RPF consider flagging tractor road locations if "a." is yes.

If b., c., d. or e. is yes:

- 1) the location of tractor roads must be flagged on the ground prior to the PHI or start of operations if a PHI is not required, and
- 2) you must clearly explain the proposed exception and justify why the standard rule is not feasible or would not comply with 14 CCR 914 (934, 954).

The location of heavy equipment operation on unstable areas or any use beyond the limitations of the standard rules must be shown on the map. List specific instructions to the LTO below.

**Geological conclusions and recommendations found in attached Engineering Geological Evaluation, Appendix G**

“Based on our research and review of the site conditions, the proposed vineyard development appears feasible from the standpoint of engineering geological and geotechnical evaluation. We observed moderate southwest-facing slopes underlain by shallow bedrock that is strong to very strong tuff and little weathered associated volcanic deposits. We did not observe any evidence of significant surface erosion, nor slope instability such as landslides or soil creep. Based on our evaluation we do not believe the proposed planting will adversely impact the slope stability of the site and adjacent areas.

On the rock disposal area typical detail [of the **ECP**], the note for the keyway should specify a minimum embedment of 12 inches into firm soil or bedrock. See the **ECP Appendix B-2**

The plans also show other surface drainage improvements such as rock-lined ditches, diversion ditches, and water bars. These features collect surface runoff and direct it to erosion-protected outlets downslope of the vineyard improvements. We find the Napa Valley Vineyard Engineering Erosion Control Plan adequate for maintaining the site soil stability.”

- 22.     Yes     No            Are any alternative practices to the standard harvesting or erosion control rules proposed for this plan? If yes, provide all the information as required by 14 CCR 914 (934, 954) .9 in Section III.

List specific instructions to the LTO below.

N/A

WINTER OPERATIONS

23. a.  Yes [ ] No Will timber operations occur during the winter period? If yes, complete "b, c, or d." State in space provided if exempt because yarding method will be cable, helicopter, or balloon.
- b. [ ] Yes  No Will mechanical site preparation be conducted during the winter period? If yes, complete "d".
- c. [ ] I choose the in-lieu option as allowed in 14 CCR 914 (934, 954) .7 (c). Specify below the procedures listed in subsections (1) and (2), and list the site specific measures for operations in the WLPZ and unstable areas as required by subsection (3), if there will be no winter operations in these areas, so state.
- d.  I choose to prepare a winter operating plan per 14 CCR 914 (934, 954) .7 (b).

**NOTE: "Winter period" means the period between November 15 and April 1, except as noted under special County Rules at Title 14 CCR 925.1, 926.18, 927.1, and 965.5... (a) except as otherwise provided in the rules: (1) All waterbreaks shall be installed no later than the beginning of the winter period of the current year of timber operations. (2) Installation of drainage facilities and structures is required from October 15 to November 15 and April 1 to May 1 on all constructed skid trails and tractor roads prior to sunset if the National Weather Service forecast is a "chance" (30% or more) of rain within the next 24 hours.**

**Winter Period operating limitations and requirements.**

No THP operations will take place during the winter period (November 15<sup>th</sup> through April 1<sup>st</sup>) except for timber falling. See winter period operating limitations below.

**Wet Weather Operating Plan**

The wet weather operating plan applies to timber operations in the non-winter period (**May 1<sup>st</sup> through October 15<sup>th</sup>**).

The following practices will take place in the event that the Weather Service predicts 30% chance of rain, at Angwin CA, in the next 24-hour period.

1. Erosion control facilities will be installed on all skid trails and logging roads prior to the end of the day if the U.S. Weather Service forecast is for a chance (30%) of rain. Rainfall prediction shall be secured from the U.S. Weather Service forecast, internet, radio, television or newspapers, by the Licensed Timber Operator.  
Internet site location <http://www.weather.com/weather/tenday/Angwin+CA+USCA0031:1:US>
2. All landings and truck roads will have appropriate erosion control facilities installed.
3. Routine use of roads and landings shall not take place when, due to general wet conditions, equipment cannot be operated under its own power. Log hauling on the associated roads may take place when the roads are generally firm and passable.
4. All haul roads will be outsloped and berms breached to keep water from accumulating and causing erosion in the event of rainfall occurring during the non-winter period.
5. If an excess of one inch of precipitation falls as measured at **Angwin CA**, all harvesting operations will cease for 24 hours after the last precipitation is recorded.

*Excerpt from the Forest Practice Rules*

**MAXIMUM DISTANCE BETWEEN WATERBREAKS**  
**Guidelines for the LTO to use during waterbar installation**

Estimated Erosion Hazard Rating	Log Truck Road or Skid Trail Gradient			
	10% or less	11% - 25%	26% - 50%	>50%
	Feet	Feet	Feet	Feet
<b>Extreme</b>	<b>100</b>	<b>75</b>	<b>50</b>	<b>50</b>
<b>High</b>	<b>150</b>	<b>100</b>	<b>75</b>	<b>50</b>
<b>Moderate</b>	<b>200</b>	<b>150</b>	<b>100</b>	<b>75</b>
<b>Low</b>	<b>300</b>	<b>200</b>	<b>150</b>	<b>100</b>

**Winter Period Operating Plan per 936.9 (k) within a watershed subject to Anadromous Salmonid Protection**

This winter period operating plan will cover only the period **October 15<sup>th</sup> through November 15<sup>th</sup> and April 1<sup>st</sup> through May 1<sup>st</sup>**. No logging operations, except for timber falling, are proposed during the winter period defined as November 15<sup>th</sup> through March 31<sup>st</sup>. This winter plan is provided pursuant to 14 CCR 936.9(k), see bottom of page 30.

The following is in response to CCR 14 section 936.9 (k) and applies to this plan.

From **October 15 to May 1**, the following shall apply:

- (1) Timber operations shall not take place unless the approved plan incorporates a complete winter period operating plan pursuant to 14 CCR (934.7(a))
- (2) Timber operations shall not take place unless an extended period with low antecedent soil wetness occurs, no tractor roads shall be constructed, reconstructed, or used on slopes that are over 40 percent and within 200 feet of a Class I, II, or III watercourse, as measured from the watercourse or lake transition line, and
- (3) Operations of trucks and heavy equipment on roads and landings shall be limited to those with a stable operating surface.
- (4) No logging roads are proposed to be constructed with this plan. Use of logging roads, tractor roads, or landings shall not take place at any location where saturated soil conditions exist, where a stable logging road or landing operating surface does not exist, or when visibly turbid water from the road, landing, or skid trail surface or inside ditch may reach a watercourse or lake. Grading to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited.
- (5) All roads (no tractor roads will be constructed or used on this plan) shall have drainage and/or drainage collection and storage facilities installed as soon as practical following yarding and prior to either the start of any rain which causes overland flow across or along the disturbed surface within a WLPZ or within any ELZ or EEZ designated for watercourse or lake protection, or any day with a National Weather Service forecast of a chance of rain of 30 percent or more, a flash flood warning, or a flash flood watch.
- (6) Within the WLPZ of all watercourses, treatments to stabilize soils, minimize soil erosion, and prevent the discharge of sediment into waters in amounts deleterious to aquatic species or the quality and beneficial uses of water, or that threaten to violate applicable water quality requirements, shall be applied in accordance with the following standards: The following requirements shall apply to all such treatments.
  - (A) They are described in the plan, see the **ECP Appendix B attached**, Project Notes.

- (B) For areas disturbed by the THP from May 1 through October 15, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface. See Wet Weather Operating limitations and requirements in the THP.
- (C) For areas disturbed by the THP from October 16 through April 30, treatment shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 10 days, whichever is earlier.
- (7) The traveled surface of logging roads shall be treated to prevent waterborne transport of sediment and concentration of runoff that results from timber operations.
- (8) The treatment for other disturbed areas, including: areas exceeding 100 contiguous square feet where timber operations have exposed bare soil and any other area of disturbed soil that threatens to discharge sediment into waters in amounts deleterious to the quality and beneficial uses of water, and which may include, but need not be limited to, mulching, rip-rapping or grass seeding. Where straw, mulch, or slash is used, the minimum coverage shall be 90%, and any treated area that has been subject to reuse or has less than 90% surface cover shall be treated again prior to the end of timber operations. The RPF may propose alternative treatments that will achieve the same level of erosion control and sediment discharge prevention. See the **ECP Appendix B attached**, Project Notes.
- (9) Where the undisturbed natural ground cover cannot effectively protect beneficial uses of water from timber operations, the ground shall be treated by measures including, but not limited to, seeding, mulching, or replanting, in order to retain and improve its natural ability to filter sediment, minimize soil erosion, and stabilize banks of watercourses and lakes. See the **ECP Appendix B attached**, Project Notes.
- (10) Skidding, loading or trucking operations will not occur at any time conditions on the ground meet the definition of saturated soils or when visibly turbid water from roads, skid trails, landings or inside ditches could reach a watercourse. Skidding, loading and trucking operations will cease for 24 hours after the last precipitation exceeding 1" is recorded at **Angwin, CA**. The probable form of precipitation during this period on this operating area will be a low intensity short duration rainstorm of approximately 1 inch of rainfall.

#### **Winter period operating plan November 15th to Jan 31st**

No THP operations will take place during the winter period (defined for this THP as November 15<sup>th</sup> through Jan 31<sup>st</sup>) except for timber falling. (Operations must cease After Jan 31 due to NSO protocol limitations) The following limitations apply at all times during the winter period.

#### **THP Mitigation #6, Winter Operating Plan, timber falling see THP page 32**

1. No heavy equipment is allowed at any time.
2. Fallers vehicles will operate on rocked road surfaces at all times.
3. All aspects of the winter period operating plan found on the previous page are in effect.
4. Trees shall be felled to lead in a direction away from WLPZ and fencing, and shall not be allowed to fall outside of the project area.
5. Trees shall be felled in conformance with watercourse and lake protection measures incorporated in the timber harvesting plan and consistent with Article 6 of the rules.

**The following is in response to CCR Section 934.7 (b) and applies to the plan.**

Specific operating measures to be taken during the winter period to minimize damage due to erosion and soil movement into watercourses, and to minimize damage due to soil compaction from felling, yarding, loading, mechanical site preparation, and erosion control activities.

1. The erosion hazard rating for the project area is moderate.
2. No mechanical site preparation is allowed during the winter period. Mechanical site preparation is associated with the ECP and under direction by Napa County. "All ground disturbing activities associated with the application of the ECP shall be completed by September 1 of each year, and all erosion control measures shall be in place by September 15." See **ECP Appendix B attached.**
3. No skid trails will be built under this THP.
4. The operating period for winter operations on the THP is **November 15<sup>th</sup> to March 31<sup>st</sup>.**
5. All erosion control facilities associated with the ECP must be in place by September 15<sup>th</sup>, See **ECP Appendix B attached**
6. All erosion control facilities associated with the THP must be in place by October 15<sup>th</sup>
7. All disturbed area must have erosion control treatment completed prior to the start of any rain that causes overland flow across or along the disturbed surface. Skidding, loading and trucking operations will cease for 24 hours after the last precipitation exceeding 1" is recorded at **Angwin, CA**. The probable form of precipitation during this period on this operating area will be a low intensity short duration rainstorm of approximately 1 inch of rainfall.
8. Silvicultural system-ground cover. Not applicable, no equipment allowed to operate and no vehicles allowed off of rocked roads. No ground disturbance will take place, activities limited to falling only during winter period.
9. Operations within the WLPZ. No operations allowed in the WLPZ, no equipment allowed to operate and no vehicles allowed off of rocked roads.
10. Equipment use limitations. No equipment allowed to operate and no vehicles allowed off of rocked roads. No ground disturbance will take place.
11. Known unstable areas. No unstable areas present. See **Engineering Geological Evaluation, Appendix G, attached.**
12. Logging roads and Landings. No heavy equipment is allowed to operate during the winter period. Activities proposed during the winter period is limited to falling and associated vehicle access. Road use is limited by number 2, 3, 4, and 5 of page 31.

**Definitions 895.1**

**Saturated soil conditions** means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.

In tractor yarding or the use of tractors, this condition may be evidenced by:

The production of sediment in quantities sufficient to cause a visible increase in turbidity of downstream waters in receiving Class I, II, III or IV waters or that violate Water Quality Requirements.

In using heavy equipment, this condition may be evidenced by:

The production of sediment in quantities sufficient to cause a visible increase in turbidity of downstream waters in receiving Class I, II, III or IV waters; that violate Water Quality Requirements; or when it cannot operate under its own power due to wet conditions.

On logging roads and landings this may be evidenced by:

The production of sediment in quantities sufficient to cause a visible increase in turbidity of downstream waters in receiving Class I, II, III or IV waters or that violate Water Quality Requirements.

**Stable Operating Surface** means a road or landing surface that can support vehicular traffic and that routes water off of the road surface or into drainage facilities without concentrating flow in ruts (tire tracks), pumping of the road bed, or ponding flow in depressions. A stable operating surface shall include a structurally sound road base appropriate for the intended use. The number, placement, and design of drainage facilities or drainage structures on a stable operating surface prevents the transport of fine-grained materials from the road or landing surface into watercourses in quantities deleterious to the beneficial uses of water.

**ROADS AND LANDINGS**

24. Will any roads be constructed? [  Yes  No, or reconstructed? [  Yes  No If yes, check items "a." – "e" & "g."  
 Will any landings be constructed? [  Yes  No, or reconstructed? [  Yes  No If yes, check items "h." -- "j."

**PROVIDE:** The classification and approximate length of each of the following logging road segment categories: constructed, reconstructed, and abandoned. 1034(o). \_\_\_\_\_

- a.  Yes  No Will new or reconstructed roads be wider than single lane with turnouts? If yes, address pursuant to 923 [943, 963](c). 923.2 [943.2, 963.2](d)(1).
- b.  Yes  No Will any logging road cross an unstable area or connected headwall swale? If yes, address pursuant to 923.1 [943.1, 963.1](d). Also see 895.1 "Connected Headwall Swale"
- c.  Yes  No Will new roads exceed a grade of 15% or have pitches of up to 20% for distances greater than 500 feet?  
 If yes, address pursuant to 923.2 [943.2, 963.2] (d)(2). See 923 [943, 963](c). Map must identify any new or reconstructed road segments that exceed an average 15% grade for over 200 feet. 1034(x)(5)(A).
- d1.  Yes  No Will any logging roads or landings be constructed within: 150' of a Class I WLTL; 100 feet of a Class II WLTL on slopes > 30%; Class I, II, III, or IV watercourses or lakes; a WLPZ; or in marshes, wet meadows, and other wet areas except as described under 923.1 [943.1, 963.1](b)(1) – (3)? If yes, address the exception. 923 (943, 963)(c).
- d2.  Yes  No Will any logging roads or landings be reconstructed within: a Class I, II, III, or IV watercourse or lake; a WLPZ; or in marshes, wet meadows and other wet areas except as described under 923.1 [943.1, 963.1] (c)(1) – (3)? If yes, address the exception. 923 (943, 963)(c).
- e.  Yes  No Will any constructed or reconstructed road be located across more than 100 feet of lineal distance on slopes over 65%, or on slopes over 50% which are within 100 feet of the boundary of a WLPZ that drain toward the zoned watercourse or lake? If yes, address pursuant to 923.2[943.2, 963.2] (a)(7) and 923.4 [943.4, 963.4](n).
- f.  Yes  No Will any roads or watercourse crossings be deactivated or abandoned? If yes, address pursuant to 923.8 [943.8, 963.8] et seq. Also see 923.9[943.9, 963.9](e) and (p).
- g.  Yes  No Is there any exception to flagging or otherwise identifying the location of any road to be constructed or reconstructed? If yes, address pursuant to 923.3 [943.3, 963.3](c).
- h.  Yes  No Will any landings exceed one half acre in size? If yes, address pursuant to 923 [943, 963](c). 923.2[943.2, 963.2](e)(2) If any landing exceeds one quarter acre in size or requires substantial excavation, the location must be shown on the map. 1034(x)(5)(D).
- i.  Yes  No Will any landing be located on an unstable area or connected headwall swale? If yes, address pursuant to 923.1[943.1, 963.1](d). Also see 895.1 "Connected Headwall Swale"
- j.  Yes  No Will any constructed or reconstructed landing be located on more than 100 feet of lineal distance on slopes over 65% or on slopes over 50% which are within 100 feet of the boundary of a WLPZ and drain toward the zoned watercourse or lake? If yes, address pursuant to 923.2[943.2, 963.2] (a)(7) and 923.4 [943.4, 963.4](n).
- k.  Yes  No Will any landing be deactivated or abandoned? If yes, address pursuant to 923.8[943.8, 963.8] et seq.

I.  Yes  No

**Significant Erosion Sites:** Are there any significant existing or potential erosion sites associated with logging roads, landings and watercourse crossings in the logging area? (923.1 [943.1, 963.1](e)(1) – (5). Also see 923.9 [943.9, 963.9](a)) If yes, for each significant existing or potential erosion site, provide the following (consider providing in a Map Point Table):

- Locate and map significant existing and potential erosion sites.
- In addition, for each site:
  - Describe current condition of the site.
  - Identify which sites can be feasibly treated, and which sites cannot.
  - Specify mitigations for those sites that can be feasibly treated.
  - Describe a logical order of treatment for those which have feasible treatments.

m.  Yes  No

**ASP WATERSHED:** Will hauling on roads and landings be limited to those which are hydrologically connected from watercourses to the extent feasible, and exhibit a stable operating surface? If not, address the exception pursuant to 923.6 [943.6,963.6] (h)(3).

#### ASP Watershed

The project area is within the Bell Canyon Reservoir Watershed, above the Bell Canyon Dam and does not contain salmonids. See the Calwater ID on page 6 of the THP. As such it is not within an ASP watershed.

#### Friesen Drive

Friesen Drive is not owned or controlled by the timber owner, timberland owner timber operator or plan submitter. As such it does not meet the definition of an appurtenant road as defined in the forest practice rules. “Appurtenant Road means a logging road under the ownership or control of the timber owner, timberland owner, timber operator, or plan submitter that will be used for log hauling.” Forest Practice Rules, 2015, Section 895.1

The road is private and has a paved and rock surface. This road is a ridge top road and by definition is hydrologically disconnected. The rock and paved surfaces are maintained by individual landowners and is in good condition. There is no evidence of accelerated erosion associated with the existing road surface.

#### Water drainage within the project area under control of the landowner.

The road side ditch adjacent to Friesen Drive within the project area contains three culverts, all disconnected from the watercourses. The erosion control plan suggests adding one culvert to facilitate drainage within the proposed vineyard.

#### Existing Low Water Crossing.

There is one existing rock ford crossing located in the NW corner of the property. This is stable and has been in place for many years. It is the primary access for the neighboring Napa Valley Land Trust. Use of the crossing for vehicle access will not degrade the watercourse. This is a class III crossing. Water flows through this crossing in response to a rain event and dries up very quickly. The bottom of the crossing and the downstream end is composed of solid rock and will not destabilize. The crossing

is presently drivable in a truck or car. The project is proposed in the spring, summer and fall when the watercourse will be dry. Use of this crossing is limited to the following.

**THP Mitigation #22, Low Water Crossing limitations. THP page 37.**

- Use of the low water crossing is limited to pickup trucks and or cars during the winter period.
- No heavy equipment is allowed to use the crossing if there is water flow.
- No material, vegetative or otherwise may be dragged through the crossing at any time, wet or dry.
- All vegetation will be transported, if needed, by 10 wheel dump trucks to landings east of the low water crossing.
- No modification of the existing crossing is permitted at any time.

Class IV watercourse, Howell Mountain Water District.

The Class IV watercourse (see THP map) directs water from the existing pond over flow to the Friesen Lakes area and is used by the Howell Mountain Water District. This water flows under one of the access roads to the vineyard project in three existing culverts. The crossing is stable and does not need any attention. The Class IV watercourse is above the project area and will not be disturbed by the proposed project. The existing lake is also above the proposed project and will not be disturbed by the proposed project. The watershed above and leading to the Class IV watercourse is not part of the proposed project.

**25. Note:** if any "item is answered "yes" (or "no" for "Item 24m)": specific LTO **operational information**, in accordance with the respective rule requirement(s), should be provided in **Section II**. Any required **explanation and justification** should normally be included in **Section III**. Additional notes relative to the Road Rules effective 1/1/15:

**For ALL WATERSHEDS, as applicable:**

- Where abandonment or deactivation is required or proposed, describe specific measures to prevent significant sediment discharge. 923.8 [943.8, 963.8].
- If the logging road is to be abandoned provide the blockage design. 923.8 [943.8, 963.8](d).

Logging Roads.

No new logging roads are proposed for this project. All roads are existing. All landings as shown on the THP map are on 0 to 15% slopes and will not need any excavation. All landings will be grass seeded and straw mulched as per item #18 of the THP. Once the THP has been completed the Erosion Control Plan directed by Napa County will be implemented. The ECP also proposes grass seeding and straw mulch along with other ECP infrastructure designed by a Civil Engineer and Hydrologist. Due to the gentle slopes of the project area no skid trails will be constructed. All disturbed areas of the project will be incorporated into the vineyard and stabilized per the ECP. **See Appendix B**

Slopes

Slopes within the project boundary range from 8-27% with approximately one acre slightly greater than 30%. All watercourses are protected by a WLPZ and have slopes leading to them under 30%.

Road Grade

All roads are existing and contain slopes less than 15%. Friesen Drive is paved and rocked.

No active erosion sites exist within the project area. All areas of soils disturbed by project construction will be stabilized as per section #18 of the THP and the ECP, attached.

A short section of existing ranch roads within the project footprint will be abandoned and graded into the surrounding landscape. This ranch road does not meet the definition of "Logging Road" found in section 895.1. "**Logging Road** means a road other than a public road used by trucks going to and from landings to transport logs and other forest products." Mitigation measures proposed in the ECP will adequately address sediment transport on this ranch road.

**Friesen Drive, private road**

**Mitigation #7, Road use limitations and restrictions, see THP page 38**

Access to the project area is over a +/- 3 mile long gated private road (Friesen Drive). The road is maintained by several individuals for residential, commercial and agricultural interests. The road contains rocked and paved surfaces. Due to the narrow nature of the road and the paved sections, this project proposes the following vehicular limitations and restrictions.

1. No use of logging trucks to haul logs
2. All logs developed from the project shall be milled onsite.
3. All vehicles are to be advised to use extreme caution when transporting equipment, agricultural products, and/or people, especially in areas of limited site visibility.

4. Larger vehicles are to operate with headlights on for safety and are not to exceed **15 miles per hour** on Friesen Drive. Larger vehicles are not to exceed **25 miles per hour** on rural county roads.
5. Oversized vehicles are not to use Jake brakes in the immediate vicinity of residential neighborhoods.
6. All construction activities are restricted to Monday through Saturday 7 am to 7 pm. No activities may take place on Sundays & holidays.
7. To further ensure no significant traffic impacts, delivery and removal of heavy equipment and trucks, including those hauling lumber from the project site, will be limited to nonpeak hours.
8. Signs indicating slow trucks entering the roadway will be placed at a distance of 300 feet in both directions of the project site if warranted.

**OPERATOR DIRECTION FOR GENERAL ROAD AND SKID TRAIL WORK**

- Out slope road surfaces whenever possible to avoid water accumulation and erosion.
- Avoid inside ditches and related water accumulation, unless directed by the approved Erosion Control Plan
- Follow all aspects of the approved Erosion Control Plan

**FLAGGING**

THP boundary	-----	Blue and Pink glow flagging
WLPZ and ELZ	-----	Blue and Pink glow flagging
Truck Road	-----	None
Skid Trail	-----	None
Point location	-----	Orange or pink glow with written instructions

All Flagging is in place and available for viewing during the preharvest inspection.

**New Road Rules**

**923.5 [943.5,963.5]. Erosion Control for Logging Roads and Landings. [All Districts]**

**The following erosion control standards shall apply to logging roads and landings:**

Yes  No  
See the ECP  
Appendix B  
Page 2

(a) All logging road and landing surfaces shall be adequately drained through the use of logging road and landing surface shaping in combination with the installation of drainage structures or facilities and shall be hydrologically disconnected from watercourses and lakes to the extent feasible. Guidance on methods for hydrologic disconnection may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 10/27/14), hereby incorporated by reference.

Yes  No

(b) Drainage facilities and structures shall be installed along all logging roads and all landings that are used for timber operations in sufficient number to minimize soil erosion and sediment transport and to prevent significant sediment discharge.

Yes  No  
See the ECP  
Appendix B Page 2

(c) Ditch drains, associated necessary protective structures, and other features associated with the ditch drain shall:

- (1) Be adequately sized to convey runoff.
- (2) Minimize erosion of logging road and landing surfaces.
- (3) Avoid discharge onto unprotected fill.
- (4) Discharge to erosion resistant material.
- (5) Minimize potential adverse impacts to slope stability.

Yes  No  
See the ECP  
Appendix B Page 2

(d) Waterbreaks and rolling dips installed across logging roads and landings shall be of sufficient size and number and be located to avoid collecting and discharging concentrated runoff onto fills, erodible soils, unstable areas, and connected headwall swales.

Yes  No  
See the ECP  
Appendix B Page 2

(e) Where logging roads or landings do not have permanent and adequate drainage, and where waterbreaks are to be used to control surface runoff, the waterbreaks shall be cut diagonally a minimum of six inches into the firm roadbed and shall have a continuous firm embankment of at least six inches in height immediately adjacent to the lower edge of the waterbreak cut. On logging roads that have firmly compacted surfaces, waterbreaks may be installed by hand methods and need not provide the additional six-inch embankment provided the waterbreak ditch is constructed so that it is at least six inches deep and six inches wide on the bottom and provided there is ample evidence based on slope, material, amount of rainfall, and period of use that the waterbreaks so constructed will be effective in diverting water flow from the logging road surface without the embankment.

Yes  No  
See THP page 31

(f) Distances between waterbreaks shall not exceed the following standards and consider erosion hazard rating and road gradient:

<b>MAXIMUM DISTANCE BETWEEN WATERBREAKS</b>			
<b>Estimated Hazard Rating</b>	<b>Logging Road 10 or less</b>	<b>11-25</b>	<b>Gradient in Percent &gt;25</b>
	<b>Feet</b>	<b>Feet</b>	<b>Feet</b>
Extreme	100	75	50
High	150	100	75
Moderate	200	150	100
Low	300	200	150

Yes  No  
See the ECP  
Appendix B Page 2

(g) Where outsloping and rolling dips are used to control surface runoff, the dip in the logging road grade shall be sufficient to capture runoff from the logging road surface. The steepness of cross-slope gradient in conjunction with the logging road or landing gradient and the estimated soil erosion hazard rating shall be used to determine the rolling dip spacing in order to minimize soil erosion and sediment transport and to

- [X]Yes [ ] No  
See the ECP  
Appendix B Page 2
- (h) Drainage facilities and structures shall discharge into vegetation, woody debris, or rock wherever possible. Where erosion-resistant material is not present, slash, rock, or other energy dissipating material shall be installed below the drainage facility or drainage structure outlet as necessary to minimize soil erosion and sediment transport and to prevent significant sediment discharge. Guidance on energy dissipaters for drainage structures may be found in "Board of Forestry Technical Rule Addendum Number 5: Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings" (1st Edition, revised 10/27/14), hereby incorporated by reference.
- N/A
- (i) Where logging road and landing surfaces, road approaches, inside ditches and drainage structures cannot be hydrologically disconnected, and where there is existing or the potential for significant sediment discharge, necessary and feasible treatments to prevent the discharge shall be described in the plan.
- [X]Yes [ ] No  
See the ECP  
Appendix B Page 2
- (j) All logging roads and landings used for timber operations shall have adequate drainage upon completion of use for the year or by October 15, whichever is earlier. An exception is that drainage facilities and drainage structures do not need to be constructed on logging roads and landings in use during the extended wet weather period provided that all such drainage facilities and drainage structures are installed prior to the start of rain that generates overland flow.
- [X]Yes [ ] No  
See the ECP and  
THP section 18
- (k) Bare soil on logging road or landing cuts, fills, transported spoils, or sidecast that is created or exposed by timber operations shall be stabilized to the extent necessary to minimize soil erosion and sediment transport and to prevent significant sediment discharge. Sites to be stabilized include, but are not limited to:
- (1) Sidecast or fill exceeding 20 feet in slope distance from the outside edge of a logging road or a landing that has access to a watercourse or lake.
  - (2) Cut and fills associated with approaches to logging road watercourse crossings of Class I or II waters or Class III waters where an ELZ, EEZ, or a WLPZ is required.
  - (3) Bare areas exceeding 800 continuous square feet within a WLPZ.
- [X]Yes [ ] No  
See the ECP  
Appendix B
- (l) Soil stabilization measures shall be described in the plan pursuant to 14 CCR § 923.5(l) [943.5(l),963.5(l)], and may include, but are not limited to, removal, armoring with rip-rap, replanting, mulching, seeding, installing commercial erosion control devices to manufacturer's specifications, or chemical stabilizers.
- N/A, no operations, other than a rocked road use, within a WLPZ**
- [X]Yes [ ] No
- (m) Where the natural ability of ground cover within a WLPZ is inadequate to protect the beneficial uses of water by minimizing soil erosion or by filtering sediments, the plan shall specify protection measures to retain and improve the natural ability of the ground cover to filter sediment and minimize soil erosion.
- (n) Soil stabilization treatments shall be in place upon completion of operations for the year of use or prior to the extended wet weather period, whichever comes first. An exception is that bare areas created during the extended wet weather period shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner, or as agreed to by the Director.
- N/A, no landing on steep slopes**
- (o) Overhanging or unstable concentrations of slash, woody debris or soil along the downslope edge or face of landings shall be removed or stabilized when it is located on slopes greater than 65 percent, within 100 feet of the boundary of a WLPZ on slopes greater than 50 percent that drain toward the zoned watercourse or lake, or when it may result in significant sediment discharge. Removed materials shall not be placed at disposal sites that could result in a significant sediment discharge.
- [X]Yes [ ] No  
See the ECP  
Appendix B
- (p) Bare soil on logging road or landing cuts, fills, transported spoils, or sidecast that is created or exposed by timber operations shall be stabilized to the extent necessary to minimize soil erosion and sediment transport and to prevent significant sediment discharge. Sites to be stabilized include, but are not limited to:
- N/A
- (1) Sidecast or fill exceeding 20 feet in slope distance from the outside edge of a

N/A	logging road or a landing that has access to a watercourse or lake.
N/A	(2) Cut and fills associated with approaches to logging road watercourse crossings of Class I or II waters or Class III waters where an ELZ, EEZ, or a WLPZ is required.
[X]Yes [ ] No See the ECP Appendix B	(q) Soil stabilization measures shall be described in the plan pursuant to 14 CCR § 923.5(l) [943.5(l),963.5(l)], and may include, but are not limited to, removal, armoring with rip-rap, replanting, mulching, seeding, installing commercial erosion control devices to manufacturer's specifications, or chemical stabilizers.
N/A No operations within a WLPZ	(r) Where the natural ability of ground cover within a WLPZ is inadequate to protect the beneficial uses of water by minimizing soil erosion or by filtering sediments, the plan shall specify protection measures to retain and improve the natural ability of the ground cover to filter sediment and minimize soil erosion.
[X]Yes [ ] No	(s) Soil stabilization treatments shall be in place upon completion of operations for the year of use or prior to the extended wet weather period, whichever comes first. An exception is that bare areas created during the extended wet weather period shall be treated prior to the start of rain that generates overland flow, or within 10 days of the creation of the bare area(s), whichever is sooner, or as agreed to by the Director.
N/A	(t) Overhanging or unstable concentrations of slash, woody debris or soil along the downslope edge or face of landings shall be removed or stabilized when it is located on slopes greater than 65 percent, within 100 feet of the boundary of a WLPZ on slopes greater than 50 percent that drain toward the zoned watercourse or lake, or when it may result in significant sediment discharge. Removed materials shall not be placed at disposal sites that could result in a significant sediment discharge.
N/A Watershed not in ASP	(u) In watersheds with listed anadromous salmonids and in planning watersheds immediately upstream of, and contiguous to, any watershed with listed anadromous salmonids, the following shall apply:
N/A, but done in the ECP	(1) Constructed and reconstructed logging roads shall be outsloped where feasible and drained with waterbreaks or rolling dips.
N/A	(2) In addition to the provisions listed under 14 CCR § 923.2(d)(2) [943.2(d)(2), 963.2(d)(2)], all permanent and seasonal logging roads with a grade of 15 percent or greater that extend 500 continuous feet or more shall have specific erosion control measures stated in the plan.
N/A, no operations in the WLPZ	(3) Within the WLPZ, and within any ELZ or EEZ designated for watercourse or lake protection, treatments to stabilize soils, minimize soil erosion, and prevent significant sediment discharge shall be described in the plan as follows:
Not in ASP watershed	<p>(A) In addition to the requirements of subsections (l)-(o), soil stabilization is required for the following areas:</p> <ol style="list-style-type: none"> <li>1. exposed bare soil, and discharge.</li> <li>2. Areas exceeding 100 continuous square feet where timber operations have disturbed logging road and landing cut banks and fills, and</li> <li>3. Any other area of disturbed soil that threatens to cause significant sediment</li> </ol> <p>(B) Where straw mulch is used, the minimum straw coverage shall be 90 percent, and any treated area that has been reused or has less than 90 percent surface cover shall be treated again by the end of timber operations.</p> <p>(C) Where slash mulch is applied, a minimum of 75% of the area shall be covered by slash in contact with the ground.</p> <p>(D) For areas disturbed outside of the extended wet weather period, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface that could result in significant sediment discharge.</p> <p>(E) For areas disturbed during the extended wet weather period, treatment</p>

shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 10 days of disturbance, whichever is earlier.

- (F)** Where the natural ability of ground cover is inadequate to protect the beneficial uses of water by minimizing soil erosion or by filtering sediments within any ELZ or EEZ designated for watercourse or lake protection, the plan shall specify protection measures to retain and improve the natural ability of the ground cover to filter sediment and minimize soil erosion.

**N/A, not in ASP watershed.**

- (v)** In watersheds with listed anadromous salmonids and in planning watersheds immediately upstream of, and contiguous to, any watershed with listed anadromous salmonids, the following shall apply:
- (1)** Constructed and reconstructed logging roads shall be outsloped where feasible and drained with waterbreaks or rolling dips.
  - (2)** In addition to the provisions listed under 14 CCR § 923.2(d)(2) [943.2(d)(2), 963.2(d)(2)], all permanent and seasonal logging roads with a grade of 15 percent or greater that extend 500 continuous feet or more shall have specific erosion control measures stated in the plan.
  - (3)** Within the WLPZ, and within any ELZ or EEZ designated for watercourse or lake protection, treatments to stabilize soils, minimize soil erosion, and prevent significant sediment discharge shall be described in the plan as follows:
    - (A)** In addition to the requirements of subsections (l)-(o), soil stabilization is required for the following areas:
      1. exposed bare soil, and discharge.
      2. Areas exceeding 100 continuous square feet where timber operations have disturbed logging road and landing cut banks and fills, and
      3. Any other area of disturbed soil that threatens to cause significant sediment
    - (B)** Where straw mulch is used, the minimum straw coverage shall be 90 percent, and any treated area that has been reused or has less than 90 percent surface cover shall be treated again by the end of timber operations.
    - (C)** Where slash mulch is applied, a minimum of 75% of the area shall be covered by slash in contact with the ground.
    - (D)** For areas disturbed outside of the extended wet weather period, treatment shall be completed prior to the start of any rain that causes overland flow across or along the disturbed surface that could result in significant sediment discharge.
    - (E)** For areas disturbed during the extended wet weather period, treatment shall be completed prior to any day for which a chance of rain of 30 percent or greater is forecast by the National Weather Service or within 10 days of disturbance, whichever is earlier.
    - (F)** Where the natural ability of ground cover is inadequate to protect the beneficial uses of water by minimizing soil erosion or by filtering sediments within any ELZ or EEZ designated for watercourse or lake protection, the plan shall specify protection measures to retain and improve the natural ability of the ground cover to filter sediment and minimize soil erosion.

**923.6 [943.6, 963.6]. Use of Logging Roads and Landings. [All Districts]**

**The following use standards shall apply to logging roads and landings:**

- Yes  No

**(a)** Logging roads and landings shall be used in a manner that is consistent with their design and construction specifications.
- Yes  No

**(b)** Logging roads and landings shall not be used during any time of the year when operations may result in significant sediment discharge to watercourse or lakes, except in emergencies to protect the road, to reduce erosion, to protect water quality, or in response to public safety needs.
- Yes  No  
See THP section 23

**(c)** During the extended wet weather period, log hauling or other heavy equipment uses shall be limited to logging roads and landings that exhibit a stable operating surface in conformance with (b) above. Routine use of logging roads and landings shall not occur when equipment cannot operate under its own power.
- Yes  No

**(d)** When burning permits are required pursuant to PRC § 4423, logging roads and landings that are in use shall be kept in passable condition for fire trucks.
- Yes  No

**(e)** Roadside berms that impede logging road drainage, concentrate logging road surface flow, or lead to hydrologic connection shall be removed or breached before the beginning of the winter period, with the exception of berms needed for erosion control.
- Yes  No

**(f)** Temporary roads shall be blocked or otherwise closed to standard production four-wheel drive highway vehicles prior to the winter period, or upon completion of use as specified in an approved winter period operating plan pursuant to 14 CCR § 914.7(b) [934.7(b), 954.7(b)].
- N/A

**(g)** Logging roads and landings used for log hauling or other heavy equipment uses during the winter period shall occur on a stable operating surface and, where necessary, be surfaced with rock to a depth and quantity sufficient to maintain such a surface. Use is prohibited on roads that are not hydrologically disconnected and exhibit saturated soil conditions. Exceptions may be proposed by the RPF when locations are disclosed and justified in the THP, consistent with 14 CCR § 923(c). Exceptions must be approved by the Director.
- N/A, not in ASP watershed

**(h)** In watersheds with listed anadromous salmonids and in planning watersheds immediately upstream of, and contiguous to, any watershed with listed anadromous salmonids, the following shall apply:

  - (1)** Existing logging roads or landings shall not be used within the CMZ of a Class I watercourse except as listed in 14 CCR § 916.9 [936.9, 956.9] subsection (e)(1)(A)-(F) or pursuant to 14 CCR § 916.9(v) [936.9(v), 956.9(v)].
  - (2)** When feasible, minimize use of existing logging roads and landings located within Inner Zones A and B of flood prone areas. Exceptions include the use of roads and landings to accomplish actions to improve salmonid habitat conditions stated in 14 CCR § 916.9(f)(3)(E)1. [936.9(f)(3)(E)1., 956.9(f)(3)(E)1.].
  - (3)** Log hauling on logging roads and landings shall be limited to those which are hydrologically disconnected from watercourses to the extent feasible, and exhibit a stable operating surface in conformance with (b) above. Exceptions may be proposed by the RPF when locations are disclosed and justified in the THP, consistent with 14 CCR § 923(c). Exceptions must be approved by the Director.
  - (4)** Concurrent with use for log hauling, all road approaches to logging road watercourse crossings shall be treated for erosion control as needed to minimize soil erosion and sediment transport and to prevent significant sediment discharge to watercourses or lakes.
  - (5)** Concurrent with use for log hauling, all traveled surfaces of logging roads in a WLPZ, and ELZ or EEZ designated for watercourse or lake protection, shall be

treated for erosion control as needed to minimize soil erosion and sediment transport and to prevent significant sediment discharge to watercourses or lakes.

- (6) No timber operations shall take place during the extended wet weather period unless the approved plan incorporates a complete winter period operating plan pursuant to 14 CCR § 914.7(b) [934.7(b), 954.7(b)] that specifically addresses, where applicable, proposed logging road or landing use.

**923.7 [943.7, 963.7]. Maintenance and Monitoring of Logging Roads and Landings. [All Districts]**

**The following maintenance and monitoring standards shall apply to logging roads and landings:**

- Yes  No (a) Logging road and landing surfaces shall be monitored and maintained during timber operations and throughout the prescribed maintenance period to ensure hydrologic disconnection from watercourses and lakes to the extent feasible, minimize soil erosion and sediment transport, and to prevent significant sediment discharge
- Yes  No (b) Logging roads that are used in connection with stocking activities shall be maintained throughout such use, even if this extends beyond the prescribed maintenance period.
- Yes  No See ECP page 2 (c) During timber operations, road running surfaces in the logging area shall be treated as necessary to prevent excessive loss of road surface materials by methods including, but not limited to, rocking, watering, paving, chemically treating, or installing commercial erosion control devices to manufacturer’s specifications.
- Yes  No (d) Grading of logging roads or landings to obtain a drier running surface more than one time before reincorporation of any resulting berms back into the road surface is prohibited. Drainage facilities and drainage structures, including associated necessary protective structures, shall be maintained to allow free flow of water, and minimize soil erosion and slope instability. Drainage facilities and structures shall be repaired, replaced, or installed as needed to protect the quality and beneficial uses of water.
- Yes  No (e) Soil stabilization treatments on logging road or landing cuts, fills, and sidecast shall be maintained as needed to reduce the potential for slope instability, minimize soil erosion and sediment transport, and to prevent significant sediment discharge.
- Yes  No (f) Heavy equipment shall not be used in a WLPZ for maintenance during wet weather, except in emergencies to protect the road, to reduce erosion, to protect water quality, or in response to public safety needs.
- Yes  No (g) Where there is evidence of significant sediment discharge along a logging road or landing used for timber operations, additional measures shall be implemented to minimize soil erosion and sediment transport, and to prevent significant sediment discharge.
- Yes  No (h) The prescribed maintenance period for erosion controls on logging roads and associated landings and drainage structures, including appurtenant, abandoned, and deactivated logging roads and landings, shall be at least one year. The Director may prescribe a maintenance period extending up to three years in accordance with 14 CCR § 1050.
- N/A Not in ASP watershed (i) In watersheds with listed anadromous salmonids and in planning watersheds immediately upstream of, and contiguous to, any watershed with listed anadromous salmonids, the prescribed maintenance period for deactivated or abandoned roads shall be one year unless otherwise prescribed by the Director pursuant to 14 CCR § 1050. The prescribed maintenance period for logging roads and associated landings, including appurtenant roads, shall be three years.
- Yes  No (j) All logging roads, including abandoned, deactivated, and appurtenant roads, landings, and associated drainage structures used for timber operations shall be monitored as needed to comply with 14 CCR § 1050. Monitoring inspections shall be conducted, when access is feasible during the prescribed maintenance period, a sufficient number of times during the extended wet weather period, particularly after large winter storm events and at least once annually, to evaluate the function of drainage facilities and

structures. The Department shall also conduct monitoring inspections at least once during the prescribed maintenance period to assess logging road and landing conditions.

Yes  No

- (1) Inspections shall include checking drainage facilities and structures for evidence of downcutting, plugging, overtopping, loss of function, and sediment delivery to Class I, II, or III watercourses and lakes. If evidence of sediment delivery or potential sediment delivery is present, and the implementation of feasible corrective measures could reduce the potential for significant sediment discharge, such additional measures shall be implemented when feasible.

Yes  No

- (2) Inspections conducted pursuant to California Regional Water Quality Control Board requirements may be used to satisfy the inspection requirements of this section.

**N/A, not in ASP watershed**

- (k) In watersheds with listed anadromous salmonids, water drafting for timber operations shall:

- (1) Comply with Fish and Game Code Section 1600, et seq. Timber operations conducted under a Fish and Game Code Section 1600 Master Agreement for Timber Operations that includes water drafting may provide proof of such coverage for compliance with 14 CCR § 923.7(l).
- (2) Describe the water drafting site conditions and proposed water drafting activity in the plan, including:
- (A) A general description of the conditions and proposed water drafting;
  - (B) The watercourse classification;
  - (C) The drafting parameters including the months the site is proposed for use; estimated total volume needed per day; estimated maximum instantaneous drafting rate and filling time; and disclosure of other water drafting activities in the same watershed;
  - (D) The estimated drainage area (acres) above the point of diversion;
  - (E) The estimated unimpeded streamflow, pumping rate, and drafting duration;
  - (F) A discussion of the effects on aquatic habitat downstream from the drafting site(s) of single pumping operations, or multiple pumping operations at the same location, and at other locations in the same watershed;
  - (G) A discussion of proposed alternatives and measures to prevent adverse effects to fish and wildlife resources, such as reducing hose diameter; using gravity-fed tanks instead of truck pumping; reducing the instantaneous or daily intake at one location; describing allowances for recharge time; using other dust palliatives; and drafting water at alternative sites; and
  - (H) The methods that will be used to measure source streamflow prior to the water drafting operation and the conditions that will trigger streamflow to be measured during the operation.
- (3) All water drafting for timber operations are subject to each requirement below unless the Department of Fish and Wildlife modifies the requirement in the Lake or Streambed Alteration agreement that authorized the drafting operation, or unless otherwise specified below:
- (A) All intakes shall be screened to prevent impingement of juvenile fish against the screen. The following requirements apply to screens and water drafting on Class I waters:
    1. Openings in perforated plate or woven wire mesh screens shall not exceed 3/32 inches (2.38 millimeters). Slot openings in wedge wire screens shall not exceed 1/16 inches (1.75 millimeters).
    2. The screen surface shall have at least 2.5 square feet of openings submerged in water.
    3. The drafting operator shall regularly inspect, clean, and maintain

screens to ensure proper operation whenever water is drafted.

4. The approach velocity (water moving through the screen) shall not exceed 0.3 feet/second.
  5. The diversion rate shall not exceed 350 gallons per minute.
- (B)** Approaches and associated drainage features to drafting locations within a WLPZ or channel zone shall be surfaced with rock or other suitable material to minimize generation of sediment.
- (C)** Barriers to sediment transport, such as straw wattles, logs, straw bales or sediment fences, shall be installed outside the normal high water mark to prevent sediment delivery to the watercourse and limit truck encroachment.
- (D)** Water drafting trucks parked on streambeds, floodplains, or within a WLPZ shall use drip pans or other devices such as adsorbent or absorbent blankets, sheet barriers or other materials as needed to prevent soil and water contamination from motor oil or hydraulic fluid leaks.
- (E)** Bypass flows for Class I watercourses shall be provided in volume sufficient to avoid dewatering the watercourse and maintain aquatic life downstream, and shall conform to the following standard:
1. Bypass flows in the source stream during drafting shall be at least 2 cubic feet per second.
  2. Diversion rate shall not exceed 10 percent of the surface flow.
  3. Pool volume reduction shall not exceed 10 percent.
- (F)** The drafting operator shall keep a log that records, for each time water is drafted: the date, total pumping time, pump rate, starting time, ending time, and volume diverted. Logs shall be filed with the Department of Forestry and Fire Protection at the end of seasonal operations and maintained with the plan record. This requirement may be modified in the approved plan that covers the water drafting, but only with concurrence from the Department of Fish and Wildlife.
- (G)** Before commencing any water drafting operation, the RPF and the drafting operator shall conduct a pre-operations field review to discuss the water drafting measures in the plan and/or Lake or Streambed Alteration Agreement.

**WATERCOURSE AND LAKE PROTECTION ZONE (WLPZ) AND DOMESTIC WATER SUPPLY PROTECTION MEASURES**

- 1)  Yes  No Is a 1603 permit necessary?
- 2)  Yes  No Do you need to apply for a standard 1603 permit?
26. a.  Yes  No Are there any watercourse or lakes which contain Class I through IV waters on or adjacent to the plan area? If yes, list the class, WLPZ or ELZ width, and protective measures determined from Table I and/or 14 CCR 916 (936, 956) .4 (c) of the WLPZ rules for each watercourse. Specify if Class III or IV watercourses have WLPZ , ELZ or both.

**Three watercourses and a pond are present on or adjacent to the project or the property area. No harvesting or vegetation removal is proposed within any WLPZ or ELZ of any Class I, II or III watercourse.**

**Biologist Stream Analysis, See Appendix D-30**

“Stream Analysis The property contains an unnamed reservoir that is part of the Friesen Lakes, one Class III watercourse and two blue line streams. The creeks on the property are ephemeral drainages.

Two blue line streams are present on the property. These streams are seasonal intermittent ephemeral drainages, they do not contain instream riparian vegetation, but have limited riparian vegetation as an overstory which provides shade. Non of the streams or drainages on the property would support fish and are not tributary's to fish bearing streams.

The southeast blue line drainage (Figure 9) Class III, and Class IIs is downstream from the reservoir on the property but water has been diverted. (Figure 8) This creek contains woodland vegetation or chaparral on the top of banks. The drainage contains a shallow cut channel with rock, mud or gravel bed present. The Class III watercourse (figure 10) is a small tributary to this blue line creek.

The northwest blue line drainage (Figure 11) drainage contains less slope and down cutting. This creek contains woodland vegetation or grasslands on the top of its banks. The drainage contains a shallow cut channel with rock, mud or gravel bed present.

The vegetation associated with these ephemeral drainages is no different than the upland vegetation (typical riparian trees, shrubs and herbs are not present). The only vegetation within the channel consists of poiklohydric bryophytes on the larger more stable boulders in the streambed. The bank below the high water mark consists of unvegetated rock or soil.

We found no evidence of in channel aquatic life. The southeast drainage has been altered by diversion to the local water system and is further altered by the reservoir above the road which appears to have been constructed to impound water on the property. The THP/TCP has been designed to provide standard buffers along these drainages. All roads exist and no expansion is contemplated.”

**NW Class III watercourse.**

This watercourse is on slopes less than 30%. The WLPZ is set by county standards and the ECP, at 55' and 65', see the ECP Appendix B. See THP map **page 13 and 14**. There is one existing rocked ford crossing located in the NW corner of

the property on this watercourse. This is stable and has been in place for many years. It is the primary access for the neighboring Napa Valley Land Trust. Use of the crossing for vehicle access will not degrade the watercourse. This is an existing class III crossing. Water flows through this crossing in response to a rain event and dries up very quickly. The bottom of the crossing and the downstream end is composed of solid rock and will not destabilize. No activity is proposed within the WLPZ, the existing road surface through this WLPZ is rocked. The crossing is presently drivable in a truck or car. The project is proposed in the spring, summer and fall when the watercourse will be dry. Use of this crossing is limited to the following..

**THP Mitigation #22, Low Water Crossing limitations. THP page 37.**

- Use of the low water crossing is limited to pickup trucks and or cars during the winter period.
- No heavy equipment is allowed to use the crossing if there is water flow.
- No material, vegetative or otherwise may be dragged through the crossing at any time, wet or dry.
- All vegetation will be transported, if needed, by 10 wheel dump trucks to landings east of the low water crossing.
- No modification of the existing crossing is permitted at any time.

**Central Class III Watercourse between Blocks B and C**

This watercourse has set backs determined by the county for the ECP that vary between 55' and 105'. This is significantly wider than the forest practice rules. The additional length is due to the ground slope within the WLPZ of over 30%. No activity is proposed in the WLPZ.

**Southern boundary Class III and Class IIs.**

This watercourse has set backs determined by the county for the ECP that vary between 105' and 125'. This is significantly wider than the forest practice rules. The additional length is due to the ground slope within the WLPZ being over 30%. No activity is proposed in the WLPZ.

**Class IV watercourse, Howell Mountain Water District.**

Located on the east side of the property. The Class IV watercourse (see THP map) directs water from the existing pond over flow to the Friesen Lakes area and is used by the Howell Mountain Water District. This water flows under one of the access roads to the vineyard project in three existing culverts. The crossing is stable and does not need any attention. The Class IV watercourse is above the project area and will not be disturbed by the proposed project. The existing lake is also above the proposed project and will not be disturbed by the proposed project. The watershed above and leading to the Class IV watercourse is not part of the proposed project.

**Pond, see Biologist comments, Appendix D-29**

"Reservoir (Figure 7)The reservoir adjacent to Friesian Road retains water year-around. It is a local wildlife resource for summer water. Small mouth bass and Sunfish were observed in significant numbers along with Northwestern Pond Turtle(s). Bullfrogs were also present. The vegetation surrounding the edge of the reservoir consisted of willows and caryx. Emergent vegetation was sparse. The overflow from the reservoir is diverted from the drainage below by a diversion channel that conveys water off of the property to the south. We are told that this is a part of the old water system of Angwin."

**Flagging**

All boundaries of the plan and all boundaries of the WLPZ are flagged in blue and pink flagging. No vegetation disturbance is proposed with any WLPZ. As such no shade impact will occur and no increase in water temperature can be expected. All water courses within the project property are dry during the hot summer months.

- b.  Yes  No Are there any watercourse crossings that require mapping per 14 CCR 1034 (x) (7)?
- c.  Yes  No Will tractor road watercourse crossings involve the use of a culvert? If yes state minimum diameter and length for each culvert (may be shown on map).

**Watercourses are within the property boundary and adjacent to the project area. All watercourse crossings are existing and permanent. The project boundary has been set back from all watercourses as required by the Forest Practice Rules or Napa County Ordinance, which ever is greater. See below.**

**Forest Practice Definitions, Section 936.5, Water and Lake Protection Zone widths.**

<b><u>WATERCOURSE</u></b>	<b>&lt; 30% Slope</b>	<b>30 – 50% Slope</b>	<b>&gt;50% Slope</b>	<b>Onsite?</b>
Class I WLPZ	150'	150'	150'	None present
Class II-L WLPZ	100'	100'	100'	Non present
Class II-S WLPZ	50'	75'	100'	Present
Class III WLPZ	30'	55+	105+	Present

**Napa County Ordinance**

<b><u>Slope</u></b>	<b>Width</b>	<b>Onsite?</b>
1-5%	45'	None Present
5-15%	55'	Present
15-30%	65'	Present
30-40%	85'	Present
40-50%	105'	Present
50-60%	125'	Present
60-70%	150'	None Present

**Explanation of additional documentation.**

The project is located in Napa County, California, as such an Erosion Control Plan (ECP) has been designed to meet Napa County regulations and is attached to this THP. An Environmental Impact Report has been prepared by Analytical Environmental Services to satisfy CEQA requirements for the Timberland Conversion and Napa Counties Erosion Control Plan. Frequent reference to the DRAFT EIR will be made throughout this document.

See the attached Environmental Impact Report for a discussion of Hydrology and Water Quality. See **Draft EIR section 4.9, Appendix A page A-196**

**Conclusions of Hydrology Analysis of ECP, O'Connor Environmental Appendix E-13**

"Simulation of potential Project effects on runoff using TR 55 to estimate runoff changes and simulating the effects of proposed erosion control and soil preparation measures, specifically the ripping the Kidd Complex soils to a depth of 36" indicates that peak runoff rates will decline for all design storms."

**Conclusions of Sediment Analysis of ECP, O'Connor Environmental, Appendix F-7**

"Supplemental Control of Off-site Sediment Delivery

The project ECP includes two features that are expected to further reduce sediment delivery from the site. First, substantial rock-disposal structures border downslope portions of the perimeters of Blocks B, C and D adjacent to each of the major stream-side set backs. The design of these rock-disposal structures will provide significant sediment retention potential. In addition, these structures will also provide substantial function as flow spreaders. Additionally, the undisturbed soil and vegetation within streamside set backs will provide an additional deposition zone within which sediment potentially mobilized within vineyard blocks may be deposited prior to reaching a stream channel. The significant features of the ECP are expected to provide substantial supplemental reduction in sediment delivery from the project site.

**Summary and Conclusion**

The preceding summary of site conditions, erosion processes, and erosion control measures embodied in the project ECP demonstrates that this project complies with County of Napa County land use Policy CON-48. Erosion rates on the project site are expected to be reduced relative to existing conditions and potential for off-site transport of eroded sediment are substantially reduced."

As a result of implementation of this Timber Harvest Plan along with the Erosion Control Plan, post project sediment erosion conditions and peak hydrological runoff are projected to be below pre project conditions. Implementation of this plan will not cause significant cumulative watershed effects. The ECP is used as mitigation to insure post project sediment erosion conditions and peak hydrological runoff are below pre project conditions, **THP mitigation #8**

**THP Mitigation #8, Erosion Control Plan see THP page 51**

Implement all aspects of the Napa County Erosion Control plan (**ECP #P-13-00373 ECPA**) in order to meet Napa County Conservation Regulations

- d.  Yes  No Is this THP Review Process to be used to meet Department of Fish and Game CEQA review requirements? If yes, attach the 1603 Addendum below or at the end of this Section II; provide the background information and analysis in Section III; list instructions for LTO below for the installation, protection measures, and mitigation measures; as per THP Form Instructions or CAL FIRE Mass Mailing, 07/02/1999, "Fish and Game Code 1603 Agreements and THP Documentation".

### **Anadromous Salmonid Protection Rules**

The project area lies in the northern portion Bell Canyon Reservoir Planning Watershed (Calwater ID #2206.500202, <http://frap.fire.ca.gov/projects/esu/esulookup.asp>) which drains into the Napa River. The Napa River watershed contains anadromous fish, the Bell Canyon Reservoir watershed does not. As such the Anadromous Salmonid Protection (ASP) rules do not apply. The Napa River is listed by the federal Clean Water Act 303(d) as impaired due to fine sediment deposition. See the following site for additional information.

[http://www.bof.fire.ca.gov/board\\_committees/forest\\_practice\\_committee/current\\_projects/ANADROMOUS\\_SALMONID\\_PROTECTION\\_RULES\\_2009/revise\\_post-workshop\\_asp\\_q&a\\_doc\\_4\\_2\\_2010-final\\_.pdf](http://www.bof.fire.ca.gov/board_committees/forest_practice_committee/current_projects/ANADROMOUS_SALMONID_PROTECTION_RULES_2009/revise_post-workshop_asp_q&a_doc_4_2_2010-final_.pdf)

The California Regional Water Quality Control Board adopted Resolution R2-2009-0064 for the San Francisco Bay Region. The Napa River is listed pursuant to Federal Clean Water Act 303(d) requirements as an impaired waterbody due to fine sediment deposition. The board approved the following for the Napa River on 1-23-09, see portions of resolution R2-2009-0064 below.

### **Napa River Sediment Reduction and Habitat Enhancement Plan**

[http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/napariver\\_sediment/rs\\_r2\\_2009\\_0064.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/napariver_sediment/rs_r2_2009_0064.pdf)

The goals of the Napa River Sediment Reduction and Habitat Enhancement Plan (Plan) are to:

- Conserve the steelhead trout population
- Establish a self-sustaining Chinook salmon population
- Enhance the overall health of the native fish community
- Enhance the aesthetic and recreational values of the river and its tributaries

To achieve these goals, specific actions are needed to:

- Attain and maintain suitable gravel quality and diverse streambed topography in freshwater reaches of Napa River and its tributaries
- Protect and/or enhance base flows in tributaries and the mainstem of the Napa River
- Reduce the number and significance of human-made structures in channels that block or impede fish passage
- Maintain and/or decrease summer water temperatures in tributaries to the Napa River

### **IMPLEMENTATION PLAN**

The actions described below, including the processes by which sediment and runoff control practices are proposed and implemented, are necessary to achieve TMDL targets and allocations and habitat enhancement goals. In addition, actions specified in this plan are expected to enhance steelhead run size and facilitate establishment of a self-sustaining Chinook salmon run.

**Regulatory Tools**

The only point sources of sediment identified are those associated with urban stormwater runoff (e.g., municipal stormwater, runoff from State highways, and industrial and construction discharges) and wastewater treatment plants, which are regulated by NPDES permits. Table 4.0 shows implementation measures required of these sources.

The state’s Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program requires regulation of nonpoint source discharges using the Water Board’s administrative permitting authorities, including waste discharge requirements (WDRs), waiver of WDRs, Basin Plan Discharge Prohibitions, or some combination of these. Consistent with this policy, Tables 4.1 – 4.4 specify actions and performance standards by nonpoint source category, as needed to achieve TMDL sediment targets and allocations in Napa River watershed. The Water Board will consider adopting conditions for waiving WDRs that apply to the nonpoint sources (vineyards, grazing, roads, etc.) listed in Tables 4.1 – 4.4, address all pollutants of concern, protect all beneficial uses, and balance the agricultural, environmental, recreational, and residential needs of the watershed.

**Table 1. TMDL sediment targets for the Napa River and its Tributaries**

Spawning gravel permeability	Median value $\geq 7000$ cm/hr <sup>a</sup>
Streambed scour	Mean depth of scour $\leq 15$ cm <sup>b</sup>
<p><sup>a</sup> Target applies to all potential spawning sites for steelhead and salmon in the Napa River and its tributaries, excluding those upstream of municipal water supply reservoirs.</p> <p><sup>b</sup> Target applies to the response of the streambed to peak flows less than the bankfull event at all potential spawning sites for salmon in gravel-bedded reaches of: 1) mainstem Napa River; and 2) alluvial reaches of tributaries where streambed slope is between 0.001 and 0.02. Potential spawning sites can be identified based on the following: 1) dominant substrate size in the streambed surface layer is between 8 and 128 mm; 2) minimum surface area of gravel deposit is 0.2 square meters in tributaries and 1.0 square meter in mainstem Napa River; or 3) located within mainstem Napa River at a riffle head, pool tail, and/or pool margin or in tributary reaches where streambed slope <math>&lt; 0.03</math>, or in tributary reaches where streambed slope <math>&gt; 0.03</math> in pool tails, backwater pools, and/or in gravel deposits associated with flow obstructions (e.g., woody debris, boulders, banks, etc.).</p>	

**Table 4.1 Required and Trackable TMDL Implementation Measures for Sediment Discharges Associated with Vineyards<sup>1</sup>**

Land Use Category	Performance Standards	Actions	Implementing Parties	Completion Dates
Vineyards	<p><b>Surface Erosion associated with vineyards:</b> Control excessive rates of sediment delivery to channels resulting from vineyard surface erosion<sup>5</sup>; <b>and</b></p> <p><b>Roads:</b> Road-related sediment delivery to channels ≤ 500 cubic yards per mile per 20-year period; <b>and</b></p> <p><b>Gullies and/or shallow landslides:</b> Accelerate natural recovery and prevent human-caused increases in sediment delivery from unstable areas; <b>and</b></p> <p><b>Effectively attenuate significant increases in storm runoff,</b> so that the runoff from vineyards shall not cause or contribute to downstream increases in rates of bank or bed erosion.</p>	<p>Submit a Report of Waste Discharge<sup>2</sup> (RoWD) to the Water Board that provides, at a minimum, the following: a description of the vineyard; identification of site-specific erosion control measures needed to achieve performance standard(s) specified in this table; and a schedule for implementation of identified erosion control measures.</p> <p>Or</p> <p>Develop and begin implementing a farm plan certified under Fish Friendly Farming Environmental Certification Program or other farm plan certification program, approved as part of a waiver of WDRs. All dischargers applying for coverage under a waiver of WDRs also will be required to file a notice of intent (NOI) for coverage, and to comply with all conditions of the WDR waiver.<sup>4</sup></p>	Vineyard owner and/or operator	October 2014
		Comply with applicable waste discharge requirements (WDRs) or waiver of WDRs.	Vineyard owner and/or operator	As specified in applicable WDRs or waiver of WDRs
		Report progress on implementation of site specific erosion control measures. <sup>3</sup>	Vineyard owner and/or operator	As specified in applicable WDRs or waiver of WDRs
<p><sup>1</sup>To achieve TMDL allocations and consistent with the <i>Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program</i> (State Board, 2004).</p> <p><sup>2</sup>Or compliance with applicable conditional waivers of WDRs that may be adopted by the Water Board.</p> <p><sup>3</sup>Reports may be submitted individually or jointly through a recognized third party.</p> <p><sup>4</sup>Additional conditions may be required under a General WDR and/or waiver program consistent with the <i>Policy for Implementation and Enforcement of the Non-Point Source Control Program</i> (State Board 2004), and/or as needed to avoid potentially significant environmental impacts.</p> <p><sup>5</sup>Napa County Conservation Regulations (County Code, Chapter 18.108) are effective in the control of excessive rates of sediment delivery resulting from vineyard surface erosion. Rates of sediment delivery are "excessive" when the predicted soil loss rate exceeds the tolerable soil loss rate (T), calculations as described in "The Universal Soil Loss Equation, Special Applications for Napa County, California" (USDA, 1994).</p>				

**The project is not impacted by CCR 14 section 936.9(a) since it is within a watershed with anadromous fish. Napa County Ordinance requires no increase in water run off and no increase in sediment for the post project compared to pre project conditions. Meeting this ordinance standard also allows the project to meet section 936.9(a)**

**936.9(a)**

It is the goal of this project to be planned and conducted to prevent deleterious interference with the watershed conditions that primarily limit the values set forth in 14 CCR 916.2 [936.2, 956.2](a) (e.g., sediment load increase where sediment is a primary limiting factor; thermal load increase where water temperature is a primary limiting factor; loss of instream large woody debris or recruitment potential where lack of this value is a primary limiting factor; substantial increase in peak flows or large flood frequency where peak flows or large flood frequency are primary limiting factors). To achieve this goal, every timber operation shall be planned and conducted to meet the following objectives where they affect a primary limiting factor:

- (1) Comply with the terms of a Total Maximum Daily Load (TMDL) that has been adopted to address factors that may be affected by timber operations if a TMDL has been adopted, or not result in any measurable sediment load increase to a watercourse system or lake.

The project lies within the Napa River watershed. The State Water Resources Control Board has amended the Water Quality Control Plan for the San Francisco Bay Region to establish a TMDL for sediment in the Napa River.

See, [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/napariver\\_sediment/rs\\_r2\\_2009\\_0064.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/napariver_sediment/rs_r2_2009_0064.pdf)

See table 1 above

The project has an Erosion Control Plan that will meet Napa County Conservation Regulations. Per the San Francisco Bay Regional Water Quality Control Board, these County Regulations are “effective in the control of excessive rates of sediment delivery resulting from vineyard surface erosion. Rates of sediment delivery are excessive when the predicted soil loss rate exceeds the tolerable soil loss rate (T), calculations as described in the “Universal Soil Loss Equation, Special Applications for Napa County, California” (USDA 1994)” See inserted Table 4.1 above and [http://www.waterboards.ca.gov/water\\_issues/programs/tmdl/docs/napariver\\_sediment/rs\\_r2\\_2009\\_0064.pdf](http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/napariver_sediment/rs_r2_2009_0064.pdf). Analysis of the Erosion Control Plan show that post project sediment production for this project is projected to be below pre project levels. See **the Hydrologic Analysis and Erosion Assessment by O’Connor Environmental, DRAFT EIR Appendix E and F.**

- (2) Not result in any measurable decrease in the stability of a watercourse channel or of a watercourse or lake bank. The project is proposed on slopes less than 30%, and all watercourses adjacent to the project area have setbacks that meet CAL FIRE and Napa County Ordinance. In addition, the ECP meets the county ordinance requiring no net increase in hydrological run off or sediment over pre project conditions. Geologic evaluation conducted on the property did not identify any slope stability issues. As such, implementation of the project THP and ECP will not decrease the stability of any watercourse channel or watercourse.
- (3) Not result in any measurable blockage of any aquatic migratory routes for anadromous salmonids or listed species. There are no watercourses on or adjacent to the project or the property area that contain anadromous salmonids.
- (4) Not result in any measurable stream flow reductions during critical low water periods except as part of an approved water drafting plan pursuant to 14 CCR 916.9(r) [936.9(r), 956.9(r)]. The watercourse protection zones adjacent to the water course are dry during the summer months that could require water drafting. No drafting is planned on any adjacent watercourse.
- (5) Consistent with the requirements of 14 CCR § 916.9(i), 14 CCR § 936.9(i), or 14 CCR § 956.9(i); protect, maintain, and restore trees (especially conifers), snags, or downed large woody debris that currently, or may in the foreseeable future, provide large woody debris recruitment needed for instream habitat structure and fluvial geomorphic functions. Watercourses adjacent to the project area are protected by a water and lake protection zone and an Erosion Control Plan designed by a Civil Engineer. No activity will take place in any WLPZ, and therefore no trees potentially supplying large wood debris would be removed under the project.
- (6) Consistent with the requirements of 14 CCR § 916.9(g), 14 CCR § 936.9(g), or 14 CCR § 956.9(g); protect, maintain, and restore the quality and quantity of vegetative canopy needed to: (A) provide shade to the watercourse or lake, (B) minimize daily and seasonal temperature fluctuations, (C) maintain daily and seasonal water temperatures within the preferred range for anadromous salmonids or listed species where they are present or could be restored, and (D) provide hiding cover and a food base where needed. Watercourses adjacent to the project area are protected by a water and lake protection zone and an Erosion Control Plan designed by a Civil Engineer. No activity will take place in any WLPZ, and therefore there will be no loss of shady or canopy to affect water temperatures.

- (7) Result in no substantial increases in peak flows or large flood frequency. Due to implementation of the Erosion Control Plan, the hydrological peak flows will be less than pre project conditions. See the **Hydrologic Analysis and Erosion Assessment by O'Connor Environmental, Appendix E and F**

**936(b)**

Pre-plan adverse cumulative watershed effects on the populations and habitat of anadromous salmonids shall be considered. The plan shall specifically acknowledge or refute that such effects exist. When the proposed timber operations, in combination with any identified pre-plan watershed effects, will add to significant adverse existing cumulative watershed effects, the plan shall set forth measures to effectively reduce such effects.

Pre-plan adverse cumulative watershed effects presently exist on populations and habitat of anadromous salmonids. These adverse impacts include sediment transport and habitat degradation. The plan as proposed does not increase the offsite transportation of sediment. Per the analysis based on the ECP, no net increase in sediment transport can be expected. No additional measures are needed. The plan as proposed will have no significant adverse cumulative watershed effects. No timber operations or silvicultural prescriptions are proposed in any WLPZ.

**936.9(c)**

Objectives for timber operations or Silvicultural prescriptions in WLPZs - Any timber operation or silvicultural prescription within any watercourse or lake protection zone shall have protection, maintenance, or restoration of the beneficial uses of water, and properly functioning salmonid habitat and listed aquatic or riparian-associated species as significant objectives. Specific objectives are described below. No timber operations or silvicultural prescriptions are proposed in any WLPZ.

**Significant Objectives**

The project is located in the Bell Canyon watershed, a tributary of the Napa River watershed; the Napa River watershed contains populations of anadromous salmonids listed as threatened, endangered, or candidate under the State or Federal Endangered Species Acts. Protection, maintenance, or restoration of the beneficial uses of water or the populations and habitat of anadromous salmonids or listed aquatic or riparian-associated species is a significant objective of this plan.

**Present condition**

The project property contains three watercourses adjacent to the project area. The project has been set back from these watercourses to establish zones of none impact. No activity will take place in these areas. The project property also contains a small pond. The proposed project has been set back from the pond a minimum of 150 feet to reduce impacts associated with the pond habitat. All timber harvest and project activities will take place downstream or outside of the pond drainage area.

**Objectives and mitigations:** the following have been considered and proposed to minimize impacts to downstream waterways and thereby impacts to downstream anadromous fisheries habitat.

**1. Reduce the transport of sediment by application of an Engineered Erosion Control Plan.**

The ECP proposes a permanent cover crop, non-tilled vineyard, rock slope protection, fiber rolls, waterbars, rolling dips, rocked roads and straw mulch. These best management practices, along with the fact that the project meets the Napa County Ordinance requiring no post-project increase in hydrological flow or sediment transport, significantly reduces the availability of sediment to transport into any downstream water system.

Analysis of the USLE shows soil loss to be less for the post project than pre project due to implementation of ECP measures and mitigation measures. See the **Hydrologic Analysis and Erosion Assessment by O'Connor Environmental, Appendix E and F.**

**2. Reduce the impacts of potential water runoff by application of an Engineered Erosion Control Plan.**

The ECP proposes a permanent cover crop, non-tilled vineyard, rock slope protection, fiber rolls, waterbars, rolling dips, rocked roads and straw mulch to reduce water concentration, encourage sheet flow of storm water. These actions reduce storm water run off levels to below preproject levels. See the **Hydrologic Analysis and Erosion Assessment by O'Connor Environmental, Appendix E and F.**

Analysis of the TR-55 model show a decrease in storm water run off levels to below preproject levels, as a result of implementation of the ECP, See the **Hydrologic Analysis and Erosion Assessment by O'Connor Environmental, Appendix E and F.**

**3. Reduce potential for chemical pollutants to enter down stream waterways.**

The vineyard proposes a Sustainable Integrated Pest Management Plan (IPM) and application of Best Management Practices approved by Napa County. Impacts to downstream watercourses as a result of chemical use will be reduced and/or eliminated compared to conventional farming methods. See **Integrated Pest Management Plan, Appendix J. THP Mitigation #4, Integrated Pest Management Plan, see THP page 23**

27. Are site specific practices proposed in-lieu of the following standard WLPZ practices?

- a.  Yes  No Prohibition of the construction or reconstruction of roads, construction or use of tractor roads or landings in Class I, II, III, or IV watercourses, WLPZs, marshes, wet meadows, and other wet areas except as follows:
  - (1) At prepared tractor road crossings.
  - (2) Crossings of Class III watercourses which are dry at time of timber operations.
  - (3) At existing road crossings.
  - (4) At new tractor and road crossings approved by Department of Fish and Game.
- b.  Yes  No Retention of non-commercial vegetation bordering and covering meadows and wet areas?
- c.  Yes  No Directional felling of trees within the WLPZ away from the watercourse or lake?
- d.  Yes  No Decrease of width(s) of the WLPZ(s)?
- e.  Yes  No Protection of watercourses which conduct class IV waters?
- f.  Yes  No Exclusion of heavy equipment from the WLPZ except as follows:
  - (1) At prepared tractor road crossings.
  - (2) Crossings of Class III watercourses which are dry at time of timber operations.
  - (3) At existing road crossings.
  - (4) At new tractor and road crossings approved by Department of Fish and Game.
- g.  Yes  No Establishment of ELZ for Class III watercourses unless side slopes are <30% and EHR is low?
- h.  Yes  No Retention of at least 50% of the overstory canopy in the WLPZ?
- i.  Yes  No Retention of at least 50% of the understory in the WLPZ?
- j.  Yes  No Are any additional in-lieu or any alternative practices proposed for watercourse or lake protection?

**NOTE: A yes answer to any of items “a.” through “j.” constitutes an in-lieu practice. If any item is answered yes, refer to 14 CCR 916.1 (936.1, 956.1) and address the following for each item checked yes:**

1. The RPF shall state the standard rule;
2. Explain and describe each proposed practice;
3. Explain how the proposed practice differs from the standard practice;
4. The specific location where it shall be applied, see map requirements of 14 CCR 1034 (x) (15) and (16);
5. Provide in THP Section III an explanation and justification as to how the protection provided is equal to the standard rule and provides for the protection of the beneficial uses of water, as per 14 CCR 916 (936, 956) .1 (a). Reference the in-lieu and location to the specific watercourse to which it will be applied.

28. a.  Yes  No Are there any landowners within 1000 feet downstream of the THP boundary whose ownership adjoins or includes a class I, II, or IV watercourse(s) which receives surface drainage from the proposed timber operations? If yes, the requirements of 14 CCR 1032.10 apply. Proof of notice by letter and newspaper should be included in THP Section V. If No, "28 b." need not be answered.
- b.  Yes  No Is an exemption requested of the notification requirements of 14 CCR 1032.10? If yes, an explanation and justification for the exemption must appear in THP Section III. Specify if requesting an exemption from the letter, the newspaper notice or both.
- c.  Yes  No Was any information received on domestic water supplies that required additional mitigation beyond that required by standard Watercourse and Lake Protection rules? If yes, list site specific measures to be implemented by the LTO.

#### Adjacent Land Owners

A list of all landowners located within 300 feet of the THP boundary can be found on **page 155 of the THP**. Notice was sent to all landowners located within 300 feet of the THP boundary, see **page 159 of the THP** for an example of this letter. Responses can be found on **page 162 of the THP**. The letter was mailed to landowners located within 300 feet of the THP boundary on **10-10-2014**.

#### Down Stream Water Users

Several adjacent landowners exist within 1,000 feet downstream of the THP boundary. As such a notice by letter was sent to these downstream water users. See the a copy of the letter **page 158**. The notice was published in a newspaper of general circulation. Forest practice rules, 14 CCR section 1032.10. A copy of this legal notice can be found on **page 167**.

#### Friesen Drive

Friesen Drive and Buckeye Lane are private roads accessing the project area. This road system is shown on the THP map **page 13 and 14 of the THP**. Notice of intent was also sent to all landowners owning property within 300' of the Friesen Drive. This letter was mailed on **10-10-2014**. Responses, if any can be found on **page 162 of the THP**

#### Notice of Intent, Posting

The notice of intent was posted (**7-9-2015**) at the entrance to the property on Friesen Rd. See **page 169 of the THP**.

29.  Yes  No Is any part of the THP area within a Sensitive Watershed as designated by the Board of Forestry and Fire Protection? If yes, identify the watershed and list any special rules, operating procedures or mitigation that will be used to protect the resources identified at risk?

HAZARD REDUCTION

30. a.  Yes  No Are there roads or improvements which require slash treatment adjacent to them? If yes, specify the type of improvement, treatment distance, and treatment method.
- b.  Yes  No Are any alternatives to the rules for slash treatment along roads and within 200 feet of structures requested? If yes, RPF must explain and justify how alternative provides equal fire protection. Include a description of the alternative and where it will be utilized below.

**Slash clean up**

All slash created by this harvest operation will be mulched, chipped, burned or removed from the site, i.e. firewood.

**Best Management Practices****THP Mitigation #9 Best Management Practices** see THP page 61

In addition to the erosion control measures described in Section 3.0 of the **DRAFT EIR**, personnel shall follow written BMP's for filling and servicing construction equipment and vehicles. The BMP's which are designed to reduce the potential for incidents involving hazardous materials , shall include:

- Refueling shall be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans shall be placed under equipment to catch potential spills during servicing.
- All disconnected hoses shall be placed in containers to collect residual fuel from the hose.
- Vehicle engines shall be shut down during refueling.
- No smoking, open flames, or welding shall be allowed in refueling or service areas.
- Refueling and all construction work shall be performed outside of any onsite stream buffer zones to prevent contamination of water in the event of a leak or spill.
- Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
- A spill containment kit that is recommended by the Napa County Department of Environmental Management or local Fire department will be onsite and available to staff if a spill occurs.

In the event that contaminated soil and/or groundwater or other hazardous materials are generated or encountered during construction, all work shall be halted in the affected area and the type and extent of the contamination shall be determined. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with federal, state, and local regulations. If containment and size of the spill is beyond the scope of the contractor, proper authorities shall be notified. The potential release of hazardous materials during construction of the Proposed Project is reduced to less than significant with the implementation of the mitigation measure above.

**Certified Pest Applicator**

**THP mitigation #10, Certified Pest Applicator, see THP page 61**

In the event pesticides are used onsite, only a certified pest applicator shall apply the pesticides and personnel shall follow Standard Operating Procedures (SOPs) when applying chemicals to the vineyard. SOPs for pesticide use, shall include the following, also see IMP Appendix J.

- Purchase only enough pesticide that would be used per season.
- All chemicals will be stored in their original containers.
- Labels on the containers will not be removed.
- Chemicals will be kept in a well-ventilated locked area.
- Chemical storage areas will be 100 feet from any drainage area, stream, or groundwater well.
- If a chemical must be disposed of, contact the Napa County Agricultural Commissioner to locate a hazardous waste facility for proper disposal.
- Chemicals will never be poured down the sink, toilet, or stream.
- Proper personal protection equipment will be utilized when working with chemicals.

Implementation of the mitigation measure above reduces potential impacts from improper chemical use and storage to a less than significant level.

**Hazardous Materials**

**THP Mitigation 11, Hazardous Materials, see THP page 61**

Fuel loading and chemical mixing areas shall be established outside the proposed set backs and away from any areas that could potentially drain off site or potentially affect surface and groundwater quality. When equipment is cleaned onsite, only rinse water that is free of gasoline residues, pesticides and other chemicals, and waste oils should be allowed to diffuse back into vineyard areas. In the event pesticides, herbicides or fungicides are used, all rinse water from equipment used to apply chemicals should be collected and stored in containers that are of sufficient size to contain the water until hazardous materials transporter can remove the rinse water. No rinse water shall be drained to a septic system or discharged to ground or surface water to prevent the release of hazardous materials into the environment during operation and maintenance of the proposed project. Impacts after mitigating would be less than significant.

31.  Yes  No Will piling and burning be used for hazard reduction? See 14 CCR 917.1-.11, 937.1-.10, or 957.1-.10, for specific requirements. Note: LTO is responsible for slash disposal. This responsibility cannot be transferred.

The LTO is responsible for all slash disposal.

BIOLOGICAL AND CULTURAL RESOURCES

32. a.  Yes  No Are any plant or animal species, including their habitat, which are listed as rare, threatened or endangered under federal or state law, or a sensitive species by the Board, associated with the THP area? If yes, identify the species and the provisions to be taken for the protection of the species.

b.  Yes  No Are there any non-listed species which will be significantly impacted by the operation? If yes, identify the species and the provisions to be taken for the protection of the species.

NOTE: See THP Form Instructions or the CAL FIRE Mass Mailing, 07/02/1999, section on "CAL FIRE Guidelines for Species Surveys and Mitigations" to complete these questions.

Biological Resources

A detailed scoping process has been performed for the assessment of impacts related to the proposed project. This process is included in the biological report and in the DRAFT EIR. See attached **Biological Resources Report Appendix D-8 and the DRAFT EIR Appendix A**. A description of the scoping process can be found in the Biological Report. The following material is an excerpt from the Biological Resources Report.

**Project Scoping**

"The scoping for the project considered location and type of habitat and or vegetation types present on the property or associated with potential special-status plant species known for the project quadrangle, surrounding quadrangles, the County, and the region. Our scoping also considered records in the most recent version of the Department of Fish and Wildlife California Natural Diversity Data Base (CDFW CNDDDB Rare Find-5), Biogeographic Information and Observation System Online mapping tool, and the California Native Plant Society (CNPS) Electronic Inventory of Rare or Endangered Plants. "Target" special-status species are those listed by the State, the Federal Government, or the CNPS, or that are considered threatened in the region. Our scoping is also a function of our familiarity with the local flora and fauna as well as previous projects on other properties in the area.

The California Wildlife Habitat Relationship System Species Summary Report by Habitat Present was run to review the potential species that could be present (Table IV).

Aerial photographs and Napa County Baseline Data Report Vegetation Layers are included within our scoping for the project.

Tables III and IV (*refer to the Biological Resources Report*) present CDFW CNDDDB Rare Find species within five miles.

We also considered species which are known for the nine surrounding Quadrangles which would potentially be present based on habitat available on property (Appendix C). The special-status species listed in Appendix C with habitat requirements that are present on the project sites or immediate vicinity are considered and included in our findings and comments below. Those species with specific habitat conditions not present within the project footprint such as vernal pools or hot springs are not discussed.

Vegetation cover was evaluated in the field using membership rules defined in the Manual of California Vegetation Second Edition (Sawyer et. al. 2009)."

**Results:**

- Spring surveys found one CNPS listed plant (4.3 Plants of Limited Distribution), Napa Lomatium (*Lomatium repostum*) and one animal CDFW Species of Special Concern, the Western Pond Turtle (*Emys marmorata*);
- We did not observe any sensitive habitats, State or Federal listed plants or animal known for the Quadrangle, surrounding Quadrangles or the region associated with the proposed vineyard blocks;
- In general the habitat types found on the property would be termed forest or woodland, annual grassland, and shrubland/chaparral. Our findings using the vegetation criteria of Sawyer et al 2009 shows that the property consists of *Quercus* Forest Alliance Mixed Oak Forest, *Pseudotsuga menziesii* Forest Alliance Douglas Fir Forest, *Adenostoma fasciculatum* Shrubland Alliance Chamise Chaparral and *Arctostaphylos Manzanita* Provisional Shrubland Alliance. It is noted that our on site analysis of the vegetation differs from the 2005 Napa County Baseline Data Report Maps;
- Approximately 50% of the property is outside of the project footprint and will be retained in a natural state. It will continue to function as watershed, open space and wildlife habitat
- The proposed project will not impact any riparian vegetation, or have a substantial adverse effect on Sensitive Natural Communities regulated by the California Department of Fish and Wildlife, US Fish and Wildlife or listed by the County;
- The proposed project will not impact any federal or state protected wetlands, drainages, or vernal pools as defined by section 404 of the Clean Water Act provided stream setbacks are implemented. All "Waters of the U.S" or Waters of the State must be avoided. The ECP for the project provides stream setbacks;
- The significant biological resources on the property are the unnamed seasonal drainage, associated riparian vegetation, reservoir, and wildlife habitat;
- The proposed project will not substantially interfere with native wildlife species, migratory corridors, and or native wildlife nursery sites:
- Trees on the property have the potential to support raptor nesting. No sign or sighting of raptors was found. The site is adjacent to an actively used camping area, which may deter raptor use or direct them to adjacent areas with better habitat;
- The project will remove Native Oaks. Mixed Oak Woodland habitat is present on the property; and
- All species observed are listed in the appendix.

**Assessment of Impacts, See Biology report Appendix D-35**

'Napa Lomatium (*Lomatium repostum*) is present within the proposed conversion area. Napa Lomatium is present within the chaparral alliance in areas that have been cleared of overstory specifically the construction of the roads. This Lomatium is a northern California and Bay Area endemic that is a member of the carrot family. It is listed by the California Native Plant Society as (4.3 plants of limited distribution) and is common in disturbed areas of chaparral communities. It does not have state or federal listing but must be addressed as per CEQA. Three occurrences were present on the property two are within the proposed conversion area.

Future clearing has the potential to release more of this species. This species is a seral species that appears after clearing and then will be outcompeted over time as the shrub overstory canopy develops and leaf litter accumulates (the Lomatium is a prostrate plant that grows from a rosette).

If left to natural vegetation growth patterns this species would not be present. If avoided it will eventually become shaded out. Routine maintenance of roads and clearing will allow this species to remain on the property. We find that there is no need to avoid this species and anticipate that it will grow around the edges of roads as the overstory is cleared. ' In an effort to increase the presence of Lomatium the following mitigation is proposed by Napa County."

**Lomatium Seed Bank****THP Mitigation #20, Lomatium seed bank. THP page 64**

A seed bank retention strategy shall be utilized for the protection of Napa lomatium (*Lomatium repostum*) on the property. Prior to ground disturbing activities, a qualified biologist or botanist shall delineate the extent of the Napa lomatium populations within the clearing limits. All Napa lomatium plants shall be transplanted and the top inch of topsoil shall be skimmed at these locations. The plants and soil shall be moved to the 150-foot buffer zone surrounding the pond in an area that is ecologically suitable for Napa lomatium, as identified by the qualified biologist or botanist.

**Western Pond Turtle** (*Emys marmorata*) was observed in the reservoir on the property. This reservoir is outside of the proposed development. Water from the reservoir will not be used on the vineyard. There is no need for protective measures due to the available upland estivation habitat surrounding the reservoir. It is unlikely that turtles would move into or use the proposed vineyard block habitat. See **Appendix D-34**

**Bat avoidance****THP Mitigation #12, Bat Surveys see ECP Appendix B-1**

Bats: The following bat avoidance measure shall be implemented prior to the commencement of vineyard development and implementation activities:

A qualified biologist shall conduct a habitat assessment for potential suitable habitat (trees with suitable cavities) within the project site no more than three days before project activities commence. If the habitat assessment reveals any suitable cavities, a qualified biologist shall conduct a concentrated presence/absence survey during peak activity periods on each tree with suitable cavities. If bats are found to be present during peak activity periods, then the qualified biologist shall submit an avoidance plan to the County and CDFW for approval. The avoidance plan shall evaluate the length of time disturbance, equipment noise, and type of habitat present at the project site. In the event the bat avoidance measures required by CDFW result in a reduction or modification of vineyard block boundaries, the ECP shall be revised by the applicant/engineer and submitted to the County. County.

**Raptor Avoidance****THP Mitigation #13, Raptor Surveys see ECP Appendix B-1**

"The following raptor preconstruction survey(s) shall be conducted prior to the commencement of vineyard development and implementation activities:

For earth-disturbing activities occurring between March 1st through September 15th, a qualified wildlife biologist shall conduct preconstruction surveys for special status birds and their nests within 500-feet of earth moving activities. The preconstruction survey shall be conducted no more than 14 days prior to vegetation removal and ground disturbing activities are to commence (surveys shall be conducted a minimum of 3 separate days during the 14 days prior to disturbance).

If active nests are found during a preconstruction survey, a 500-foot disturbance buffer shall be created around active raptor nests, or until it is determined by a qualified biologist that all young have fledged. These buffer zones may be modified in coordination with DFW based on existing conditions at the project site. Buffer zones shall be fenced with temporary construction fencing and remain in place until the end of the breeding season or until young have fledged.

If a 15 day or greater lapse of project-related work occurs during the breeding season, another bird preconstruction survey and consultation with DFW will be required before project work can be reinitiated."

**939.2 General Protection of Nest Sites, Forest Practice Rules.**

- (b) During timber operations, nest tree(s), designated perch trees(s), screening tree(s), and replacement trees(s), shall be left standing and unharmed except as otherwise provided in these following rules.
- (c) Timber operations shall be planned and operated to commence as far as possible from occupied nest trees unless explained and justified by the RPF in the THP.
- (d) When an occupied nest site of a listed bird species is discovered during timber operations, the timber operator shall protect the nest tree, screening trees, perch trees, and replacement trees and shall apply the provisions of subsections (b) and (c) above and shall immediately notify the Department of Fish and Game and the Department of Forestry and Fire Protection. An amendment that shall be considered a minor amendment to the timber harvesting plan shall be filed reflecting such additional protection as is agreed between the operator and the Director after consultation with the Department of Fish and Game.

**Northern Spotted Owl, see Northern Spotted Owl report, Appendix P-1, report updated 4-14-2015**

Pre-harvest, the property is primarily unsuitable northern spotted owl (NSO) habitat, see aerial photo, due to insufficient overstory canopy cover. There is approximately 1/2 acre of forested habitat within the project area that would meet the definition of suitable NSO habitat set forth under USFWS guidelines; however, this is part of a small patch (11 acres) isolated in a landscape of unsuitable NSO habitat, see aerial photo. The property's vegetation consists of primarily gray pine and black oak with a small amount of Douglas-fir and brush land. The brush includes manzanita, coyote brush, interior live oak, and ceanothus.

The landscape surrounding the property is primarily unsuitable NSO habitat (vineyards, ponds, residential houses, and scrub-land). There are small forested patches (the largest is 21 acres) that meet the definition of NSO habitat. However, due to the patchiness within the landscape, they do not provide adequate habitat for a resident NSO. Although unlikely, the forested patches might be used by transient NSOs as temporary shelter as the owl searches for suitable habitat.

**Northern Spotted Owl Surveys, See Appendix P-2**

This is year #3 of surveys completed on this project. Much of the area is considered unsuitable NSO habitat, however, surveys were completed. Three survey stations were used along a private road that we had access. Much of the area surrounding the project area is inaccessible (gated roads, no trespassing signs, and private property), although our stations were able to survey areas within Bell Canyon. Three different surveyors (Scott Butler, Theodore Wooster, and Pamela Town) completed surveys.

**Proposed Operations**

Timber harvest operations are converting the area to a new vineyard. The majority of the conversion area is unsuitable, with approximately ½ acre considered pre-harvest marginal northern spotted owl habitat.

**Northern Spotted Owl No-Take Scenario:**

This project should be able to fall under Scenario 3. Scenario 3 includes the following:

- A. Suitable habitat within harvest units, and
- B. Protocol surveys are completed, and
  - a. No owls are detected within 1.3 miles of timber operations AND
  - b. No historic NSO activity centers within 1.3 miles of timber operations

**Northern Spotted Owl Protection Measures**

- The majority of the project area and surrounding landscape is unsuitable habitat for northern spotted owls prior to the completion of this project.
- At this time, there are no known NSO activity centers within 1.3-miles of the project area, therefore, there are no seasonal or harvest restrictions.
- No helicopter operations are proposed.
- There are no known NSO territories within 1.3 -miles of the property boundary. The closest known NSO territory is NAP002, which is 1.6 miles to the east.

**THP Mitigation #14, NSO see THP page 66**

There are no activity centers located within 1.3 miles of the project parcel (Town, 2015). Northern spotted owl take avoidance will be achieved via compliance with California Forest Practice Rule 14 CCR 919.9(e) Scenario 3. Suitable habitat within harvest units, and protocol surveys are completed and no owls are detected within 1.3 miles of the timber operations and no historic NSO activity centers within 1.3 miles of timber operations.

All information regarding northern spotted owl shall be submitted to CAL FIRE, and annual operations will not commence until Cal Fire has determined if the THP conforms to the USFWS scenario 3. Protocol survey calling procedures shall follow the revised (January 9, 2012) *Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owl* (USFWS, 2012).

The Applicant shall implement the following measures to avoid take of the northern spotted owl (USFWS, 2012):

1. No timber operations shall occur until all surveys which follow the most current approved USFWS survey protocol for the current, or immediately preceding, survey period are complete; the results have been provided to CAL FIRE to be evaluated for consistency with the plan and protocol; and the results amended into the plan.

**California Red-legged Frog (*Rana draytonii*), See Biological Report Appendix D page 29**

“inhabits permanent or nearly permanent water sources (quiet streams, marshes, and reservoirs). They are highly aquatic and prefer shorelines with extensive vegetation. There are two known occurrences for the California Red-legged Frog within five miles of the property 2.88-miles to the east and 3.0 miles to the north. Both of the occurrences are within different watersheds and drain into Pope Valley. There is no potential habitat associated with the proposed conversion area. The reservoir on the property contains limited potential habitat. The reservoir contains bull frogs, sunfish and bass which are predators on Red-legged frogs if present. Banks surrounding the reservoir do not contain potential upland estivation habitat. The shallow ephemeral drainage on the property provides poor habitat for this species. No California Red-legged Frogs were observed within the reservoir and it is unlikely that the proposed project would result in take of this species. The project site is approximately 150-feet away from the reservoir that it is unlikely Red-legged frogs would use this area for upland estivation or for movement.

Day time surveys were conducted on February 22, March 19, April 17, May13, and June 3, 2013. Surveys were conducted by scanning the perimeter of the reservoir with binoculars and walking to edge of the reservoir listening for any clues of amphibians entering the water. The perimeter of the reservoir was also scanned for the presence of egg masses. Bull frog were recorded entering the water and large Bass and bull frog tadpoles were observed in the reservoir. No night time surveys were conducted.”

**CRLF take avoidance, Scenario IV, California Red Legged Frog Take Avoidance Scenarios dated 3-25-2008.**

Scenario IV: Suitable habitat within 2 miles of harvest units or in units and harvest activities planned within 300 feet of suitable habitat during the dry season. All suitable habitat must maintain a 30-foot no-cut buffer; no equipment within the no-cut buffer; trees felled away from suitable habitat.

**THP Mitigation #23, CRLF see THP page 67**

Under all the above scenarios, the following operational conditions are proposed as mitigation for this project.

- 1) Pile burning must be outside the 300-foot buffer of suitable habitat, suitable habitat is associated with the existing pond. The project area is 150 feet from the existing pond.
- 2) No herbicide use allowed within 300 feet of suitable habitat except for direct application to stumps, this applies to the project area from 150' to 300' from the existing pond.
- 3) Roads and landings, if constructed, must be at least 300 feet from suitable habitat, and construction must occur in the dry season. No construction of roads and landings is proposed in the project property.
- 4) Water drafting from suitable habitat (for dust abatement) must be done with a hose placed in a bucket in a deep pool. The bucket must be covered by < 1 inch mesh, and the mouth of the hose must be covered by 1/4 inch mesh. No water drafting is proposed within the existing pond.

### **Vineyard acreage limitation 60/40**

Napa County Ordinance No. 1219 limits the amount of vegetation that can be cleared based on vegetation present on the parcel in 1993. Vegetation was documented by county wide aerial photographs taken in 1993. A portion of the ordinance states

*Section 1. 18.108.010*

*A. The purpose and intent of these regulations is to protect the public health, safety and community welfare, and to otherwise preserve the natural resources of the county of Napa. Further, these regulations are intended to ensure the continued long-term viability of county agricultural resources by protecting county lands from excessive soil loss which if unprotected could threaten local water quality and quantity and lead ultimately to loss of economic productivity. These regulations have been developed in general accord with the policies and principles of the general plan, as specified in the land use element and the open space and conservation element.*

*B. It is furthermore intended that these regulations accomplish the following:*

*Preserve riparian areas and other natural habitat by controlling development near streams and rivers. Encourage development which minimizes impacts on existing land forms, avoid steep slopes, and preserves existing vegetation and unique geologic features; “*

The ordinance applies to seven “sensitive domestic water supply drainages” designated by the County; this project is located in one of these seven sensitive water supply drainages.

### **Vegetation clearing is limited by Napa County Code Section 2. 18.108.027**

***B. Vegetation clearing.** A minimum of sixty percent of the tree canopy cover on the parcel existing on June 16, 1993 along with any understory vegetation, or when vegetation consists of shrub and brush without tree canopy, a minimum of forty percent of the shrub, brush and associated annual and perennial herbaceous vegetation shall be maintained as part of any use involving earth-disturbing activity.*

The vegetation clearing ordinance limits the size of the vineyard conversion on these parcels to approximately 20 acres. Additional regulations on slopes over 30% reduce this acreage even further. The vegetation clearing ordinance is clear in limiting further development on these parcels to only this proposed project size. The remaining acreage is precluded from future conversion and additional development by Napa County ordinance. **The ordinance effectively provides for a conservation easement on the property and accomplishes the intent of a deed restriction.** The ordinance provides for a security deposit to insure implementation as described in the plan. The ordinance does not have any termination date and protects this retained vegetation by protecting county lands and their “continued long-term viability” into the future. The ordinance provides for penalties if the ordinance is violated. These penalties are enforceable as a misdemeanor, and subject to judicial action.

### **Slopes 30% or greater**

Napa County Code Section 18.108 limits earth disturbing activity to slopes less than 30%. This limitation is

reflected in the ECP attached as **Appendix B**.

### **Habitat Retention Area (HRA)**

A Habitat Retention Area (HRA) will be created to address wildlife habitat. The intent of the HRA will be to increase the quality and quantity of forest habitat, develop forest resources, improve water quality and sequester carbon.

#### **Situation:**

The habitat proposed for removal by this project contains:

- Mixed Oak Alliance
- Chamise Chaparral Alliance
- Douglas fir Alliance
- Foothill Pine Alliance

#### **Proposal:**

The HRA proposes to

1. Improve the forest habitat conditions on **9.6 acres** of habitat remaining in and around the proposed vineyard blocks. Napa County has requested a 2:1 oak woodland retention standard, consistent with General Plan Policy CON-24. This project proposes the removal of approximately **5.4 acres** of Mixed Oak Alliance. This equates to a need to retain **10.8 acres** of Mixed Oak Alliance. The HRA proposes to retain **3.6 acres** of existing Mixed Oak Alliance and enhance an additional **9.6 acres** of Foothill Pine Alliance and some small areas classified as Chamise Chaparral Alliance, for a total of **13.2 acres** in oak woodland. See the attached aerial photo showing these areas. The proposal is to remove overstory competition to existing oaks found in the understory of these two habitat areas. The forester has made detailed onsite review of these **9.6 acres** of proposed oak enhancement areas. Approximately 30 to 40% of the vegetation is presently composed of black oak, but most of these are in the understory and are in competition with Ghost Pine and or Manzanita. The proposal is to remove this competition, allowing the existing black oak to release and capture a more dominant role in the canopy. This will be accomplished by the use of chainsaws to cut the manzanita and the Ghost Pine. The manzanita will be left in place to provide protective habitat for birds and animals. The Ghost Pine will be removed if they can be accessed from the existing road. However, most of it will be felled and/or girdled. Girdling of the Ghost Pine will create snag habitat presently lacking in some areas. Falling of many of these pines would damage the existing black oak, whereas snag recruitment will eliminate this disturbance. No mechanical equipment is allowed in the HRA, except on the existing Friesen Drive. All chainsaw work done on the Ghost Pine and manzanita shall be done during the month of November. This will allow the operator to easily locate and protect the black oaks, as leaves will have turned yellow by then and still be on the tree. Operations are also limited to November with

the creation of the pine snags. The cooler weather and late season will eliminate potential increases in insect populations associated with the pine.

This reduction in Ghost Pine and manzanita will increase the black oak component of these areas to approximately 50%. It is anticipated that the Ghost Pine competition will be reduced by approximately 30%.

2. Limit all earth disturbing activities and vegetation disturbances on **3.6 acres** of existing Mixed Oak Alliance associated with the two watercourse adjacent to the proposed project.

**Justification:**

The HRA will improve the forest canopy and wildlife habitat retained on property. Napa County Ordinance 1219 will limit future development of the HRA.

**Mitigation:**

This HRA is proposed as mitigation for the removal of forest vegetation to establish the proposed project. The designated HRA and county ordinance #1219 will effectively maintain forest canopy into the future.

**THP Mitigation #15, HRA see THP page 70**

A Habitat Retention Area (HRA) is proposed to reduce significant impacts to the following resources.

1. Oak Woodland as defined by Napa County.  
Maintain and enhance oak woodland on areas shown as oak enhancement, see map below. These habitat areas contain oaks in the overstory canopy and in the understory canopy. The HRA proposes to reduce competition for the oaks in the understory by removing competition associated with the none oaks in the overstory. This will entail removing, Ghost Pine and or chaparral. This reduction may be in the form of cutting Ghost pine into firewood and or making standing snags. This will be done on a site specific basis as directed by a Registered Professional Forester. It is anticipated that about 30% of the Ghost Pines will be effected.
2. Approximately 30 to 40% of the vegetation is presently composed of black oak, but most of these are in the understory and are in competition with Ghost Pine and or Manzanita. The proposal is to remove this competition, allowing the existing black oak to release and capture a more dominant role in the canopy. This will be accomplished by the use of chainsaws to cut the manzanita and the Ghost Pine. The manzanita will be left in place to provide protective habitat for birds and animals. The Ghost Pine will be removed if they can be accessed from the existing road. However, most of it will be felled and/or girdled. Girdling of the Ghost Pine will create snag habitat presently lacking in some areas. Falling of many of these pines would damage the existing black oak, whereas snag recruitment will eliminate this disturbance. No mechanical equipment is allowed in the HRA, except on the existing Friesen Drive. All chainsaw work done on the Ghost Pine and manzanita shall be done during the month of November. This will allow the operator to easily locate and protect the black oaks, as leaves will have turned yellow by then and still be on the tree. Operations are also limited to November with the creation of the pine snags. The

cooler weather and late season will eliminate potential increases in insect populations associated with the pine.

3. Reduce impacts associated with habitat fragmentation.

The impact caused by habitat fragmentation has been reduced by:

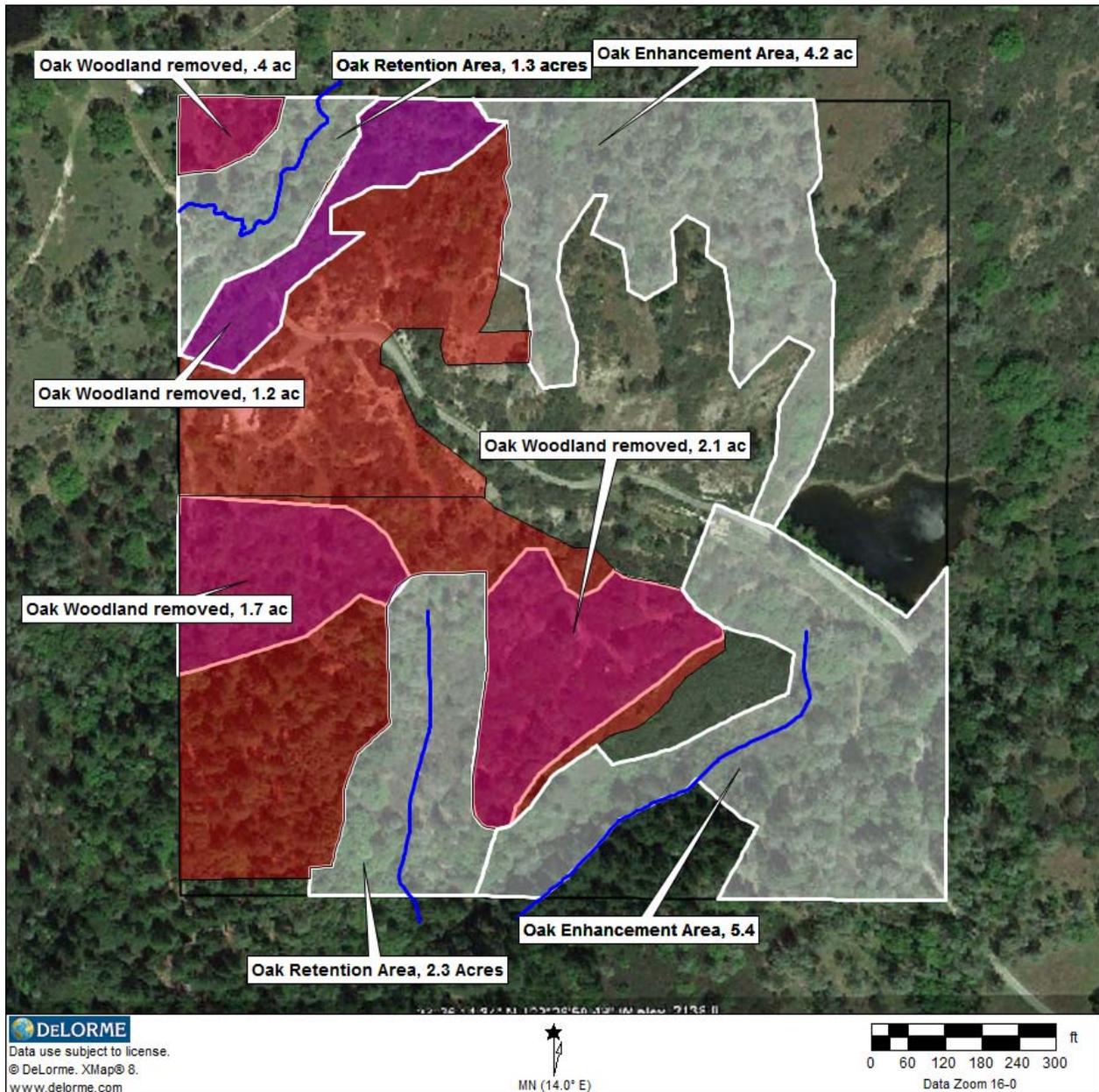
- maintaining fencing associated with the project around each individual or group of blocks
- Not fencing watercourses and watercourse access
- Using cattle guards instead of gates
- Installing cattle guards that allow small animals to exit the project area
- Using fencing with at least 6” wide holes to allow small animals to move in and out of the vineyard blocks
- Condensing the vineyard blocks and not spreading out over the whole parcel
- Installing turtle friendly cattle guards as directed by the ECP, they are to have a turtle escape opening 10” wide by 6” height. Deer Fence mesh to be a minimum of 6” x 6”. See the **ECP Appendix B-1**

4. Protect existing habitat associated with the existing pond.

Vineyard block D has been set back from the pond 150’. There are no fences associated with the pond and its surrounding habitat. The 150 foot buffer will ensure wildlife associated with the pond is not impacted by the proposed vineyard project.

**Habitat Retention Area HRA**

	<b>Oak Woodland Removal</b>	<b>Oak Retention Area</b>	<b>Oak Enhancement Area</b>
	<b>Acres</b>	<b>Acres</b>	<b>Acres</b>
	0.4	1.3	4.2
	1.2	2.3	5.4
	1.7		
	2.1		
<b>Total</b>	5.4	3.6	9.6
Total Oak Retained and Enhanced		<b>13.2 Acres</b>	
note: Some of the oak enhancement area could be classified as oak woodland.			



The boundaries of the area's listed above have been verified with onsite investigation. The total oak woodland removed by this project is 5.4 acres. Napa County's 2:1 oak retention standard is being met by retention and enhancement on a total of 13.2 acres. The oak enhancement mitigation is listed in the THP as mitigation #15, I've copied it to this memo below.

**Anadromous Fisheries**

Potential downstream impact does not exist for anadromous fisheries. See Anadromous Salmonid Protection section in the **THP page 52**.

Onsite review of the project by the Biologist and the Forester find potential for impact to rare, threatened, or endangered species unless the above mitigation is incorporated in the plan. Mitigations proposed for species considered have been applied and reduce impacts to negligible if not none. With mitigation, the project will not have any significant impact on rare, threatened or endangered species.

**THP Mitigation #16, Additional direction to the LTO see page 73 of the THP**

Should additional listed species be identified during active timber operations, all timber operations shall cease and DFW and CAL FIRE will be notified of the detection. Timber operations shall not resume until mitigation measures for the protection of the listed species have been developed and implemented. These mitigation measures shall be amended into the THP.

33.  Yes  No Are there any snags which must be felled for fire protection or safety reasons? If yes, describe which snags are going to be felled and why.

**Snags**

Snags and other live trees have been designated to be retained for wildlife within the balance of the landowners parcel. No harvest has been proposed in these areas. Snags which pose an immediate threat to workers safety will be felled.

34.  Yes  No Are any Late Succession Forest Stands proposed for harvest? If yes, describe the measures to be implemented by the LTO that avoid long-term significant adverse effects on fish, wildlife and listed species known to be primarily associated with late succession forests.

35.  Yes  No Are any other provisions for wildlife protection required by the rules? If yes, describe.

36. a.  Yes [ ] No Has an archaeological survey been made of the THP area?
- b.  Yes [ ] No Has a current archaeological records check been conducted for the THP area?
- c.  Yes [ ] No Are there any archaeological or historical sites located in the THP area? Specific site locations and protection measures are contained in the Confidential Archaeological Addendum in Section VI of the THP, which is not available for general public review.

### Cultural Resources

During the course of plan preparation an Archaeological Survey Report and Confidential Archaeological Addendum (CAA) were prepared by Tom Origer and Associates. This included a scoping process of the following resources. **See the CAA, this document is available at the CAL FIRE office in Santa Rosa.**

- Archival research of library and project files of Tom Origer and Associates.
- An Archaeological records check with the Northwest Information Center.
- Native American Consultation.
- Pre-field research.
- An Archaeological survey performed by Tom Origer and Associates.

### Survey Results

Cultural resource site found, see **CAA Appendix K for details.**

**Potential Impacts and mitigations, see the CAA Appendix K for details.**

### **THP Mitigation #17, Archaeology, Requirements during ground disturbing activities, see THP page 74 and the CAA**

See “specific enforceable protection measures” of the CAA **Appendix K-8**. This information is confidential and available at CAL FIRE Regional Office in Santa Rosa. A qualified archaeologist and Native American representative must be present during all ground disturbing activities in a specified area.

### **THP Mitigation #18, Archaeology, unanticipated subsurface deposits, see THP page 74 and the CAA Appendix K-8**

There is a slight possibility that unanticipated subsurface archaeological deposits may exist within the proposed vineyard areas, as archaeological sites may be buried with no surface manifestation, or may be obscured by vegetation. In accordance with CEQA *Guidelines* Section 15064.5 (f), should any previously unknown prehistoric or historic resources, such as, but not limited to, obsidian and chert flaked-stone tools or tool making debris; shellfish remains, stone milling equipment, concrete, or adobe footings, walls, filled wells or privies, deposits of metal, glass, and/or ceramic refuse be encountered during onsite construction activities, earthwork within 100 feet of these materials shall be stopped and the Applicant shall consult with a professional archaeologist. Once the archaeologist has had the opportunity to evaluate the find he/she shall consult the local CAL FIRE Archaeologist regarding the results of the evaluation and appropriate site treatment options, as necessary. Said measures shall be carried out prior to any resumption of related ceased earthwork. All significant cultural resource materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards and a copy of the draft report provided to the local CAL FIRE Archaeologist for review and approval prior to finalization of it.

**THP Mitigation #19, Archaeology, discovery of human remains, see THP page 75, see Appendix K-8**

In the event that human remains are discovered, the provisions of the California Health and Safety Code Section 7050.5 (b) shall be followed, including contacting the Napa County Coroner within 24 hours of the find. Upon determining the remains as being Native American in origin, the Coroner would be responsible for contacting the Native American Heritage Commission (NAHC) within 24 hours. The NAHC has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant (MLD), who is designated by the NAHC. Implementation of this mitigation measure would reduce this impact to less than significant.

Post Review Site Discovery Procedures: 14 CCR 929.3

If a person discovers a potentially significant archaeological or historical site after a plan, Emergency Notice, or Exemption is accepted by the Director, the following procedures apply:

- (a) The person who made the discovery shall immediately notify the Director, LTO, RPF, or timberland owner of record.
- (b) The person first notified in (a) shall immediately notify the remaining parties in (a).
- (c) No timber operations shall occur within 100 feet of the identified boundaries of the new site until the plan submitter proposes, and the Director agrees to, protection measures pursuant to 14 CCR Sec. 929.2 (949.2,969.2).
- (d) A minor deviation shall be filed to the plan. The minimum information provided shall include:
  - (1) A statement that the information is confidential.
  - (2) The mapped location of the site.
  - (3) A description of the site.
  - (4) Protection measures, and
  - (5) Site records, if site records are required pursuant to 14 CCR Sec. 929.1 (g) (Z) (b) and 929.5 (949.5, 969.51).
- (e) Upon receipt, the Director shall immediately provide the proposed minor deviation or portions of the minor deviation, to Native Americans when Native American archaeological or cultural sites are involved.

37.     [ ] Yes   [X] No           Has any inventory or growth and yield information designated "trade secret" been submitted in a separate confidential envelope in Section VI of this THP?

38. Describe any special instructions or constraints that are not listed elsewhere in Section II.

**List of general mitigations, responsibilities and reminders for LTO, this list is not all inclusive.**

**Copies of ECP, THP and TCP must be available onsite at all times.**

For compliance purposes a complete copy of the Erosion Control Plan, Timber Harvest Plan and Timber Conversion Plan must be available onsite at all times activities covered under these permits are taking place.

The TLO, or RPF as directed by the TLO, is responsible for notifying the Department of Forestry and Napa County Planning of the commencement of timber operations. Both shall be notified by telephone, mail or Email as listed below.

Telephone	Department of Forestry (707) 576-2344	Napa County Planning Department (707) 253-4416
Address	2210 W. College, Santa Rosa, CA 95401	1195 Third St. Rm 210, Napa, CA 94559
Email	<a href="mailto:santarosareviewteam@fire.ca.gov">santarosareviewteam@fire.ca.gov</a>	<a href="mailto:brian.bordona@countyofnapa.org">brian.bordona@countyofnapa.org</a>

**THP Mitigation #1, Completion meeting.** See THP page 4

There shall be a meeting at the end of timber harvesting operations between the RPF, LTO and the vineyard manager to discuss each person's responsibilities when logging is complete. CAL FIRE and any other reviewing agency may be invited to this meeting.

**THP Mitigation #2, SOD Mitigation.** See THP page 18

1. RPF (or LTO for most Exemptions) should inform personnel that they are working in an area with Sudden Oak Death disease, unauthorized movement of plant material is prohibited, and the intent of mitigation measures is to prevent disease spread (14 CCR 1035.2). If some sites in the general operating area are found to be disease-free or have a low incidence of disease, consider initiating operations on these sites before moving to more heavily infested sites.
2. To the extent practical and feasible, route equipment away from host plants and trees, especially in areas with disease symptoms. Locate landings, log decks, logging roads, tractor roads, and other sites of equipment activity away from host plants, especially areas with disease symptoms.
3. Each time equipment or vehicles leave the site, the equipment or vehicles should be inspected by operations personnel for host plant debris (leaves, twigs, and branches). Host plant debris should be removed from equipment and vehicles prior to their departure. This applies to all equipment and vehicles associated with the operation, including logging equipment, log-hauling trucks, pick-up trucks, employee's personal vehicles, etc. An exception will be granted for equipment or vehicles that leave the site temporarily and will not be traveling to uninfested areas prior to their return.
4. Conduct operations during the dry season. Utilize paved and rocked roads and landings to the extent possible.
5. After working in an infested area, remove or wash off accumulations of soil, mud, and organic debris from shoes, boots, vehicles and heavy equipment, etc. before traveling to an area that is not infested with Sudden Oak Death. Lysol® or a bleach solution can be used to disinfect shoes and boots after cleaning.
6. Inspect loads of logs and equipment leaving the site to ensure that no host material is being transported without a permit. This may require cleaning mud from vehicle to remove host plant material imbedded in mud depending on conditions when the timber harvest is conducted. Consider establishing an equipment power wash station. The station should be: located within the generally infested area, paved or rocked, well drained so that vehicles exiting the station do not become contaminated by the wash water, located where wash water and displaced soil does not have the

potential to carry fines to a watercourse (see "Saturated Soil Conditions" in 14 CCR 895.1), pay particular attention to sites where soil and organic debris may accumulate.

**THP Mitigation #3, Pine Slash reduction, see THP page 22**

Pine Slash Hazard Reduction Mitigations implemented under this THP/Conversion

Treatment of Pine slash as directed by Board Of Forestry Technical Rule Addendum No. 3. See **THP page 21** for details.

**THP Mitigation #4, Integrated Pest Management Plan, see THP page 23**

Implementation of the Integrated Pest Management Plan, see the **IPM Draft EIR Appendix J**.

**THP Mitigation #5, Dust abatement see THP page 27**

The Applicant shall implement a fugitive dust abatement program during the construction of the county ECP #P05-0376-ECPA, which shall include the following elements:

- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard.
- Cover all exposed stockpiles.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent paved streets.
- Limit traffic speeds on unpaved roads to **15 miles per hour (mph)**.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.

In addition to the above measures, the Applicant shall also implement the required basic construction mitigation measures as recommended by the BAAQMD during the construction of the Proposed Project, which shall include the following elements:

- All exposed surfaces (e.g., parking areas, staging areas, and unpaved access roads) shall be watered as needed to ensure dust abatement.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of the California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
- Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
- All heavy duty construction equipment shall be fitted with diesel particulate matter filters and use only aqueous diesel fuel.

The measures above are in addition to the permanent erosion control measures specified in #P13-0376-ECPA, which include establishing a permanent no till cover crop on all disturbed areas. As shown in **EIR attached**, construction of the Proposed Project would not exceed the BAAQMD criteria pollutant threshold. The permanent erosion control measures would avoid the creation of nuisance dust and PM<sub>10</sub> during operation of the Proposed Project, which would reduce these potentially significant impacts to a less than significant level. These measures are additive to those required during the timber harvest prior to conversion.

**THP Mitigation #6, Winter Operating Plan, timber falling see THP page 32**

1. No heavy equipment is allowed at any time.
2. Fallers vehicles will operate on rocked road surfaces at all times.
3. All aspects of the winter period operating plan found on the previous page are in effect.
4. Trees shall be felled to lead in a direction away from WLPZ, fencing and not allowed to fall outside of the project area.
5. Trees shall be felled in conformance with watercourse and lake protection measures incorporated in the timber harvesting plan and consistent with Article 6 of the rules.

**Mitigation #7, Road use limitations and restrictions, see THP page 38**

Access to the project area is over a +/- 3 mile long gated private road (Friesen Drive). The road is maintained by several individuals for residential, commercial and agricultural interests. The road contains rocked and paved surfaces. Due to the narrow nature of the road and the paved sections, this project proposes the following vehicular limitations and restrictions.

1. No use of logging trucks to haul logs
2. All logs developed from the project shall be milled onsite.
3. All vehicles are to be advised to use extreme caution when transporting equipment, agricultural products and or people. Especially in areas of limited site visibility.
4. Larger vehicles are to operate with headlights on for safety and are not to exceed **15 miles per hour** on Friesen Drive. Larger vehicles are not to exceed **25 miles per hour** on rural county roads.
5. Oversized vehicles are not to use Jake brakes in the immediate vicinity of residential neighborhoods.
6. All construction activities are restricted to Monday through Saturday 7 am to 7 pm. No activities may take place on Sundays & holidays.
7. To further ensure no significant traffic impacts, delivery and removal of heavy equipment and trucks, including those hauling lumber from the project site, will be limited to nonpeak hours.
8. Signs indicating slow trucks entering the roadway will be placed at a distance of 300 feet in both directions of the project site if warranted.

**THP Mitigation #8, Erosion Control Plan see THP page 51**

Implement all aspects of the Napa County Erosion Control plan (**ECP #P-13-00373 ECPA**) in order to meet Napa County Conservation Regulations

**THP Mitigation #9 Best Management Practices, see THP page 61**

In addition to the erosion control measures described in Section 3.0 of the DRAFT EIR, personnel shall follow written BMP's for filling and servicing construction equipment and vehicles. The BMP's which are designed to reduce the potential for incidents involving hazardous materials, shall include:

- Refueling shall be conducted only with approved pumps, hoses, and nozzles.
- Catch-pans shall be placed under equipment to catch potential spills during servicing.
- All disconnected hoses shall be placed in containers to collect residual fuel from the hose.
- Vehicle engines shall be shut down during refueling.
- No smoking, open flames, or welding shall be allowed in refueling or service areas.
- Refueling and all construction work shall be performed outside of any onsite stream buffer zones to prevent contamination of water in the event of a leak or spill.
- Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
- A spill containment kit that is recommended by the Napa County Department of Environmental Management or local FIRE department will be onsite and available to staff if a spill occurs.

In the event that contaminated soil and/or groundwater or other hazardous materials are generated or encountered during construction, all work shall be halted in the affected area and the type and extent of the contamination shall be determined. Should a spill contaminate soil, the soil shall be put into containers and disposed of in accordance with federal, state, and local regulations. If containment and size of the spill is beyond the scope of the contractor, proper authorities shall be notified. The potential release of hazardous materials during construction of the Proposed Project is reduced to less than significant with the implementation of the mitigation measure above.

#### **Certified Pest Applicator**

##### **THP mitigation #10, Certified Pest Applicator, see THP page 61**

In the event pesticides are used onsite, only a certified pest applicator shall apply the pesticides and personnel shall follow Standard Operating Procedures (SOPs) when applying chemicals to the vineyard. SOPs for pesticide use, shall include the following, also see IMP Appendix J.

- Purchase only enough pesticide that would be used per season.
- All chemicals will be stored in their original containers.
- Labels on the containers will not be removed.
- Chemicals will be kept in a well-ventilated locked area.
- Chemical storage areas will be 100 feet from any drainage area, stream, or groundwater well.
- If a chemical must be disposed of, contact the Napa County Agricultural Commissioner to locate a hazardous waste facility for proper disposal.
- Chemicals will never be poured down the sink, toilet, or stream.
- Proper personal protection equipment will be utilized when working with chemicals.

Implementation of the mitigation measure above reduces potential impacts from improper chemical use and storage to a less than significant level.

**THP Mitigation 11, Hazardous Materials, see THP page 61**

Fuel loading and chemical mixing areas shall be established outside the proposed set backs and away from any areas that could potentially drain off site or potentially affect surface and groundwater quality. When equipment is cleaned onsite, only rinse water that is free of gasoline residues, pesticides and other chemicals, and waste oils should be allowed to diffuse back into vineyard areas. In the event pesticides, herbicides or fungicides are used, all rinse water from equipment used to apply chemicals should be collected and stored in containers that are of sufficient size to contain the water until hazardous materials transporter can remove the rinse water. No rinse water shall be drained to a septic system or discharged to ground or surface water to prevent the release of hazardous materials into the environment during operation and maintenance of the proposed project. Impacts after mitigating would be less than significant.

**Bat avoidance****THP Mitigation #12, Bat Surveys see ECP Appendix B-1, THP page 64**

Bats: The following bat avoidance measure shall be implemented prior to the commencement of vineyard development and implementation activities:

A qualified biologist shall conduct a habitat assessment for potential suitable habitat (trees with suitable cavities) within the project site no more than three days before project activities commence. If the habitat assessment reveals any suitable cavities, a qualified biologist shall conduct a concentrated presence/absence survey during peak activity periods on each tree with suitable cavities. If bats are found to be present during peak activity periods, then the qualified biologist shall submit an avoidance plan to the County and CDFW for approval. The avoidance plan shall evaluate the length of time disturbance, equipment noise, and type of habitat present at the project site. In the event the bat avoidance measures required by CDFW result in a reduction or modification of vineyard block boundaries, the ECP shall be revised by the applicant/engineer and submitted to the County. County.

**Raptor Avoidance****THP Mitigation #13, Raptor Surveys see ECP Appendix B-1, THP page 65**

The following raptor preconstruction survey(s) shall be conducted prior to the commencement of vineyard development and implementation activities:

For earth-disturbing activities occurring between March 1st through September 15th, a qualified wildlife biologist shall conduct preconstruction surveys for special status birds and their nests within 500-feet of earth moving activities. The preconstruction survey shall be conducted no more than 14 days prior to vegetation removal and ground disturbing activities are to commence (surveys shall be conducted a minimum of 3 separate days during the 14 days prior to disturbance).

If active nests are found during a preconstruction survey, a 500-foot disturbance buffer shall be created around active raptor nests, or until it is determined by a qualified biologist that all young have fledged. These buffer zones may be modified in coordination with DFW based on existing conditions at the project site. Buffer zones shall be fenced with temporary construction fencing and remain in place until the end of the breeding season or until young have fledged.

If a 15 day or greater lapse of project-related work occurs during the breeding season, another bird preconstruction survey and consultation with DFW will be required before project work can be reinitiated.

**939.2 General Protection of Nest Sites, Forest Practice Rules.**

- (e) During timber operations, nest tree(s), designated perch trees(s), screening tree(s), and replacement trees(s), shall be left standing and unharmed except as otherwise provided in these following rules.
- (f) Timber operations shall be planned and operated to commence as far as possible from occupied nest trees unless explained and justified by the RPF in the THP.
- (g) When an occupied nest site of a listed bird species is discovered during timber operations, the timber operator shall protect the nest tree, screening trees, perch trees, and replacement trees and shall apply the provisions of subsections (b) and (c) above and shall immediately notify the Department of Fish and Game and the Department of Forestry and Fire Protection. An amendment that shall be considered a minor amendment to the timber harvesting plan shall be filed reflecting such additional protection as is agreed between the operator and the Director after consultation with the Department of Fish and Game.

**THP Mitigation #14, NSO see THP page 66**

There are no activity centers located within 1.3 miles of the project parcel (Town, 2015). Northern spotted owl take avoidance will be achieved via compliance with California Forest Practice Rule 14 CCR 919.9(e) Scenario 3. Suitable habitat within harvest units, and protocol surveys are completed and no owls are detected within 1.3 miles of the timber operations and no historic NSO activity centers within 1.3 miles of timber operations.

All information regarding northern spotted owl shall be submitted to CAL FIRE, and annual operations will not commence until Cal Fire has determined if the THP conforms to the USFWS scenario 3. Protocol survey calling procedures shall follow the revised (January 9, 2012) *Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owl* (USFWS, 2012).

The Applicant shall implement the following measures to avoid take of the northern spotted owl (USFWS, 2012):

1. No timber operations shall occur until all surveys which follow the most current approved USFWS survey protocol for the current, or immediately preceding, survey period are complete; the results have been provided to CAL FIRE to be evaluated for consistency with the plan and protocol; and the results amended into the plan.

**THP Mitigation #15, HRA see THP page 70**

A Habitat Retention Area (HRA) is proposed to reduce significant impacts to the following resources.

1. Oak Woodland as defined by Napa County.  
Maintain and enhance oak woodland on areas shown as oak enhancement, see map below. These habitat areas contain oaks in the overstory canopy and in the understory canopy. The HRA proposes to reduce competition for the oaks in the understory by removing competition associated with the non-oaks in the overstory. This will entail removing, Ghost Pine and or chaparral. This reduction may be in the form of cutting Ghost pine into firewood and or making standing snags. This will be done on a site specific basis as directed by a Registered Professional Forester. It is anticipated that about 30% of the Ghost Pines will be effected.
2. Approximately 30 to 40% of the vegetation is presently composed of black oak, but most of these are in the understory and are in competition with Ghost Pine and or Manzanita. The proposal is to remove this competition, allowing the existing black oak to release and capture a more dominant role in the canopy.

This will be accomplished by the use of chainsaws to cut the manzanita and the Ghost Pine. The manzanita will be left in place to provide protective habitat for birds and animals. The Ghost Pine will be removed if they can be accessed from the existing road. However, most of it will be felled and/or girdled. Girdling of the Ghost Pine will create snag habitat presently lacking in some areas. Falling of many of these pines would damage the existing black oak, whereas snag recruitment will eliminate this disturbance. No mechanical equipment is allowed in the HRA, except on the existing Friesen Drive. All chainsaw work done on the Ghost Pine and manzanita shall be done during the month of November. This will allow the operator to easily locate and protect the black oaks, as leaves will have turned yellow by then and still be on the tree. Operations are also limited to November with the creation of the pine snags. The cooler weather and late season will eliminate potential increases in insect populations associated with the pine.

**3. Reduce impacts associated with habitat fragmentation.**

The impact caused by habitat fragmentation has been reduced by:

- maintaining fencing associated with the project around each individual or group of blocks
- Not fencing watercourses and watercourse access
- Using cattle guards instead of gates
- Installing cattle guards that allow small animals to exit the project area
- Using fencing with at least 6" wide holes to allow small animals to move in and out of the vineyard blocks
- Condensing the vineyard blocks and not spreading out over the whole parcel
- Installing turtle friendly cattle guards as directed by the ECP, they are to have a turtle escape opening 10" wide by 6" height. Deer Fence mesh to be a minimum of 6" x 6". See the **ECP Appendix B-1**

**4. Protect existing habitat associated with the existing pond.**

Vineyard block D has been set back from the pond 150'. There are no fences associated with the pond and its surrounding habitat. The 150 foot buffer will ensure wildlife associated with the pond is not impacted by the proposed vineyard project.

**THP Mitigation #16, Additional direction to the LTO see page 73 of the THP**

Should additional listed species be identified during active timber operations, all timber operations shall cease and DFW and CAL FIRE will be notified of the detection. Timber operations shall not resume until mitigation measures for the protection of the listed species have been developed and implemented. These mitigation measures shall be amended into the THP.

**THP Mitigation #17, Archaeology, Requirements during ground disturbing activities, see THP page 74 and the CAA**

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to, obsidian and chert flaked-stone tools or tool making debris; shellfish remains, stone milling equipment, concrete, or adobe footings, walls, filled wells or privies, deposits of metal, glass, and/or ceramic refuse be encountered during onsite construction activities, earthwork within 100 feet of these materials shall be stopped and the Applicant shall consult with a professional archaeologist. Once the archaeologist has had the opportunity to evaluate the find he/she shall consult the local CAL FIRE Archaeologist regarding the results of the evaluation and appropriate site treatment options, as necessary. Said measures shall be carried out prior to any resumption of related ceased earthwork. All significant cultural resource materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards and a copy of the draft report provided to the local CAL FIRE Archaeologist for review and approval prior to finalization of it.

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  - A statement that the information is confidential.
  - (1) The mapped location of the site.
  - (2) A description of the site.
  - (3) Protection measures, and
  - (4) Site records, if site records are required pursuant to 14 CCR Sec. 929.1 (g) (Z) (b) and 929.5 (949.5, 969.51).
- (e) Upon receipt, the Director shall immediately provide the proposed minor deviation or portions of the minor deviation, to Native Americans when Native American archaeological or cultural sites are involved.

**THP Mitigation #20, Lomatium seed bank. THP page 64**

A seed bank retention strategy shall be utilized for the protection of Napa lomatium (*Lomatium repostum*) on the property. Prior to ground disturbing activities, a qualified biologist or botanist shall delineate the extent of the Napa lomatium populations within the clearing limits. All Napa lomatium plants shall be transplanted and the top inch of topsoil shall be skimmed at these locations. The plants and soil shall be moved to the 150-foot buffer zone surrounding the pond in an area that is ecologically suitable for Napa lomatium, as identified by the qualified biologist or botanist.

**THP Mitigation #21, Green House Gas emissions. THP page 138**

The Applicant shall implement the following mitigation measures to reduce project-related GHG emissions during construction of the Proposed Project:

The Applicant shall maintain all construction equipment in accordance with manufacturers' specifications.

The Applicant shall limit construction equipment idling time to less than five minutes.

**THP Mitigation #22, Low Water Crossing limitations. THP page 37.**

- Use of the low water crossing is limited to pickup trucks and or cars during the winter period.
- No heavy equipment is allowed to use the crossing if there is water flow.
- No material, vegetative or otherwise may be dragged through the crossing at any time, wet or dry.
- All vegetation will be transported, if needed, by 10 wheel dump trucks to landings east of the low water crossing.
- No modification of the existing crossing is permitted at any time.

**THP Mitigation #23, CRLF see THP page 67**

Under all the above scenarios, the following operational conditions are proposed as mitigation for this project.

- 1) Pile burning must be outside the 300-foot buffer of suitable habitat, suitable habitat is associated with the existing pond. The project area is 150 feet from the existing pond.
- 2) No herbicide use allowed within 300 feet of suitable habitat except for direct application to stumps, this applies to the project area from 150' to 300' from the existing pond.
- 3) Roads and landings, if constructed, must be at least 300 feet from suitable habitat, and construction must occur in the dry season. No construction of roads and landings is proposed in the project property.
- 4) Water drafting from suitable habitat (for dust abatement) must be done with a hose placed in a bucket in a deep pool. The bucket must be covered by < 1 inch mesh, and the mouth of the hose must be covered by 1/4 inch mesh. No water drafting is proposed within the existing pond.



## **SECTION III SUPPORT DOCUMENTATION**

Non-operational information helpful or required for review

## Project Description

The Proposed Project would convert approximately 10 acres of timberland to a commercial vineyard within a 38.7 acre property. The 13.6 acres constitute the Project Site and the total area to be converted to vineyard. The remaining 25.1 acres of the property will not be impacted by the project. Four vineyard blocks are proposed for development within the Project Site. The vineyard blocks will include wine grape vines as well as internal farm avenues and space for vineyard maintenance operations; therefore, the net area of the vineyard will be approximately 10.5 acres. The establishment of the vineyard as part of the Proposed Project is consistent with the current Napa County zoning designation of Agricultural Watershed (AW).

The Project Site is not located within a Timberland Protection Zone (TPZ). However, since the Proposed Project would convert “non-TPZ timberland to a non-timber growing use” through timber operations in which “future timber harvests will be prevented or infeasible because of land occupancy and activities thereon,” a TCP and approval is required from CAL FIRE consistent with the Z’berg-Nejedly Forest Practice Act (Division 4, Chapter 8, Public Resources Code) and California Forest Practice Rules (Title 14, California Code of Regulations). CAL FIRE will therefore be the CEQA Lead Agency on the EIR.

Harvested timber would be processed on-site using a portable mill. All non-merchantable trees and vegetation would be removed, chipped, and/or burned on-site, consistent with CAL FIRE, Napa County, and San Francisco Bay Area Air Quality Management District standards. Suitable forest products such as lumber, sawlogs, chips, etc. would be marketed as appropriate. Wood products leaving the site would be limited to transport on 3-axle trucks and would not require the use of logging trucks. No new roads, except internal farm avenues within the new vineyard, would be built. As a result of implementation of the ECP and the Forest Practice Act, post-project sediment erosion conditions and peak hydrological runoff are projected to be below pre-project conditions; these aspects are detailed in the hydrological report and sediment report that have been prepared for the Proposed Project and will be included with the EIR as attachments. See **Appendix E and F**.

Chapter 18.108 of the Napa County Code (Conservation Regulations) requires an ECP be prepared by a Licensed Civil Engineer for the Proposed Project and approved by Napa County because slopes on the Project Site are greater than 5 percent. Consequently, Napa County will be a Responsible Agency for the EIR. See the ECP **Appendix B**.

## Project Setting

The Project Site is located on a 38.7-acre property within a portion of the northwest quarter of Section 25 of the Mount Diablo Base Meridian within Township 9 North and Range 6 West. The property includes two parcels which are identified as Napa County APNs 018-060-012 and 018-060-013. The property is located at 1875 Friesen Drive, roughly two miles northwest of the town of Angwin in northern Napa County, California. Land uses in the vicinity of the property include vineyards, rural residences, and open space. The 3,030-acre Dunn- Wildlake Ranch Preserve, which is managed by the Land Trust of Napa County, is located to the west, south, and east of the property; the preserve is adjacent to the west and east borders of the property. Property elevations range from approximately 2,050 to 2,200 feet above mean sea level. Soils on the property are forward gravely loam for the most part, with some Henneke gravelly loam and rock outcrop-Kidd complex soils. The property is located within the Bell Canyon Reservoir watershed (Calwater 2206.500202), and an unnamed reservoir, three Class III watercourse, and one Class II are present on the property. The Project Site is set back 150 feet from the reservoir, and the Project Site would be set back from the Class III watercourse and Class II consistent with Napa County standards and/or CAL FIRE standards (whichever is most protective). The slopes on the Project Site range from 5 to 27 percent. A map of the property with the Project Site identified is included, see **maps and figures page 13 and 14 of the THP**.

As part of the EIR process, a report on the biological resources within an approximate 18-acre survey area (which includes the Project Site of 14± acres and immediately surrounding area within the 38.7-acre property) has been prepared. The following habitats have been identified within the 18-acre survey area: Ghost Pine Woodland Alliance, Douglas Fir Forest Alliance, Mixed Oak Forest Alliance, Chamise Chaparral Alliance, and Manzanita Chaparral Alliance. There are ponderosa pines within the Project Site, but the pines within the survey area do not constitute a Ponderosa Pine Forest.

### **Physical conditions**

Soils on the property are forward gravelly loam for the most part, with some Henneke gravelly loam and rock outcrop-Kidd complex soils. Topography on the plan is gentle with slopes ranging from 5 to 27% within the project area. Aspect is generally south to southwest. Vegetation on the site is classified as "Forest or Woodland Alliances are Quercus Forest Alliance Mixed Oak Forest, Pinus sabiniana Woodland Alliance Ghost Pine Woodland, and Pseudotsuga menziesii Forest Alliance Douglas fir Forest. The Shrubland Chaparral Alliances are Adenostoma fasciculatum Shrubland Alliance Chamise Chaparral and Arctostaphylos manzanita Provisional Shrubland Alliance" See Biological report Appendix D page 7.

Vegetation on the site has been significantly influenced by past fire events and represent a succession of chaparral to oak woodland to conifer forest. Vegetation age is 50 to 100 years old with some minor components of mature Douglas Fir over 100 years old. Vegetation conditions is good, with no significant evidence of decadence or over mature forest vegetation. Plant succession is evident in the understory as oaks and conifers replace chaparral and chamise.

Streams in the plan area are seasonal intermittent ephemeral drainages and do not contain instream riparian vegetation, but have limited riparian vegetation as an overstory which provides shade. None of the streams or drainages on the property would support fish and are not tributary to fish bearing streams. The vegetation associated with these ephemeral drainages is no different than the upland vegetation (typical riparian trees, shrubs and herbs are not present). The only vegetation within the channel consists of poikilohydric bryophytes on the larger more stable boulders in the streambed. The bank below the high water mark consists of unvegetated rock or soil. See Bio report **Appendix D-30**.

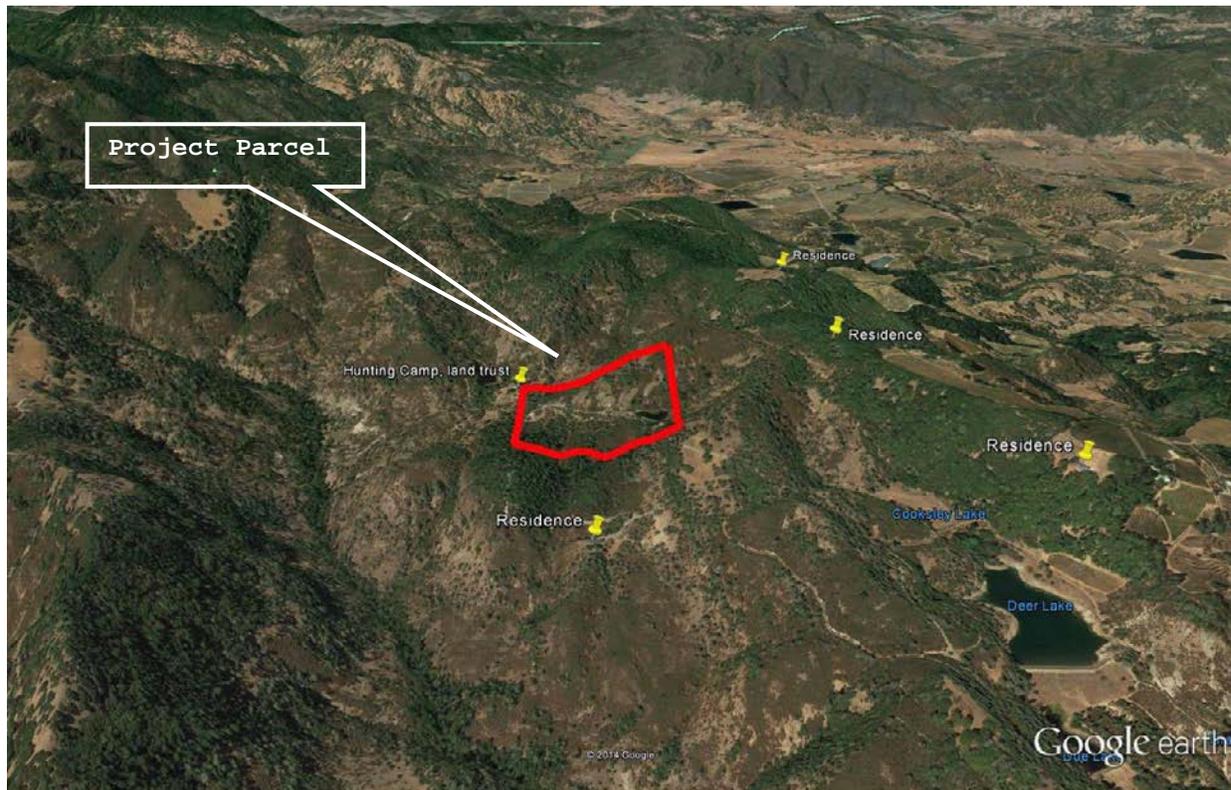
### **Assessment.**

Approximately 10± acres of timberland would be harvested on the property under this Timber Harvest Plan (THP), consistent with Forest Practice Rules. Subsequent to the timber harvest, there is a Timber Conversion Plan (TCP) for the 10-acre TCP area, which is the focus of the Draft EIR attached to this THP. The County must also approve and authorize an ECP before planting of the vineyard to manage impacts from erosion and sedimentation.

As described above, the timber harvest, conversion of timberland to vineyard, and installation of the ECP affect the development of the Proposed Project on the property and would occur in the following order: 1) the separate harvest of 10± acres of timberland on the property and clearing of approximately 3.1± acres of grassland/brushland and 0.5± acres of ruderal, permitted separately under a THP approved by CAL FIRE; 2) the conversion of 10± acres within the 13.6± acre clearing limits to a vineyard block; and 3) the implementation of a County-approved ECP, which is required per County guidelines for the vineyard development since onsite slopes exceed a five percent grade.

## Surrounding Land Uses

In general the area surrounding the proposed vineyard is very rural, three residences are found with in a half mile of the project area. Due to the southwesterly aspect of the property, and the remote nature of the area, it is very doubtful that any residence or public road has a view of the project area.



### North

The property to the north is zoned agricultural watershed; there is no residence and it will not be impacted by the proposed project. The area is covered in brush, grass and some conifers.

### West

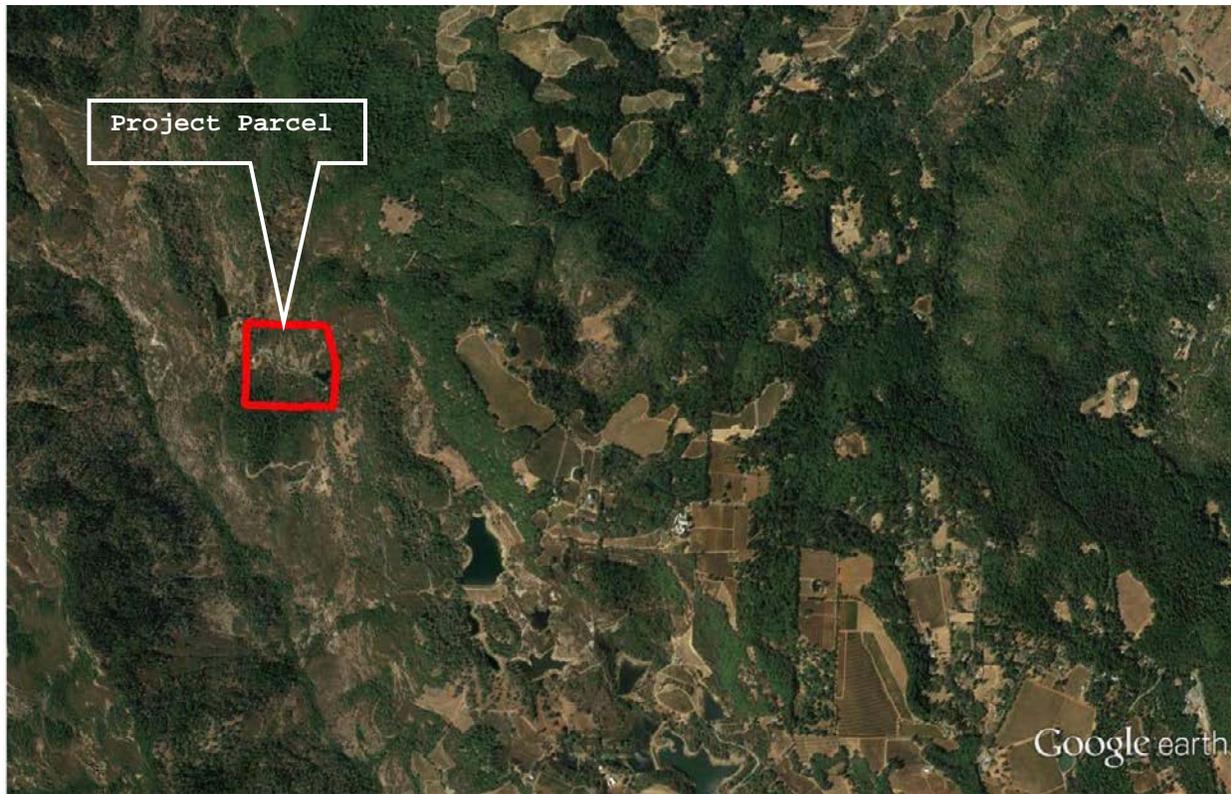
The area to the west is owned by the Napa Valley Land Trust. Prior to ownership by the Land Trust, the property was a hunting camp. The hunting lodge is still there. The Land Trust property is used primarily for hiking. The proposed vineyard will be visible from the hunting lodge. Access to the Land Trust property is through several vineyards along Friesen Drive. The proposed project will provide similar views as found presently. The Land Trust also owns property on the east side of the proposed project property. Friesen Drive passes through Land Trust property after leaving the proposed project property. The forester and vineyard manager have met with the Napa Valley Land Trust to make them aware of the proposed project.

### South

The property to the south does not have a residence. There is evidence of a camping site and current use. Access for the property is over Friesen Drive. The proposed vineyard will be visible from this camp site. A 25 foot buffer has been provided adjacent to this property line. The existing residence further south has not expressed concern with the project.

### East

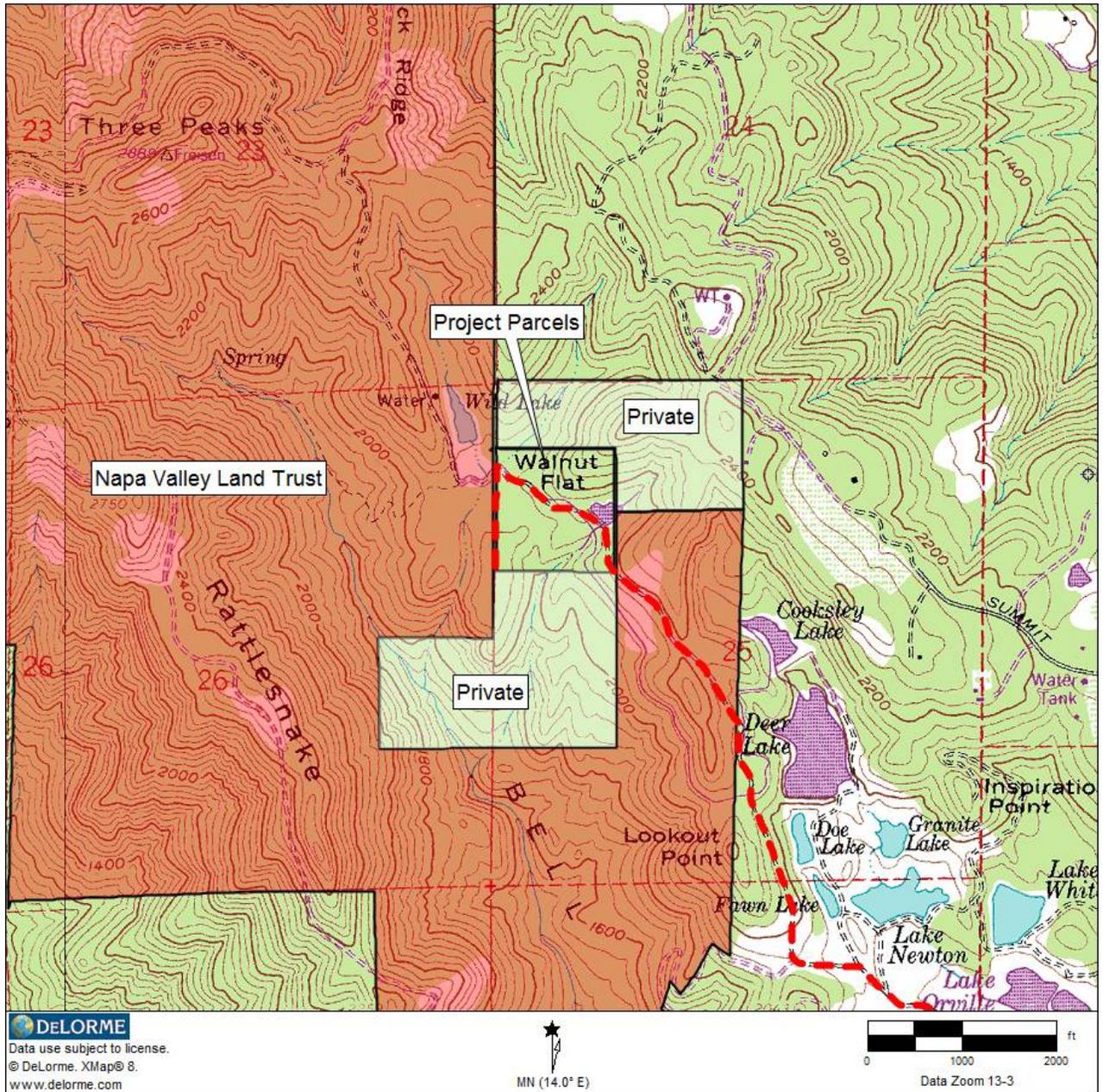
The property to the northeast does have a residence. This residence lies in a different watershed, and as such it does not have a view of the project area. The property to the southeast is owned by the land trust; see **West** above.



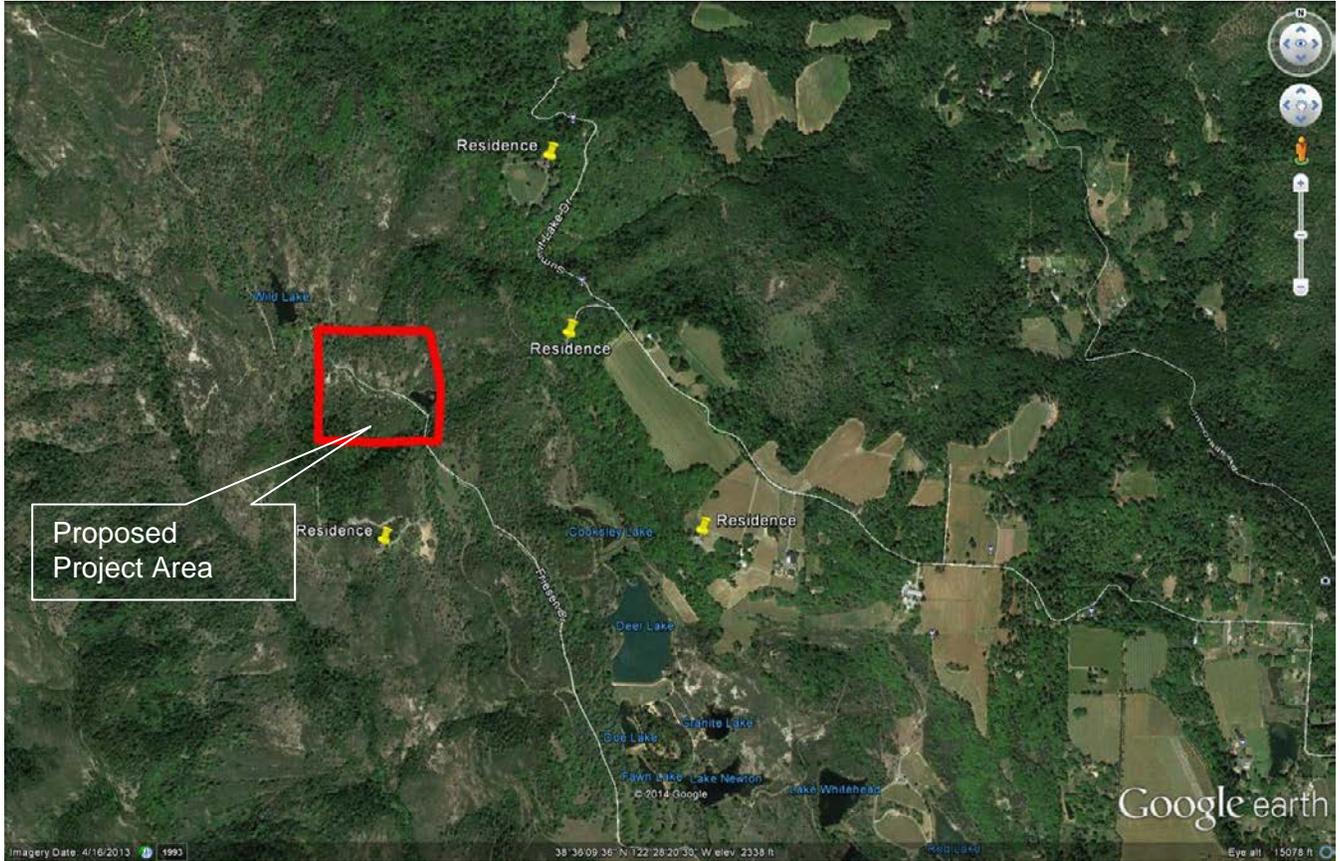
*Proximity to residences, communities, and towns:* The project is located in a rural part of Napa County. Three of the residences found within a half mile of the proposed project are in an adjacent watershed and do not have a view of the project area. The other residence south of the project is below the proposed vineyard and does not have a view of the proposed project.

*Adjacent ownership (public, private, industrial, etc.):* See the description above, north south east and west. There are no industrial ownerships. Rural land composed of brush, grass, conifer and deciduous forest surround the project parcel. Agriculture in the form of grazing and vineyards is also practiced in the general area. See aerial photo above.

*Parkland, open space, etc.:* Napa Valley Land Trust has property on two sides of the project area. See comment above (West). The area to the west is owned by the Napa Valley Land Trust. Prior to ownership by the land trust, the property was a hunting camp. The hunting lodge is still there. The use of the land trust property is for hiking. The proposed vineyard will be visible from the hunting lodge. Access to the land trust property is through several vineyards along Friesen Drive. The proposed project will provide similar views as found presently. The land trust also owns property on the east side of the proposed projects property. Friesen Drive passes through land trust property. The forester and vineyard manager have meet with the land trust to make them aware of the proposed project. See map below.



*How does the proposed use fit the neighboring landscape?* Rural land composed of brush, grass, conifer and deciduous forest surround the project parcel. Agriculture in the form of grazing and vineyards is also practiced in the general area. See aerial photo. Past fires in the areas have added to the mosaic by creating open areas and brush fields. Open areas that are not suitable to agriculture are used for grazing. Open areas suitable to intensive agriculture have been planted to vineyard. Vegetation continues to develop in the brush and forested areas surrounding the project area. The town of Angwin and other residences continue to spread into surrounding agricultural and wild lands. See figure below. The proposed conversion and planting to vineyard will be consistent with other land uses in the area.



In conclusion, the area surrounding the proposed THP/Conversion will retain a forested appearance. The combination of vineyard and forest is compatible and similar to other ownerships in the area. This THP/conversion as proposed will not increase the vistas of the general public driving on county roads. The present views will remain the same along county roads in the area and therefore not present a significant adverse impact.

**No significant adverse impacts are expected to occur.**

## REQUIREMENTS UNDER CEQA

As a certified regulatory program under CEQA, the THP process is exempt from the requirement to prepare Environmental Impact Reports (EIRs) and related provisions of CEQA. However, a THP must include "a description of the proposed activity with alternatives to the activity, and mitigation measures to minimize any significant adverse effect on the environment of the activity." PRC § 21080.5(d)(3)(A); 14 CCR §§15250-15253.

CAL FIRE has informed RPFs that they must submit an alternatives analysis with proposed THPs and has given RPFs guidance in preparing that analysis, based on the CEQA guidelines that control the alternatives analysis in EIRs (14 CCR §15126.6). Those CEQA guidelines are not directly applicable to the THP process as a certified regulatory program. However, they provide the only available guidance on preparing an alternatives analysis. Nevertheless, there are some important differences between the THP process and the EIR process that make the EIR guidelines difficult to apply.

By definition, an EIR must be prepared where the lead agency has identified potentially significant effects from the project as proposed. In the EIR process, where the lead agency determines that the project as proposed would not result in significant environmental effects, the agency prepares a negative declaration or a mitigated negative declaration - rather than an EIR. Where an EIR is necessary, it must describe reasonable alternatives to the project, or to the location of the project, that would avoid or substantially lessen those significant effects the lead agency has identified. An EIR must also develop mitigation measures that serve the same purpose.

As proposed the THP is more like a "mitigated negative declaration" than an EIR. A mitigated negative declaration is prepared for a proposed project where "revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed negative declaration is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur.

Under CEQA, no alternatives analysis is required for projects where a mitigated negative declaration is adopted for a project. 14 CCR 15070(b). Presumably, that is because the project has been designed to meet CEQA's mandate to avoid or substantially lessen significant effects of projects with feasible mitigation measures or feasible alternatives. PRC §21002.

The certified regulatory program's CEQA process for THP's is designed to have the same result as a mitigated negative declaration, i.e., as proposed, a THP will be designed to avoid significant environmental effects or to mitigate such effects to the point where no significant effects will occur. The THP process is based on the Forest Practice Rules, which reflect a layer of analysis that is not utilized in the EIR process. That is, the Forest Practice Rules are developed and adopted by the Board of Forestry as programmatic prescriptions and best management practices designed to mitigate or avoid significant impacts of timber harvesting, road building and other timber operations as they are applied by the RPF in preparing a THP. In addition to requiring RPFs to apply these prescriptions in preparing THPs, the Forest Practice Rules require plan submitters to conduct a site-specific analysis of potentially significant individual and cumulative effects that may not have been avoided or mitigated by simply applying the prescriptions contained in the Forest Practice Rules. The RPF must incorporate feasible measures in the THP to avoid or mitigate such effects.

In preparing this THP, the RPF has applied the prescriptive standards of the Forest Practice Rules. In addition, the RPF has adopted additional measures in the plan as necessary to mitigate or avoid potentially significant site-specific individual and cumulative effects identified during THP preparation. Accordingly, the RPF has submitted a THP that already serves CEQA's objective of avoiding or substantially lessening significant environmental effects.

Applying the EIR-related alternatives requirements to the THP process, the RPF faces the paradox of identifying alternatives to the THP that will avoid or substantially lessen any of the significant environmental effects of the THP where none has been identified. The RPF has, as required by the Forest Practice Rules, already incorporated measures into the THP that will avoid or substantially lessen potentially significant effects.

Although no potentially significant environmental effects have been identified in the THP as proposed, the RPF has analyzed alternatives that could avoid or substantially lessen environmental effects that are typically identified in the preparation and review of THPs in this region. As discussed above, many if not all such effects are addressed in the THP when first submitted for review. The RPF has used CEQA's EIR-related guidelines as well as CAL FIRE's guidance dated June 10, 1997 for addressing alternatives in the THP process.

CEQA does not require any fixed number of alternatives, and does not require inclusion of every conceivable alternative, 14 CCR 15126.6 (a). Further, CEQA does not require the consideration of alternatives whose effect cannot reasonably be ascertained and whose implementation is remote and speculative. Instead, the CEQA Guidelines provide that a "reasonable range" of alternatives must be selected for discussion, applying a rule of reason. 14 CCR 15126.6 (a)(c)(f). In accordance with CEQA's principles, the alternatives selected for detailed examination in this THP are limited to ones that would avoid or substantially lessen any of the significant effects of the project, assuming that such impacts had been identified, and that could feasibly attain most of the basic objectives of the project. Finally, under CEQA, the alternatives considered need only relate to the project as a whole, not to its various parts. *Big Rock Mesas Property Owners Assoc. v. Board of Supervisors* (1977), 73 Cal. App. 3d 218, 227.

*The THP describes the rationale for selecting the alternatives to be discussed, including an explanation of why some alternatives were considered but not selected for detailed discussion in the THP.*

## **STATEMENT OF ALTERNATIVES**

No potentially significant environmental effects have been identified in the THP as proposed. The RPF has analyzed alternatives that could avoid or substantially lessen environmental effects that are typically identified in the preparation and review of a timber harvest. In accordance with CEQA principles, the alternatives selected for detailed examination in this THP are limited to ones that would avoid or substantially lessen the significant effects of the project.

### **Project description, purpose and need.**

The THP proposes the harvest, and conversion to vineyard of 10 acres of conifer forest. Harvesting and slash cleanup will take place with ground based equipment. Planting of premium quality grapes will take place immediately following slash cleanup under a Timberland Conversion Plan (TCP). Watercourses adjacent to the THP have water and lake protection zones (WLPZs) established. These zones meet Napa County ordinances associated with an Erosion Control Plan (ECP) and are greater than the setbacks required by the Forest Practice Rules. The vineyard footprint will avoid threatened and endangered species, and will transplant and collect seeds for the locally rare plant Napa lomatium (*Lomatium repostum*).

### **Landowner objectives:**

The project as proposed will

- Harvest 10 acres of conifer forest.
- Convert 10 acres of conifer forest to Vineyard.
- Produce a premium quality grape for the wine industry.
- Maintain the aesthetics of a forested environment around the gentle slopes of the vineyard.
- Minimize the visual and environmental impacts of the timber harvest and conversion.
- Reduce sediment transport and hydrologic run off on the property.
- Follow all county, state and federal laws in protecting the environment.
- Justify the ownership of the property.
- Maintain long-term ownership of the property.

**Alternatives to this proposed timber harvest have been considered by the landowner. These alternatives include the following.**

#### **1. Sale of the property.**

**Advantage:** This would give immediate cash flow.

**Disadvantage:** The owners are vineyard producers in other parts of the county, and they have purchased this property to use as a potential vineyard site. Sale of the property would defeat the purpose of the initial purchase. The landowners are in the business of growing grapes and processing them into wine. Loss of the property would defeat the goals of land ownership and the recent purchase.

**Impact:** The sale of the property would be speculative and may or may not lessen environmental impact. Future impacts to the environment would be dependent on the future purchaser and their intended land use practices. These potential land uses may or may not be of greater impact than those proposed.

Alternative #1 is speculative and was rejected due to the intended use justified by ownership.

## 2. Sale of a conservation easement:

**Advantage:** This might generate some cash flow, depending on the payment schedule of the easement. Habitat modification would be expected to be reduced; however, depending on the extent and type of the easement, the impact to habitat could vary significantly. Due to implementation of the ECP proposed under the project, sediment transport would not be reduced under this alternative.

**Disadvantage:** The Napa Valley Land Trust is adjacent to this property. They did not express prior interest in purchasing the property. This option would be expected to limit the future uses on the property and therefore affect its future value. Even with compensation for an easement, it would be expected to reduce the net value of the property. The owner wishes to retain ownership of the property and generate a positive cash position. Loss of the potential vineyard would defeat the justification of ownership.

**Impact:** Analysis of this alternative would depend on the type and scope of an easement. Its ability to lessen environmental impacts would be directly related to the type of restrictions placed on the property. The ability to harvest timber may be restricted, but the ability to build rural housing may still be available. Long-term impacts could be reduced due to the fact that any change in land use would be regulated and monitored by several State, County and Federal agencies.

Alternative #2 was rejected due the reduced total net return on the property, the speculative nature of potential environmental impacts and the owner's goal of producing high quality grapes.

## 3. Retain the property in its present condition.

**Advantage:** This option would eliminate the cost of harvest and conversion permits. Habitat modification would be minimized.

**Disadvantage:** An increase in the long-term value of the property would not be realized without the proposed development. The cash flow from the sale of grapes or other agricultural products would not be realized. The habitat improvement proposed in the THP would not take place, and current sediment production would not be reduced by application of the ECP.

**Impact:** This alternative would reduce the modification of habitat associated with the conversion. This loss has been mitigated by maintaining habitat on the balance of the property and improving habitat through oak woodland enhancement proposed in the THP. Potential sediment production has been addressed and reduced to below pre-project levels with the application of the Erosion Control Plan. Future impacts to the environment would be dependent on the future land use practices necessitated by economics of land use management.

Alternative #3 was rejected due to a lower long term cash flow and related property values. Environmental impacts are mitigated by application of the Erosion Control Plan.

#### 4. Alternative silvicultural systems.

**Advantage:** Alternative silvicultural systems have been considered. A selection harvest would be allowed over the entire parcel. The timber harvest would yield a positive net cash flow in the year it occurred. Under the direction of the THP, long term growth and therefore future harvests would also be improved.

**Disadvantage:** Harvesting would reduce the present value of the property due to the appearance of the property and the loss of timber. Existing sediment production would not be reduced by application of the ECP as proposed. Short term costs associated with the selection harvest would be offset by the sale of logs. Habitat modification would take place over the entire property rather than the smaller proposed project footprint. The habitat improvement proposed in the HRA would not take place. Selection timber would also increase potential impacts to the Howell Mountain Water Agency ditch and reservoir, as timber harvest would occur within the watershed above their ditch. Although future growth of potential harvestable volume would increase, the long term economic benefits would be significantly less than the alternative agricultural crop of premium grapes.

**Impact:** Overall, negative impacts to the habitat would be increased due to the disturbance to a larger area. Impacts to soils would be equivalent. Although the cash flow demands would be less than that of converting and planting a vineyard the return on investment would significantly decrease. Sediment currently produced on site will continue to flow to fish bearing streams below the project area.

Alternative #4 was rejected. The long term investment potential is is not meet with this alternative. Neighbors concerns for aesthetics and environmental issues would be similar to the alternative #6. No improvement to sediment production would be realized with this alternative.

#### 5. Delay project construction for economic and environmental concerns

**Advantage:** Conversion of the site at this time is economically advantageous since forest products are not as economically productive as grapes. Although implementation of the plan will reduce wildlife habitat, long-term management of the habitat available in the Habitat Retention Area (HRA) will improve habitat in the future. Implementation of the Erosion Control plan will reduce sediment production in the future. Implementation of the THP would insure the long term improvement of forest growth.

**Disadvantage:** The initial investment required to develop the proposed agricultural crop is significant. Future economic downturns in the wine industry would not be beneficial to the landowner's financial position. Putting off the conversion into the future will not reduce the concerns over habitat modification, sediment production, or investment risks; these concerns will remain a constant.

**Impact:** Timing and implementation of the project as proposed will not have a significant impact on the environment. Concerns over habitat modification and sediment production remain a constant. Requirements and mitigations proposed in the permits will mitigate these concerns.

Alternative #5 was rejected, as the landowner's goals are not met. Impacts related to putting off the permit until some future date is highly speculative. The THP/Conversion will begin as soon as the permits allow. No improvement or significant environmental impacts can be seen if the project were to be put off into the future. A significant impact on the economics of land ownership can be seen if the project is not completed in a timely manor.

**6. Conversion of forestlands to a vineyard.**

**Advantage:** Long term future cash flows will be the highest if the forest is converted to alternative agricultural crops. In Napa County this alternative crop is a high quality grape. Timber crops in California are not cost effective to own nor operate. Present timber market conditions are a good example of the long-term downward trend in the forest products market. The cost of operating in the forest products business and dealing with environmental regulation (THP, etc.) produces a product that is more expensive than that purchased from other markets.

**Disadvantage:** The increases in permit applications, permit costs and stress is significant when converting the timberland to vineyards. Potential impacts to wildlife habitat and soils are higher than other alternatives. These concerns would be mitigated with application of the Forest Practice Rules and the Erosion Control Plan.

**Impact:** The long term impacts to soil erosion, wildlife habitat and water quality have been addressed with the application of the THP and ECP. Sediment production will be decreased with application of the ECP. Wildlife habitat will be improved by application of the HRA mitigation. Stress and the financial burden of the permit system are part of the economics of the investment. The potential cash flow benefit will offset these stresses and financial hardships.

Alternative #6 was chosen due to the mitigated impact on the environment with the THP and ECP, and long-term investment potential of this alternative agricultural crop.

**Conclusion:**

After considering these alternatives, it is the conclusion of the landowners and their advisors that this project, the conversion of forestland to a vineyard, is their best alternative. Adverse environmental effects have been considered and have been mitigated to levels of insignificance. Sediment production, hydrological runoff and habitat improvement have been improved with application of the proposed ECP and THP. The project as proposed is the least damaging alternative given the objectives of the landowner.

## Section 32 Support documentation

### Scoping process, see Biology Report Appendix D.

The following scoping process was undertaken for this project.

- Analysis of the California Department of Fish and Wildlife Natural Data Diversity Base was made. USFWS list of federal listed special-status species with the potential to occur or be affected by projects on the “Saint Helena, CA” USGS quad and eight surrounding quads.
- Analysis of the California Natural Diversity Database (CNDDDB) query of special-status species known to occur within the “Saint Helena, CA” quad and eight surrounding quads.
- Analysis of the California Native Plant Society (CNPS) query for special-status species known to occur within the “Saint Helena, CA” quad and eight surrounding quads.
- Analysis of the Special-status species occurrences within 5 miles of the parcel.
- Analysis of CAL FIRE list of Species of Special Concern within the assessment area.
- Field Surveys of the project area by Chris Kjeldsen (biologist), Dan Kjeldsen (biologist), Theodore Wooster (biologist), Pam Town (biologist), Scott R. Butler (forester), Drew Aspegren (civil Engineer), Tom Origer (archaeologist), Lou Gilpin (geologist), Matt O’Connor (hydrologist),
- Detailed review of aerial photographs and topographic maps of the parcel.

### The following recommendations have been made by the Biology Report, See Appendix D-39

#### Recommendation

“The project should comply with the Oak Woodlands Preservation Act (PRC Section 21083.4) regarding oak woodland preservation to conserve the integrity and diversity of oak woodlands, and retain, to the maximum extent feasible, existing oak woodland communities, and Napa County General Plan Policy CON-24 Paragraph (c) stated that a project should “provide replacement of lost oak woodlands or preservation of like habitat at a 2:1 ratio.”

#### Response

The project proposes to meet the habitat retention of oak woodlands with a 2:1 ratio. See **Mitigation #15 on page 70** of the THP.

#### Recommendation

“Deer fencing should be designed with exit gates and limited to vineyard blocks.”

#### Response

The project meets this proposal, see **Mitigation #8 page 51** of the THP, see Wildlife Exclusion Fencing, **page 1 of the ECP Appendix B**.

**Analysis of Timberland Conversion impacts on**

- (a) Habitat loss
- (b) Habitat fragmentation
- (c) Streamside impacts
- (d) Timber production and
- (e) Economics of Napa County.

Each of these impacts has been addressed below as they relate to non threatened, endangered, or listed species. Impacts to listed species can be found in the Biological Report, **Appendix D**. Other potential impacts related to sediment transport, watershed production and aesthetics have been addressed elsewhere in this document. Implementation of this project as proposed will reduce these potential impacts to a level of insignificance.

**Project Description**

The Proposed Project would convert approximately 10 acres of timberland to a commercial vineyard within a 38.7 acre property. The 13.6 acres constitute the Project Site and the total area to be converted to vineyard. The remaining 25.1 acres of the property will not be impacted by the project. Four vineyard blocks are proposed for development within the Project Site. The vineyard blocks will include wine grape vines as well as internal farm avenues and space for vineyard maintenance operations; therefore, the net area of the vineyard will be approximately 10.5 acres. The establishment of the vineyard as part of the Proposed Project is consistent with the current Napa County zoning designation of Agricultural Watershed (AW).

The Project Site is not located within a Timberland Protection Zone (TPZ). However, since the Proposed Project would convert “non-TPZ timberland to a non-timber growing use” through timber operations in which “future timber harvests will be prevented or infeasible because of land occupancy and activities thereon,” a TCP and approval is required from CAL FIRE consistent with the Z'berg-Nejedly Forest Practice Act (Division 4, Chapter 8, Public Resources Code) and California Forest Practice Rules (Title 14, California Code of Regulations).

Harvested timber would be processed on-site using a portable mill. All non-merchantable trees and vegetation would be removed, chipped, and/or burned on-site, consistent with CAL FIRE, Napa County, and San Francisco Bay Area Air Quality Management District standards. Suitable forest products such as lumber, sawlogs, chips, etc. would be marketed as appropriate. Wood products leaving the site would be limited to transport on 3-axle trucks and would not require the use of logging trucks. No new roads, except internal farm avenues within the new vineyard, would be built. As a result of implementation of the ECP and the Forest Practice Act, post-project sediment erosion conditions and peak hydrological runoff are projected to be below pre-project conditions; these aspects are detailed in the hydrological report and sediment report that have been prepared for the Proposed Project and will be included with the EIR as attachments. See **Appendix E and F**.

Chapter 18.108 of the Napa County Code (Conservation Regulations) requires an ECP be prepared by a Licensed Civil Engineer for the Proposed Project and approved by Napa County because slopes on the Project Site are greater than 5 percent. Consequently, Napa County will be a Responsible Agency for the EIR. See the ECP **Appendix B**.

### **Project Setting**

The Project Site is located on a 38.7-acre property within a portion of the northwest quarter of Section 25 of the Mount Diablo Base Meridian within Township 9 North and Range 6 West. The property includes two parcels which are identified as Napa County APNs 018-060-012 and 018-060-013. The property is located at 1875 Friesen Drive, roughly two miles northwest of the town of Angwin in northern Napa County, California. Land uses in the vicinity of the property include vineyards, rural residences, and open space. The 3,030-acre Dunn- Wildlake Ranch Preserve, which is managed by the Land Trust of Napa County, is located to the west, south, and east of the property; the preserve is adjacent to the west and east borders of the property. Property elevations range from approximately 2,050 to 2,200 feet above mean sea level. Soils on the property are forward gravely loam for the most part, with some Henneke gravely loam and rock outcrop-Kidd complex soils. The property is located within the Bell Canyon Reservoir watershed (Calwater 2206.500202), and an unnamed reservoir, one Class III watercourse, and one blue-line (Class II) stream are present on the property. The Project Site is set back 150 feet from the reservoir, and the Project Site would be set back from the Class III watercourse and blue-line (Class II) stream consistent with Napa County standards and/or CAL FIRE standards (whichever is most protective). The slopes on the Project Site range from 5 to 27 percent. A map of the property with the Project Site identified is included, see **maps and figures page 13 and 14 of the THP**.

As part of the EIR process, a report on the biological resources within an approximate 18-acre survey area (which includes the Project Site of 14± acres and immediately surrounding area within the 38.7-acre property) has been prepared. The following habitats have been identified within the 18-acre survey area: Ghost Pine Woodland Alliance, Douglas Fir Forest Alliance, Mixed Oak Forest Alliance, Chamise Chaparral Alliance, and Manzanita Chaparral Alliance. There are ponderosa pines within the Project Site, but the pines within the survey area do not constitute a Ponderosa Pine Forest.

### **Physical conditions**

Soils on the property are forward gravely loam for the most part, with some Henneke gravely loam and rock outcrop-Kidd complex soils. Topography on the plan is gentle with slopes ranging from 5 to 27% within the project area. Aspect is generally south to southwest. Vegetation on the site is classified as "Forest or Woodland Alliances are Quercus Forest Alliance Mixed Oak Forest, Pinus sabiniana Woodland Alliance Ghost Pine Woodland, and Pseudotsuga menziesii Forest Alliance Douglas fir Forest. The Shrubland Chaparral Alliances are Adenostoma fasciculatum Shrubland Alliance Chamise Chaparral and Arctostaphylos manzanita Provisional Shrubland Alliance" See Biological report **Appendix D-12**.

Vegetation on the site has been significantly influenced by past fire events and represent a succession of chaparral to oak woodland to conifer forest. Vegetation age is 50 to 100 years old with some minor components of mature Douglas Fir over 100 years old. Vegetation conditions is good, with no significant evidence of decadence or over mature forest vegetation. Plant succession is evident in the understory as oaks and conifers replace chaparral and chamise.

Streams in the plan area are seasonal intermittent ephemeral drainages and do not contain instream riparian vegetation, but have limited riparian vegetation as an overstory which provides shade. None of the streams or drainages on the property would support fish and are not tributary to fish bearing streams. The vegetation associated with these ephemeral drainages is no different than the upland vegetation (typical riparian trees, shrubs and herbs are not present). The only vegetation within the channel consists of poiklohydric bryophytes on the larger more stable boulders in the streambed. The bank below the high water mark consists of unvegetated rock or soil. See Bio report **Appendix D-30**.

**Assessment.**

Approximately 10± acres of timberland would be harvested on the property under a Timber Harvest Plan (THP) consistent with Forest Practice Rules and will be processed under a separate CEQA-equivalent process by CAL FIRE (Appendix H). Subsequent to the timber harvest, there is a Timber Conversion Plan (TCP) for the 10-acre TCP area, which is the focus of this CEQA document. The County must also approve and authorize an ECP before planting of the vineyard to manage impacts from erosion and sedimentation. The TCP and ECP are the direct components through which discretionary actions by CAL FIRE and the County are subject to analysis in this DRAFT EIR.

As described above, the timber harvest is the precursor action to the Proposed Project, which consists of two direct elements: the conversion of timberland to vineyard and installation of the ECP. All of these actions effect the development of the Proposed Project on the property and would occur in the following order: 1) the separate harvest of 10± acres of timberland on the property and clearing of approximately 3.1± acres of grassland/brushland and 0.5± acres of ruderal, permitted separately under a THP approved by CAL FIRE; 2) the conversion of 10± acres within the 13.6± acre clearing limits to a vineyard block; and 3) the implementation of a County-approved ECP, which is required per County guidelines for the vineyard development since onsite slopes exceed a five percent grade.

## Surrounding Land Uses

In general the area surrounding the proposed vineyard is very rural, three residences are found within a half mile of the project area. Due to the southwesterly aspect of the property, and the remote nature of the area, it is very doubtful that any residence or public road has a view of the project area.



### North

The property to the north is zoned agriculture watershed, there is no residence and will not be impacted by the proposed project. The area is covered in brush, grass and some conifers

### West

The area to the west is owned by the Napa Valley Land Trust. Prior to ownership by the Land Trust, the property was a hunting camp. The hunting lodge is still there. The Land Trust property is used primarily for hiking. The proposed vineyard will be visible from the hunting lodge. Access to the Land Trust property is through several vineyards along Friesen Drive. The proposed project will provide similar views as found presently. The Land Trust also owns property on the east side of the proposed project property. Friesen Drive passes through Land Trust property after leaving the proposed project property. The forester and vineyard manager have met with the Napa Valley Land Trust to make them aware of the proposed project.

### South

The property to the south does not have a residence. There is evidence of a camping site and current use. Access for the property is over Friesen Drive. The proposed vineyard will be visible from this camp site. A 25 foot buffer has been provided adjacent to this property line. The existing residence further south has not expressed concern with the project.

### East

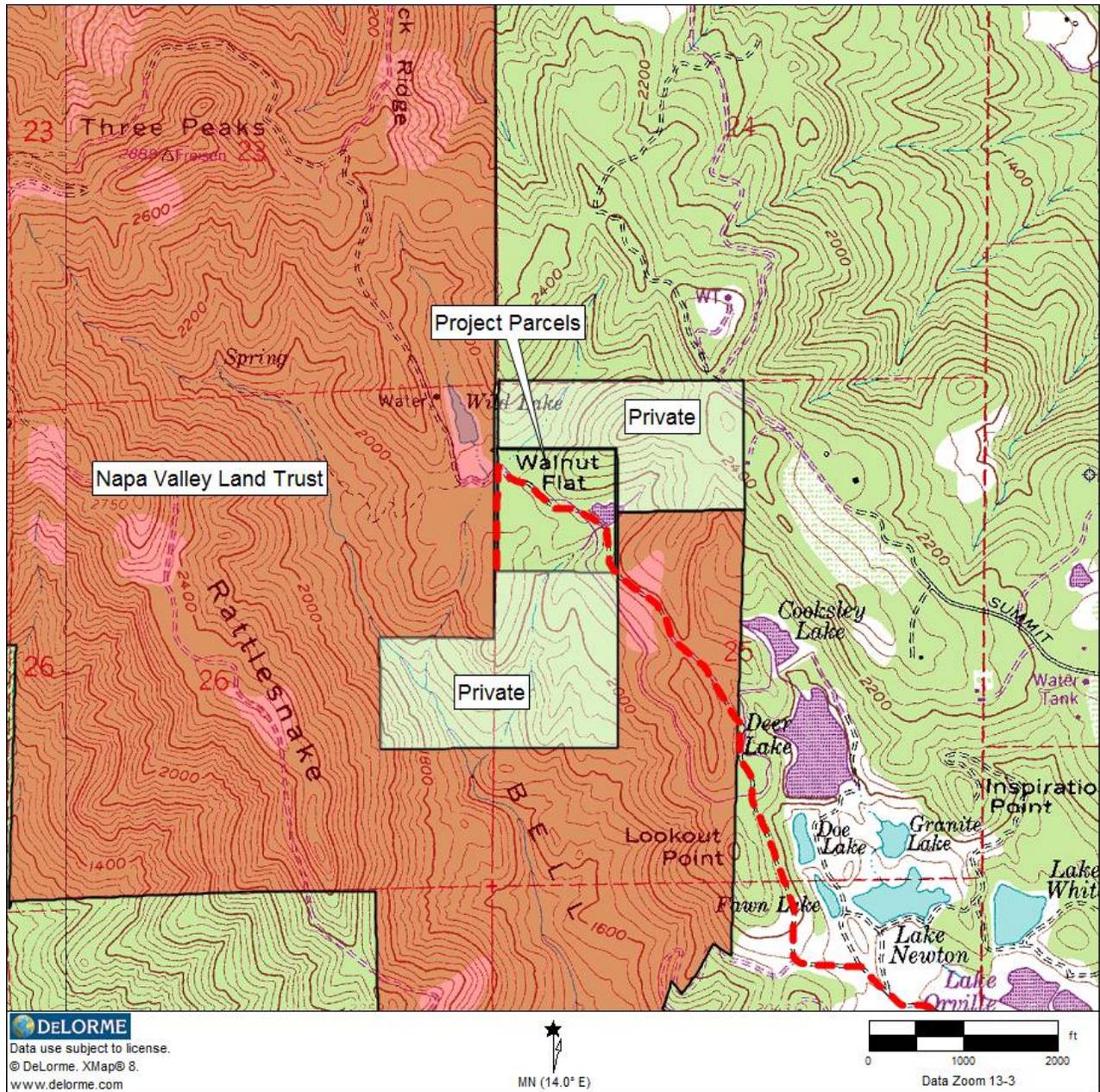
The property to the north east does have a residence. This residence lies in a different watershed, as such it does not have a view of the project area. The property to the south east is owned by the land trust see **west** above.



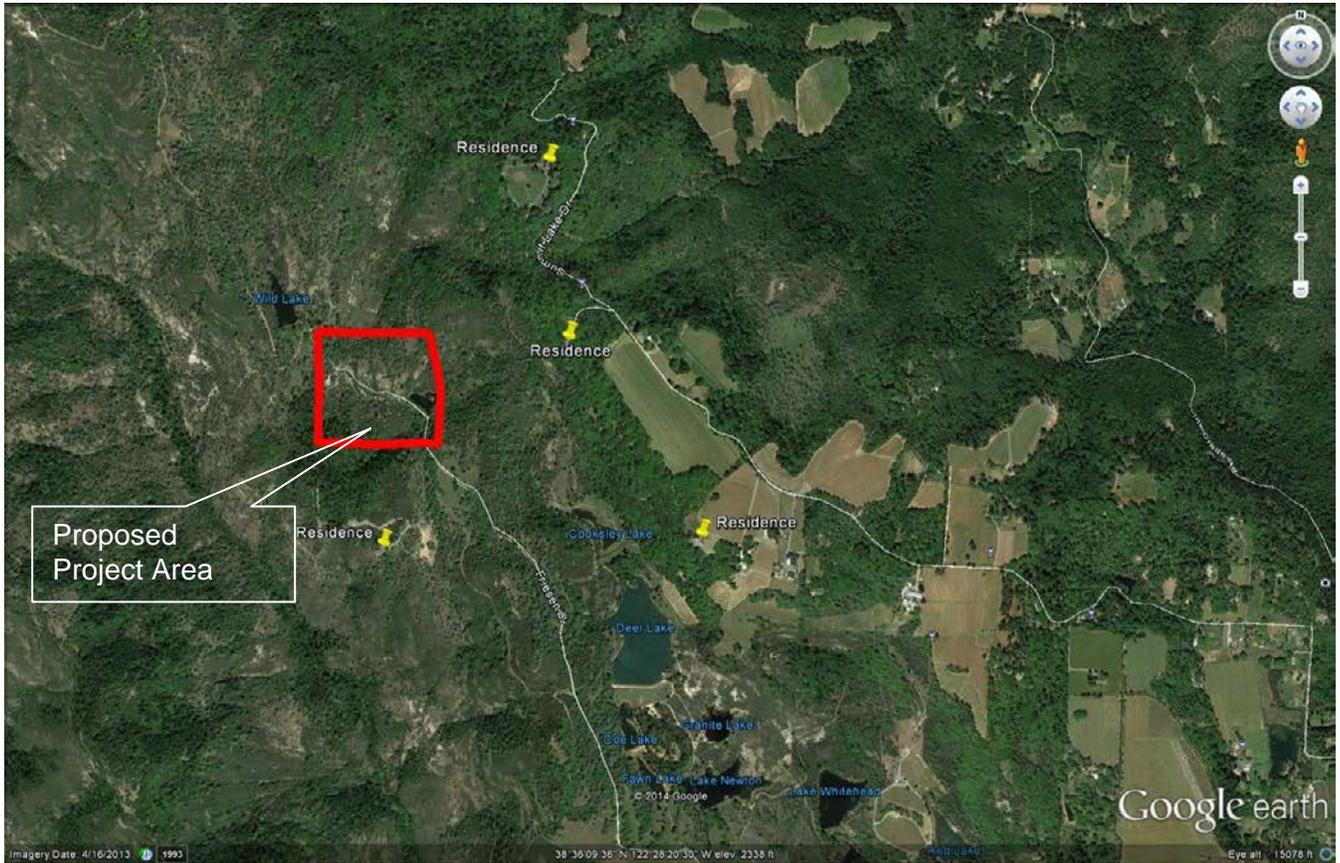
*Proximity to residences, communities, and towns:* The project is located in a rural part of Napa County. Three of the residences found within a half of a mile of the proposed project are in an adjacent watershed and do not have a view of the project area. The other residence south of the project is below the proposed vineyard and does not have a view of the proposed project.

*Adjacent ownership (public, private, industrial, etc.):* See the description above, north south east and west. There are no industrial ownerships. Rural land composed of brush, grass, conifer and deciduous forest surround the project parcel. Agriculture in the form of grazing and vineyards is also practiced in the general area. See aerial photo above.

*Parkland, open space, etc.:* Napa Valley Land Trust has property on two sides of the project area. See comment above (west). The area to the west is owned by the Napa Valley Land Trust. Prior to ownership by the land trust the property was a hunting camp. The hunting lodge is still there. The use of the land trust property is for hiking. The proposed vineyard will be visible from the hunting lodge. Access to the land trust property is through several vineyards along Friesen Drive. The proposed project will provide similar views as found presently. The land trust also owns property on the east side of the proposed projects property. Friesen Drive passes through land trust property. The forester and vineyard manager have meet with the land trust to make them aware of the proposed project. See map below.



*How does the proposed use fit the neighboring landscape?* Rural land composed of brush, grass, conifer and deciduous forest surround the project parcel. Agriculture in the form of grazing and vineyards is also practiced in the general area. See aerial photo. Past fires in the areas have added to the mosaic by creating open areas and brush fields. Open areas that are not suitable to agriculture are used for grazing. Open areas suitable to intensive agriculture have been planted to vineyard. Vegetation continues to develop in the brush and forested areas surrounding the project area. The town of Angwin and other residences continue to spread into surrounding agricultural and wild lands. See figure below. The proposed conversion and planting to vineyard will be consistent with other land uses in the area.



In conclusion, the area surrounding the proposed THP/Conversion will retain a forested appearance. The combination of vineyard and forest is compatible and similar to other ownerships in the area. This THP/conversion as proposed will not increase the vistas of the general public driving on county roads. The present views will remain the same along county roads in the area and therefore not present a significant adverse impact.

**No significant adverse impacts are expected to occur.**

**a. Habitat Loss**

The proposed project will convert 13.6 acres of conifer, oak woodland and brush to vineyard. The project will be fenced as individual blocks. The location of the watercourses and the corresponding protection zones will provide habitat retention areas adjacent to these watercourses. These retention areas meet and or exceed the required setbacks of the Forest Practice Rules and Napa County.

Large animal movement in the area is presently impacted by some ranch fencing in the area. There are few residences in the area, and roads and traffic are also minimal. This infrastructure has limited to no impact on large animal movement in the area. No listed species was found to be impacted by this infrastructure or the proposed project. See the **Biological report, Appendix D**.

The installation of the vineyard will direct large animals around the vineyard blocks by the installation of deer proof fencing. See excerpt from the ECP below. Onsite evidence indicates large animals present in the area would be deer, bear and mountain lion. Gates will be placed in the corners and on vehicle access points to allow trapped animals a safe avenue for escape. **See the ECP Appendix B**. Small animals, birds and rodents will not be impacted by the installation of the vineyard fence. They will be able to pass through (8" squares), below and over the proposed fencing. The loss of forest habitat to large animals and their movement will be minimal. The installation of the deer proof fence will eliminate the need for depredation of the deer within the vineyard blocks.

Fencing requirements contained in the **ECP Appendix B-1**

*"Wildlife exclusion fencing shall be installed around the vineyard, as shown on the plan, with gates and/or turtle friendly cattle guards provided where convenient for vineyard access. For convenience, the fence may be routed around trees and other imposing physical features, and additional gates may be installed. Existing cattle fence around the property will remain in place and it may be augmented or replaced with wildlife exclusion fence where it is adjacent to proposed vineyard blocks. Wildlife exclusion fence shall be 6' with 8" x 8" square mesh with 2 strands of barbed wire above (total 8' height). Cattle guards installed must be pond turtle friendly allowing any turtle that falls between guards to walk out on its own."*

Small animals, birds and rodents will not be significantly impacted by the vineyard conversion. They will be able to move freely through the fencing and vineyard. Additionally the vineyard also proposes a cover crop. This vegetation in conjunction with the leaf cover of the grapes, drip irrigation and fruit will provide additional habitat for small animals and birds. This new habitat is beneficial for small animals, birds and rodents in several ways: by lowering vegetation to the ground and making it more accessible; by providing younger, more tender vegetation; and by providing more grasses and a wider distribution of seeds and by providing grapes as a fruit that was not present previously.

Water availability for wildlife is presently supplied during the wet season by the adjacent watercourses and year round by the existing pond. These water sources will not change, are not impacted by the vineyard fencing, and will continue to be available for wildlife use.

**b. Habitat Fragmentation**

Due to the rural nature of the area, lack of roads, residences, fencing and related infrastructure, this area has not seen a lot of habitat fragmentation. The area has been impacted in the past by several factors.

- **Fire:** In the past large fires that were annually lit by Native Americans kept the valley and surrounding areas open with grasses and younger seral stages of vegetation. With the reduction in Native American occupation of the area, these fires have been eliminated. The removal of these fires has allowed native vegetation to develop and significantly increase on the site. Some fires have burned through the area as recently as 60 to 100 years ago. These fires burned much hotter than those set by Native Americans and therefore had a much more significant impact on the intensity of the burn and impacts to wildlife. Due to modern fire suppression efforts and the reduction in the use of fire within the landscape, fuel levels and vegetation density have increased. This increase has allowed wildlife associated with this type of vegetation to increase. Wildlife associated with open areas of grass and brush have diminished in population.

As vegetation levels have increased, vegetation ages and structure has also increased. This has allowed oak woodland and conifer forests to develop from grasslands and brush lands of the past. The fragmentation of habitat as a result of recent historical fires suppression is being reduced as the developing forest is becoming more homogeneous, and with wider diversity, over time.

- **Agriculture:** The primary use of the foothills during the late 1800 and early 1900 was for the use of farming, primarily in the form of grazing. Some of the more open areas with gentle topography were planted to vineyards and orchards, particularly during the latter part of the last century. As the Bay Area became more populated toward the middle of the last century, more pressure was placed on these same foothills for rural residential use. This increased use has overpowered land values to the point that the grazing practices of the last century have come to a close. Very little large scale grazing takes place within the vegetated areas of the foothills of Napa County. The loss of this grazing pressure has allowed open areas to become revegetated and resume the cycle of plant succession. As a result, more open areas of the county are revegetating into brush and then forest. This plant succession has had impacts on plant and animal species associated with the open grasslands of the past. This type habitat modification has been increasing since the middle of the last century. See the assessment of vegetative changes below.
- **Rural residences:** As pressure on land use increased due to the increase in the population centers of the Bay Area, so have land values. This increase in land values has been part of the impact on grazing as mentioned above. Although these land values have increased in Napa County, they have been significantly less than that found within the heavily populated areas of the Bay Area. As a result, more and more residences have moved to the rural areas to get out of the big city and live in areas more rural

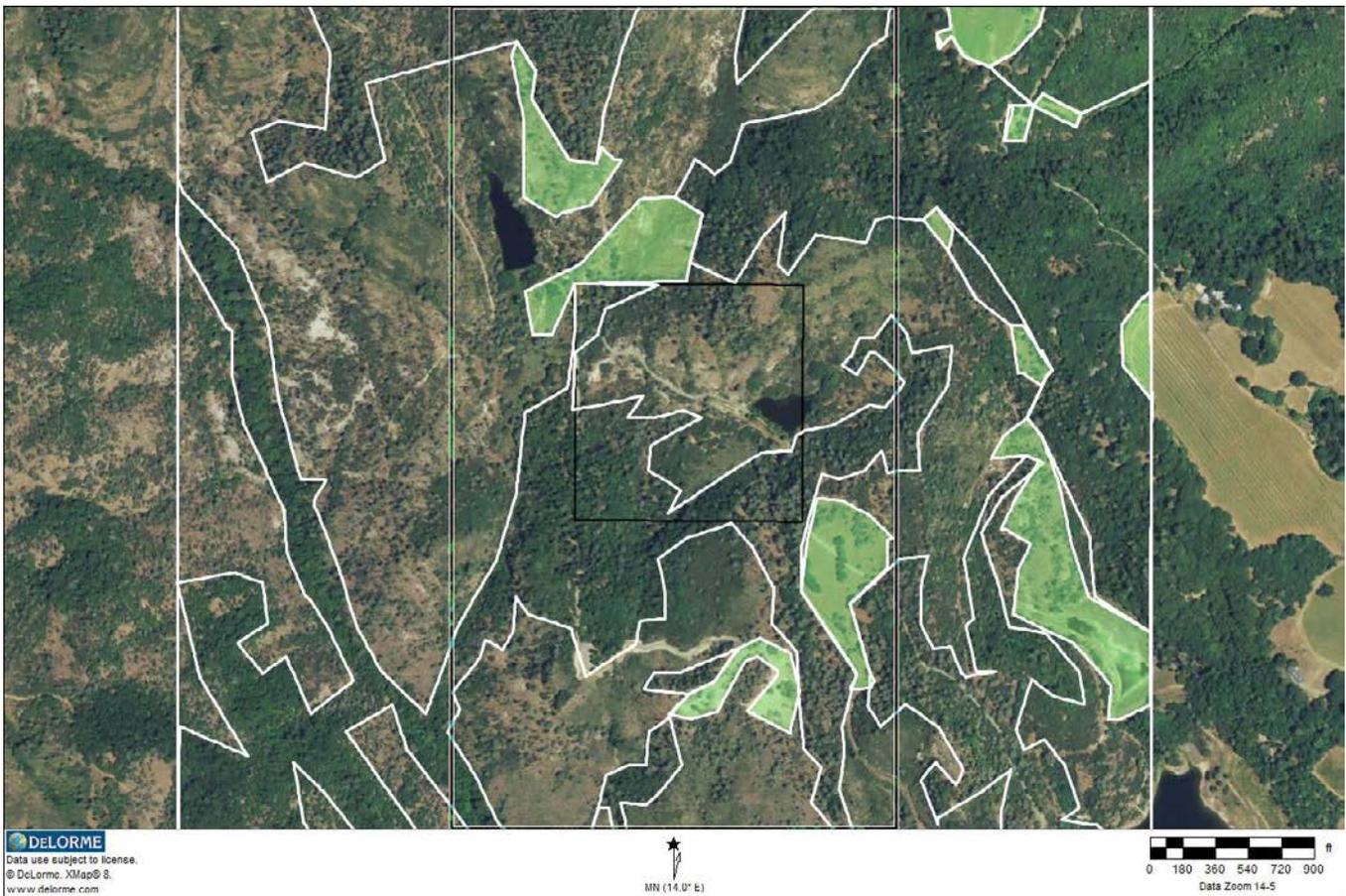
and less expensive. This increased pressure in the residential nature of the area has had a significant impact

on the fragmentation of wildlife habitat. Homes, driveways, gardens, fencing, noise, waterlines, power lines, septic tanks and traffic have all increased to the detriment of wildlife. As this pressure increased parcel sizes have decreased, allowing more and more residences to be built in the area. The overall impact of the increased infrastructure associated with these rural residences has been to increase the fragmentation of the native wildlife habitat. This impact continues today. As the value of these residential areas increase and if the Bay area continues to increase in affluence, we may see additional residential subdivision with the increase in demand and values associated with a fixed land resource. For the present this fragmentation will continue.

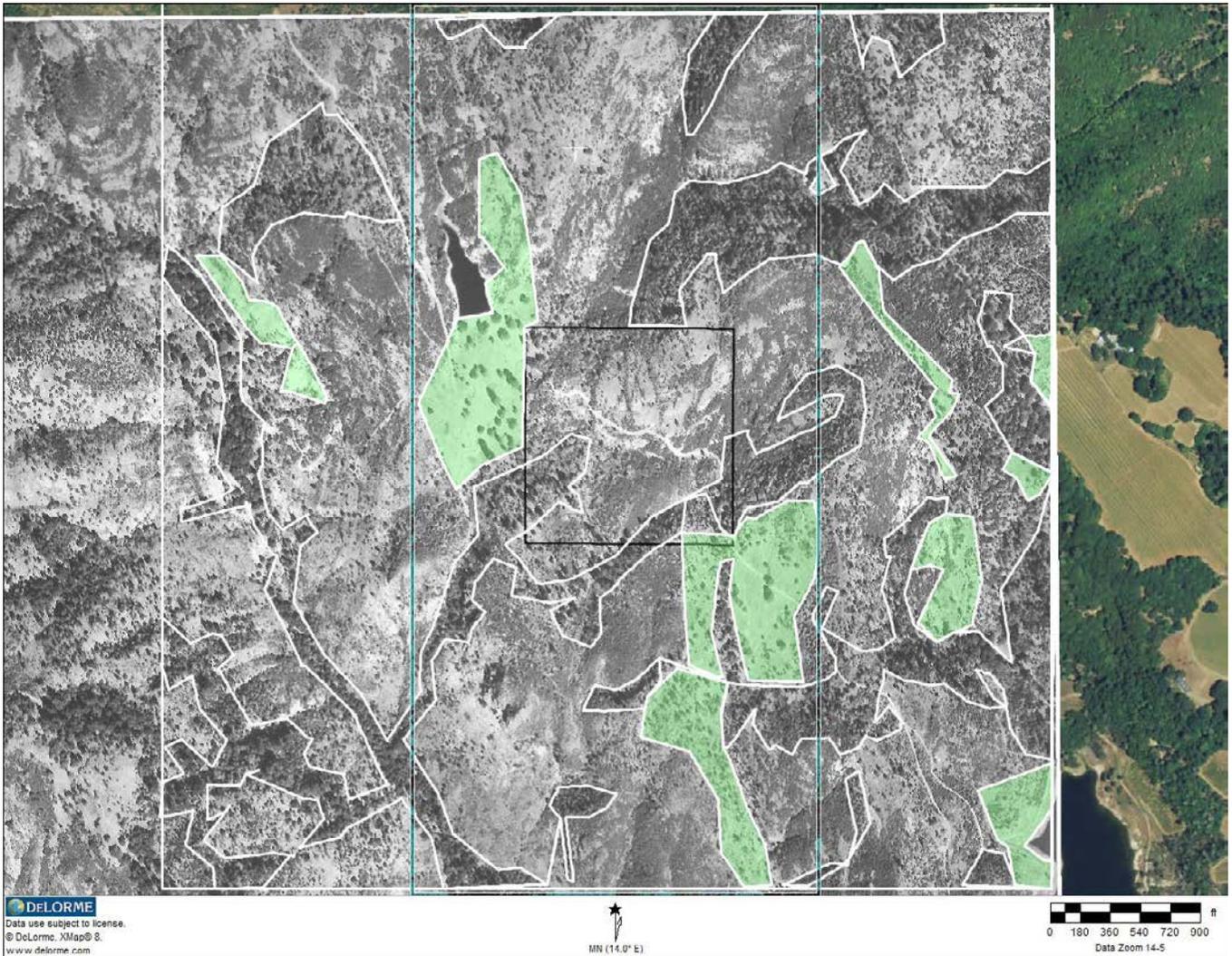
- **Intensive land use:** The preservationist and antagonistic attitudes of the general public toward commercial timber harvest has significantly reduced the use of this land management tool in the foothills of Napa County. The increase in land values and lack of increase in timber values has also reduce the application of timber harvests as a land management tool. The use of properly applied silvicultural practices can increase the mosaic of vegetation associated with a watershed, thereby increasing the type and availability of wildlife habitat. Commercial timber harvest is not anticipated to be viable in the present or near future in this area or in Napa County as a whole.

- **Vegetation changes from 1958 to 2014 (56 years of change):** To quantify some of the changes that have taken place in the area surrounding the proposed development, aerial photos have been reviewed from 1958 and 2014. Changes during the last 56 years were noted. An arbitrary 1 square mile was reviewed with the project being in the center of the 640 acres. The 1958 photos are good quality, and were used to show details of the different types of vegetation. Agricultural activities are discernable, buildings and vegetation density are sometimes hard to identify. The 2014 photo is much better quality, but limited in comparison with the 1958 photo. Typing of the two photos was done using agricultural verses brush/forest. It should be noted that these are very broad definitions and open to personal interpretation of the aerial photos examined. The trend, although general, can be seen. See photos below.

**1 mile square (640 acres) vegetation analysis, 1958 to 2014**



2014 aerial photo, green is agriculture, white outline is forest canopy, the balance in brush.



1958 aerial photo, green area is agriculture, white outline is forest canopy, the balance is brush

Vegetation acreage changes from 1958 to 2014					
	1958		2014		Change in Acres from 1958
	Acres	Percent	Acres	Percent	
Agriculture*	56	9%	35	5%	(21)
Brush	443	69%	327	51%	(116)
Forest**	141	22%	278	43%	137
Total	640	100%	640	100%	

\*agriculture, grazing, vineyard, orchard, non brush  
 \*\*forest, includes oak woodland, conifer, forest canopy

## Interpretation

For the area reviewed, agricultural activities decreased from 56 acres to 35 acres, a drop of 21 acres or 40%.

This is due primarily to a decrease in grazing and an increase in brush as a result of plant succession. The brush also decreased from 443 acres to 327 acres, a decrease of 116 acres or 35%. This is primarily due to plant succession and a lack of fire within the landscape during this 56 year period. The forest canopy increased from 141 acres to 278 acres. The increase of 137 acres or 97% is due to a lack of fire and development of brush area due to plant succession.

Although the analysis of the vegetation types is influenced by the subjectiveness of the photo interpreter, the general trend indicates a significant change in the development of the forest canopy through plant succession and the lack of fire.

The intensity level of the agricultural changes is the result of vineyard development. The intensive agricultural practices of modern vineyard management is greater than that used during the turn of the century.

Some of the areas that may have been cleared for grazing in the past are now used for more intensive agriculture, i.e. vineyards. The present awareness of and attention paid to sediment control is much greater due to the permit process and education. The erosion control measures used early in the last century were significantly lacking. Today's modern erosion control measures and best management practices are a significant improvement over the excessive sediment losses of 60 years ago.

The improvement in forest density is the result of natural plant succession and the increase in fire suppression efforts of the past 100 years. The changes seen in the area analyzed in the above photos are the same as those seen in the assessment area as a whole. The following general assumptions can be applied to the larger assessment area.

1. Generally speaking, agricultural acreages are equal to or less than those of 60 years ago.
2. Agriculture is more intensively managed today.
3. Erosion control practices are significantly improved over 60 years ago.
4. Brush and forest vegetation are more developed than 60 years ago due to fire suppression and plant succession.
5. More rural residential housing exists in the rural forested areas of the county.
6. Sediment transport due to poor management practices has been reduced due to increased awareness of the landowner and regulatory agencies.

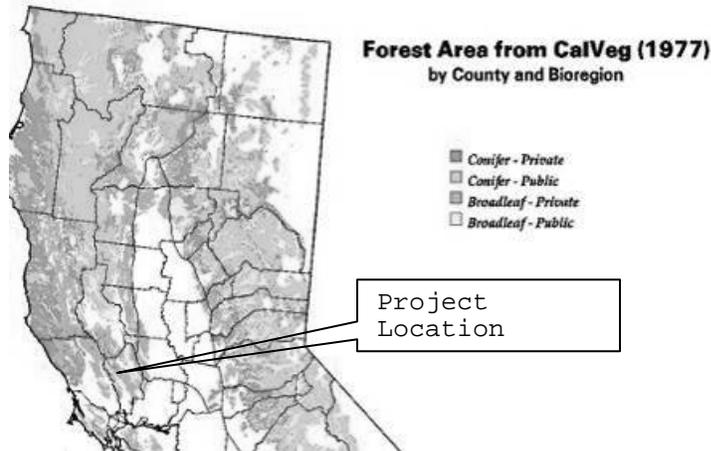
**c. Streamside Impacts**

There are three watercourses associated with the project area. These watercourses are protected by a Water and Lake Protection Zone (WLPZ). Protection widths were determined by the Forest Practice Rules and by Napa County Ordinance. In all cases, the buffers around the watercourses meet Napa County set back standards, which exceed those found in the Forest Practice Rules. Setbacks on these watercourses range from 55' to 125'.

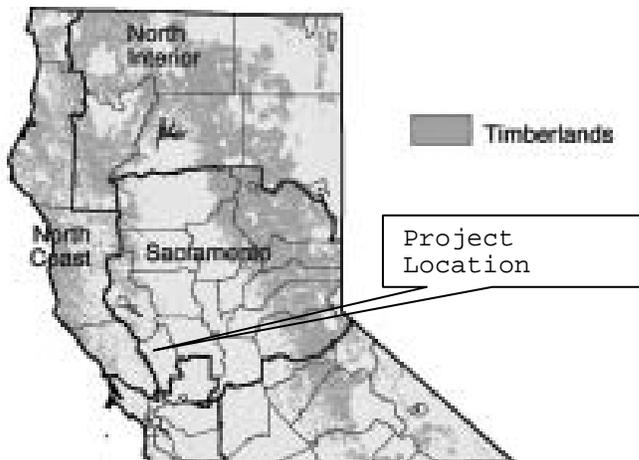
All of these watercourse protection zones are equipment exclusion areas. No equipment will operate within these areas. No trees or vegetation will be disturbed within these areas. The vegetation retention within these zones will trap and stabilize sediment transport that may leave the project area. It should be pointed out that the project area is covered by an Erosion Control Plan (see **Appendix B**) designed by a registered Civil Engineer and will meet Napa County Resource Conservation Standards of no net increase in sediment transport or hydrological run off vs. pre project conditions. As such, no sediment transport is expected. See the **Hydrology Analysis and the Erosion Assessment Appendix E and F**.

**d. Timber Production**

The FRAP report “Land Base of California Forests”, lists Napa County as having 22,000 acres of Commercial Conifer Timberland. (<http://frap.fire.ca.gov/>) Conifer Timberland is defined as growing more than 20 sq. ft. per acre per year. This 22,000 acres is a small portion of Napa County as a whole. Other areas of the county which may have forest land with commercial conifer growth, contain small and scattered areas that were not included in the designation of Commercial Conifer Timberland. The project area falls in one of these areas. Since the project area is small, removes very little volume and is not within the commercial forest land base of California, **no significant impact** can be expected on the timber resources of the state.



The 2003 Forest and Range Report show the following as representing California’s Timberland. Page 59, Figure 26. Approximate distribution of timberlands\* and FIA resource areas



\* administratively available for timber management and growth potential, exceeds 20 cubic feet per acre per year Source: FRAP, 2002d

Timber Resource Statistics of the Sacramento Resource Area [http://www.fs.fed.us/pnw/pubs/pnw\\_rb220.pdf](http://www.fs.fed.us/pnw/pubs/pnw_rb220.pdf)

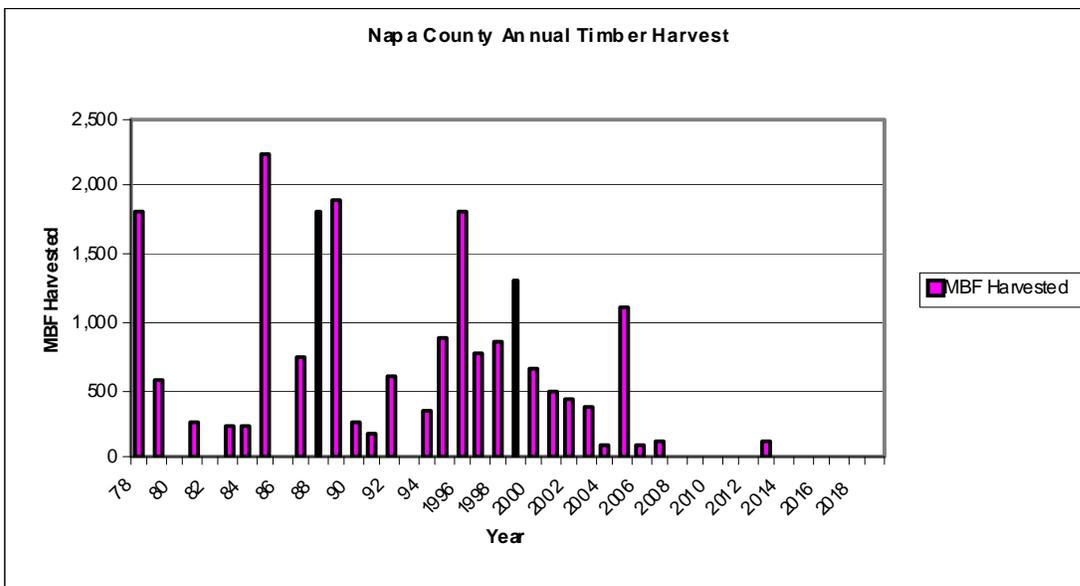
Napa County has 482,000 acres, of which 22,000 acres are classified as commercial timberland. The timberland base represents 4.5% of the County’s land base. Timber volume on this land base is composed of 52 million cubic feet (MCF) of softwood and 28 MCF of hardwood. Due to the small area of the project’s timberland (10 acres), the small amount of timberland in Napa County and the fact that the project area is not within this timberland base, no impact can be expected to the state timberland base and its productivity.

**Timber Values**

The California State Board of Equalization lists the volume and value of timber harvested during the last decade for Napa County. This information is shown below. (<http://www.boe.ca.gov/proptaxes/timbertax.htm>)

<b>Napa County BOE Yield Tax Information</b>					
<b>year</b>	<b>Net MBF</b>	<b>% of volume for the entire state</b>	<b>Dollar Value of timber harvested</b>	<b>% of volume for the entire state</b>	
2004	97	0.01%	\$ 27,075	0.01%	
2005	1100	0.07%	\$ 414,539	0.08%	
2006	82	0.01%	\$ 26,717	0.01%	
2007	126	0.01%	\$ 16,650	0.00%	
2008	0	0.00%	\$ 14,121	0.00%	
2009	0	0.00%	\$ -	0.00%	
2010	0	0.00%	\$ -	0.00%	
2011	0	0.00%	\$ -	0.00%	
2012	0	0.00%	\$ -	0.00%	
2013	125	0.01%	\$ 15,000	0.00%	
<b>Annual Average</b>	<b>153</b>	<b>0.01%</b>	<b>\$ 51,410</b>	<b>0.01%</b>	

<b>Napa County Annual Timber Harvest</b>					
<b>Year</b>	<b>MBF Harvested</b>	<b>Year</b>	<b>MBF Harvested</b>	<b>Year</b>	<b>MBF Harvested</b>
<b>78</b>	1,817	<b>92</b>	593	<b>2006</b>	82
<b>79</b>	572	<b>93</b>	0	<b>2007</b>	126
<b>80</b>	0	<b>94</b>	335	<b>2008</b>	0
<b>81</b>	248	<b>1995</b>	890	<b>2009</b>	0
<b>82</b>	0	<b>1996</b>	1,803	<b>2010</b>	0
<b>83</b>	238	<b>1997</b>	771	<b>2011</b>	0
<b>84</b>	223	<b>1998</b>	860	<b>2012</b>	0
<b>85</b>	2,232	<b>1999</b>	1,318	<b>2013</b>	125
<b>86</b>	0	<b>2000</b>	649	2014	
<b>87</b>	739	<b>2001</b>	490	2015	
<b>88</b>	1,802	<b>2002</b>	441	2016	
<b>89</b>	1,902	<b>2003</b>	373	2017	
<b>90</b>	256	<b>2004</b>	97	2018	
<b>91</b>	185	<b>2005</b>	1,100	2019	



The project area consists of 10 acres of timberland that will be converted to vineyard. The hardwood understory is composed of Oak and Madrone. The projected harvest from this conversion is estimated at 100 MBF net (less defect and breakage). At present estimated values (\$145 per MBF standing in the woods), this will amount to a net value of \$14,500. This figure is considered a stumpage value and takes into account the costs of logging and trucking. Due to the economics of this small amount of volume and the limitation of hauling logs on Friesen Drive, these trees will be milled onsite.

There are no figures available for actual growth in Napa County. Growth in this area can be assumed to be at most 3% and possibly as low as 2%. If we consider these trees occupy 10 acres and use an annual growth of 3.0 percent, the volume per acre growth is 300 bd. ft. per acre per year.

Assuming a potential grape harvest of 3 tons per acre and an acreage of 10.5 acres, the potential annual yield would be 31.5 tons. The potential dollar return to the local economy from the proposed vineyard will far exceed (over 20 thousand percent) any return from the growth of trees.

<b>Comparisons of dollar values in ANNUAL GROWTH of Grapes vs. Timber.</b>			
	<b>Grapes</b>		<b>Timber</b>
	<b>Tons per acre</b>		<b>MBF</b>
<b>Annual Growth</b>	3		0.300
<b>Unit Value (\$)</b>	\$	3,000	\$ 145
<b>Acreage (Net)</b>	10.5		10.5
<b>Total Value</b>	\$	94,500	\$ 457
<b>Percent increas compared to present use.</b>	20690%		100%

Due to the small amount of timber resource harvested annually in Napa County, no impact can be expected to the harvest volumes and the economic values of Napa County or the State of California.

### **Timberland Management Potential**

Land values in the area are some of the highest in the State. These values are high for several reasons: the close proximity to the high population densities of the Bay Area; the neighboring Napa Valley and high priced vineyard land; and the desirable rural hillsides of a mild Mediterranean climate. The timberland value of property purchased in Napa County is not recognized nor is it considered in property appraisal values. These high land values cannot be supported by timber production. Landowners do not recognize any economic incentive to manage the timberland base of their property.

The potential timber value on the property is significantly less and overshadowed by the high land values and aesthetic values attributed to the forest environment. The harvesting impacts in these high priced areas significantly reduces the overall land value attributed to aesthetics by much more than the value realized from the timber harvest.

By using the legal system and government regulation, neighboring property owners and environmental groups have also brought tremendous pressures on timberland owners to preserve forest habitat and not utilize its wood product economic value.

Napa County ordinance requires landowners in County-defined sensitive watersheds to maintain 60 percent of the forested area of the parcel and 40 percent of the brush area of the parcel based on the 1993 aerial survey of Napa County. This project is within a sensitive watershed, and the acreage limitation as proposed in this project is consistent with these Napa County ordinances. This vegetation retention requirement does not prohibit timber harvesting in the future, but it does ensure long-term forest habitat and the growth of forest products within the property boundary.

The ability to harvest timberland in Napa County is no longer economically feasible. Although harvesting will take place on a small scale, Napa County does not have an economically viable commercial timberland base.

### **Future Timber Growth**

The reoccurrence of past fires on the landscape of Napa County can be seen throughout the area. These past fires maintained younger vegetation compatible with this reoccurrence. As such, the larger forest tree species were not able to flourish and actually declined as a percentage of vegetation type. Since the middle part of the last century, fire has been noticeably absent from the environment. This has allowed numerous vegetation types to mature and maintain a larger component of mature forest tree species. Overall this has had a significant impact on the percentage increase of commercial forest tree species in the vegetation types of the County. Also, the lack of cattle and sheep grazing during the past 50 years has had a significant impact on the grazing lands of the County. Many of the previously grazed areas are reestablishing habitat composed of brush and conifer species. Although no one has performed a detailed analysis of these vegetative changes for

the county, it can be assumed (and is seen in aerial photography) that the forest component of these vegetation types is increasing significantly.

**e. Economic**

Employment Opportunity: The impact on increased employment due to the establishment of the vineyard is significant. Review of the estimate of vineyard growth versus timber growth as shown in the chart above shows an increase in potential cash flow of over 20 thousand percent. The ability to harvest timber from this location is such that harvesting would be expected to take place once every 20 to 30 years and might employ 3 individuals for several days, compared to the vineyard maintenance and grape harvest taking place every year employing a family of 6 to 8 individuals for several weeks during the season.

The county tax base is also significantly increased due to the increase in the value of the agricultural product.

Balance of the project area property: The remaining area of the project property will be retained in forest, grass and brush habitat. The balance of the property, 25.1 acres, will be available for wildlife and future timber harvests depending on the economic and political conditions supported by the County, State and neighbors.

**Summary:**

- **Large animal habitat** loss is minimal due to the existing rural nature of the area surrounding the project area and agricultural infrastructure proposed for this project. Mitigation is offered in the form of limiting fencing to the vineyard areas of the property. Providing escape gates will ensure a safe escape for trapped large animals. Small animal habitat is not severely impacted since they are able to use the new vineyard habitat as well as they did the previous habitat.
- Habitat fragmentation is minimal in the area. Wildlife corridors are not impacted by existing fencing. Fencing associated with the vineyard is limited to fencing around the vineyard blocks and will not impact wildlife movement around the project area. Maintenance of cover crops and the vineyard will minimize disturbance to small animal habitat. The presence of the drip irrigation, grasses, leaf cover of the vines and fruit may provide more habitat for small animals, birds and rodents than previously existed.
- Future timber harvests (if economically feasible) would be directed under a THP on the habitat retention area (HRA) of the property (13.2 acres). The HRA will ensure the land's ability to produce merchantable timber and provide forest habitat into the future.
- The loss of commercial timber land is minimal if not negligible since it is not part of the commercial timberland base of the state. The project timberland area is composed of 10 acres. No significant impact to the State's production of commercial timber or future commercial timber will occur.
- The land values of the county will continue to increase with this type of intensive agricultural practice. The increases in jobs and the local economy is significant. The revenue and job potential is many thousand times higher with the installation of the proposed vineyard than timberland.
- Napa County ordinance requires landowners in County-defined sensitive watersheds to maintain 60 percent of the forested area of the parcel and 40 percent of the brush area of the parcel based on the 1993 aerial survey of Napa County. This project is located within the Bell Canyon sensitive watershed, the acreage proposed for this project is consistent with Napa County ordinances concerning these limitations. This vegetation retention requirement does not prohibit timber harvesting but it will ensure long-term forest habitat retention and the growth of forest products within the property boundary.

Considering all of the above, the project as proposed will have a **less than significant impact**.

## **SECTION IV CUMULATIVE IMPACTS ASSESSMENT**

### Technical Rule addendum #2

Assessment areas

Projects approved by CAL FIRE within the last 10 years

Watershed

Soil productivity

Biological

Recreation

Visual

Traffic

Green House Gas Emissions

List of resources used

## ASSESSMENT AREAS

The **Watershed** and **Biological** assessment area as it relates to this plan, is the Bell Canyon Watershed. Bell Canyon is listed as Calwater ID #2206.500302 and contains 6,830 acres. In order to assess the movements of raptors an additional 1.5 mile radius surrounding the plan area was also assessed. This area includes an additional 3,175 acres. It should be pointed out that this plan submitter owns and controls a very minor portion of this assessment area. As such, the RPF and plan submitter are limited to assessments within their control and knowledge. Reasonable efforts have been made to research and access additional information from local, state and federal agencies. See **DRAFT EIR Appendix A**. See watershed assessment map, below. This area was chosen because it represents the watershed surrounding the area influenced by this THP/Conversion. The biological assessment area represents the area that contains the wildlife that frequents the THP/Conversion (project site), watershed, and 1.5 mile radius surrounding the proposed project area. The activities of the wildlife that frequent this area are not limited to the ridges that represent the boundary of the watershed unit. The THP is near the northern 1/4 of the assessment area. Bird activity in the area is assessed by visual observation, CNDDDB reference, discussion with local people in the area, consultation with biologists and review of adjacent THP's, if any. All of these activities have been taken into account.

**Soil productivity** assessment is limited to the area of operations (i.e. the THP/Conversion). This area was chosen because it represents the area actually disturbed by this activity and is controlled by this landowner.

**Recreational** assessment area is the THP and surrounding property under control of this landowner. This area was chosen because it represents the area actually disturbed by this activity and is controlled by this landowner.

**Visual** assessment area is limited to the area visible by large numbers of people. Due to the location of the project area, on a small bench at the head of the watershed and west of the town of Angwin, the project area is not visible by a large number of people. The future vineyard will not be visible from any county roads. There is no public access to the project site, which is at the terminus of a privately-maintained road, and the nearest public road is 1/3 of a mile east of the project area. There appears to be no local residence that can see the project area.

**Traffic** assessment issues are assessed as they apply to White Cottage road and Howell Mountain Road to Hwy 128 through the Napa Valley. This was chosen because it is the area impacted by the traffic associated with this THP/Conversion. Friesen Drive is a private drive and does not have public access. This section of road is treated separately. See the **THP page 59 and Draft EIR Appendix A-4.12.1 page A-242**.

(1) Do the assessment areas of resources that may be affected by the proposed project contain any past, present, or reasonably foreseeable probable future projects?

Yes  No

If the answer is yes, identify the projects and affected resource subjects.

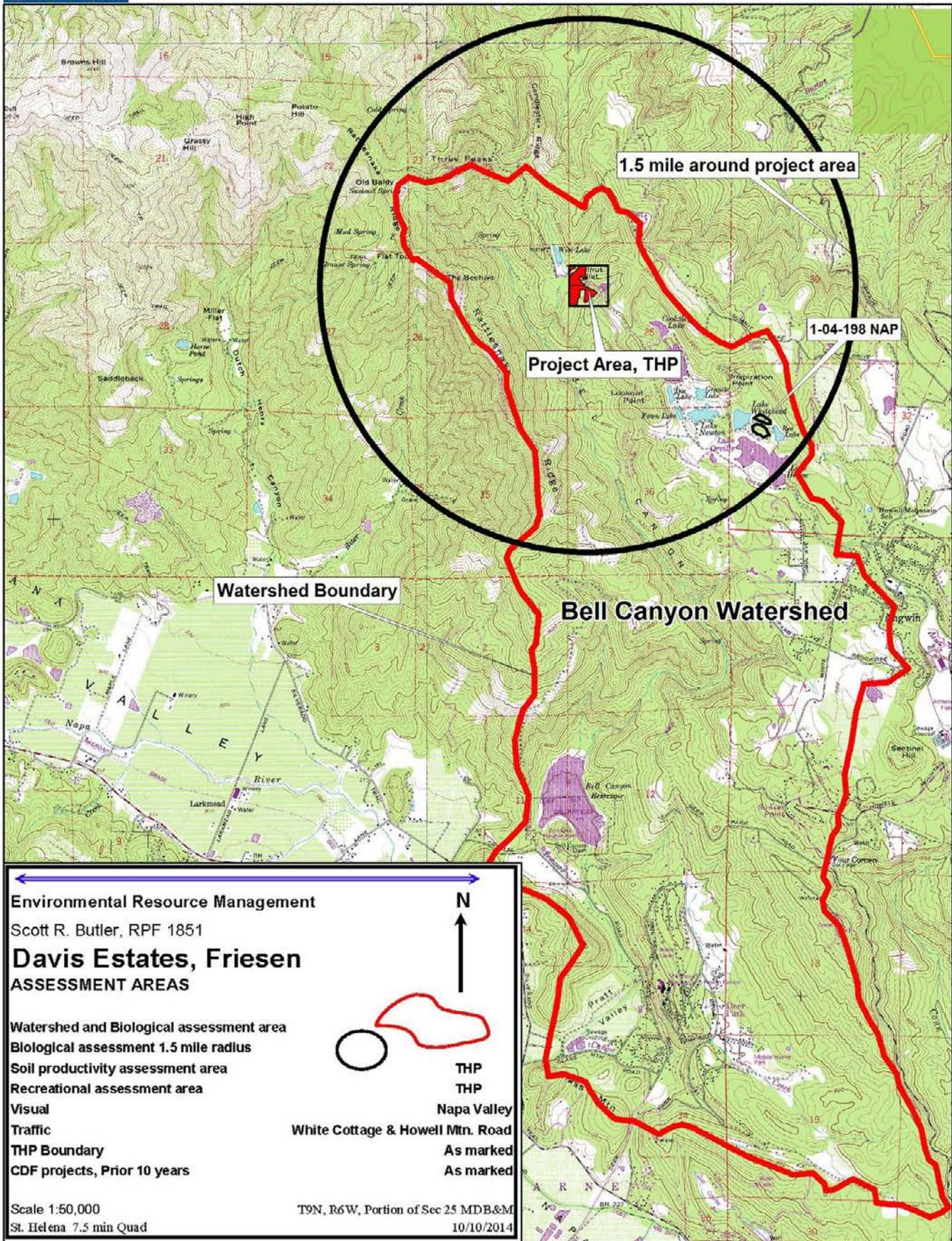
Research performed in November of 2014 showed 1 timber harvest plan in the assessment area during the past 10 years. This plan was done 9 years ago and consisted of a 5 acre timberland conversion to vineyard.

	10 Year Assessment History					
	Property Owner	RPF	Acres	Silviculture	Logging Method	Status
<b>THP Conversion</b> 1-04-198 NAP	Red Lake Ranch LLC	Lowell	5	Conversion	Tractor	Completed
	Conversion Totals		5			

See assessment map and 10 year history below.



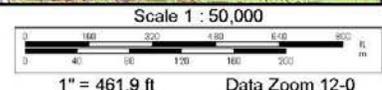
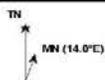
XMap® 8



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### **Past Historical Activities**

Since the later part of the 1800's, agriculture, mining, and to a lesser degree timber harvesting, have been the primary activity in the area. Most of the timber harvesting activities occurred late in the 1800s and sporadically during the early part of the last century. Poor agricultural practices, mining practices, poor road building techniques and poor timber harvesting activities conducted prior to modern day regulations and the Forest Practice Act had significant impacts on and contributed to the bed load of the streams in the Assessment Area. However, a significant amount of time has elapsed and many of the problems relating to these types of operations have naturally corrected themselves. Recent agricultural practices, mining practices, road building practices and timber harvesting techniques have utilized modern and environmentally sensitive practices to avoid deleterious effects to watercourses and the environment.

The early agricultural activities of the late 1800s and early 1900s were primarily in the form of grazing and orchards. These practices dwindled during the later 1900s and have been replaced with grape production as wine making has become more profitable. In many areas in the Napa Valley, agricultural acreage levels are approaching those that existed early in the 1900s. Although many of the erosion problems created early this century have been corrected, some have not. These areas are being corrected as new permit applications are applied for and landowners are educated in modern, environmentally sensitive erosion control practices. Scrutiny by county, state and federal permitting agencies has and will continue to correct these problems. This increase in attention paid to erosion control activities and related land use has significantly reduced the amount of sediment transport to downstream anadromous fisheries. It has also helped to reduce the impact of habitat modification and loss due to the fragmentation created by the increased infrastructure associated with agricultural and residential practices. Many of these impacts have been reduced by education of landowners toward the requirements of wildlife.

Stabilization and recovery of these habitats and watercourses is an ongoing process. Due to the rules and mitigation proposed for this Harvest Plan/Conversion and subsequent Erosion Control Plan, it is not anticipated that this plan will combine with past, present, and/or reasonably foreseeable future projects to create significant adverse impacts or to impede the recovery of the Assessment Area. In fact, the proposed project will reduce the current production of sediment from the project site by implementation of the ECP and its associated mitigations. See **DRAFT EIR 4.6-1 page A-152**

### **Non-Timber Harvesting Activities:**

Non-timber harvesting activities conducted in the Watershed Assessment Area consist primarily of open space, grazing, vineyard production, residential housing and recreation. Camping, hiking, fishing, and cattle and equine management also occur within the Assessment Area.

**Timber Harvesting Activities:**

Due to the vegetation types present in the assessment area and due to the high land values, timber harvesting has been limited to vineyard conversion on 5 acres of the watershed during the past 10 years. There is no reason to expect this trend to change dramatically anytime in the foreseeable future. In fact, the number of timberland conversion applications have dropped significantly over the past 8 years in the county as a whole.

**Present Operations**

Harvesting activities in the assessment area are limited due to present land use economics and vegetation. The economics are directed toward watershed management, agriculture and rural housing. These types of activities included some of the following management practices within the assessment area.

- Maintaining and/or recruiting late seral habitat characteristics adjacent to watercourses to provide habitat for wildlife and fisheries resources.
- Protection of watershed values associated with the Bell Canyon Reservoir near the bottom of the assessment area.
- Locating new roads on ridge tops or midslope instead of near sensitive riparian areas and the inner gorge.
- Use of excavators to construct roads in sensitive areas.
- Placing road fills in stable locations and compaction of disturbed material.
- Improved drainage facilities, including culvert sizes, rocked fjords and bridges.
- Maintaining vegetative buffers and restrictive measures within water and lake protection zones.
- Applications of erosion control measures designed by licensed civil engineers.
- Erosion control practices applications must meet Napa County ordinance, which requires no net increase in sediment or hydrological flows compared to pre project levels.
- Enhancing wildlife habitat by improving habitat, recruiting snags, protecting watercourse zones, etc.

**Vineyard Management**

Vineyard conversions have seen a significant increase in recent decades. Early in the last century, agriculture was the primary activity in the watershed. This included grazing and some intensive agricultural activities such as orchards and vineyards. Due to fluctuating market conditions and the high demand on rural properties, much of these agriculture practices have ceased. Many areas previously cleared have reverted to their natural vegetation. Today, the high price of grapes has encouraged the reestablishment of vineyards. Due to the existing vegetation, topography, and land use constraints, county and state regulations require conversion permits and erosion control plans to develop new projects on vegetated slopes over 5%. This permit system ensures environmentally friendly practices and reduced impact on the environment as new vineyards are established in previously forested and brush areas.

**Rural Roads**

Poor road construction practices, installation of undersized culverts and poor culvert spacing increased erosion on rural county roads early in the last century. In addition, unpaved rural roads in the assessment area that are used year-round for residential access and agriculture have contributed to sediment production into downstream watercourses. These impacts have been reduced to some degree, compared to 40 years ago, by increasing the awareness of county road departments and small landowners through education, and the implementation of better road building and maintenance practices through permit regulation. As this process continues, it is expected that the production of these sediments will continue to be reduced. The regulatory input on these roads by city, county and state planning processes has also caused many roads to be upgraded with culverts, rock and/or asphalt. This ongoing process is continually improving road caused erosion and reducing downstream sediment transport.

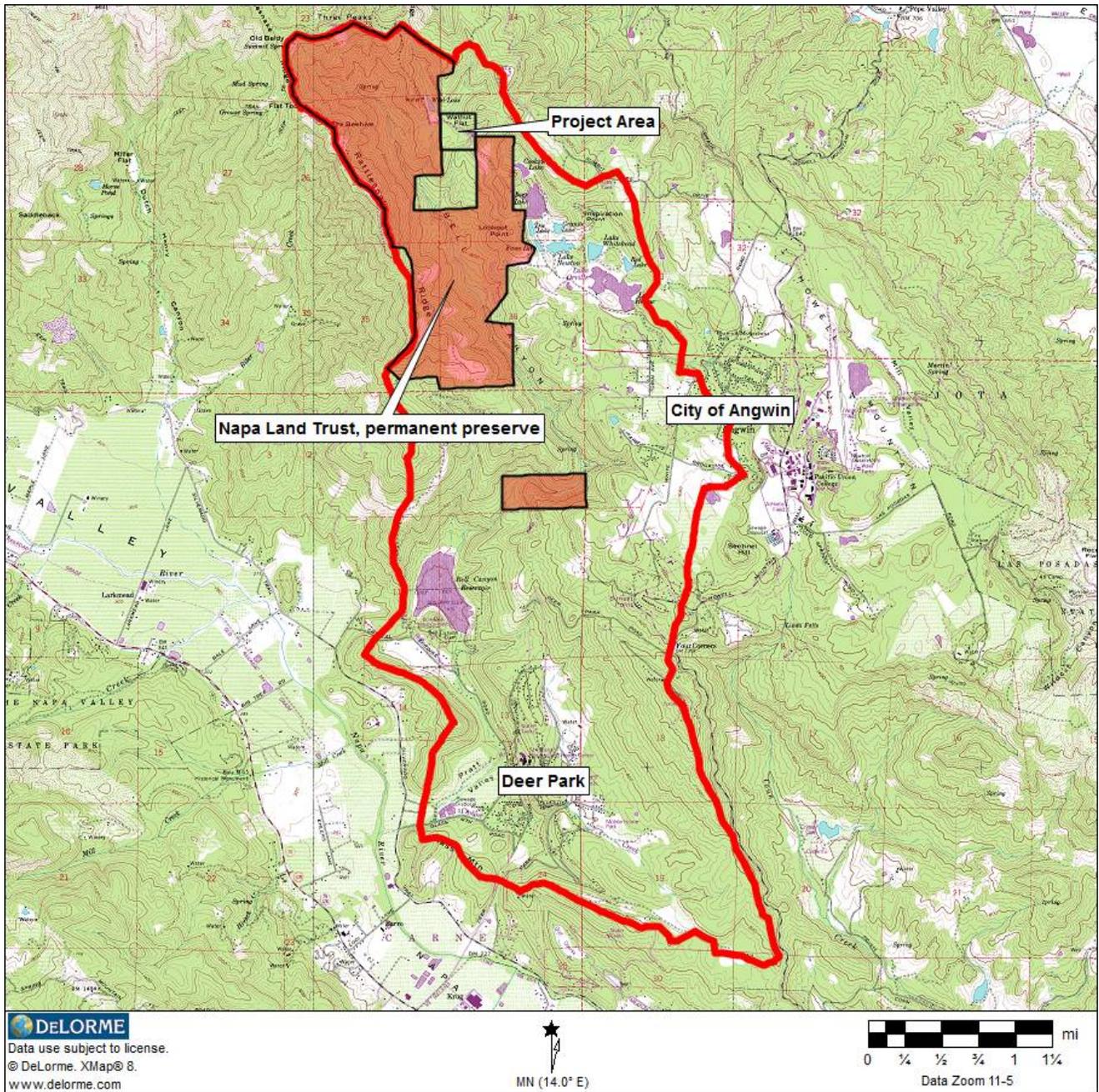
The erosion control plan proposes measures that will reduce sediment production to below pre-project levels. See **the ECP Appendix B** for additional detail.

### **Proposed Future Projects**

The assessment area has seen more intensive land use practices with increases in residential housing and agriculture occurring during the later quarter of the last century. These increases have impacted wildlife and fisheries resources with loss of habitat and increases in sediment transport. The increase in agriculture is primarily in the form of vineyards. The number of acres converted annually to vineyard has in all probability reached its peak and will be dropping during the next decade for several reasons. Cost (both permit and vineyard installation), lack of suitable land, environmental limitations and lack of demand for additional acres of vineyard are all part of the reasons for the anticipated decline. On the other hand, demand for residential housing will probably increase as the recession ends. Both of these land use activities are monitored and controlled by local, state and federal agencies interested in protecting environmental resources. This monitoring, in the form of permits, county regulation and state law, will control, reduce and mitigate future demands on the environment. In combination with recent past activities and expected future activities, impacts to the environment related to sediment transport and habitat modification will continue to be reduced over time.

Approximately 10 percent of the watershed is comprised of a portion of the city of Angwin and community of Deer Park. These areas contain residential housing and related infrastructure. Additionally, the area is increasingly desirable for exclusive estate-type residential development with its consequential impacts upon erosion, water supply, wildlife, aesthetics and agriculture. This urbanization is increasingly impacting the resources required to be evaluated under addendum #2. Residential development on small parcel/large lot sites continues throughout the assessment area. Competition between residential interests and agricultural interests for land with suitable topographical characteristics is at a high level. Future growth in these areas will continue. State and County regulations will minimize future impacts to the environment much better than past practices of the late 20<sup>th</sup> century.

Significant areas of land in the watershed are being acquired by non-governmental preservation organizations and/or have been placed in preservation easements established to prevent development. This activity has both positive and negative environmental impacts. These areas do buffer impacts from adjacent land use activities, but do little to prevent the natural and man made adverse environmental impacts that managed land use practices can ameliorate. An example of this would be the build up of ground and ladder fuels that could promote disastrous wildfires. See Land Trust map below. The Napa County Land Trust presently has 19% of the watershed in permanent preserve.



### Bell Canyon Watershed

## Article 2 Preparation and Review of Timber Harvesting Plans

### 898 Feasibility Alternatives

“After considering the rules of the Board and any mitigation measures proposed in the plan, the RPF shall indicate whether the operation would have any significant adverse impact on the environment. On TPZ lands, the harvesting per se of trees shall not be presumed to have a significant adverse impact on the environment. If the RPF indicates that significant adverse impacts will occur, the RPF shall explain in the plan why any alternatives or additional mitigation measures that would significantly reduce the impact are not feasible.

Cumulative impacts shall be assessed based upon the methodology described in Board Technical Rule Addendum Number 2, Forest Practice Cumulative Impacts Assessment Process, and shall be guided by standards of practicality and reasonableness. The RPF's and plan submitter's duties under this section shall be limited to closely related past, present and reasonably foreseeable probable future projects within the same ownership and to matters of public record. The Director shall supplement the information provided by the RPF and the plan submitter when necessary to insure that all relevant information is considered.

When assessing cumulative impacts of a proposed project on any portion of a waterbody that is located within or downstream of the proposed timber operation and that is listed as water quality limited under **Section 303(d)** of the Federal Clean Water Act, the RPF shall assess the degree to which the proposed operations would result in impacts that may combine with existing listed stressors to impair a waterbody's beneficial uses, thereby causing a significant adverse effect on the environment. The plan preparer shall provide feasible mitigation measures to reduce any such impacts from the plan to a level of insignificance, and may provide measures, insofar as feasible, to help attain water quality standards in the listed portion of the waterbody.

The Director's evaluation of such impacts and mitigation measures will be done in consultation with the appropriate RWQCB.”

**Section 303(d)(1)(A) of the Clean Water Act (CWA)** requires that "Each State shall identify those waters within its boundaries for which the effluent limitations...are not stringent enough to implement any water quality standard applicable to such waters." The CWA also requires states to establish a priority ranking for waters on the 303(d) list of impaired waters and establish Total Maximum Daily Loads (TMDLs) for such waters. As part of the 1996 303(d) list submittal, the State identified the Napa River Watershed # 20650010 as a Medium to Low priority for TMDL development.

The elements of a TMDL are described in 40 CFR 130.2 and 130.7 and Section 303(d) of the CWA, as well as in U.S. Environmental Protection Agency guidance (U.S. EPA, 1991). A TMDL is defined as "the sum of the individual waste load allocations for point sources and load allocations for nonpoint sources and natural background" (40 CFR 130.2) such that the capacity of the waterbody to assimilate pollutant loadings (the Loading Capacity) is not exceeded. A TMDL is also required to be developed with seasonal variations and include a margin of safety to address uncertainty in the analysis. In addition, pursuant to the regulations at 40 CFR 130.6, states must develop water quality management plans to be used to directly implement the plan elements, including TMDLs.

[http://www.swrcb.ca.gov/water\\_issues/programs/tmdl/docs/303dlists2006/swrcb/r2\\_final303dlist.pdf](http://www.swrcb.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/swrcb/r2_final303dlist.pdf) 2002 CWA

The San Francisco Bay Regional Water Quality Control Board lists the Napa River Watershed as having Pollutant/Stressors (see page 37 of the THP) The Bell Canyon watershed is a tributary of the Napa River.

(2) *Are there any continuing, significant adverse impacts from past land use activities that may add to the impacts of the proposed project?*

Yes [] No []

#### **Activities identified within the THP area.**

The following activities are associated with present land management and the proposed THP/Conversion. Their impacts are related to the production of sediment into watercourses located near the THP, downstream and the modification of habitat located in the THP. These activities impact water quality, riparian habitat, fisheries resources and wildlife resources. Each of the listed activities identifies mitigation proposed in this THP to minimize or eliminate the impact.

- **Present land management activities**
- **Soil and vegetation disturbance of the planned THP/Conversion**
- **Wildlife habitat modification associated with the THP/Conversion.**
- **Erosion control and sediment production**

See the list of general mitigations proposed in the **THP page 76+**

#### **Activities identified outside of the THP area.**

- **Fire:** In the past, large fires that were annually lit by Native Americans kept the valley and surrounding areas open with grasses and younger seral stages of vegetation. With the reduction in Native American occupation of the area, these fires have been eliminated. The removal of these fires has allowed native vegetation to develop and significantly increase on the site. Some fires have burned through the area as recently as 60 to 100 years ago. These fires burned much hotter than those set by Native Americans and therefore had a much more significant impact on the intensity of the burn and impacts to wildlife. Due to modern fire suppression efforts and the reduction in the use of fire within the landscape, fuel levels and vegetation density have increased. This increase has allowed wildlife associated with this type of vegetation to increase. Wildlife associated with open areas of grass and brush have diminished in population.

As vegetation levels have increased vegetation ages and structure has also increased. This has allowed oak woodland and conifer forests to develop from grasslands and brush lands of the past. The fragmentation of habitat as a result of recent historical fires suppression is being reduced as forested areas occupy a larger areas and contain a wider diversity of habitat, over time.

- **Agriculture:** The primary use of the foothills during the late 1800 and early 1900 was for the use of farming primarily in the form of grazing. Some of the more open areas with gentle topography were planted to vineyards and orchards, particularly during the latter part of the last century. As the Bay Area became more populated toward the middle of the last century, more pressure was placed on these same foothills for rural residential use. This increased use has overpowered land values to the point that the grazing practices of the last century have come to a close. Very little large scale grazing takes place within the vegetated areas of the foothills of Napa County. The loss of this grazing pressure has allowed

open areas to become revegetated and resume the cycle of plant succession. As a result more open areas of

the county are revegetating into brush and then forest. This plant succession has had impacts on plant and animal species associated with the open grasslands of the past. This type habitat modification has been increasing since the middle of the last century. See the assessment of vegetative changes below.

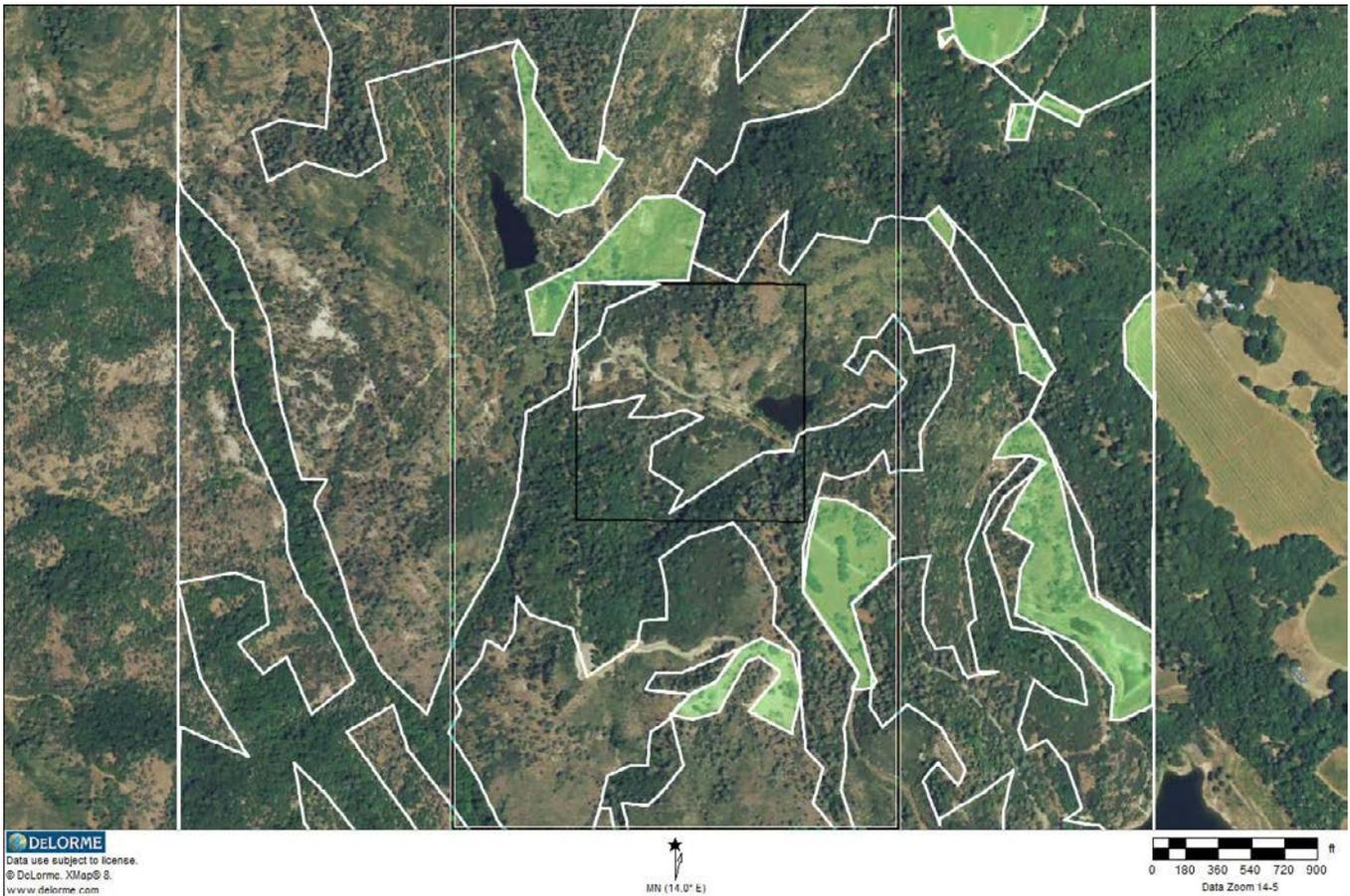
- **Rural residences:** As pressure on land use increased due to the increase in the population centers of the Bay Area, so have land values. This increase in land values has been part of the impact on grazing as mentioned above. Although these land values have increased in Napa County, they have been significantly less than that found within the heavily populated areas of the Bay Area. As a result, more and more residences have moved to the rural areas to get out of the big city and live in areas more rural and less expensive. This increased pressure in the residential nature of the area has had a significant impact on the fragmentation of wildlife habitat. Homes, driveways, gardens, fencing, noise, waterlines, power lines, septic tanks and traffic have all increased to the deterrent of wildlife. As this pressure increased parcel sizes have decreased, allowing more and more residences to be built in the area. The overall impact of the increased infrastructure associated with these rural residences has been to increase the fragmentation of the native wildlife habitat. This impact continues today. As the value of these residential areas increase and if the Bay Area continues to increase in affluence, we may see additional residential subdivision with the increase in demand and values associated with a fixed land resource. For the present this fragmentation will continue.
  
- **Intensive land use:** The preservationist and antagonistic attitudes of the general public toward commercial timber harvest has significantly reduced the use of this land management tool in the foothills of Napa County. The increase in land values and lack of increase in timber values has also reduce the application of timber harvests as a land management tool. The use of properly applied silvicultural practices can increase the mosaic of vegetation associated with a watershed, thereby increasing the type and availability of wildlife habitat. Commercial timber harvest is not anticipated to be viable in the present or near future in this area or in Napa County.

No significant changes in activity are presently occurring in the surrounding areas of the project.

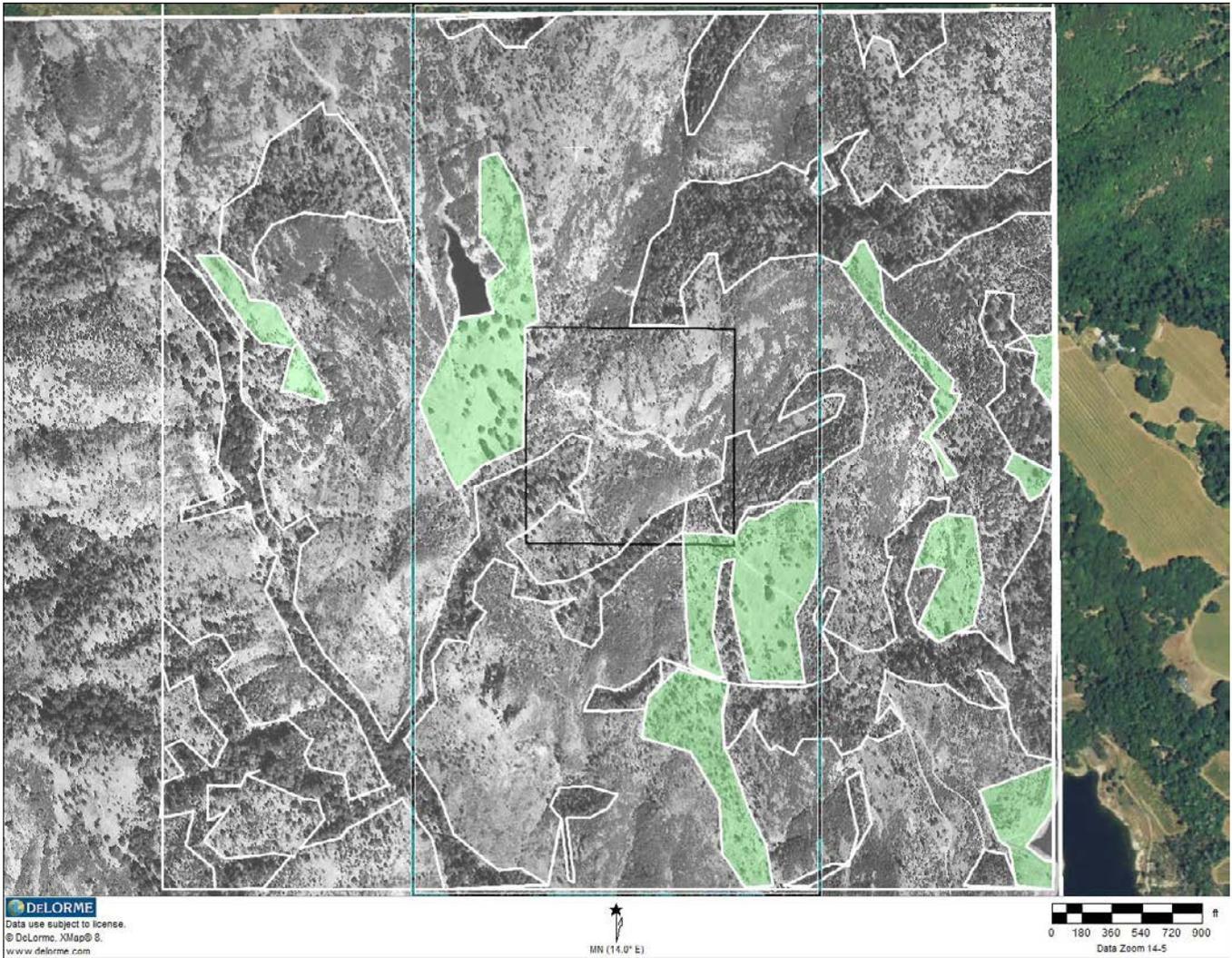
**Vegetation changes from 1958 to 2014 (56 years of change):**

To quantify some of the changes that have taken place in the area surrounding the proposed development aerial photos have been reviewed for 1958 and 2014. Changes during the last 56 years were noted. An arbitrary 1 square mile was reviewed with the project being in the center of the 640 acres. The 1958 photos are good quality, and were used to show details of the different types of vegetation. Agricultural activities are discernable, buildings and vegetation density are sometimes hard to identify. The 2014 photo is much better quality, but limited in comparison with the 1958 photo. Typing of the two photos was done using agricultural verses brush/forest. It should be noted that these are very broad definitions and open to personal interpretation of the aerial photos examined. The trend, although general, can be seen. See photos below.

**1 mile square (640 acres) vegetation analysis, 1958 to 2014**



2014 aerial photo, green is agriculture, white outline is forest canopy, the balance in brush.



1958 aerial photo, green area is agriculture, white outline is forest canopy, the balance is brush

Vegetation acreage changes from 1958 to 2014						
	1958		2014		Change from 1958	
	Acres	Percent	Acres	Percent		
Agriculture*	56	9%	35	5%	-21	
Brush	443	69%	327	51%	-116	
Forest**	141	22%	278	43%	137	
Total	640	100%	640	100%		

\*agriculture, grazing, vineyard, orchard, non brush  
 \*\*forest, includes oak woodland, conifer, forest canopy

## Interpretation

For the area reviewed, agricultural activities decreased from 56 acres to 35 acres, a drop of 21 acres or 40%.

This is due primarily to a decrease in grazing and an increase in brush as a result of plant succession. The brush also decreased from 443 acres to 327 acres, a decrease of 116 acres or 35%. This is primarily due to plant succession and a lack of fire within the landscape during this 56 year period. The forest canopy increased from 141 acres to 278 acres. The increase of 137 acres or 97% is due to a lack of fire and development of brush area due to plant succession.

Although the analysis of the vegetation types is influenced by the subjectiveness of the photo interpreter, the general trend indicates a significant change in the development of the forest canopy through plant succession and the lack of fire.

The intensity level of the agricultural changes is the result of vineyard development. The intensive agricultural practices of modern vineyard management is greater than that used during the turn of the century.

Some of the areas that may have been cleared for grazing in the past are now used for more intensive agriculture, i.e. vineyards. The present awareness of and attention paid to sediment control is much greater due to the permit process and education. The erosion control measures used early in the last century were significantly lacking. Today's modern erosion control measures and best management practices are a significant improvement over the excessive sediment losses of 60 years ago.

The improvement in forest density is the result of natural plant succession and the increase in fire suppression efforts of the past 100 years. The changes seen in the area analyzed in the above photos are the same as those seen in the assessment area as a whole. The following general assumptions can be applied to the larger assessment area.

1. Generally speaking agricultural acreages are equal to or less than those of 60 years ago.
2. Agriculture is more intensively managed today.
3. Erosion control practices are significantly improved over 60 years ago.
4. Brush and Forest vegetation are more developed than 60 years ago due to fire suppression and plant succession.
5. More rural residential housing exists in the rural forested areas of the county.
6. Sediment transport due to poor management practices has been reduced due to increased awareness of the landowner and regulatory agencies..

## Conclusion

Even when considering the change in vegetation as the result of the proposed project, overall use of the area remains much the same as it was 71 years ago. Habitat will continue to develop as successional vegetation types mature over time. Fire suppression efforts will continue to allow habitat to mature. Habitat fragmentation will not significantly increase as a result of the proposed project.

(3) Will the proposed project, as presented, in combination with past, present, and reasonably foreseeable, probable, future projects identified in items (1) and (2) above, have a reasonable potential to cause or add to significant cumulative impacts in any of the following resources?

Resource	Yes, after mitigation	No, after mitigation	No reasonable potential for Significant effects
1. Watershed	_____	<u>  X  </u>	_____
2. Soil Productivity	_____	<u>  X  </u>	_____
3. Biological	_____	<u>  X  </u>	_____
4. Recreational	_____	_____	<u>  X  </u>
5. Visual	_____	_____	<u>  X  </u>
6. Traffic	_____	_____	<u>  X  </u>

- a) **Yes**, means that potential significant adverse impacts are left after application of the forest practice rules, mitigations or alternatives proposed by the plan submitter.
- b) **No, after mitigation** means that any potential for the proposed timber operation to cause significant adverse impacts has been substantially reduced or avoided by mitigation measures or alternatives proposed in the THP and application of the forest practice rules and or erosion control plan.
- c) **No reasonable potential significant effects**, means that the operations proposed under the THP do not have reasonable potential to join with the impacts of any other projects to cause cumulative impacts.

The DRAFT EIR prepared by Analytical Environmental Services has addressed all of the following environmental issues and the impact that the project will have on each one of them. See the DRAFT EIR for a detailed analysis of each one. Due to existing state and local regulations and with the addition of mitigations proposed in the THP and DRAFT EIR the project will not have significant impacts on these environmental receptors.

**Cumulative Impacts Assessment Summary of analysis and findings have been addressed by the EIR, see below, excerpt from the Draft EIR.**

**1. Aesthetics Section 6.2.2-1 of the EIR, Appendix A-266** (excerpt from Draft EIR below)

- **Visual Resources.** Long distance views of the project site are shielded by topography and forested vegetation. Nearby views from Private Friesen Drive and adjacent properties would remain consistent with the existing visual character and would not be significantly altered as similar views of vineyards are already available in the vicinity. Given that there is no reasonably foreseeable project that would alter the surrounding forested lands such that the Proposed Project would be more visible, a less-than-significant cumulatively considerable impact would occur.
- **Lighting and Glare.** As operation of the Proposed Project would not create a substantial light or glare that would adversely affect day or nighttime views in the area, the Proposed Project would not contribute to the cumulative environment. No cumulatively considerable impact would occur.

## 2. Agriculture and Forestry Section 6.2.2-2 of the EIR, Appendix A-267 (excerpt from Draft EIR below)

The Fire and Resource Assessment Program's (FRAP's) Land Base of California Forests report lists Napa County as having 22,000 acres of Commercial Conifer Timberland (Shih, 1998). Conifer Timberland is defined as growing more than 20 square-feet per acre per year. This 22,000 acres is a small portion of the nearly 131,136 acres of forest land in the entire County, which includes cypress forest, deciduous oak woodland, Douglas fir/redwood forest, evergreen oak woodland, evergreen oak woodland, deciduous, non-native woodland, and pine forest as classified and mapped by the County (Napa County, 2002). Other areas of the County, which may have forest land with commercial conifer growth, contain small and scattered areas that are not included under the general designation of Commercial Conifer Timberland. The property falls within one of these scattered areas and is not within the commercial forest land base of California. As noted in the Timber Harvest Plan (THP), since the forested timber harvest portion (10± acres) of the property is so small and the Proposed Project would remove a small amount of timber volume that is not within the commercial forest land base of California, no significant impact can be expected to occur on timber resources of the State or its timber productivity and economy (**Appendix H**).

Bell Canyon Reservoir Watershed. An analysis of potential impacts to the Bell Canyon Reservoir watershed from implementation of the Proposed Project is presented in Section IV of the THP (Appendix H). The results of this analysis show that in the past ten years, timber harvesting has been limited to vineyard conversion on 5 acres within the assessment area. Furthermore, the number of timber conversion applications has most likely reach its peak and has dropped significantly within the last five years (**Appendix H**). The proposed timber harvest of 10.0± acres represents less than 0.015 percent of the total land in the watershed. Combined with the other known projects from the last decade, the total amount of timber converted is approximately 5 acres and is 0.0075 percent of the Bell Canyon Reservoir watershed. When added to the other known conversion projects in the watershed, this minor increase of less than 0.015 percent is less than significant to the watershed as a whole. Therefore, no significant impact can be expected to occur to the state timber harvest volumes or the economic values to Napa County or the state due to the loss of timberland, based on the following: the small amount of timber resources harvested annually in Napa County; the reduced number of timberland to vineyard conversions in the watershed; the small scale of the timberland conversion expected from the Proposed Project; and the small scale of the one other timberland conversion project known in the assessment area. Therefore, cumulative impacts to agriculture and forestry resources would be considered less than significant.

## 3. Air Quality Section 6.2.2-3 of the Draft EIR, Appendix A-267 (excerpt from Draft EIR below)

The geographic scope for the cumulative air quality impact analysis is the San Francisco Bay Area Air Basin (SFBAAB) because cumulative air quality impacts could potentially affect the entire San Francisco Bay Area region. Cumulative air quality issues in the SFBAAB are addressed through regional air quality control plans developed by the Bay Area Air Quality Management District (BAAQMD). These plans account for projected growth in the Bay Area, as embodied in the adopted General Plans of the various cities and counties that comprise the Bay Area. There is, therefore, no need to identify each and every specific "probable future project" that might contribute emissions within the air basin.

**Project Construction.** Construction elements of the Proposed Project, including the timber harvest, installation of erosion control measures, and development of the vineyard, concurrent with other projects in the air basin would generate emissions of criteria pollutants, including suspended and inhalable particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and

equipment exhaust emissions. As discussed in Draft EIR **Section 4.3**, for construction-related impacts, the BAAQMD has developed significance thresholds of 54 pounds per day of nitrogen oxide (NO<sub>x</sub>), reactive organic

gases (ROG), and PM<sub>2.5</sub> and 82 pounds per day of PM<sub>10</sub> and recommends basic construction mitigation for all projects (BAAQMD, 2010). BAAQMD's significance thresholds consider the regions cumulative emissions levels. Construction emissions from the development of the Proposed Project would not exceed the BAAQMD threshold with implementation of a fugitive dust abatement program under Draft EIR **Mitigation Measure 4.3-1 (Section 4.3)**. The BAAQMD Guidelines take into account past, present, and future emissions of criteria pollutants; therefore, since the project would not exceed BAAQMD thresholds, the cumulative impacts due to construction would be less than significant.

**Project Operation.** The BAAQMD also provides cumulative operational significance thresholds for NO<sub>x</sub>, ROG, PM<sub>2.5</sub> and PM<sub>10</sub> (BAAQMD, 2010). The SFBAAB non-attainment status for NO<sub>x</sub>, ROG, PM<sub>2.5</sub>, and PM<sub>10</sub> is attributed to the region's development history. Past, present, and future development contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact; no single project is sufficient in size to, by itself, result in non-attainment of the ambient air quality standards. However, if a project contribution is considerable, then the project's cumulative impact on regional air quality would be considered significant. Cumulative thresholds are the same as project thresholds, which are provided in Draft EIR **Section 4.3**. As shown in Draft EIR **Table 4.3-5 in Section 4.2**, project-related operational NO<sub>x</sub>, ROG, PM<sub>2.5</sub>, and PM<sub>10</sub> emissions would not exceed the BAAQMD cumulative operational significance thresholds, and therefore the cumulative operational impacts would be less than significant.

#### 4. **Biological Resources Section 6.2.2-4 of the EIR, Appendix A-268.** (excerpt from Draft EIR below)

Cumulative projects in the vicinity of the property, including growth resulting from build-out of the County's General Plan and any proposed future development in the vicinity of the property, are anticipated to permanently remove plant and wildlife resources, which could affect special status species and their habitat, nesting and foraging habitat for resident and migratory birds, and/or local policies or ordinances protecting biological resources.

##### **Impacts to Biological Resources during Construction**

As discussed in Draft EIR **Section 4.4**, potential impacts to biological resources analyzed in this EIR include impacts from the precursor timber harvest phase, the erosion control plan (ECP), and vineyard installation under the Proposed Project. The project design follows County goals and policies including the incorporation of setbacks within the THP area that will prevent construction activities from disturbing adjacent forested areas to be retained onsite, outside of the 13.6± acre vineyard footprint. As a result, forested habitat onsite occurring outside of the THP area will not be impacted by construction and operation of the Proposed Project.

**Section 4.4** includes mitigation measures to reduce potential impacts to special status species (Draft EIR **Mitigation Measures 4.4-3** through **4.4-8**) and habitats (Draft EIR **Mitigation Measure 4.4-1**) during construction to less than significant levels. The County would similarly require cumulative projects with potentially significant impacts to wildlife and plant species in the vicinity of the Proposed Project to comply with federal, State and local regulations and ordinances and to mitigate for potential impacts to biological resources during construction. Cumulative projects with the incorporation of appropriate mitigation and approval of local, State, and federal agencies would reduce impacts to cumulative environmental conditions to less than significant levels.

### Impacts to Biological Resources Due to Vineyard Conversion

**Watershed.** Although vineyards only provide limited habitat value for wildlife, local regulations ensure that installation of vineyards do not necessarily represent a total loss of habitat for wildlife. Napa County Conservation Regulations (Napa County Code, Chapter 18.108.100) require projects to maintain portions of open space on parcels proposed for development, which provides habitat for plants and foraging and nesting opportunities for wildlife. Napa County Conservation Regulations (Napa County Code, Chapter 18.108.025) generally preclude development on slopes greater than 30 percent and require setbacks of 35 to 150 feet from all County-definitional streams (depending on slopes). These County regulations would apply to any cumulative projects in the vicinity of the Proposed Project, which would lessen any potential impacts to the surrounding watershed. Further, the Proposed Project includes a Habitat Retention Area (HRA) that was specifically designed to offset impacts to oak woodland, protect the onsite water supply reservoir, and provide buffers around onsite water courses, which provides better and more ongoing protection for the watershed.

**Special Status Species.** The property provides habitat for the following special status species: Napa lomatium (*Lomatium repostum*), western pond turtle (*Clemmys marmorata*), and other migratory birds. Mitigation measures have been provided in Draft EIR **Section 4.4** to reduce the project's impact to each special status species to less-than-significant, either through replanting, avoidance, or preservation methods. Therefore, the Proposed Project's impact to special status species is less than cumulatively considerable, with implementation of mitigation.

**Habitats.** Habitats on the property include: Douglas Fir Forest Alliance, Foothill Pine Woodland Alliance, Mixed Oak Alliance, Mixed Manzanita Alliance, and Chamise Chaparral Alliance. Special status plant and wildlife may occur in these habitats. Although the project proposes to remove portions of these habitats, they are still relatively common in the cumulative environment surrounding the project site. As shown in Draft EIR **Table 4.4-1 of Section 4.4**, the acreage of onsite habitat types removed by the Proposed Project are relatively minor when compared to total percentage of each habitat type represented in the County. Specific mitigation and avoidance measures (Draft EIR **Mitigation Measure 4.4-1**) specified in **Section 4.4** reduce the cumulative impacts to habitat loss on potentially occurring special status species to less than significant levels through the creation of an HRA designed to protect Oak Woodland at greater than a 2:1 ratio.

#### 5. Cultural Resources Section 6.2.2-5 of the EIR, Appendix A-270. (excerpt from Draft EIR below)

Potential projects in the vicinity of the property, including growth resulting from build-out of the County's General Plan and proposed development in the vicinity of the property, have the potential to cumulatively impact cultural resources. Archaeological and historic resources are afforded special legal protections designed to reduce the cumulative effects of development. Potential cumulative projects and the Proposed Project would be subject to the protection of cultural resources afforded by the CEQA *Guidelines* Section 15064.5 and related provisions of the Public Resources Code. In addition, projects with federal involvement would be subject to Section 106 of the National Historic Preservation Act. Given the non-renewable nature of cultural resources, any impact to protected sites could be considered cumulatively considerable. As discussed in Draft EIR **Section 4.5**, with implementation of **Mitigation Measure 4.5-1**, site-specific cultural resources identified within the property would be protected. Additionally, Draft

**EIR Mitigation Measures 4.5-2 and 4.5-3 in Section 4.5** provide for the protection of unanticipated discoveries during ground disturbing activities. With the implementation of these mitigation measures, the Proposed Project's incremental contribution to cumulative impacts to cultural resources is considered to be less than significant.

**6. Geology and Soils Section 6.2.2-6 of the EIR, Appendix A-271.** (excerpt from Draft EIR below)

Implementation of the Proposed Project and other potential cumulative projects in the region, including growth resulting from build-out of the County's General Plan and other proposed development in the vicinity of the property, could result in increased erosion and soil hazards and could expose additional structures and people to seismic hazards.

Potential soil and seismic hazards from cumulative development could represent a significant cumulative impact if such projects do not incorporate grading/erosion plans and are not developed to the latest building standards by incorporating recommendations from site-specific geotechnical reports. As stated in Draft EIR **Section 4.6**, there were two technical reports prepared for the Proposed Project, the ECP (NVVE, 2014; **Appendix B**) and the Engineering Geological and Geotechnical Evaluation (Gilpin Geosciences, Inc., 2014; **Appendix G**), that include mitigation measures that are specifically designed for and included as part of the Proposed Project (refer to EIR **Section 3.0**), which would reduce impacts during construction and operation of the Proposed Project to local geology and soils. The Applicant would implement the recommended mitigation measures and design specifications included in the ECP and supporting technical reports, which are designed to avoid, reduce, or mitigate potential impacts associated with geology and soils. Therefore, with incorporation of design standards, cumulative impacts of the Proposed Project would be considered less than significant.

**7. Greenhouse Gas Emissions Section 6.2.2-7 of the EIR, Appendix A-271** (excerpt from Draft EIR below)

As discussed in Draft EIR **Section 6.2.2-3**, cumulative air quality issues in the SFBAAB are addressed through regional air quality control plans developed by the BAAQMD. These plans account for projected growth in the Bay Area, as embodied in the adopted General Plans of the various cities and counties that comprise the Bay Area. There is, therefore, no need to identify each and every specific "probable future project" that might contribute emissions within the air basin.

**Project Construction.** The purchase of emission credits required by Draft EIR **Mitigation Measure 4.7-1** and the Proposed Project's design reduces greenhouse gas (GHG) emissions from construction by 39 percent from "business as usual" practices, which results in a less than significant impact to climate change. Since the County's draft Climate Action Plan (CAP) provides for a reduction in GHG emissions by 38 percent, the Proposed Project meets the draft CAP standard. As discussed in Draft EIR **Section 4.7**, the BAAQMD CEQA Guidelines was adopted by the BAAQMD Board of Directors in June 2010 and upheld in court on August 13, 2013. The BAAQMD CEQA Guidelines do not provide specific thresholds for GHG emissions from construction. The Applicant would further reduce construction-related GHG emissions from the Proposed Project with implementation of Draft EIR **Mitigation Measure 4.7-1**.

**Mitigation Measure 4.7-1:** See **THP mitigation #21 page 84 and 85**.

The Applicant shall implement the following mitigation measures to reduce project-related GHG emissions during construction of the Proposed Project:

The Applicant shall maintain all construction equipment in accordance with manufacturers' specifications.

The Applicant shall limit construction equipment idling time to less than five minutes.

The Applicant shall purchase 1,601 MT of GHG emissions credits from a recognized GHG reduction credit organization, such as the Climate Action Registry, the American Carbon Registry, or the Chicago Climate Exchange.

**Project Operation.** As shown in Draft EIR **Section 4.7, Table 4.7-2**, operational GHG emissions are estimated to be 343 MT per year. These emissions would be less than the BAAQMD CEQA threshold of 1,100 MT of CO<sub>2</sub>e for project-level operation. Therefore, operation of the Proposed Project would not result in cumulatively impacts to climate change.

**8. Hazards and Hazardous Materials Section 6.2.2-8 of the EIR, Appendix A-272** (excerpt from Draft EIR below)

Unmitigated, construction and operation of the Proposed Project in combination with cumulative development in the project vicinity could lead to impacts related to hazardous materials. The Proposed Project and similar cumulative projects would involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction. Impacts related to these activities are extensively regulated by various federal, State, and local agencies and it is assumed that similar projects would also comply with these hazardous materials regulations.

Operation of the Proposed Project and cumulative projects in the vicinity could result in impacts if development were to result in potential exposure of hazardous materials to sensitive individuals or the general public-at-large. Operation of the Proposed Project using integrated pest management (IPM, Appendix J) practices and reduce the large scale use of chemicals such as pesticides and herbicides and would therefore result in a low risk for adverse effects. Because hazardous materials impacts are site-specific and the Proposed Project would not require substantial volumes of hazardous materials, the project would not contribute to cumulatively considerable hazardous impacts.

Furthermore, Draft EIR **Mitigation Measures 4.8-1, 4.8-2, and 4.8-3 (Section 4.8)** include measures to ensure that any hazardous materials that are stored or used onsite would be properly maintained, reducing the risk of spills or adverse effects. With implementation of these mitigation measures, the Proposed Project would not cause cumulatively considerable impacts to the environment from hazardous materials use.

**9. Hydrology and Water Quality Section 6.2.2-9 of the EIR, Appendix A-272** (excerpt from Draft EIR below)

The project site is located within the drainage area of the Bell Canyon watershed, which constitutes a drainage area of roughly 10.1 square miles. As stated in Draft EIR **Section 4.9**, the analysis of impacts to hydrology and water quality from the Proposed Project included factors such as topography, drainage, and other physical features of the local area. For this cumulative impact analysis, potential impacts of the Proposed Project in addition to cumulative impacts of other projects within the watershed form the scope of this discussion.

**Protection of Stream Corridors and Water Quality.** The Proposed Project includes the restriction of earthmoving activities to the dry season consistent with County Code Section 18.108.070(L), and the installation of fiber rolls, seeding and mulching of disturbed areas, and other erosion control measures and best management practices (BMPs) discussed in Draft EIR **Section 3.0**, which would reduce the potential for sedimentation to move off-site. The Proposed Project would not increase runoff rates or volumes, or degrade water quality (as discussed in Draft EIR **Section 4.9**) and would not increase soil erosion or sedimentation (as discussed in Draft EIR **Section 4.6**).

As shown in Draft EIR **Section 4.9**, implementation of the ECP for the Proposed Project would result in improved conditions to on and off-site water quality. As stated in Draft EIR **Section 4.9.1-2**, the Napa River is currently listed

as an impaired water body for nutrients, pathogens, and sediment under Section 303 (d) of the Clean Water Act (CWA). Runoff from the project site is eventually transported to the Napa River; therefore, from a cumulative standpoint, implementation of the ECP under the Proposed Project would be beneficial by improving onsite and offsite water quality by lessening cumulative sedimentation impacts to the Napa River.

**Groundwater Supplies.** The Proposed Project would require approximately 2.9 acre feet per annum (afa) for the establishment of the vineyard and would require approximately half of that amount of water in the long-term for the vineyard. The long-term water use of the proposed vineyard blocks is only 19 percent of the allowable groundwater allotment for the property. Other projects within the Bell Canyon watershed would be required to limit groundwater use to the allowable groundwater allotment for the associated property. Furthermore, it is estimated that the Proposed Project's property provides the recharge opportunity for approximately 12.5 af per year of percolation into the Sonoma Volcanics, which is less than the long-term irrigation needs of the Proposed Project. Accordingly, cumulative impacts to groundwater would be less than significant. See the Water Demand and Water Availability Analysis of the Draft EIR **Appendix O**.

#### **10. Land Use Section 6.2.2-10 of the EIR, Appendix A-273 (excerpt from Draft EIR below)**

Potential cumulative projects in the vicinity of the property, including growth resulting from build-out of the County's General Plan and proposed developments in the vicinity of the property, would be developed in accordance with local and regional planning documents; thus, cumulative impacts associated with land use compatibility are expected be less than significant. Additionally, as discussed in Draft EIR **Section 4.10**, the Proposed Project would not result in a substantial inconsistency with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect. Further, the Proposed Project is consistent with the County zoning ordinance, and General Plan (2008) land use designations, goals, and policies, and therefore would not cause cumulative impacts to land use.

#### **11. Noise Section 4.11-1 of the EIR, Appendix A-274 (excerpt from Draft EIR below)**

**Construction.** Construction activities associated with the Proposed Project are unlikely to occur in combination with additional development projects in the vicinity because the area is rural and surrounding County designated land uses include rural residences, vineyards, and agriculture. Existing noise from Friesen Road, which bisects the property, and scattered agricultural activities in the vicinity of the property would be the only other source of noise in the immediate vicinity during construction of the Proposed Project.

As stated in Draft EIR **Section 4.11**, the nearest noise sensitive receptor to construction activities is a residence located approximately 800 feet south of the property. Analysis of potential noise impacts on this receptor included factors such as natural noise barriers (trees and vegetation), which attenuate noise impacts. The results concluded that the maximum noise level at the nearest sensitive noise receptor during construction of the Proposed Project would be approximately 58 dBA Leq, which is below the County's noise threshold of 75 dBA, Leq for construction near residential areas. Furthermore, construction activities associated with the Proposed Project shall occur between the hours of 7 A.M. to 7 P.M., which is consistent with County Ordinance 8.16.080 2.

Construction of the Proposed Project in combination with cumulative sources of noise in the vicinity would not expose persons to temporary or substantial permanent increases in the ambient noise level or generate noise levels in

excess of standards established in the General Plan, County noise ordinance, or applicable standards of other agencies.

**Operation.** As stated in **Section 4.11**, the Proposed Project would slightly increase the ambient noise level in the immediate vicinity of the property. However, given the small size of the project, the location of the project (existing agricultural uses in the vicinity of the project site), the low-density residential uses in the area, and the County's General Plan Policy CC-35, which states that agriculture and agricultural processing is considered an acceptable and necessary part of the community character of Napa County and is not considered to be undesirable, the Proposed Project's contribution to potential cumulative impacts associated with ambient noise levels would be considered less than significant.

**Groundborne Vibration.** Additionally, construction of the Proposed Project would not result in cumulative impacts due to groundborne vibration noise levels. There are no known projects in close enough proximity to the project site that would contribute to groundborne vibration noise levels. Given the predicted PPV levels for all of the equipment to be used in construction and operation of the Proposed Project would be below the significance thresholds of 0.1 PPV for residences, which is the nearest sensitive receptor, no cumulative impacts would occur.

#### **12. Traffic Section 4.12-1 of the EIR, Appendix A-275 (excerpt from Draft EIR below)**

As stated in Draft EIR **Section 4.12**, operation of the Proposed Project would generate worker trips for vineyard maintenance and grape harvest, which would typically require 3 to 4 people per day or less but would require up to 10 people for short durations during certain operational tasks, such as harvesting. During operation of the Proposed Project, grapes would be transported in farm trucks to wineries in the Napa Valley area. Approximately three 20± ton trucks are anticipated to transport harvested grapes during a 30-day period (**Appendix I**). This type of agricultural traffic anticipated to be generated by the Proposed Project would be minimal and very similar to other agricultural transport activities (i.e. grapes, cattle, sheep, horses, apples, rock aggregates, fire wood, etc.) presently taking place on local roadways in the vicinity of the Proposed Project (**Appendix I**). This long-term addition of up to 26 daily trips during certain, infrequent vineyard operations (e.g. pruning, harvesting) to Friesen Drive, White Cottage Road, and Howell Mountain Road would be minimal, seasonal, well below County threshold of significance and road design of 7,000 vehicles per day, and not significantly impact the existing roadways serving the property and in the vicinity; therefore, operation of the Proposed Project would not result in cumulative impacts to transportation and circulation in the area.

#### **13. Recreation**

Hunting, hiking, cycling and camping are the anticipated recreational activities, which exist within the assessment area. These activities are controlled by and limited to the landowner to his property only. These activities are not expected to change. The landowner controls the private use of his property, trespassing is not allowed. Several adjacent landowners are in the process of negotiations to install a permanent gate near the back of Friesen drive to reduce traffic related to trespassing. This gate will be maintained by this landowner and adjacent owners. Adjacent property owners have also posted their property prohibiting trespass.

Due the location size and restrictive control of this property this conversion is not expected to have a significant adverse impact on the recreation activity within the assessment area. The general public cannot access this

property; no public road system goes through or is adjacent to the assessment area. No significant adverse impacts are expected to occur.

### **CAL FIRE List of Species of Special Concern within the Assessment Area:**

**Sensitive Species** means those species designated by the Board pursuant to 14 CCR 898.2(d). These species are the Bald eagle, Golden eagle, Great blue heron, Great egret, Northern goshawk, Osprey, Peregrine falcon, California Condor, Great gray owl, Northern spotted owl, Marbled Murrelet, Pacific Fisher and Townsend Big Eared Bat. (Forest Practice Rules, section 895.1 definitions)

The Great Blue Heron, Northern Goshawk, Osprey, California Condor, Great Bray Owl, Marbled Murrelet and Pacific Fisher are not shown on the CNDDDB to be present in the project area. Habitat to support these species does not exist within the project area, and does not exist within the landscape surrounding the project. Onsite review by the landowner, Biologist and RPF has not revealed the presence of these species.

#### **Haliaeetus Leucocephalus (Bald Eagle)**

Found near ocean shorelines, lakes, reservoirs, river systems, and coastal wetlands. Usually less than 2 km to water that offers foraging opportunities. Suitable foraging habitat consists of large bodies of water or rivers with abundant fish and adjacent perching sites such as snags or large trees. The project site does not provide suitable habitat for this species. Neither the RPF, Biologist nor the landowner has observed any Bald Eagles in or near the project area. See the biology report **Appendix D-26**. The necessary habitat elements for this species are significantly lacking within the project site, and this operation is not expected to have an adverse impact on Bald Eagle. The project **mitigation #13** requires raptor surveys be conducted 14 days prior to vegetation removal and ground disturbing activities. See the **THP page 65**.

#### **Aquila Chrysaetos (Golden Eagle)**

Neither the RPF, Biologist nor the landowner has observed any Golden Eagles in or near the project area. See the biology report **Appendix D-26**. As this species nests in large pre-dominant snags, and these habitat elements are significantly lacking within the project, this operation is not expected to have an adverse impact on Golden Eagle. The project **mitigation #13** requires raptor surveys be conducted 14 days prior to vegetation removal and ground disturbing activities. See the **THP page 65**.

#### **Ardea Herodias (Great Blue Heron)**

Suitable habitat for the great blue heron is lacking in the project site. This operation is not expected to have an adverse impact on Great Blue Heron.

#### **Ardea Alba (Great Egret)**

Suitable habitat for the great egret is lacking in the project site. This operation is not expected to have an adverse impact on Great Egret.

#### **Accipiter Gentilis (Northern Goshawk)**

Suitable habitat for the Northern Goshawk is lacking in the project site. This operation is not expected to have an adverse impact on Northern Goshawk.

**Pandion haliaetus (Osprey)**

Suitable habitat for the Osprey is lacking in the project site. This operation is not expected to have an adverse impact on Osprey.

**Falco Peregrinus Anatum (Peregrine Falcon)**

“American Peregrine Falcon (*Falco peregrinus anatum*): Peregrine falcons require protected cliffs and ledges for cover. Peregrines often breed near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes or mounds (Zeiner et al. 1990a); however, they will nest on human-made structures and will occasionally use snag cavities or old nests of other raptors. Suitable habitat in the form of cliffs over 70' high do not exist on the property. Peregrine falcons were not observed during this field survey within the project area.” See the biology report **Appendix D-26 and D-37**.

**Gymnogyps Californianus (California Condor)**

Suitable habitat for the California Condor is lacking in the project site. This operation is not expected to have an adverse impact on California Condor.

**Strix Nebulosa (Great Gray Owl)**

Suitable habitat for the Great Gray Owl is lacking in the project site. This operation is not expected to have an adverse impact on Great Gray Owl.

**Strix Occidentalis Caurina (Northern Spotted Owl)**

“Habitat capable of supporting the Northern Spotted Owl does not exist within the project and or surrounding areas. See Biology report **Appendix D-37, and NSO report Appendix P**. Northern spotted owls require mature forest patches with permanent water and suitable nesting trees and snags (Zeiner et al. 1990a). Northern spotted owls use dense, old-growth forests, or mid- to late- seral stage forests, with a multi-layered canopy for breeding (Remsen 1978). Mixed conifer, redwood, and Douglas-fir habitats are required for nesting and roosting. There are two known occurrences within five miles of the project 1.66, and 1.78 miles. The project and property do not contain potential nesting habitat and the project sited do not contain potential foraging habitat.”

Northern Spotted Owl Habitat is defined as Foraging Habitat: Habitat that contains greater than/equal to 40% canopy cover of trees that are greater than/equal to 11” dbh (diameter at breast height), and have a basal area of greater than/equal to 75 square feet per acre of trees greater than/equal to 11” dbh. Trees may be conifer or hardwood.

Nesting/Roosting Habitat: Forested habitat that supports successful nesting and associated roosting behavior by NSO. Habitat with >60% canopy cover of trees that are >11” dbh, and have a basal area >100 square feet per acre of trees >11” dbh. Trees may be conifer or hardwood.

No impact can be expect to occur to this species as a result of this project.

**Brachyramphus marmoratus (Marbeled Murrellet)**

Suitable habitat for the Marbeled Murrellet is lacking in the project site. This operation is not expected to have an adverse impact on Marbeled Murrellet.

**Oncorhynchus Kisurtch (Coho Salmon)**

The (Central California Coast Evolutionary Significant Unit) Coho salmon does not exist within the project area. Mitigation to reduce sediment transport down stream that could conceivably impact Coho salmon has been incorporated into this project. See erosion control measures in the ECP, **Appendix B**. Sediment transport is also limited by the dam associated with Bell Canyon Reservoir downstream from the project area. With mitigation for sediment reduction, the project is not expected to have an adverse impact on Coho Salmon.

**Oncorhynchus Mykiss (Steelhead)**

The (Central California Coast Evolutionary Significant Unit) Steelhead does not exist within the project area. Mitigation to reduce sediment transport down stream that could conceivably impact Steelhead has been incorporated into this project. See erosion control measures in the ECP, **Appendix B**. Sediment transport is also limited by the dam associated with Bell Canyon Reservoir downstream from the project area. With mitigation for sediment reduction, the project is not expected to have an adverse impact on Steelhead.

**Emys marmorata (Western Pond Turtle) Excerpt from Biology Report, Appendix D-34**

“was observed in the reservoir on the property. This reservoir is outside of the proposed development. Water from the reservoir will not be used on the vineyard. There is no need for protective measures due to the available upland estivation habitat surrounding the reservoir. It is unlikely that turtles would move into or use the proposed vineyard block habitat.

The pond turtle is found throughout California and is listed by the State as a Species of Concern. It does not have Federal status. Suitable habitat consists of any permanent or nearly permanent body of water or slow moving stream with suitable refuge, basking sites and nesting sites. Refuge sites include partially submerged logs or rocks or mats of floating vegetation. Basking sites can be partially submerged rocks or logs, as well as shallow-sloping banks with little or no cover. Nesting can occur in sandy banks or in soils up to 100 meters away from aquatic habitat. The project site is down slope from the reservoir and separated by Friesen Drive a private right of way open to the public. The soils down slope are dry associated with chaparral which are not the preferred sandy soils essential for nesting. Clearing of vegetation will not occur within 100-feet of the reservoir. “ The project has been set back 150 foot from the reservoir. SRB, 12-8-2014

**Rana draytonii (California Red-legged Frog) Excerpt from Biology Report, Appendix D-35**

“inhabits permanent or nearly permanent water sources (quiet streams, marshes, and reservoirs). They are highly aquatic and prefer shorelines with extensive vegetation. There are two known occurrences for the California Red-legged Frog within five miles of the property 2.88-miles to the east and 3.0 miles to the north. Both of the occurrences are within different watersheds and drain into Pope Valley. There is no potential habitat associated with the proposed conversion area. The reservoir on the property contains limited potential habitat. The reservoir contains bull frogs, sunfish and bass which are predators on Red-legged frogs if present. Banks surrounding the reservoir do not contain potential upland estivation habitat. The shallow ephemeral drainage on the property provides poor habitat for this species. No California Red-legged Frogs were observed within the reservoir and it is unlikely that the proposed project would result in take of this species. The project site is approximately 150-feet away from the reservoir that it is unlikely Red-legged frogs would use this area for upland estivation or for movement.”

**Pallid Bat (*Antrozous pallidus*)**

“The Pallid Bat occupies a wide variety of habitats, such as grasslands, shrublands, and forested areas of oak and pine, but prefer rocky outcrops with desert scrub. The pallid bat roosts in caves, mines, crevices, and occasionally in hollow trees or buildings. They forage over open country and in woodland areas. No roosts or evidence of their presence was observed within the proposed project area.” See the Biology report **Appendix D-36**. With mitigation for pre-construction surveys, the project is not expected to have an adverse impact on pallid bat. **THP Mitigation #12, Bat Surveys** see **ECP Appendix B-1, THP page 64**

**Townsend’s Big-Eared Bat (*Corynorhinus townsendii*): Excerpt from Biology Report Appendix D-37**

“A petition to list Townsend’s big-eared bat as Threatened or Endangered under the California Endangered Species Act (CESA) was received by the California Fish and Game Commission on November 1, 2012. On June 26, 2013, the Commission voted to designate Townsend’s big-eared bat as a candidate for listing. Townsend’s big-eared bats are more abundant in mesic habitats and range throughout the State. Their primary roosts are in caves, mines, abandoned dwellings, and large basal hollows of trees. Potential habitat for this species on the property would include large burned or hollow out mature trees. The site was surveyed for large cavities, or hollow basins, large enough for bats to roost in within 500 feet of the project site. It is unlikely that this species would be present and it is unlikely that the proposed project would result in take of this species.” With mitigation for pre-construction surveys, the project is not expected to have an adverse impact on Townsend’s big-eared bat. **THP Mitigation #12, Bat Surveys** see **ECP Appendix B-1, THP page 64**

**Pacific Fisher (*Martes pennantii*):** The project area is not within the range of the Pacific Fisher. The CWHR does not list the habitat found on the project area as supportive for the Pacific Fisher. The biological report states the “project site does not contain suitable large cavities or late seral stage trees for this species.” No impact can be expected.

**List of Resources Used in Compilation of this Document:**

1. Theodore Wooster, Consulting Wildlife Biologist, 6645 Yount Street, Yountville CA 94599, (707) 944-8451
2. Pam Town, Consulting Wildlife Biologist, 3904 North Cable Rd, Anaconda, MT 57911, (406) 490-7427
3. CCR 912.9 (932.9, 952.9), Technical Rule Addendum No. 2, Cumulative Impacts Assessment
4. California Department of Forestry and Fire Protection Guidelines for Assessment of Cumulative Impacts
5. 14 CCR 912.5 (932.5, 952.5) Technical Rule Addendum No. 1. Estimating Surface Soil Erosion Hazard Rating
6. Napa County Assessors Records, 1195 Third St., Napa CA 94559. (707) 253-4416
7. Napa County GIS records available on the internet, Napa County GIS
8. Various THP records maintained by CAL FIRE Santa Rosa
9. California Natural Diversity Data Base
10. Soil maps of Napa County (Soil Conservation Service)
11. Cumulative impact for Foresters Handbook CLFA
12. California Wildlife Habitat Relationships System Version 8.0
13. California Wildlife Pub. CDF & G 1990
14. California Department of Fish and Game personnel onsite review.
15. Brian Bordona, Planner, Napa Co., 1195 Third St., Napa CA 94559 (707) 253-4416
16. Various reports written and attached as appendices to this application.
17. Napa Valley Vineyard Engineering, Erosion Control Plan
18. Matt O’Connor, PHD, GES, O’Connor Environmental, P. O. Box 794 Healdsburg, CA (707) 431-2810
19. Lou Gilpin, Gilpin Geosciences, Inc. 3228 Silverado Trail, St. Helena, Ca 94574, (707) 251-8543
20. Tom Origer, Origer and Associates, P. O. Box 1531, Rohnert Park, CA 94927
21. California Oak Mortality Task Force, <http://www.suddenoakdeath.org/>

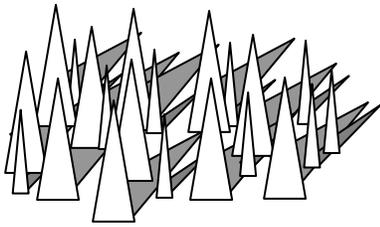
## SECTION V CONFIDENTIAL ARCHAEOLOGICAL ADDENDUM

Sensitive Archaeological material may have been removed from this file and can be seen in the CAL FIRE Santa Rosa Region office. Contact Chuck Whatford CAL FIRE Archaeologist, (707) 576-2966. The CAA has been attached to the **Draft EIR, Appendix K**.

## SECTION VI ATTACHMENTS

Attachments not required elsewhere

**Northern Spotted Owl Report, Appendix P**



Environmental Resource Management  
 Scott R. Butler, RPF #1851  
 889 Hwy 20-26  
 Ontario, Oregon 97914  
 Office: (707) 468-8466 Fax: (707) 220-0111  
 email: [scott.butler@sbcglobal.net](mailto:scott.butler@sbcglobal.net)

**Frost Fire Vineyards II, LLC**  
**Attn: Mike Davis**  
**15572 Computer Ln.**  
**Huntington Beach, CA 92649**

**mailed 10-10-2014**

Dear Mike,

I am required by the California Department of Forestry to inform you of the following Forest Practice Rule requirements. I have made some footnotes below to try to explain if needed. Please contact me if you still have questions.

### **Erosion Control responsibilities**

Per Page 4, item 5(c) of the THP. As the landowner you are responsible for erosion control operations after timber operations have ceased and after the work completion report has been filed. The prescribed maintenance period for erosion is three years. You are also responsible for all vineyard development as outlined in the erosion control plan.

**Prescribed Maintenance Period** means the period, beginning with filing of the Timber Harvest Plan (THP) work completion report, provided the report is approved, during which time erosion control facilities which are required and constructed as part of a timber operation must be maintained in a functional condition. The period shall not exceed three years from the filing of the work completion report provided that the report is subsequently approved by the director.

### **912.7, 932.7, 952.7 Resource Conservation Standards for Minimum Stocking**

[All Districts, note (b)(1)(D)]

The following resource conservation standards constitute minimum acceptable stocking in the Coast [Northern, Southern] Forest District after timber operations have been completed.

- (a) Rock outcroppings, meadows, wet areas, or other areas not normally bearing commercial species shall not be considered as requiring stocking and are exempt from such provisions.
- (b) An area on which timber operations have taken place shall be classified as acceptably stocked if either of the standards set forth in (1) or (2) below are met within five (5) years after completion of timber operations unless otherwise specified in the rules.
  - (1) An area contains an average point count of 300 per acre on Site I, II and III lands or 150 on site IV and V lands to be computed as follows:
    - (A) Each countable tree [Ref. PRC § 4528(b)] which is not more than 4 inches d.b.h. counts 1 point.
    - (B) Each countable tree over 4 inches and not more than 12 inches d.b.h. counts 3 points.
    - (C) Each countable tree over 12 inches d.b.h. counts as 6 points.
    - (D) **[Coast]** Root crown sprouts will be counted using the average stump diameter 12 inches above average ground level of the original stump from which the sprouts originate, counting one sprout for each foot of stump diameter to a maximum of 6 per stump. **(D) [Northern]** Sprouts over 1 foot in height will be counted, counting one sprout for each 6 inches or part thereof of stump diameter to a maximum of 4 per stump. **(D) [Southern]** Root crown sprouts over 1 foot in height will be counted, using the average stump diameter at 1 foot above the average ground level of the original stump, counting 1 sprout for each foot of stump diameter to a maximum of 6 per stump.
  - (2) The average residual basal area measured in stems 1 inch or larger in diameter, is at least 85 square ft. per acre on Site I lands, and 50 square ft. per acre on lands of Site II classification or lower. Site classification shall be determined by the RPF who prepared the plan.
  - (3) To the extent basal area standards are specified in the rules in excess of 14 CCR § 912.7(b)(2) [932.7(b)(2), 952.7(b)(2)], up to 15 square feet of basal area of those standards higher than the minimum may be met by counting snags, and decadent or deformed trees of value to wildlife in the following sizes:
    - (A) 30 inches or greater d.b.h and 50 feet or greater in height on site I and II lands;
    - (B) 24 inches or greater d.b.h and 30 feet or greater in height on site III lands; and
    - (C) 20 inches or greater d.b.h and 20 feet or greater in height on site IV and V lands.

The substitution provided for in 14 CCR § 912.7(b)(3) [932.7(b)(2), 952.7(b)(2)] may only be done when the potential spread of insects and diseases will not have a significantly adverse impact on long term productivity or forest health.

- (c) The resource conservation standards of the rules may be met with Group A and/or B commercial species. The percentage of the stocking requirements met with Group A species shall be no less than the percentage of the stand basal area they comprised before harvesting. The site occupancy provided by Group A species shall not be reduced relative to Group B species. When considering site occupancy, the Director shall consider the potential long term effects of relative site occupancy of Group A species versus Group B species as a result of harvest. If Group A species will likely recapture the site after harvest, Group B species do not need to be reduced. The time frames for recapturing the site shall be consistent with achieving MSP. The Director may prohibit the use of Group A and/or B commercial species which are non-indigenous or are not physiologically suited to the area involved.

Exceptions may be approved by the Director if the THP provides the following information and those exceptions are agreed to by the timberland owner:

- (1) Explain and justify with clear and convincing evidence how using Group A nonindigenous, or Group B species to meet the resource conservation standards will meet the intent of the Forest Practice Act as described in PRC § 4513.

The discussion shall include at least:

- (A) The management objectives of the post-harvest stand;
- (B) A description of the current stand, including species composition and current stocking levels within the area of Group B species. The percentage can be measured by using point-count, basal area, stocked plot, or other method agreed to by the Director.
- (C) The percentage of the post-harvest stocking to be met with Group B species. Post harvest percentages will be determined on the basis of stocked plots. Only the methods provided by 14 CCR §§ 1070-1075 shall be used in determining if the standards of PRC § 4561 have been met.
- (D) A description of what will constitute a countable tree, as defined by PRC § 4528 for a Group B species and how such a tree will meet the management objectives of the post-harvest stand.

The Director, after an initial inspection pursuant to PRC § 4604, shall approve use of Group B species, as exceptions to the pre-harvest basal area percentage standard, if in his judgment the intent of the Act will be met, and there will not be an immediate significant and long-term harm to the natural resources of the state.

**Comments: These are the conifer tree planting standards CDF will hold you to if you do not complete the conversion process. This means complete the whole process, including the installation of the vineyard and associated infrastructure. This does not apply until operations have been started.**

### **923, 943, 963 Logging Roads and Landings** [All Districts]

All logging roads and landings in the logging area shall be planned, located, constructed, reconstructed, used, and maintained in a manner which: is consistent with long-term enhancement and maintenance of the forest resource; best accommodates appropriate yarding systems, and economic feasibility; minimizes damage to soil resources and fish and wildlife habitat; and prevents degradation of the quality and beneficial uses of water. The provisions of this article shall be applied in a manner which complies with this standard.

Factors that shall be considered when selecting feasible alternatives (see 14 CCR 897 and 898) shall include, but are not limited to, the following:

- (a) Use of existing roads whenever feasible.
- (b) Use of systematic road layout patterns to minimize total mileage.
- (c) Planned to fit topography to minimize disturbance to the natural features of the site.
- (d) Avoidance of routes near the bottoms of steep and narrow canyons, through marshes and wet meadows, on unstable areas, and near watercourses or near existing nesting sites of threatened or endangered bird species.
- (e) Minimization of the number of watercourse crossings.
- (f) Location of roads on natural benches, flatter slopes and areas of stable soils to minimize effects on watercourses.
- (g) Use of logging systems which will reduce excavation or placement of fills on unstable areas.

**Comments: These are the requirements for locating roads. In your case they don't apply since no roads are being built. All roads are existing. Avenues are not considered roads.**

**1035 Plan Submitter Responsibility**

The plan submitter, or successor in interest, shall:

- (a) Ensure that an RPF conducts any activities which require an RPF.
- (b) Provide the RPF preparing the plan or amendments with complete and correct information regarding pertinent legal rights to, interests in, and responsibilities for land, timber, and access as these affect the planning and conduct of timber operations.
- (c) Sign the THP certifying knowledge of the plan contents and the requirements of this section.
- (d) (1) Retain an RPF who is available to provide professional advice to the LTO and timberland owner upon request throughout the active timber operations regarding:
  - A) the plan,
  - B) the Forest Practice Rules, and
  - C) other associated regulations pertaining to timber operations,
 (2) The plan submitter may waive the requirement to retain an RPF to provide professional advice to the LTO and timberland owner under the following conditions:
  - A) the plan submitter provides authorization to the timberland owner to provide advice to the LTO on a continuing basis throughout the active timber operations provided that the timberland owner is a natural person who personally performs the services of a professional forester and such services are personally performed on lands owned by the timberland owner;
  - B) the timberland owner agrees to be present on the logging area at a sufficient frequency to know the progress of operations and advise the LTO, but not less than once during the life of the plan; and
  - C) the plan submitter agrees to provide a copy of the portions of the approved THP and any approved operational amendments to the timberland owner containing the General Information, Plan of Operations, THP Map, Yarding System Map, Erosion Hazard Rating Map and any other information deemed by the timberland owner to be necessary for providing advice to the LTO regarding timber operations.
 (3) All agreements and authorizations required under 14 CCR § 1035(d)(2) shall be documented and provided in writing to the Director to be included in the plan.
- (e) Within five working days of change in RPF responsibilities for THP implementation or substitution of another RPF, file with the Director a notice which states the RPF's name and registration number, address, and subsequent responsibilities for any RPF required fieldwork, amendment preparation, or operation supervision. Corporations need not file notification because the RPF of record on each document is the responsible person.
- (f) Provide a copy of the portions of the approved THP and any approved operational amendments to the LTO containing the General Information, Plan of Operations, THP Map, Yarding System Map, Erosion Hazard Rating Map and any other information deemed by the RPF to be necessary for timber operations.
- (g) Notify the Director prior to commencement of site preparation operations. Receipt of a burning permit is sufficient notice.
- (h) Disclose to the LTO, prior to the start of operations, through an on-the-ground meeting, the location and protection measures for any archaeological or historical sites requiring protection if the RPF has submitted written notification to the plan submitter that the plan submitter needs to provide the LTO with this information.

**Comments: As the plan submitter you will have this responsibility. As long as everything is going well these technicalities are not a problem. But if something goes wrong this is where individuals get into trouble.**

**1035.1 Registered Professional Forester Responsibility**

- (a) Upon submission of a THP, the RPF who prepares and signs a plan is responsible for the accuracy and completeness of its contents.
  - (1) The RPF preparing the plan shall state in the THP the work which will be performed by the RPF plan preparer (beyond preparation of the THP and attending the pre-harvest inspection if requested by the Director), and any additional work requiring an RPF which the plan preparer does not intend to perform. This may include, but is not limited to, field work in identifying watercourse and lake protection zones or special treatment areas, marking trees, or other activities. The RPF is only responsible for the activities set forth in the plan when employed for that purpose, or required by the rules of the Board. The RPF shall state whether or not he or she has been retained to provide professional advice throughout the timber operations.
  - (2) The RPF preparing the plan shall in writing, inform the plan submitter(s) of their responsibility pursuant to Section 1035 of this Article, and the timberland owner(s) of their responsibility for compliance with the requirements of the Act and where applicable, Board rules regarding site preparation, stocking, and maintenance of roads, landings, and erosion control facilities.
- (b) Upon entering into an agreement to accept responsibility for any part of the preparation or implementation of a plan or any work beyond the preparation of a plan, including providing professional advice; all responsible RPFs shall disclose to the real party of interest for whom the RPF is providing professional forestry services any known current or potential conflict of interest the RPFs have with regard to the timber or land that is subject to operations under the plan. All responsible RPFs shall disclose to the timberland owner and plan submitter whether they are the real party of interest for whom the RPF is providing professional forestry services.

- (c) Disclosure of newly discovered conflicts of interest an RPF has with regard to the plan submitter, timberland owner, timber owner, the LTO and timber purchaser, pertaining to the timber or land that is subject to operations under the plan, shall be required as long as an RPF has responsibilities relative to a plan. The disclosure shall include identification of the real party of interest for whom the RPF is providing professional forestry services.
- (d) All disclosures made between an RPF and an affected party pursuant to this section may be kept confidential.
- (e) An RPF retained by the plan submitter to provide professional advice throughout the timber operations shall be present, or ensure that the RPF's supervised designee is present, on the logging area at a sufficient frequency to know the progress of operations and advise the LTO and timberland owner, but not less than once during the life of the plan.
- (f) An RPF retained by the plan submitter to provide professional advice throughout the timber operations shall inform the LTO during operations of any mitigation measures incorporated into the plan that are intended to address operations that have a high likelihood of resulting in immediate, significant and long-term harm to the natural resources of the State if such mitigation measures are not strictly applied to minimize such impacts.
- (g) The RPF shall without delay notify in writing the LTO, the plan submitter, and the Department of a decision to withdraw professional services from the plan.

**Comments: These are my responsibilities, unless the landowner and/or plan submitter take them over.**

### 1035.2 Interaction Between RPF and LTO

After the start of the plan preparation process but before commencement of operations, the responsible RPF or supervised designee familiar with on-site conditions, shall meet with either the LTO, or supervised designee, who will be on the ground and directly responsible for the harvesting operation. The meeting shall be on-site if requested by either the RPF or LTO. An on-site meeting is required between the RPF or supervised designee familiar with on-site conditions and LTO to discuss protection of any archaeological or historical sites requiring protection if any such sites exist within the site survey area pursuant to Section 929.2[949.2,969.2](b). If any amendment is incorporated to the plan by an RPF after the first meeting, that RPF or supervised designee familiar with on-site conditions shall comply with the intent of this section by explaining relevant changes to the LTO; if requested by either that RPF or LTO, another on-site meeting shall take place. The intent of any such meeting is to assure that the LTO:

- (a) Is advised of any sensitive on-site conditions requiring special care during operations.
- (b) Is advised regarding the intent and applicable provisions of the approved plan including amendments.

**Comments: These are my responsibilities, unless the landowner and/or plan submitter take them over.**

### 1035.3 Licensed Timber Operator Responsibilities

Each affected licensed Timber Operator shall:

- (a) Sign the plan and major amendments to the plan, or sign and file with the Director a facsimile of such plan or amendments, agreeing to abide by the terms and specifications of the plan. This shall be accomplished prior to implementation of the following; which the affected LTO has responsibility for implementing:
  - 1) those operations listed under the plan and
  - 2) those operations listed under any amendments proposing substantial deviations from the plan.
- (b) Inform the responsible RPF or plan submitter, whether in writing or orally, of any site conditions which in the LTO's opinion prevent implementation of the approved plan including amendments.
- (c) Be responsible for the work of his or her employees and familiarize all employees with the intent and details of the operational and protection measures of the plan and amendments that apply to their work.
- (d) Keep a copy of the applicable approved plan and amendments available for reference at the site of active timber operations. The LTO is not required to possess any confidential addenda to the plan such as the Confidential Archaeological Addendum, nor is the LTO required to keep a copy of such confidential plan addenda at the site of active timber operations.
- (e) Comply with all provisions of the Act, Board rules and regulations, the applicable approved plan and any approved amendments to the plan.
- (f) In the event that the LTO executing the plan was not available to attend the on-site meeting to discuss archaeological site protection with the RPF or supervised designee familiar with on-site conditions pursuant to Section 929.2 [949.2,969.2] (b), it shall be the responsibility of the LTO executing the plan to inquire with the plan submitter, timberland owner, or their authorized agent, RPF who wrote the plan, or the supervised designee familiar with on-site conditions, in order to determine if any mitigation measures or specific operating instructions are contained in the Confidential Archaeological Addendum or any other confidential addendum to the plan.
- (g) Provide the RPF responsible for professional advice throughout the timber operations an on-site contact employee authorized by the LTO to receive RPF advice.
- (h) Keep the RPF responsible for professional advice throughout the timber operations advised of the status of timber operation activity.
  - (1) Within five days before, and not later than the day of the start-up of a timber operation, the LTO shall notify the RPF of

the start of timber operations.

- (2) Within five days before, and not later than the day of the shutdown of a timber operation, the LTO shall notify the RPF of the shutdown of timber operations.
- (A) The notification of the shutdown of timber operations is not required if the period of the shutdown does not extend beyond a weekend, including a nationally designated legal holiday.
- (i) Upon receipt of written notice of an RPF's decision to withdraw professional services from the plan, the LTO or on-site contact employee shall cease timber operations, except for emergencies and operations needed to protect water quality, until the LTO has received written notice from the plan submitter that another RPF has visited the plan site and accepts responsibility for providing advice regarding the plan as the RPF of record.

**Comments: These are the responsibilities of the Licensed Timber Operator, LTO.**

#### **1104 Operations Requiring Conversion**

Except as exempted by Sec. 1104.1 and 1104.2 of this article a timberland conversion permit issued by the Director is required for conversion of timberland as defined in Sec. 1100. Issuance of the Timberland Conversion Permit to the timberland owner must be completed before conversion operations begin. "Conversion operations" include final immediate rezoning of timberland production zone lands, and timber operations as defined in PRC 4527 on nontimberland production zone timberlands.

**Comments: I think this is straight forward. You do not have Timberland Production Zoning (TPZ), so no zoning change is required.**

#### **1104.3 Timberland Conversion Permit Fees**

The applicant shall pay an application fee in the amount of \$600 [NOTE: The fee is \$700 if the land is zoned TPZ, see 1105.1. Also, there are DFG fees.] for the cost of processing an application for the conversion of timberland to a non-timber growing use. Where the land proposed to be converted lies within a TPZ the applicant shall also follow the requirements of Section 1105.1. The fee(s) shall be submitted with the application to the appropriate regional headquarters. Where actual state cost exceeds the application fee, the additional charge equal to the excess cost will be computed using State Administrative Manual Sections 8752.1 and 8740 (dated March 1990). The Department will keep the applicant informed of any additional charges and will advise the applicant of any estimated future costs. All additional charges shall be paid by the applicant to the Department's Accounting Office before the issuance of the Timberland Conversion Permit. Costs of recording the documents pursuant to this article shall be paid by the applicant.

**Comments: Again, no TPZ. The \$600 usually does not change, but they have the ability to ask for more. The California Department of Fish and Wildlife (CDFW) fee is around \$2000, they keep changing it so we won't know until CDF (acting in CDFW's behalf) tells us.**

**All of the following are somewhat self explanatory.**

#### **1105 Application**

The conversion permit application shall be in a form prescribed by the Director and shall require but not be limited to the following information:

- The name and address of the applicant;
  - The name and address of the timberland owner of record;
  - The name and address of the timber owner;
  - The legal description, general plan designation, and zoned status of the proposed conversion area;
  - The proposed future use or uses of said area;
  - The dates when conversion is to be commenced and completed;
  - The approximate number of acres to be converted;
  - The zoned status of adjacent property;
  - A description of other land owned by the applicant in the surrounding area which could accommodate the proposed use or used;
  - Together with a copy of the conversion plan.
- The application shall be executed under penalty of perjury.

**1105.1 Application Fees**

In addition to the requirements of Section 1104.3, the applicant shall pay a fee in the amount of \$100 for the cost of processing an application for conversion where the land proposed to be converted lies within a TPZ. [NOTE: The total of CDF fees is \$700. There may be additional fees from DFG.] Fees for the recording of documents pursuant to this article shall be borne by the applicant.

**1105.2 Director's Determination**

The Director shall determine the applicant's bona fide intention to convert in light of the present and predicted economic ability of the applicant to carry out the proposed conversion; the environmental feasibility of the conversion, including, but not limited to, suitability of soils, slope, aspect, quality and quantity of water, and micro-climate; adequacy and feasibility of possible measures for mitigation of significant adverse environmental impacts; and other foreseeable factors necessary for successful conversion to the proposed land use.

**1105.3 Conversion Plan**

A conversion plan in a form prescribed by the Director shall become a part of the application. The plan conversion shall set forth in detail information pertaining to present and future use, soils, topography, conversion techniques, conversion time schedule and such other information as may be required and is applicable to the particular future use to which the land will be devoted.

**1105.4 Additional Proof**

The Director or the Board upon appeal may require that the applicant provide such further or additional proof or information as in the Director's or Board's judgment is necessary to allow him to decide whether or not to issue a conversion permit pursuant to PRC 4621.2 and 4623.

**1106 Conversion Permit Issuance**

(a) The Director shall issue a conversion permit if:

- (1) In his judgment the bona fide intent of the applicant to convert is established;
- (2) He makes the written findings pursuant to PRC 4621.2, when applicable;
- (3) He makes the written findings pursuant to PRC 21081, if an environmental impact report has been prepared;
- (4) He finds that necessary and feasible mitigation measures have been incorporated into the proposed conversion; and
- (5) He finds that no other proximate and suitable land not within a TPZ is available for the proposed alternative use for lands within a TPZ, if PRC 4621.2 applies.

(b) The Board upon appeal shall apply the same standards as the Director in subsection (a) above in determining whether to issue a conversion permit.

**1106.1 Contents of Conversion Permit**

The conversion permit shall include, but not be limited to, the name of the permittee, identification of code section of the forest practice rules and regulations from exempt, description of the lands to which the conversion permit is applicable, and the period of time during which the conversion permit is valid.

**1106.2 Timber Harvesting Plan Processing**

Prior to the start of timber operations, the applicant shall submit to the Director a Timber Harvesting Plan applicable to timber operations set forth in the conversion plan. The THP may be submitted concurrently with the Timberland conversion Permit application but the Director may not approve the THP until the Timberland Conversion Permit is issued.

**1106.3 Recordation, Renewal, Transferability**

- (a) The permittee shall submit the conversion permit to the County Recorder for recording in each county in which the property is located before beginning any operations contemplated under said permit. Amendments, suspensions, revocations, and cancellations of conversion permits shall be recorded in the same manner.
- (b) A conversion permit may be renewed by the Director upon a proper showing of cause and necessity by the permittee. The Director may deny renewal and require a new application if he finds that circumstances have substantially changed.
- (c) The privilege granted to the permittee is nontransferable and nonassignable for any purpose without written approval of the Director.

**1106.4 Conversion Permit Denial**

- (a) The Director shall deny a conversion permit:
  - (1) For any of the reasons set forth in PRC 4624;
  - (2) If, in the Director's judgment, the applicant has failed to provide satisfactory proof of his bona fide intent to convert;
  - (3) If the Director cannot make the findings required by PRC 21801, if an environmental impact report has been prepared;
  - (4) If the Director finds that necessary and feasible mitigation measures have not been incorporated into the proposed conversion; or
  - (5) For lands within a TPZ, if PRC 4621.2 applies and the Director finds that other proximate and suitable land not within a TPZ is available for the proposed alternative use.
- (b) The Board upon appeal shall deny a conversion permit for any of the reasons specified in subsection (a) above.

**1106.5 Denial, Suspension, Revocation**

- (a) Except as provided in subsection (b), the Director may deny, suspend or revoke a conversion permit in accordance with the requirements of Article 9 (commencing with Sec. 4621) of Chapter 8, Part 2, Division 4 of the PRC, provided that all proceedings in connection with such action shall be conducted in accordance with the provisions of Chapter 5 (commencing with Sec. 11500) of Part 1, Division 3, Title 2 of the Gov. C.
- (b) The Director may deny a conversion permit pursuant to PRC 4621.2(d) provided that all proceedings in connection with such action shall be conducted in accordance with the provisions of subsection (a) above, except that the applicant must request a hearing before the Board within 15 days of service of the denial. The hearing shall be commenced within 60 days from the filing of the appeal unless a later hearing date is mutually agreed upon by the applicant and the Board.

**1107 Cancellation by Permittee**

Upon application by the permittee for cancellation, the conversion permit may be cancelled by the Director upon such terms and conditions as he may set forth. Upon cancellation of the conversion permit, an agreement of cancellation, executed by the permittee and the Director, shall be recorded by the permittee in those counties in which the permit was originally recorded. Upon such recording, the subject land shall revert back to timberland and stocking shall be established pursuant to PRC 4561 and 4561.3. The Director shall provide a copy of the cancellation agreement to the county assessors and the county planning directors of those counties in which the property is located.

Contact me if you have further questions.

Sincerely



Scott R. Butler, RPF #1851

Adjacent landowners within 300' and 1000' downstream of the project boundary. Updated 10-4-2014, **mailed** 10-10-2014 •  
Updated 7-7-2915, no change.

Amazing Facts Inc  
P. O. Box 1058  
Roseville, CA 95678

Bercovich, Edward & Darleen  
1591 Ellis St #313 •  
Concord, CA 94520

Frost Fire Vineyards II, LLC  
15572 Computer Ln  
Huntington Beach, CA 92649

Jensen, Donald L  
1800 Atrium Pkwy Apt 449 •  
Napa, CA 94559

Napa County Land  
1700 Soscol Ave #20 •  
Napa, CA 94559

Helmer, Douglas & Beverly  
P. O. Box 518 •  
Angwin, CA 94508

Ashlandr LLC  
2615 Summit Lake Drive  
Angwin, CA 94508

Amazing Facts Inc  
P. O. Box 1058  
Roseville, CA 95678

Bercovich, Edward & Darleen  
1591 Ellis St #313  
Concord, CA 94520

Frost Fire Vineyards II, LLC  
15572 Computer Ln  
Huntington Beach, CA 92649

Jensen, Donald L  
1800 Atrium Pkwy Apt 449  
Napa, CA 94559

Napa County Land  
1700 Soscol Ave #20  
Napa, CA 94559

Helmer, Douglas & Beverly  
P. O. Box 518  
Angwin, CA 94508

Ashlandr LLC  
2615 Summit Lake Drive  
Angwin, CA 94508

Dina, Dino  
24 Jenna Ln  
Half Moon Bay, CA 94019

O'Shaughnessy, Dell Oso LLC  
P. O. Box 923  
Angwin, CA 94508

Howell Mountain Mutual Water Co.  
P. O. Box 9  
Angwin, CA 94508

Crain, Richard  
850 Friesen Dr.  
Angwin, CA 94508

Woolls, Paul & Betty  
P. O. Box 923  
Angwin, CA 94508

Manzanita & Dogwood  
P. O. Box 886  
Angwin, CA 94508

First Responder Support Network  
4460 Redwood Hwy #362  
San Rafael, CA 94903

Adamvs LLC  
501 White Cottage Ranch Road  
Angwin, CA 94508

Hogan, Michael & Roxanne  
785 Friesen Drive  
Angwin, CA 94508

Willard, Dudley  
1200 Brush Creek Rd  
Santa Rosa, 95404

Tillay, David and Jeannie  
P. O. Box 546  
Angwin, CA 94508

Beatty, Michael  
P. O. Box 926  
Angwin, CA 94508

Cabaud, Philip & Bozena  
5614 Cedar Creek Dr.  
Houston, TX 77056

Nicola, Della  
2292 Ceanothus Ave.  
Chico, CA 95926

Pina, John and Rickie  
P. O. Box 373  
Oakville, CA 94562

Trez, Joseph & Erika  
449 N. White Cottage Rd  
Angwin, CA 94508

Creek, Dorothea  
P. O. Box 244  
Angwin, CA 94508

Dotzler, Frank & Kathy  
P. O. Box J  
Angwin, CA 94508

Chesi, Richard & Kathy  
345 N. White Cottage Rd  
Angwin, CA 94508

Tirado, Brian & Tamara  
341 N. White Cottage Rd  
Angwin, CA 94508

Ermshar, Douglas & Susanne  
335 White Cottage Rd  
Angwin, CA 94508

Dearborn, Dana & Marie  
330 Buckeye Ln  
Angwin, CA 94508

Klingbeil, Shane & Jennifer  
P. O. Box 836  
Angwin, CA 94508

Teesdale, Dave & Debra  
P. O. Box 656  
Angwin, CA 94508

Scott, Daniel  
19827 223<sup>rd</sup> Ave.  
Woodinville, WA 98077

Vance, Robin & Maria  
497 College Ave.  
Angwin, CA 94508

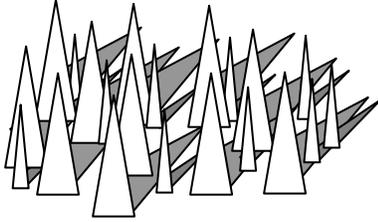
Ammon, Douglas & Cheryl  
315 N. White Cottage Rd  
Angwin, CA 94508

Butler, Joann  
3243 Rio Lino Ave.  
Healdsburg, CA 95448

Northrop, Penny & Thomas  
310 N. White Cottage Rd  
Angwin, CA 94508

Wiedmann, Melissa  
260 White Cottage Rd  
Angwin, CA 94508

Johns, Elaine  
320 N. White Cottage Rd  
Angwin, CA 94508  
APN: 024-152-021, 026



Environmental Resource Management  
 Scott R. Butler, RPF #1851  
 889 Hwy 20-26  
 Ontario, Oregon 97914  
 Office: (707) 468-8466 Fax: (707) 220-0111  
 email: [scott.butler@sbcglobal.net](mailto:scott.butler@sbcglobal.net)

Adjacent Landowner  
 Bell Canyon Watershed  
 Napa, California

10-10-2014

To Whom It May Concern:

You are listed as an adjacent landowner of a proposed timber harvest. Your property is within 300 feet, or within 1,000 feet downstream, and has the potential to receive surface drainage from the property proposed timber harvest. State law requires that I notify you of this activity.

I am a Registered Professional Forester preparing a Timber Harvest Plan (THP) on property near you. The proposed project consists of a 10 acre timber harvest, 3.6 acres of grass/brush removal and installation of a +/- 13.6 acre vineyard. The project is located within the Bell Canyon Watershed (Calwater #2206.500202). The project is located on an unnamed tributary of Bell Canyon, approximately 3 miles above the Bell Canyon Reservoir. Bell Canyon lies approximately 1500 feet south west of the proposed project. Legal description: A portion of the NW quarter of Sections 25, T9N, R6W, MDB&M. The town of Angwin in Napa County California lies approximately 3 miles South East of the project. See the attached map, a portion of the St. Helena quadrangle, for the exact location.

The logs harvested on the property will be manufactured on site. No heavy logging trucks will be allowed on Friesen Drive. All vehicles used under this permit will be required to drive slowly and recognize the existing rural and residential nature of the road and road surface.

Harvesting is expected to take place within the next year.

It should be pointed out that Napa County ordinances require the vineyard project to not increase erosion (hydrological and sediment) levels on the project over pre project condition. To that end the project incorporates an erosion control plan (ECP) designed by a licensed Civil Engineer. This project will also require the preparation of an Environmental Impact Report and is supported by Hydrological, Biological, Botanical, Geological and Archaeological studies.

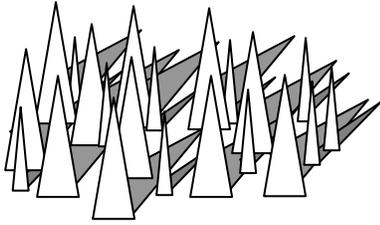
This letter is an official request for information. You (the property owner) are requested to respond within ten days of the post-marked date on this letter if you have any information or concerns. Please contact me at the above address in writing or by email.

Sincerely,

Scott R. Butler, RPF 1851

**Plan submitter**  
 Mike Davis  
 15572 Computer Ln.  
 Huntington Beach, CA 92649

Attached, Notice of intent  
 General Area Map  
 Project Area Map



Environmental Resource Management  
 Scott R. Butler, RPF #1851  
 889 Hwy 20-26  
 Ontario, Oregon 97914  
 Office: (707) 468-8466 Fax: (707) 220-0111  
 email: [scott.butler@sbcglobal.net](mailto:scott.butler@sbcglobal.net)

Friesen Drive, adjacent landowner  
 Bell Canyon Watershed  
 Napa, California

10-10-2014

To Whom It May Concern:

You are listed as an adjacent landowner of a proposed timber harvest at the end of Friesen Drive and Buckeye Lane. Your property is within 300 feet of these roads. State law requires that I notify you of this proposed timber harvest.

I am a Registered Professional Forester preparing a Timber Harvest Plan (THP) on property at the end of Friesen Road. The proposed project consists of a 10 acre timber harvest, 3.6 acres of grass/brush removal and installation of a +/- 13.6 acre vineyard. The project is located within the Bell Canyon Watershed (Calwater #2206.500202). The project is located on an unnamed tributary of Bell Canyon, approximately 3 miles above the Bell Canyon Reservoir. Bell Canyon lies approximately 1500 feet south west of the proposed project. Legal description: A portion of the NW quarter of Sections 25, T9N, R6W, MDB&M. The town of Angwin in Napa County California lies approximately 3 miles South East of the project. See the attached map, a portion of the St. Helena quadrangle, for the exact location.

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Harvesting is expected to take place within the next year.

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This letter is an official request for information. You (the property owner) are requested to respond within ten days of the post-marked date on this letter if you have any information or concerns. Please contact me at the above address in writing or by email.

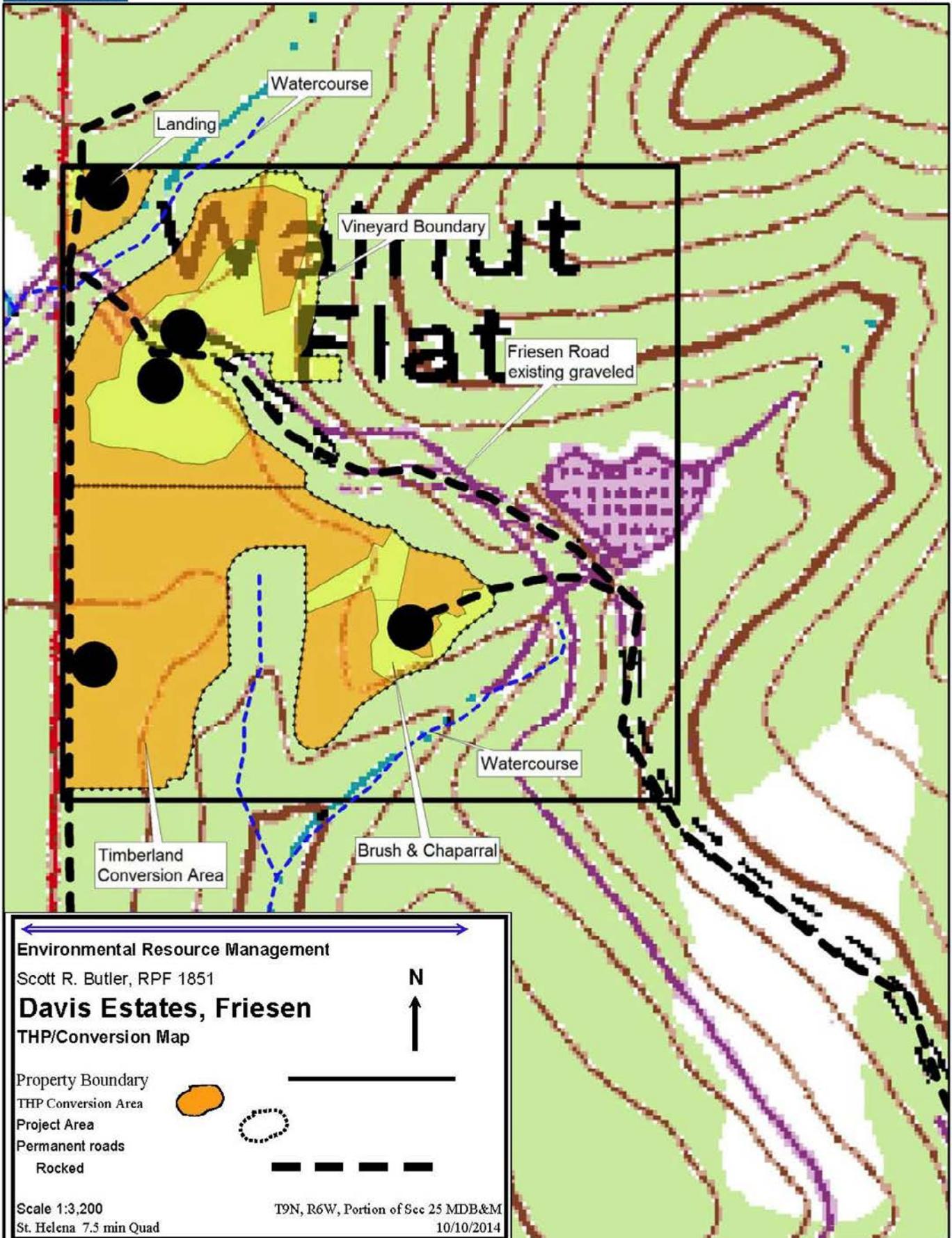
Sincerely,

Scott R. Butler, RPF 1851

**Plan submitter**

Mike Davis  
 15572 Computer Ln.  
 Huntington Beach, CA 92649

Attached, Notice of intent  
 General Area Map  
 Project Area Map



Environmental Resource Management  
 Scott R. Butler, RPF 1851  
**Davis Estates, Friesen**  
 THP/Conversion Map

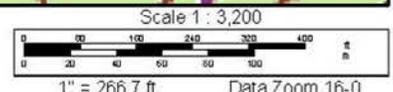
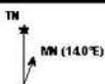
Property Boundary  
 THP Conversion Area  
 Project Area  
 Permanent roads  
 Rocked

Scale 1:3,200  
 St. Helena 7.5 min Quad  
 T9N, R6W, Portion of Sec 25 MDB&M  
 10/10/2014

Data use subject to license.

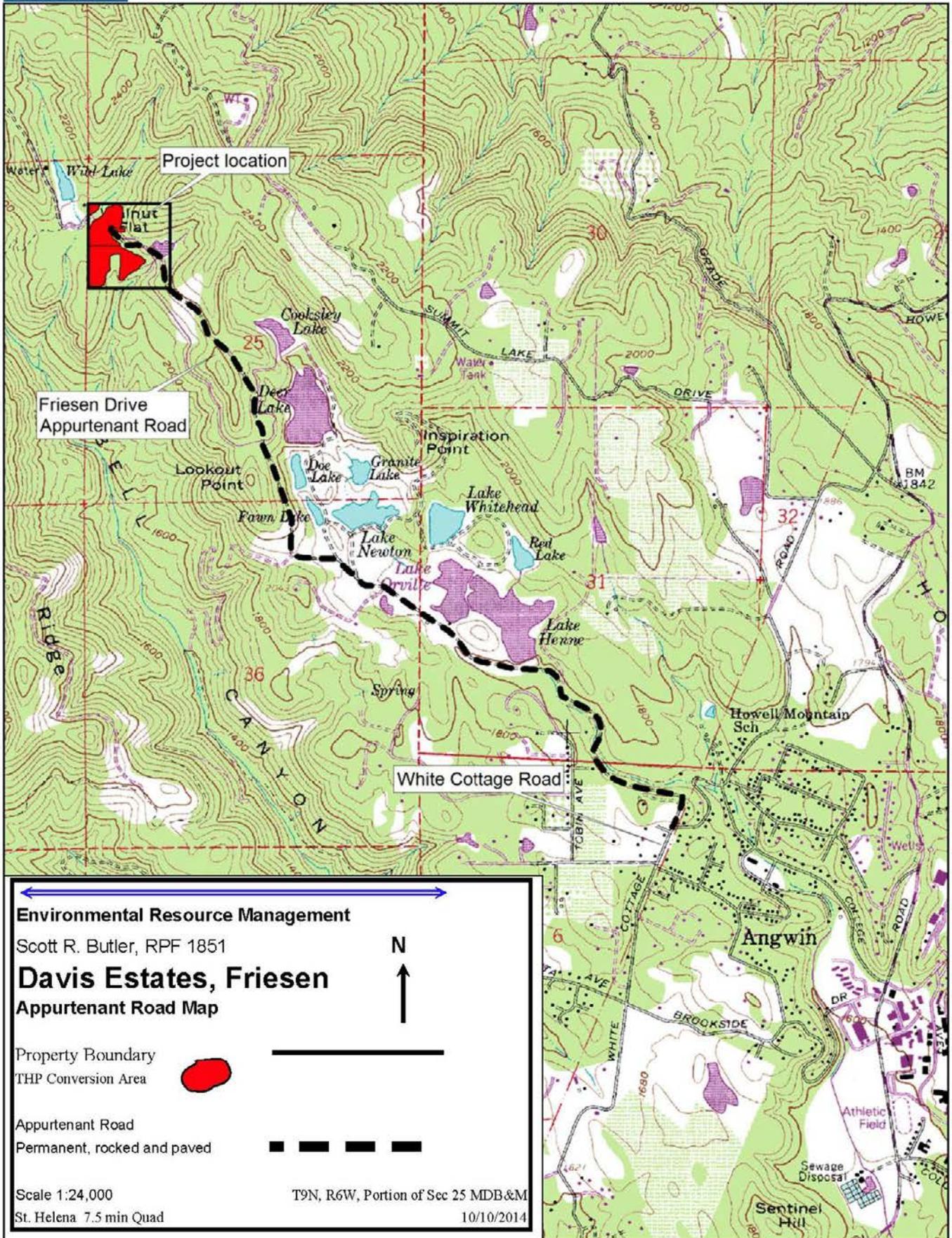
© DeLorme, XMap® 6.

www.delorme.com





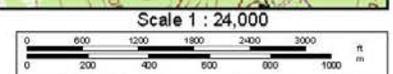
XMap® 6



Data use subject to license.

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www.delorme.com



**Response from Adjacent Land Owners**

Napa Valley Land Trust	10-15-2014
Howell Mtn Water Agency	10-31-2014
Ed Bercovich	10-15-2014

**Napa Valley Land Trust**



October 15, 2014

Environmental Resource Management  
Scott R. Butler, RPF #1851  
899 Hwy 20-26  
Ontario, Oregon 97914

Dear Mr. Butler,

This letter is in response to your letter of October 10, 2014 regarding a proposed timber harvest on the Davis Family Estates property on Friesen Drive. As noted in the original Notice of Preparation, this timber harvest is adjacent to the Land Trust's Dunn-Wildlake Preserve, which is a nature preserve that bounds the subject property on the west and east. We do have significant concerns about the timber harvest pertaining to loss of wildlife habitat, and would like to schedule a meeting between LTNC and Mr. Davis to discuss these impacts.

Thank you,

A handwritten signature in black ink that reads "Mike Palladini".

Mike Palladini  
Land Stewardship Manager  
Land Trust of Napa County



**Howell Mountain Water Company**

Print

[https://us-mg205.mail.yahoo.com/neo/launch?.partner=sbc&retry\\_ssl=1#mail](https://us-mg205.mail.yahoo.com/neo/launch?.partner=sbc&retry_ssl=1#mail)

---

**Subject:** RE: Proposed Timber Harvest at the end of Friesen Drive, Angwin CA

---

**From:** William Miller (hmmwco@napanet.net)

---

**To:** scott.butler@sbcglobal.net;

---

**Date:** Friday, October 31, 2014 2:59 PM

---

Scott,

Thanks for your response I'll pass this on.

Bill

---

**From:** Scott R. Butler [mailto:scott.butler@sbcglobal.net]  
**Sent:** Friday, October 31, 2014 4:34 AM  
**To:** William Miller  
**Cc:** 'Bernie Aaen'; Bill Mundy; Delmer Fjarli; Frank Dotzler; Graham Baskerville; 'Patrick Reeves'; Shane Klingbeil; Drew Aspegren; Davie Pina; Annalee Sanborn; Pete Bontadelli  
**Subject:** Re: Proposed Timber Harvest at the end of Friesen Drive, Angwin CA

Mr. Miller,

Thank you for the email. You requested a response to the following two questions.

- 1. that the parties involved be responsible for any damage caused by this activity to the roads and bridge leading to the site. As an example, damage to the road surface can cause runoff into our watershed contaminating our water supply.*
- 2. That our watershed be protected at all costs. Improper containment and cleanup of the site can have a long term impact on the watershed and the surrounding environment.*

We recognize the responsibility we have toward use of the road and road surfaces. To this end we do not plan to haul logs on the road. This fact will be included in the Timber Harvest Plan and Environmental Impact Report being prepared for the project. Logs will be milled, onsite, into lumber using a small portable sawmill.

We understand the need to protect the watershed and surrounding environment, to this end an Environmental Impact Report is being prepared for use in the approval process of the permits needed for the California Department of Forestry and Napa County Planning. This report will be made available to the public for public input in the near future. All of the vineyard and related infrastructure as proposed is located below the existing drainage ditch that carries surface water to your water company. This alone should insure that the project does not impact your watershed. However the EIR for the proposed project will also address the use of chemicals, fuels, dust etc that can be expected to result from this proposed project.

**Howell Mountain Water Company**

Print

[https://us-mg205.mail.yahoo.com/neo/launch?.partner=sbc&retry\\_ssl=1#mail](https://us-mg205.mail.yahoo.com/neo/launch?.partner=sbc&retry_ssl=1#mail)

Please feel free to contact me if you have additional questions, I will be available next week to meet onsite, with someone from your organization if you wish.

Thank you,  
Scott R. Butler

Scott R. Butler  
Environmental Resource Management  
889 Hwy 20-26, Ontario, OR 97914  
(707) 468-8466, fax (707) 220-0111

---

**From:** William Miller <[hmmwco@napanet.net](mailto:hmmwco@napanet.net)>  
**To:** [scott.butler@sbcglobal.net](mailto:scott.butler@sbcglobal.net)  
**Cc:** 'Bernie Aaen' <[baaen@aaenlaw.com](mailto:baaen@aaenlaw.com)>; Bill Mundy <[bmundy@puc.edu](mailto:bmundy@puc.edu)>; Delmer Fjarli <[mdfjarli@sbcglobal.net](mailto:mdfjarli@sbcglobal.net)>; Frank Dotzler <[Frank@outpostwines.com](mailto:Frank@outpostwines.com)>; Graham Baskerville <[grahambaskerville@comcast.net](mailto:grahambaskerville@comcast.net)>; 'Patrick Reeves' <[patrickr@napanet.net](mailto:patrickr@napanet.net)>; Shane Klingbeil <[sklingbeil@sbcglobal.net](mailto:sklingbeil@sbcglobal.net)>  
**Sent:** Wednesday, October 22, 2014 12:47 PM  
**Subject:** Proposed Timber Harvest at the end of Friesen Drive, Angwin CA

Mr. Butler,

Howell Mountain Mutual Water Company is responding to the letter received on 10/14/2014 concerning the proposed timber harvest at the end of Friesen Drive and Buckeye Lane in Angwin. Since activity in this area can affect our watershed Our Board President, Dr. Delmer Fjarli, wanted to convey the following requests:

1. That the parties involved be responsible for any damage caused by this activity to the roads and bridge leading to the site. As an example, damage to the road surface can cause runoff into our watershed contaminating our water supply.
2. That our watershed be protected at all costs. Improper containment and cleanup of the site can have a long term impact on the watershed and the surrounding environment.

Your response to this communication will be appreciated.

Bill Miller

Office Manager  
Howell Mountain Mutual Water Company, Inc.  
PO Box 9  
1100 Friesen Drive  
Angwin CA 94508  
707-965-2205 Office  
707-965-2655 Fax  
[HMMWCo@Napanet.net](mailto:HMMWCo@Napanet.net)

**Ed Bercovich**

Print

[https://us-mg205.mail.yahoo.com/neo/launch?partner=sbc&retry\\_ssl=1#mail](https://us-mg205.mail.yahoo.com/neo/launch?partner=sbc&retry_ssl=1#mail)

---

**Subject:** Friesen Road Timber Harvest

---

**From:** Edward Bercovich (edticket@yahoo.com)

---

**To:** scott.butler@sbcglobal.net;

---

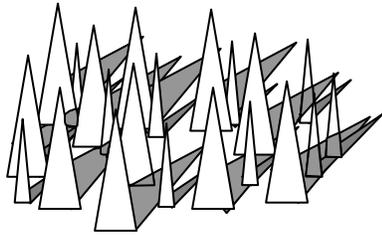
**Date:** Wednesday, October 15, 2014 10:53 AM

---

Dear Mr. Scott Butler,

We have no objection to the timber removal on our property that Mr. Mike Davis is planning. We have sold that property to him on a Lease Option and will comply with his requests. Thank you for the notice.

Sincerely,  
Edward and C. Darleen Bercovich



Environmental Resource Management  
Scott R. Butler, RPF #1851  
889 Hwy 20-26  
Ontario, OR 97914  
Phone: (707) 468-8466 Fax: (707) 220-0111  
Email: [scott.butler@sbcglobal.net](mailto:scott.butler@sbcglobal.net)

Napa Valley Register  
Attn: Margaret, Legal notices  
P. O. Box 150  
Napa, CA 94559  
Fax: 256-0743

10-10-2014 **Mailed**

Email: [nvrlegals@napanews.com](mailto:nvrlegals@napanews.com)

To Whom It May Concern:

Please place the following Legal notice in the Napa Valley Register on the earliest date possible.

*This is a request for information on any domestic water supply located within 1,000 feet downstream from a proposed 10 acre timber harvest and conversion. The proposed project consists of a 10 acre timber harvest, 3.6 acres of grass/brush removal and installation of a +/- 13.6 acre vineyard. The project is located within the Bell Canyon Watershed (Calwater #2206.500202). The project is located on an unnamed tributary of Bell Canyon, approximately 3 miles above the Bell Canyon Reservoir. Bell Canyon lies approximately 1500 feet south west of the proposed project. Legal description: A portion of the NW quarter of Sections 25, T9N, R6W, MDB&M. The town of Angwin in Napa County California lies approximately 3 miles South East of the project. The nearest road intersection is White Cottage Road and Buckeye Lane , 2.75 miles SE of the project area. Send information within 10 days of the publication of this notice to: Environmental Resource Management 889 Hwy 20-26 Ontario, OR 97914*

Please call me, at the number listed above, or email to confirm, thank you for your assistance.  
Sincerely

**Scott R. Butler**

\*\*\* Proof of Publication \*\*\*

AFFIDAVIT OF PUBLICATION NAPA VALLEY REGISTER

Environmental Resources Management
889 Hwy 20-26
Ontario, OR 97914

ORDER NUMBER 33796

STATE OF CALIFORNIA

COUNTY OF NAPA

I AM A CITIZEN OF THE UNITED STATES AND A RESIDENT OF THE COUNTY AFORESAID; I AM OVER THE AGE OF EIGHTEEN YEARS, AND NOT A PART TO OR INTERESTED IN THE ABOVE-ENTITLED MATTER. I AM THE PRINCIPAL CLERK OF THE NAPA VALLEY REGISTER, A NEWSPAPER OF GENERAL CIRCULATION, PRINTED AND PUBLISHED DAILY IN THE CITY OF NAPA, COUNTY OF NAPA, AND WHICH NEWSPAPER HAS BEEN ADJUDGED A NEWSPAPER OF GENERAL CIRCULATION BY THE SUPERIOR COURT OF THE COUNTY OF NAPA, STATE OF CALIFORNIA, UNDER THE DATE OF NOVEMBER 16, 1951, CASE NUMBER 12752.

THAT I KNOW FROM MY OWN PERSONAL KNOWLEDGE THE NOTICE, OF WHICH THE ANNEXED IS A PRINTED COPY (SET IN TYPE NOT SMALLER THAN NONPAREIL), HAS BEEN PUBLISHED IN EACH REGULAR AND ENTIRE ISSUE OF SAID NEWSPAPER AND NOT IN ANY SUPPLEMENT THEREOF ON THE FOLLOWING DATES, TO-WIT:

PUBLISHED ON: 10/18/2014

PUBLIC NOTICE

This is a request for information on any domestic water supply located within 1,000 feet downstream from a proposed 10 acre timber harvest and conversion. The proposed project consists of a 10 acre timber harvest, 3.6 acres of grass/brush removal and installation of a +/- 13.6 acre vineyard. The project is located within the Bell Canyon Watershed (Calwater #2206.50020-2). The project is located on an unnamed tributary of Bell Canyon, approximately 3 miles above the Bell Canyon Reservoir. Bell Canyon lies approximately 1500 feet south west of the proposed project. Legal description: A portion of the NW quarter of Sections 25, T9N, R6W, MDB&M. The town of Angwin in Napa County California lies approximately 3 miles South East of the project. The nearest road intersection is White Cottage Road and Buckeye Lane, 2.75 miles SE of the project area. Send information within 10 days of the publication of this notice to: Environmental Resource Management 889 Hwy 20-26 Ontario, OR 97914, 10/17, #33796

TOTAL AD COST: 73.99

FILED ON: 10/20/2014

I CERTIFY (OR DECLARE) UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT.

DATED AT NAPA COUNTY, CALIFORNIA,

THIS 20th DAY OF October 2014
SIGNATURE [Handwritten Signature]

# NOTICE OF INTENT TO HARVEST TIMBER

A Timber Harvesting Plan (Plan) or Amendment has been submitted to the California Department of Forestry & Fire Protection (CAL FIRE). CAL FIRE will be reviewing the proposed timber operation for compliance with State law and rules of the Board of Forestry and Fire Protection. The following briefly describes the proposed timber operation and where and how to get more information. In accordance with the timeline stated under Public Resources Code Section 4582.7, you may submit written public comments on the Plan or Amendment for CAL FIRE to consider.

**This notice applies to (select one below):**

- New Timber Harvesting Plan                       Amendment to an Approved Timber Harvesting Plan

**Applicant Information** (Timberland Owner(s), Registered Professional Forester who prepared the plan and Plan Submitter should match those listed in the plan or amendment.)

1. The name(s) of the Timberland Owner(s) where timber operations are to occur: **Edward Bercovich, Frost Fire Vineyards II**
2. Registered Professional Forester who prepared the plan or amendment: **Scott R. Butler**  
Registered Professional Forester Phone (optional): **707 468-8466**
3. The name of the Plan or Amendment Submitter: **Mike Davis**

**Project Summary** (County, legal description, acres proposed to be harvested and treatments to be used should match those listed in the plan or amendment.)

4. Location of the proposed timber operation (county, legal description, approximate direction & approximate distance of the timber operation from the nearest community or well-known landmark):  
**Napa County California. Legal description: Portion of NW quarter of Section 25, T9N, R6W MDB&M. The town of Angwin in Napa County California, lies approximately 3 miles South East of the project.**
5. The name of, and distance from, the nearest perennial stream and major watercourse flowing through or downstream from the timber operation:  
**The project is located within the Bell Canyon Watershed (Calwater #2206.500202). The project is located on an unnamed tributary of Bell Canyon, approximately 3 miles above the Bell Canyon Reservoir. Bell Canyon lies approximately 1500 feet South West of the proposed project**
7. The regeneration methods and intermediate treatments to be used:  
**Timberland Conversion, 10 acres, 3.6 acres cleared of grass/brush. Installation of a +/- 13.6 acre Vineyard.**
8.  Yes  No Is there a known overhead power line, except lines from transformers to service panels, within the plan area?

**Public Information:** The review times allowed for CAL FIRE to review the proposed timber operation are variable in length, but limited. To ensure CAL FIRE receives your comments please read the following:

The estimated earliest possible date CAL FIRE may **APPROVE** the Plan or Amendment is: **7-24-2015**  
(This date is 15 calendar days from receipt of the Plan or Amendment by CAL FIRE, except in counties for which special rules have been adopted where the earliest date is 45 calendar days after receipt.)

**NOTE: THE ESTIMATED EARLIEST APPROVAL DATE IS PROBABLY NOT THE ACTUAL APPROVAL DATE.** Normally, a much longer period of time is available for public comment and preparation of CAL FIRE's responses to public comments. Please check with CAL FIRE, prior to the above listed date, to determine the actual date that the public comment period closes.

The public may review, or purchase a copy of, the Plan or Amendment at the CAL FIRE Review Team Office shown below. The cost to obtain a copy is 37 cents for each page, \$2.50 minimum per request. The cost to obtain a copy of this plan or amendment is: \_\_\_\_\_ (to be completed by CAL FIRE upon receipt of plan).

Questions or concerns regarding this plan should be directed to the CAL FIRE Review Team Office shown below or emailed to [SantaRosaPublicComment@fire.ca.gov](mailto:SantaRosaPublicComment@fire.ca.gov) for incorporation into an Official Response Document. Please include the plan number on all correspondence.

Forest Practice Program Manager  
CAL FIRE  
135 Ridgway Avenue  
Santa Rosa, CA 95401  
(707) 576-2959

The plan may be viewed online at [http://thp.fire.ca.gov/THPLibrary/North\\_Coast\\_Region](http://thp.fire.ca.gov/THPLibrary/North_Coast_Region)

A map showing the approximate boundary of the THP area, a map legend, and a scale is attached to help in locating where the proposed timber operation is to occur.

**For CAL FIRE Use Only**

Timber Harvest Plan Number:

Date of Receipt:

## THP Appendices

THP Appendices that are identical to Draft EIR appendices are not reprinted here, but can be found in the Draft EIR as follows:

THP Appendix	Report Name	Corresponding Location in Draft EIR
A	Davis Friesen Draft EIR	Draft EIR
B	Erosion Control Plan	Draft EIR Appendix B
C	<i>Intentionally left blank</i>	
D	Biological Resources Report	Draft EIR Appendix D
E	Hydrologic Analysis	Draft EIR Appendix E
F	Erosion Assessment	Draft EIR Appendix F
G	Engineering Geological Evaluation	Draft EIR Appendix G
H	Timber Harvest Plan	Draft EIR Appendix H
I	Timber Conversion Plan	Draft EIR Appendix I
J	Integrated Pest Management	Draft EIR Appendix J
K	Archaeological Survey Report, CAA (confidential)	Draft EIR Appendix K
L	Technical Adequacy	Draft EIR Appendix L
M	NRCS Soil Report	Draft EIR Appendix M
N	Adjacent Landowners and Friesen Road	<i>Printed below.</i>
O	Water Demand and Water Availability Analysis	Draft EIR Appendix N
P	Northern Spotted Owl Survey and Report	Draft EIR Appendix O
Q	Pictures	<i>Printed below.</i>
R	Anamosa Soil Report	Draft EIR Appendix M

18-06

Tax Area Code  
55000, 55001, 65000, 65001

T.9N., R.6W., M.D.B.&M.

77002

55001

55000

55000

55000

55000

55000

55000

55000

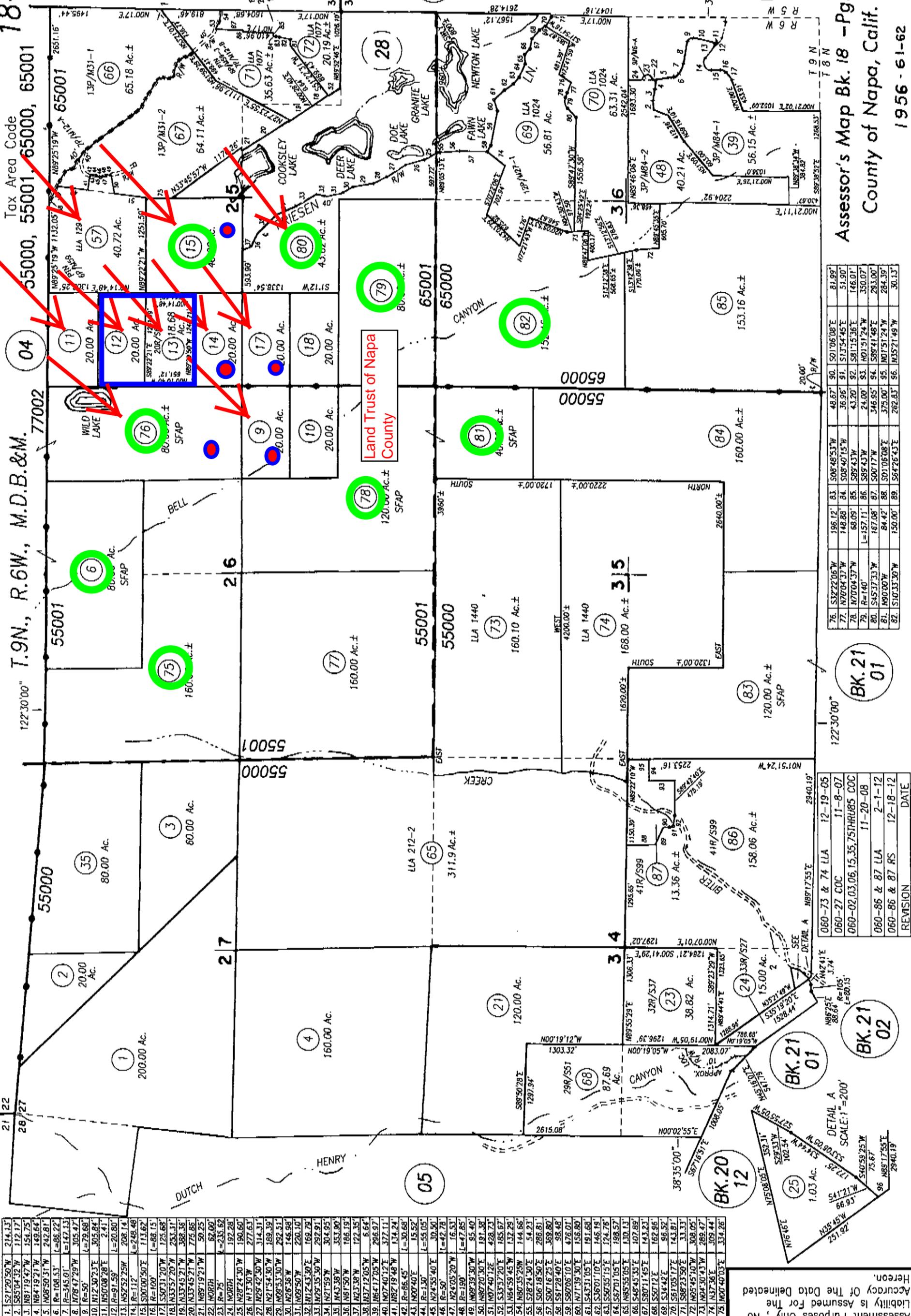
55000

55000

55000

55000

55000



1.	S121°20'50"W	214.13'
2.	S85°04'32"W	112.17'
3.	N87°19'47"W	151.75'
4.	N84°19'21"W	149.64'
5.	N06°50'31"W	242.81'
6.	R=108.53'	L=86.22'
7.	R=545.01'	L=147.13'
8.	N78°47'29"W	305.47'
9.	R=50'	L=79.68'
10.	N12°30'23"E	305.84'
11.	N50°08'28"E	2.41'
12.	R=91.59'	L=20.80'
13.	N52°52'25"W	208.14'
14.	R=112'	L=248.48'
15.	S00°00'50"E	113.62'
16.	R=100'	L=88.15'
17.	S50°31'20"W	125.68'
18.	N33°57'20"W	253.31'
19.	N33°45'21"W	388.38'
20.	N33°45'21"W	775.86'
21.	N89°19'21"W	50.25'
22.	NORTH	82.00'
23.	R=75'	L=235.62'
24.	NORTH	192.28'
25.	N28°24'30"W	190.60'
26.	N13°30'W	277.63'
27.	N29°42'50"W	314.31'
28.	N21°54'30"W	189.39'
29.	N09°53'30"W	292.51'
30.	N26°58'W	146.98'
31.	N09°50'W	220.10'
32.	N12°43'30"E	169.79'
33.	N29°15'30"W	292.91'
34.	N21°59'W	304.95'
35.	N44°38'W	353.90'
36.	N61°50'W	186.19'
37.	N23°38'W	122.35'
38.	N37°12'05"W	6.64'
39.	N64°17'05"W	296.97'
40.	N07°40'12"E	377.11'
41.	N82°19'48"W	134.24'
42.	R=86.45'	L=30.68'
43.	N00°40'E	19.52'
44.	R=130'	L=55.05'
45.	N24°55'40"E	30.50'
46.	R=50'	L=42.78'
47.	N24°05'20"W	16.53'
48.	R=190'	L=47.85'
49.	N08°39'30"W	95.40'
50.	N08°20'30"W	191.38'
51.	N07°40'12"E	428.73'
52.	S33°57'20"E	185.67'
53.	N64°59'45"W	132.29'
54.	N07°15'25"W	144.66'
55.	S28°24'50"E	54.23'
56.	S06°18'50"E	286.81'
57.	S00°16'25"E	369.80'
58.	S61°28'40"E	98.48'
59.	S08°08'10"E	476.01'
60.	N71°39'30"E	156.80'
61.	S43°31'05"E	191.68'
62.	S36°01'10"E	145.19'
63.	S56°55'15"E	124.76'
64.	S66°01'05"E	198.57'
65.	N85°55'05"E	130.13'
66.	S48°45'35"E	407.89'
67.	S80°11'45"E	143.23'
68.	S54°42'E	162.86'
69.	S34°42'E	96.52'
70.	S61°05'17"E	143.81'
71.	S88°23'50"E	33.33'
72.	N85°45'10"W	308.05'
73.	N04°30'43"W	289.47'
74.	N37°36'E	309.44'
75.	N80°17'55"E	2940.19'
76.	N60°40'03"E	334.26'

NOTE: This Map Was Prepared For Assessment Purposes Only, No Liability is Assumed For The Accuracy Of The Data Delineated Herein.

76.	S32°22'05"W	196.12'	83.	S00°48'53"W	48.67'	90.	S01°06'08"E	81.99'
77.	N70°04'37"W	148.89'	84.	S08°40'15"W	36.96'	91.	S13°54'45"E	51.90'
78.	N70°04'37"W	68.09'	85.	S09°43"W	43.20'	92.	S81°15'36"E	146.01'
79.	R=140'	L=157.11'	86.	S09°43"W	24.00'	93.	N01°51'24"W	350.07'
80.	S45°37'13"W	167.08'	87.	S00°17"W	346.95'	94.	S88°41'48"E	293.00'
81.	N90°00"W	84.42'	88.	S01°06'08"E	375.00'	95.	N01°51'24"W	284.39'
82.	S10°33'30"W	150.00'	89.	S64°26'43"E	262.83'	96.	N35°21'49"W	90.13'

060-73 & 74 LLA	12-19-05
060-27 COC	11-8-07
060-02,03,06,15,35,75,THRU85 COC	
060-86 & 87 LLA	11-20-08
060-86 & 87 RS	12-18-12
060-86 & 87 RS	12-18-12
REVISION	DATE

21	120.00 Ac.±
22	160.00 Ac.±
23	38.82 Ac.±
24	15.00 Ac.±
25	1.03 Ac.±
26	60.00 Ac.±
27	20.00 Ac.±
28	20.00 Ac.±
29	20.00 Ac.±
30	20.00 Ac.±
31	20.00 Ac.±
32	20.00 Ac.±
33	20.00 Ac.±
34	20.00 Ac.±
35	20.00 Ac.±
36	20.00 Ac.±
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38	20.00 Ac.±
39	20.00 Ac.±
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44	20.00 Ac.±
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47	20.00 Ac.±
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87	20.00 Ac.±
88	20.00 Ac.±
89	20.00 Ac.±
90	20.00 Ac.±
91	20.00 Ac.±
92	20.00 Ac.±
93	20.00 Ac.±
94	20.00 Ac.±
95	20.00 Ac.±
96	20.00 Ac.±

Assessor's Map Bk. 18 -Pg.06  
County of Napa, Calif.  
1956-61-62

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

<a href="#">Co / APN ▲</a> (View Detail) 	Owner Name	Situs Address
<input type="checkbox"/> <a href="#">NAP 018-060-001-000</a>	JOHNSON RUDIN M JR	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-002-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-003-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-004-000</a>	ALEXANDER DEBORAH	<b>505 DUTCH HENRY CANYON RD</b> CALISTOGA CA 94515-9645
<input type="checkbox"/> <a href="#">NAP 018-060-006-000</a>	NAPA COUNTY LAND	ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-009-000</a>	OBRIEN JOHN D & SHARRON J	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-010-000</a>	HENRI WILLIAM DONALD	ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-011-000</a>	AMAZING FACTS INC	<b>3505 FRIESEN DR</b> ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-012-000</a>	BERCOVICH EDWARD L & DARLEEN	ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-013-000</a>	FROSTFIRE VINEYARDS II LLC	ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-014-000</a>	JENSEN DONALD L	ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-015-000</a>	NAPA COUNTY LAND	ANGWIN CA
 <input type="checkbox"/> <a href="#">NAP 018-060-017-000</a>	HELMER DOUGLAS & BEVERLY	<b>3335 FRIESEN DR</b> ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-018-000</a>	JENSEN FLOYD WILBUR	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-021-000</a>	LOUGHLIN MICHAEL J	<b>375 DUTCH HENRY CANYON RD</b> CALISTOGA CA 94515-9602
<input type="checkbox"/> <a href="#">NAP 018-060-024-000</a>	9 BUTTON VINEYARD LLC	<b>701 LOMMEL RD</b> CALISTOGA CA 94515-9649
<input type="checkbox"/> <a href="#">NAP 018-060-025-000</a>	781466 ALBERTA LTD	<b>600 LOMMEL RD</b> CALISTOGA CA 94515-9607
<input type="checkbox"/> <a href="#">NAP 018-060-035-000</a>	NAPA COUNTY LAND	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-060-039-000</a>	DIMMICK JENS W	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-060-048-000</a>	HORNBERGER MARK ROBERT & ADELAIDE WILSON	<b>975 BELL CANYON RD</b> ANGWIN CA 94508-9691

<input checked="" type="checkbox"/>	NAP <a href="#">018-060-057-000</a>	ASHLANDR LLC	<b>2615 SUMMIT LAKE DR</b> ANGWIN CA 94508-9788
<input type="checkbox"/>	NAP <a href="#">018-060-065-000</a>	WAGNER JOSEPH J & AMBER N	<b>560 LOMMEL RD</b> CALISTOGA CA 94515-9607
<input type="checkbox"/>	NAP <a href="#">018-060-066-000</a>	ASHLANDER LLC	<b>2600 SUMMIT LAKE DR</b> ANGWIN CA 94508-9788
<input type="checkbox"/>	NAP <a href="#">018-060-067-000</a>	ASHLANDER LLC	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-060-069-000</a>	DINA DINO	<b>1185 FRIESEN DR</b> ANGWIN CA 94508-9670
<input type="checkbox"/>	NAP <a href="#">018-060-070-000</a>	OSHAUGHNESSY DEL OSO LLC	<b>1150 FRIESEN DR</b> ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-060-071-000</a>	RATTLESNAKE RIDGE LLC	<b>2575 SUMMIT LAKE DR</b> ANGWIN CA 94508-9803
<input type="checkbox"/>	NAP <a href="#">018-060-072-000</a>	ROBERT CRAIG WINERY LP	<b>2475 SUMMIT LAKE DR</b> ANGWIN CA 94508-9782
<input type="checkbox"/>	NAP <a href="#">018-060-073-000</a>	KOKA LLC	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-074-000</a>	WAGNER JOSEPH J & AMBER N	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-075-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input checked="" type="checkbox"/>	NAP <a href="#">018-060-076-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-077-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-078-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-079-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input checked="" type="checkbox"/>	NAP <a href="#">018-060-080-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-081-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-082-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-083-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-084-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-085-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-086-000</a>	CALISTOGA RANCH CLUB	<b>580 LOMMEL RD</b> CALISTOGA CA 94515-9607
<input type="checkbox"/>	NAP <a href="#">018-060-087-000</a>	PROVO LAND PARTNERS LLC	CALISTOGA CA 94515
<input type="checkbox"/>	NAP <a href="#">018-060-088-000</a>	PEJU PROVINCE WINERY	<b>321 DUTCH HENRY CANYON RD</b> CALISTOGA CA 94515-9602

<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>		
<input type="checkbox"/> <b>Property Address:</b>				
<b>Ownership</b>				
Parcel# (APN):	<b>018-060-009-000</b>			
Parcel Status:	<b>ACTIVE</b>			
Owner Name:	<b>OBRIEN JOHN D &amp; SHARRON J</b>			
Mailing Addr:	<b>302 SUNSET RD PLEASANT HILL CA 94523</b>			
Legal Description:				
<b>Assessment</b>				
Total Value:	<b>\$4,134</b>	Use Code: <b>30</b>		
Land Value:	<b>\$4,134</b>	Use Type: <b>VACANT</b>		
Impr Value:		Tax Rate Area: <b>055-001</b>		
Other Value:		Zoning:		
% Improved:		Year Assd: <b>2012</b>		
Exempt Amt:		Census Tract:		
		Property Tax: <b>\$65.12</b>		
		Price/SqFt:		
		Delinquent Yr:		
		HO Exempt: <b>N</b>		
<b>Sale History</b>				
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>	<b>Transfer</b>
Recording Date:	<b>05/08/2012</b>			<b>07/09/2012</b>
Recording Doc:	<a href="#"><u>2012R0011961</u></a>			<a href="#"><u>2012R0017738</u></a>
Rec. Doc Type:				
Transfer Amount:				
Seller (Grantor):	<b>CAMP JACKLYN RAMSAY ETAL</b>			
1st Trust Dd Amt:				
2nd Trust Dd Amt:				
<b>Property Characteristics</b>				
Bedrooms:		Fireplace:		Units:
Baths (Full):		A/C:		Stories:
Baths (Half):		Heating:		Quality:
Total Rooms:		Pool:		Building Class:
Bldg/Liv Area:		Park Type:		Condition:
Lot Acres:	<b>20.000</b>	Spaces:		Site Influence:
Lot SqFt:	<b>871,200</b>	Garage SqFt:		Timber Preserve:
Year Built:		Bsmt SqFt:	<b>N/A</b>	Ag Preserve:
Effective Year:				

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www.parcelquest.com  
(888) 217-8999

<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address: 3505 FRIESEN DR ANGWIN CA</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-011-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>AMAZING FACTS INC</b>		
Mailing Addr:	<b>PO BOX 1058 ROSEVILLE CA 95678</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$104,823</b>	Use Code:	<b>30</b>
Land Value:	<b>\$104,823</b>	Use Type:	<b>VACANT</b>
Impr Value:		Tax Rate Area:	<b>065-001</b>
Other Value:		Year Assd:	<b>2013</b>
% Improved:		Census Tract:	
Exempt Amt:		Property Tax:	<b>\$1,125.72</b>
		Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:	<b>12/21/2009</b>	<b>07/13/2001</b>	<b>04/06/2000</b>
Recording Doc:	<b><u>2009R0033141</u></b>	<b><u>2001R0023319</u></b>	<b><u>2000R0008351</u></b>
Rec. Doc Type:	<b>DEED</b>	<b>GRANT DEED</b>	<b>GRANT DEED</b>
Transfer Amount:		<b>\$127,000</b>	<b>\$90,000</b>
Seller (Grantor):	<b>ALIMPIC JOHN B</b>		
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:		Fireplace:	Units:
Baths (Full):		A/C:	Stories:
Baths (Half):		Heating:	Quality:
Total Rooms:		Pool:	Building Class:
Bldg/Liv Area:		Park Type:	Condition:
Lot Acres:	<b>20.000</b>	Spaces:	Site Influence:
Lot SqFt:	<b>871,200</b>	Garage SqFt:	Timber Preserve:
Year Built:		Bsmt SqFt:	<b>N/A</b>
Effective Year:			Ag Preserve:

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<b>Napa, CA    JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address:</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-012-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>BERCOVICH EDWARD L &amp; DARLEEN</b>		
Mailing Addr:	<b>1591 ELLIS ST #313 CONCORD CA 94520</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$118,948</b>	Use Code:	<b>30</b>
Land Value:	<b>\$118,948</b>	Use Type:	<b>VACANT</b>
Impr Value:		Tax Rate Area:	<b>065-001</b>
Other Value:		Year Assd:	<b>2012</b>
% Improved:		Property Tax:	<b>\$1,269.52</b>
Exempt Amt:		Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:			<b>Transfer</b>
Recording Doc:			
Rec. Doc Type:			
Transfer Amount:			
Seller (Grantor):			
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:		Fireplace:	Units:
Baths (Full):		A/C:	Stories:
Baths (Half):		Heating:	Quality:
Total Rooms:		Pool:	Building Class:
Bldg/Liv Area:		Park Type:	Condition:
Lot Acres:	<b>20.000</b>	Spaces:	Site Influence:
Lot SqFt:	<b>871,200</b>	Garage SqFt:	Timber Preserve:
Year Built:		Bsmt SqFt:	<b>N/A</b>
Effective Year:			Ag Preserve:

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address:</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-013-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>FROSTFIRE VINEYARDS II LLC</b>		
Mailing Addr:	<b>15572 COMPUTER LN HUNTINGTON BEACH CA 92649</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$61,876</b>	Use Code:	<b>30</b>
Land Value:	<b>\$61,876</b>	Use Type:	<b>VACANT</b>
Impr Value:		Tax Rate Area:	<b>065-001</b>
Other Value:		Year Assd:	<b>2012</b>
% Improved:		Property Tax:	<b>\$670.66</b>
Exempt Amt:		Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:	<b>10/19/2012</b>		<b>10/19/2012</b>
Recording Doc:	<a href="#"><u>2012R0027903</u></a>		<a href="#"><u>2012R0027903</u></a>
Rec. Doc Type:	<b>GRANT DEED</b>		
Transfer Amount:	<b>\$425,000</b>		
Seller (Grantor):	<b>PECK JOHN EDWARDS</b>		
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:		Fireplace:	Units:
Baths (Full):		A/C:	Stories:
Baths (Half):		Heating:	Quality:
Total Rooms:		Pool:	Building Class:
Bldg/Liv Area:		Park Type:	Condition:
Lot Acres:	<b>18.680</b>	Spaces:	Site Influence:
Lot SqFt:	<b>813,700</b>	Garage SqFt:	Timber Preserve:
Year Built:		Bsmt SqFt:	<b>N/A</b>
Effective Year:			Ag Preserve:

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address:</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-014-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>JENSEN DONALD L</b>		
Mailing Addr:	<b>211 S JEFFERSON ST NAPA CA 94559-4546</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$4,967</b>	Use Code: <b>30</b>	
Land Value:	<b>\$4,967</b>	Tax Rate Area: <b>065-001</b>	
Impr Value:		Year Assd: <b>2012</b>	
Other Value:		Property Tax: <b>\$73.52</b>	
% Improved:		Delinquent Yr:	
Exempt Amt:		HO Exempt: <b>N</b>	
Use Type:	<b>VACANT</b>		
Zoning:			
Census Tract:			
Price/SqFt:			
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:			<b>03/23/2001</b>
Recording Doc:			<b><u>2001R0008287</u></b>
Rec. Doc Type:			
Transfer Amount:			
Seller (Grantor):			
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:	Fireplace:	Units:	
Baths (Full):	A/C:	Stories:	
Baths (Half):	Heating:	Quality:	
Total Rooms:	Pool:	Building Class:	
Bldg/Liv Area:	Park Type:	Condition:	
Lot Acres: <b>20.000</b>	Spaces:	Site Influence:	
Lot SqFt: <b>871,200</b>	Garage SqFt:	Timber Preserve:	
Year Built:	Bsmt SqFt: <b>N/A</b>	Ag Preserve:	
Effective Year:			

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address:</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-015-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>NAPA COUNTY LAND</b>		
Mailing Addr:	<b>1700 SOSCOL AVE #20 NAPA CA 94559</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$262,399</b>	Use Code:	<b>30</b>
Land Value:	<b>\$262,399</b>	Tax Rate Area:	<b>065-001</b>
Impr Value:		Year Assd:	<b>2012</b>
Other Value:		Property Tax:	<b>\$21.40</b>
% Improved:		Delinquent Yr:	
Exempt Amt:	<b>\$262,399</b>	HO Exempt:	<b>N</b>
Use Type:	<b>VACANT</b>		
Zoning:			
Census Tract:			
Price/SqFt:			
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:	<b>07/11/2006</b>	<b>06/28/2005</b>	<b>07/11/2006</b>
Recording Doc:	<a href="#"><u>2006R0024178</u></a>	<a href="#"><u>2005R0025472</u></a>	<a href="#"><u>2006R0024178</u></a>
Rec. Doc Type:	<b>GRANT DEED</b>		
Transfer Amount:			
Seller (Grantor):	<b>WILDLAKE RANCH INC</b>		
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:	Fireplace:	Units:	
Baths (Full):	A/C:	Stories:	
Baths (Half):	Heating:	Quality:	
Total Rooms:	Pool:	Building Class:	
Bldg/Liv Area:	Park Type:	Condition:	
Lot Acres:	Spaces:	Site Influence:	
Lot SqFt:	Garage SqFt:	Timber Preserve:	
Year Built:	Bsmt SqFt:	<b>N/A</b>	Ag Preserve:
Effective Year:			

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address: 3335 FRIESEN DR ANGWIN CA</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-017-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>HELMER DOUGLAS &amp; BEVERLY</b>		
Mailing Addr:	<b>PO BOX 518 ANGWIN CA 94508</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$1,183,084</b>	Use Code:	<b>32</b>
Land Value:	<b>\$147,732</b>	Use Type:	<b>RESIDENTIAL</b>
Impr Value:	<b>\$1,035,352</b>	Tax Rate Area:	<b>065-001</b>
Other Value:		Year Assd:	<b>2012</b>
% Improved:	<b>87%</b>	Census Tract:	
Exempt Amt:		Property Tax:	<b>\$12,451.04</b>
		Price/SqFt:	<b>\$34.68</b>
		Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:	<b>02/05/2007</b>	<b>01/02/2001</b>	<b>Transfer</b>
Recording Doc:	<b><a href="#">2007R0003935</a></b>	<b>2005ID010201</b>	<b>02/05/2007</b>
Rec. Doc Type:	<b>GRANT DEED</b>		<b><a href="#">2007R0003935</a></b>
Transfer Amount:	<b>\$138,500</b>		
Seller (Grantor):	<b>JENSEN LEE L JR ETAL</b>		
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:	<b>4</b>	Fireplace:	<b>1</b>
Baths (Full):	<b>4</b>	A/C:	
Baths (Half):		Heating:	
Total Rooms:		Pool:	
Bldg/Liv Area:	<b>3,994</b>	Park Type:	<b>GARAGE/CARPORT</b>
Lot Acres:	<b>20.000</b>	Spaces:	
Lot SqFt:	<b>871,200</b>	Garage SqFt:	<b>885</b>
Year Built:	<b>2009</b>	Bsmt SqFt:	<b>N/A</b>
Effective Year:			
		Units:	
		Stories:	
		Quality:	<b>8.0</b>
		Building Class:	<b>D</b>
		Condition:	
		Site Influence:	
		Timber Preserve:	
		Ag Preserve:	

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address: 2575 SUMMIT LAKE DR ANGWIN CA 94508-9803</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-057-000</b>	Parcel Status:	<b>ACTIVE</b>
Owner Name:	<b>ASHLANDR LLC</b>	Mailing Addr:	<b>2615 SUMMIT LAKE DR ANGWIN CA 94508-9788</b>
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$507,327</b>	Use Code:	<b>32</b>
Land Value:	<b>\$225,321</b>	Use Type:	<b>RESIDENTIAL</b>
Impr Value:	<b>\$282,006</b>	Tax Rate Area:	<b>065-001</b>
Other Value:		Year Assd:	<b>2012</b>
% Improved:	<b>55%</b>	Census Tract:	<b>2017.00/4</b>
Exempt Amt:		Property Tax:	<b>\$5,360.34</b>
		Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:			<b>02/15/2012</b>
Recording Doc:			<b><u>2012R0004187</u></b>
Rec. Doc Type:			
Transfer Amount:			
Seller (Grantor):			
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:	<b>2</b>	Fireplace:	<b>1</b>
Baths (Full):	<b>1</b>	A/C:	
Baths (Half):	<b>1</b>	Heating:	
Total Rooms:		Pool:	<b>POOL</b>
Bldg/Liv Area:	<b>1,680</b>	Park Type:	<b>GARAGE/CARPORT</b>
Lot Acres:	<b>40.720</b>	Spaces:	
Lot SqFt:	<b>1,773,763</b>	Garage SqFt:	<b>1152</b>
Year Built:	<b>1987</b>	Bsmt SqFt:	<b>N/A</b>
Effective Year:			

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address:</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-076-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>NAPA COUNTY LAND</b>		
Mailing Addr:	<b>1700 SOSCOL AVE #20 NAPA CA 94559</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$525,408</b>	Use Code:	<b>30</b>
Land Value:	<b>\$525,408</b>	Use Type:	<b>VACANT</b>
Impr Value:		Tax Rate Area:	<b>055-001</b>
Other Value:		Year Assd:	<b>2012</b>
% Improved:		Property Tax:	<b>\$21.40</b>
Exempt Amt:	<b>\$525,408</b>	Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:			<b>11/20/2008</b>
Recording Doc:			<b><u>2008R0029017</u></b>
Rec. Doc Type:			
Transfer Amount:			
Seller (Grantor):			
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:		Fireplace:	Units:
Baths (Full):		A/C:	Stories:
Baths (Half):		Heating:	Quality:
Total Rooms:		Pool:	Building Class:
Bldg/Liv Area:		Park Type:	Condition:
Lot Acres:	<b>80.000</b>	Spaces:	Site Influence:
Lot SqFt:	<b>3,484,800</b>	Garage SqFt:	Timber Preserve:
Year Built:		Bsmt SqFt:	<b>N/A</b>
Effective Year:			Ag Preserve:

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<b>Napa, CA JOHN TUTEUR, ASSESSOR</b>		<b>ParcelQuest</b>	
<input type="checkbox"/> <b>Property Address:</b>			
<b>Ownership</b>			
Parcel# (APN):	<b>018-060-080-000</b>		
Parcel Status:	<b>ACTIVE</b>		
Owner Name:	<b>NAPA COUNTY LAND</b>		
Mailing Addr:	<b>1700 SOSCOL AVE #20 NAPA CA 94559</b>		
Legal Description:			
<b>Assessment</b>			
Total Value:	<b>\$286,423</b>	Use Code:	<b>30</b>
Land Value:	<b>\$286,423</b>	Use Type:	<b>VACANT</b>
Impr Value:		Tax Rate Area:	<b>055-001</b>
Other Value:		Year Assd:	<b>2012</b>
% Improved:		Property Tax:	<b>\$21.40</b>
Exempt Amt:	<b>\$286,423</b>	Delinquent Yr:	
		HO Exempt:	<b>N</b>
<b>Sale History</b>			
	<b>Sale1</b>	<b>Sale2</b>	<b>Sale3</b>
Recording Date:			<b>11/20/2008</b>
Recording Doc:			<b><u>2008R0029017</u></b>
Rec. Doc Type:			
Transfer Amount:			
Seller (Grantor):			
1st Trust Dd Amt:			
2nd Trust Dd Amt:			
<b>Property Characteristics</b>			
Bedrooms:		Fireplace:	Units:
Baths (Full):		A/C:	Stories:
Baths (Half):		Heating:	Quality:
Total Rooms:		Pool:	Building Class:
Bldg/Liv Area:		Park Type:	Condition:
Lot Acres:	<b>43.620</b>	Spaces:	Site Influence:
Lot SqFt:	<b>1,900,087</b>	Garage SqFt:	Timber Preserve:
Year Built:		Bsmt SqFt:	<b>N/A</b>
Effective Year:			Ag Preserve:

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18-06

Tax Area Code  
55000, 55001, 65000, 65001

T.9N., R.6W., M.D.B.&M.

04

77002

55000

55001

55000

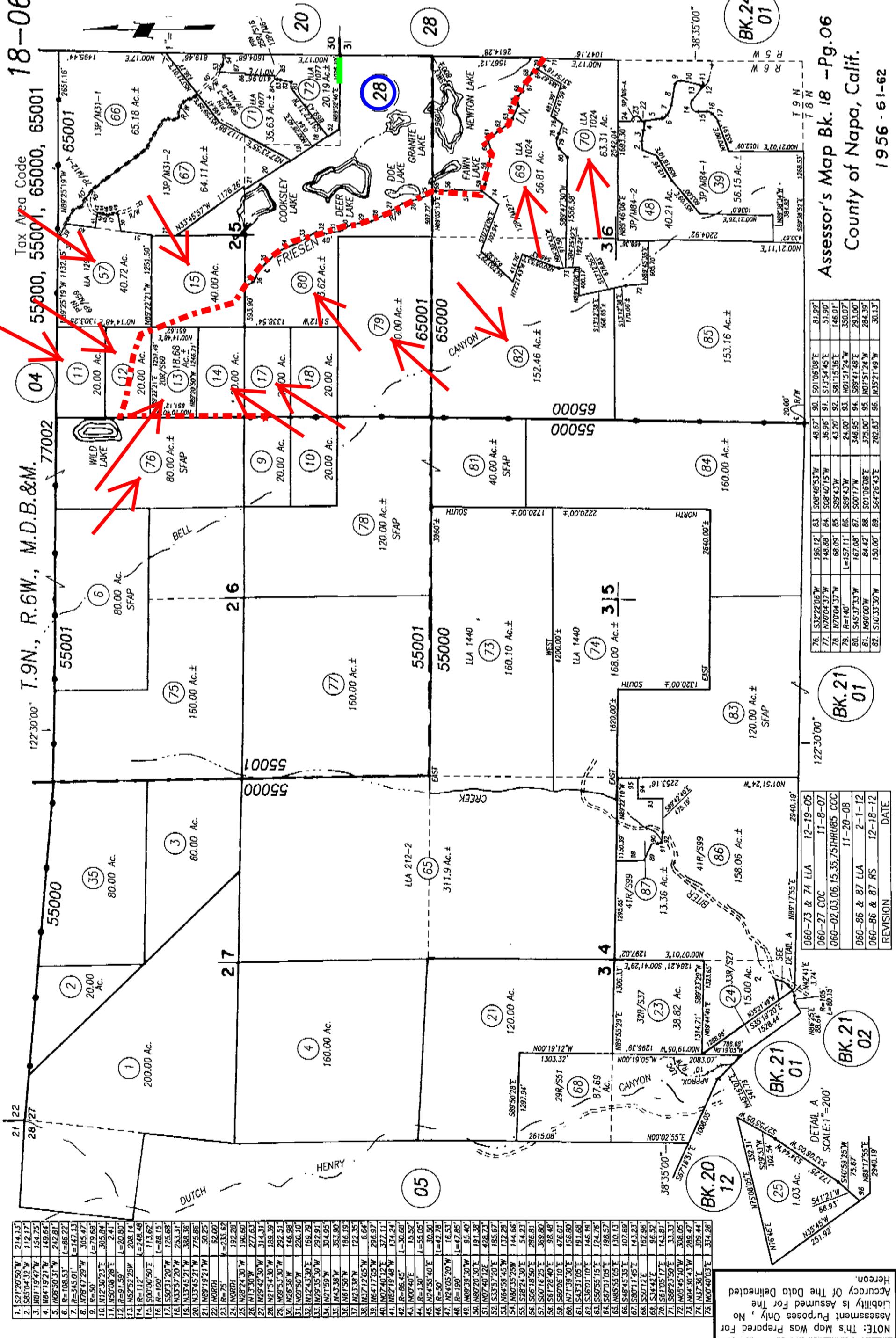
55000

55000

55000

55000

55000



Assessor's Map Bk. 18 -Pg.06  
County of Napa, Calif.  
1956-61-62

76.	S32°22'05"W	198.12	83	S00°48'53"W	48.67	90	S01°06'08"E	81.99
77.	N70°04'37"W	148.89	84	S08°40'15"W	36.96	91	S13°54'45"E	51.90
78.	N70°04'37"W	68.09	85	S08°43'37"W	43.20	92	S81°15'36"E	146.01
79.	R=140	L=157.11	86	S08°43'37"W	24.00	93	N01°51'24"W	350.07
80.	S45°37'13"W	167.08	87	S00°17'W	346.95	94	S08°41'48"E	293.00
81.	N90°00'W	84.42	88	S01°06'08"E	375.00	95	N01°51'24"W	284.39
82.	S10°33'30"W	150.00	89	S64°26'43"E	262.83	96	N35°21'49"W	90.13

BK.21 01

060-73 & 74 LLA	12-19-05
060-27 COC	11-8-07
060-02,03,06,15,35,75,THRU85 COC	
060-86 & 87 LLA	11-20-08
060-86 & 87 RS	12-18-12
060-86 & 87 RS	12-18-12

BK.21 02

21	120.00 Ac.
22	160.00 Ac.
23	38.82 Ac.
24	15.00 Ac.
25	1.03 Ac.
26	160.00 Ac.
27	120.00 Ac.
28	120.00 Ac.
29	168.00 Ac.
30	168.00 Ac.
31	168.00 Ac.
32	168.00 Ac.
33	168.00 Ac.
34	168.00 Ac.
35	168.00 Ac.
36	168.00 Ac.
37	168.00 Ac.
38	168.00 Ac.
39	168.00 Ac.
40	168.00 Ac.
41	168.00 Ac.
42	168.00 Ac.
43	168.00 Ac.
44	168.00 Ac.
45	168.00 Ac.
46	168.00 Ac.
47	168.00 Ac.
48	168.00 Ac.
49	168.00 Ac.
50	168.00 Ac.
51	168.00 Ac.
52	168.00 Ac.
53	168.00 Ac.
54	168.00 Ac.
55	168.00 Ac.
56	168.00 Ac.
57	168.00 Ac.
58	168.00 Ac.
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60	168.00 Ac.
61	168.00 Ac.
62	168.00 Ac.
63	168.00 Ac.
64	168.00 Ac.
65	168.00 Ac.
66	168.00 Ac.
67	168.00 Ac.
68	168.00 Ac.
69	168.00 Ac.
70	168.00 Ac.
71	168.00 Ac.
72	168.00 Ac.
73	168.00 Ac.
74	168.00 Ac.
75	168.00 Ac.
76	168.00 Ac.
77	168.00 Ac.
78	168.00 Ac.
79	168.00 Ac.
80	168.00 Ac.
81	168.00 Ac.
82	168.00 Ac.
83	168.00 Ac.
84	168.00 Ac.
85	168.00 Ac.
86	168.00 Ac.

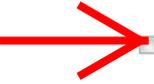
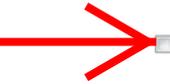
NOTE: This Map Was Prepared For Assessment Purposes Only, No Liability is Assumed For The Accuracy Of The Data Delineated Herein.

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

<a href="#">Co / APN ▲ (View Detail) 2</a>	Owner Name	Situs Address
<input type="checkbox"/> <a href="#">NAP 018-060-001-000</a>	JOHNSON RUDIN M JR	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-002-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-003-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-004-000</a>	ALEXANDER DEBORAH	<b>505 DUTCH HENRY CANYON RD</b> CALISTOGA CA 94515-9645
<input type="checkbox"/> <a href="#">NAP 018-060-006-000</a>	NAPA COUNTY LAND	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-009-000</a>	OBRIEN JOHN D & SHARRON J	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-010-000</a>	HENRI WILLIAM DONALD	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-011-000</a>	AMAZING FACTS INC	<b>3505 FRIESEN DR</b> ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-012-000</a>	BERCOVICH EDWARD L & DARLEEN	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-013-000</a>	FROSTFIRE VINEYARDS II LLC	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-014-000</a>	JENSEN DONALD L	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-015-000</a>	NAPA COUNTY LAND	ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-017-000</a>	HELMER DOUGLAS & BEVERLY	<b>3335 FRIESEN DR</b> ANGWIN CA
<input type="checkbox"/> <a href="#">NAP 018-060-018-000</a>	JENSEN FLOYD WILBUR	CALISTOGA CA 94515
<input type="checkbox"/> <a href="#">NAP 018-060-021-000</a>	LOUGHLIN MICHAEL J	<b>375 DUTCH HENRY CANYON RD</b> CALISTOGA CA 94515-9602
<input type="checkbox"/> <a href="#">NAP 018-060-024-000</a>	9 BUTTON VINEYARD LLC	<b>701 LOMMEL RD</b> CALISTOGA CA 94515-9649
<input type="checkbox"/> <a href="#">NAP 018-060-025-000</a>	781466 ALBERTA LTD	<b>600 LOMMEL RD</b> CALISTOGA CA 94515-9607
<input type="checkbox"/> <a href="#">NAP 018-060-035-000</a>	NAPA COUNTY LAND	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-060-039-000</a>	DIMMICK JENS W	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-060-048-000</a>	HORNBERGER MARK ROBERT & ADELAIDE WILSON	<b>975 BELL CANYON RD</b> ANGWIN CA 94508-9691

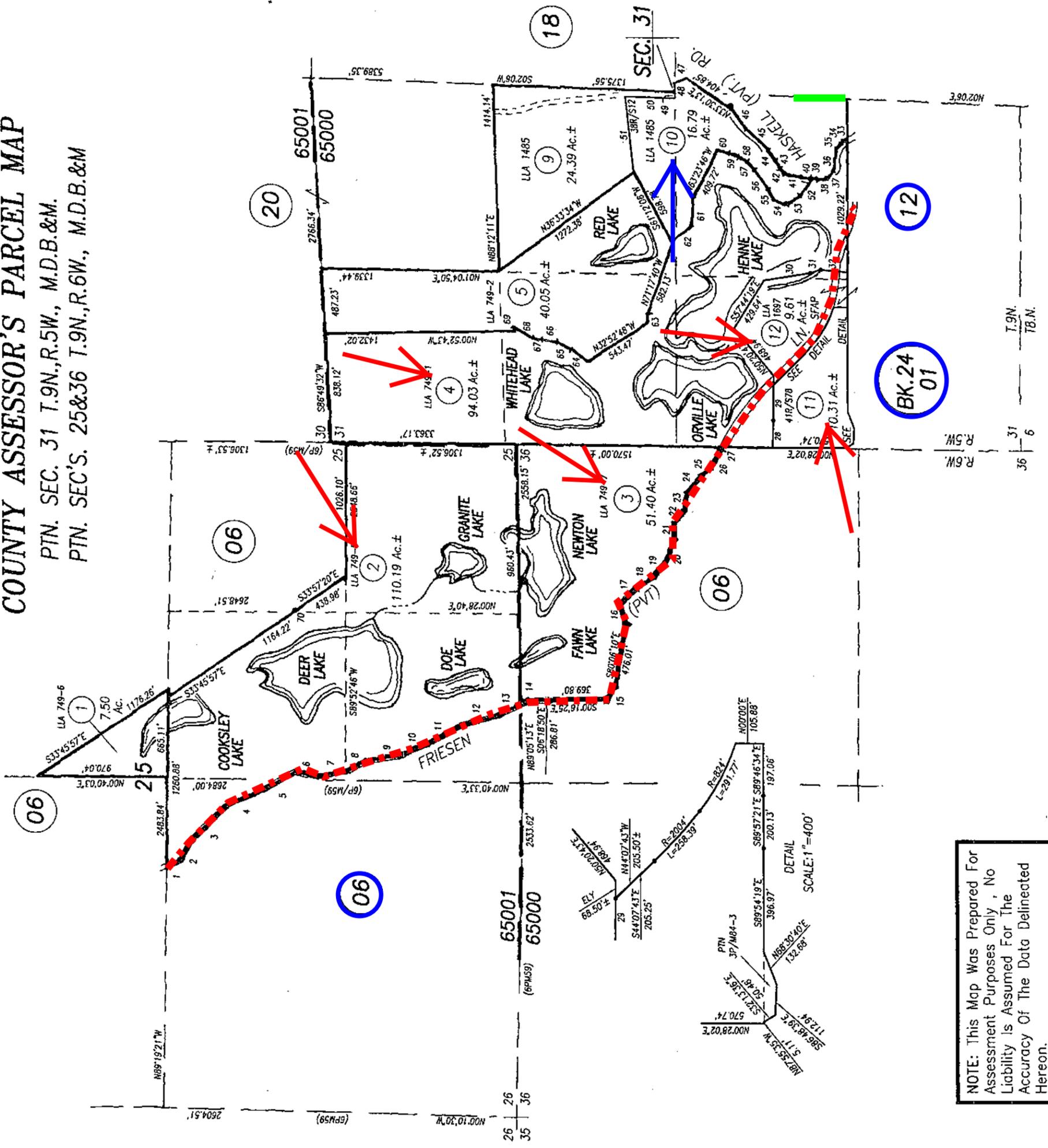
	<input type="checkbox"/>	NAP <a href="#">018-060-057-000</a>	ASHLANDR LLC	<b>2615 SUMMIT LAKE DR</b> ANGWIN CA 94508-9788
	<input type="checkbox"/>	NAP <a href="#">018-060-065-000</a>	WAGNER JOSEPH J & AMBER N	<b>560 LOMMEL RD</b> CALISTOGA CA 94515-9607
	<input type="checkbox"/>	NAP <a href="#">018-060-066-000</a>	ASHLANDER LLC	<b>2600 SUMMIT LAKE DR</b> ANGWIN CA 94508-9788
	<input type="checkbox"/>	NAP <a href="#">018-060-067-000</a>	ASHLANDER LLC	ANGWIN CA 94508
	<input type="checkbox"/>	NAP <a href="#">018-060-069-000</a>	DINA DINO	<b>1185 FRIESEN DR</b> ANGWIN CA 94508-9670
	<input type="checkbox"/>	NAP <a href="#">018-060-070-000</a>	OSHAUGHNESSY DEL OSO LLC	<b>1150 FRIESEN DR</b> ANGWIN CA 94508
	<input type="checkbox"/>	NAP <a href="#">018-060-071-000</a>	RATTLESNAKE RIDGE LLC	<b>2575 SUMMIT LAKE DR</b> ANGWIN CA 94508-9803
	<input type="checkbox"/>	NAP <a href="#">018-060-072-000</a>	ROBERT CRAIG WINERY LP	<b>2475 SUMMIT LAKE DR</b> ANGWIN CA 94508-9782
	<input type="checkbox"/>	NAP <a href="#">018-060-073-000</a>	KOKA LLC	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-074-000</a>	WAGNER JOSEPH J & AMBER N	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-075-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-076-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-077-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-078-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-079-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-080-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-081-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-082-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-083-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-084-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-085-000</a>	NAPA COUNTY LAND	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-086-000</a>	CALISTOGA RANCH CLUB	<b>580 LOMMEL RD</b> CALISTOGA CA 94515-9607
	<input type="checkbox"/>	NAP <a href="#">018-060-087-000</a>	PROVO LAND PARTNERS LLC	CALISTOGA CA 94515
	<input type="checkbox"/>	NAP <a href="#">018-060-088-000</a>	PEJU PROVINCE WINERY	<b>321 DUTCH HENRY CANYON RD</b> CALISTOGA CA 94515-9602

Tax Area Code  
65000, 65001

COUNTY ASSESSOR'S PARCEL MAP  
PTN. SEC. 31 T.9N., R.5W., M.D.B.&M.  
PTN. SEC'S. 25&36 T.9N., R.6W., M.D.B.&M



1.	S23.28°E	122.35'	46.	N54.40'13"E	196.81'
2.	S61.50°E	186.19'	47.	N12.29'47"W	92.80'
3.	S43.38°E	353.90'	48.	S89.37'18"W	91.24'
4.	S21.59°E	304.95'	49.	S89.37'18"W	40.04'
5.	S79.35'30"E	292.91'	50.	N02.05°E	370.69'
6.	S12.45'30"W	169.78'	51.	S85.53'35"W	582.00'
7.	S09.50°E	270.10'	52.	N53.43'16"W	171.41'
8.	S26.36°E	146.98'	53.	N31.47'40"W	119.57'
9.	S09.53'30"E	282.51'	54.	N27.10'02"E	90.71'
10.	S21.54'30"E	169.39'	55.	N61.25'50"E	93.48'
11.	S29.42'30"E	314.31'	56.	N53.46'40"E	170.85'
12.	S13.30°E	277.63'	57.	N51.16'16"E	91.26'
13.	S28.24'30"E	190.60'	58.	N24.58'55"E	67.19'
14.	S28.24'30"E	54.23'	59.	N25.24'51"E	65.38'
15.	S61.28'40"E	98.48'	60.	N14.05'53"E	92.72'
16.	N71.39'30"E	156.80'	61.	N87.27'16"W	224.07'
17.	S43.31'05"E	191.68'	62.	N37.40'48"W	192.37'
18.	S36.01'10"E	146.19'	63.	N83.07'53"W	77.50'
19.	S50.55'15"E	124.76'	64.	N41.20'39"E	146.67'
20.	S97.01'05"E	198.57'	65.	N31.09'53"E	132.34'
21.	N85.58'05"E	130.13'	66.	N09.51'46"E	111.61'
22.	S48.45'35"E	107.89'	67.	N05.23'19"E	66.05'
23.	S60.11'45"E	143.23'	67.	N31.28'52"E	167.94'
24.	S50.12°E	162.96'	67.	S91.37'06"W	27.64'
25.	S34.42°E	96.52'	67.	S00.28'40"W	0.64'
26.	S61.05'27"E	143.81'			
27.	S88.23'50"E	33.33'			
28.	S88.11'19"E	190.04'			
29.	S89.31'48"E	269.08'			
30.	S09.08'50"E	355.39'			
31.	S17.53'30"E	84.06'			
32.	S05.44'30"W	197.33'			
33.	N30.50'27"W	32.64'			
34.	N42.27'47"W	20.01'			
35.	N56.55'47"W	53.70'			
36.	N77.40'47"W	153.25'			
37.	N39.40'47"W	64.40'			
38.	N05.24'47"W	95.25'			
39.	N05.47'13"E	27.30'			
40.	N06.47'13"E	79.05'			
41.	N10.26'13"E	115.50'			
42.	N46.01'13"E	50.70'			
43.	N59.11'13"E	63.08'			
44.	N54.38'13"E	84.58'			
45.	N42.48'13"E	239.48'			



BK.24  
01

NOTE: This Map Was Prepared For Assessment Purposes Only, No Liability Is Assumed For The Accuracy Of The Data Delineated Hereon.

2-27-92	ADJ. PG. CHG
5-24-02	280-09 & 10 LLA 12-5-06
2-9-07	PTN 280-09&10 RS 2-9-07
12-22-11	280-11 & 12 LLA 12-22-11
9-7-12	280-11 RS
REVISION	DATE

1991

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

Co / APN ▲  
(View Detail) 2

Owner Name .

Situs Address .

<input type="checkbox"/>	NAP <a href="#">018-280-001-000</a>	HOWELL MOUNTAIN MUTUAL WATER COMPANY INC	ANGWIN CA 94508
<input checked="" type="checkbox"/>	NAP <a href="#">018-280-002-000</a>	HOWELL MOUNTAIN MUTUAL WATER CO INC	ANGWIN CA 94508
<input checked="" type="checkbox"/>	NAP <a href="#">018-280-003-000</a>	HOWELL MOUNTAIN MUTUAL WATER CO INC	ANGWIN CA 94508
<input checked="" type="checkbox"/>	NAP <a href="#">018-280-004-000</a>	HOWELL MOUNTAIN MUTUAL WATER COMPANY INC	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-280-005-000</a>	RED LAKE RANCH LLC	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-280-009-000</a>	DICE AUSTIN MARKUS	<b>840 FRIESEN DR</b> ANGWIN CA 94508-9669
<input checked="" type="checkbox"/>	NAP <a href="#">018-280-010-000</a>	CRAIN RICHARD P & LILLY E	<b>850 FRIESEN DR</b> ANGWIN CA 94508-9669
<input checked="" type="checkbox"/>	NAP <a href="#">018-280-011-000</a>	WOOLLS PAUL & BETTY OSHAUGHNESSY	<b>1005 FRIESEN DR</b> ANGWIN CA 94508-9670
<input type="checkbox"/>	NAP <a href="#">018-280-012-000</a>	WOOLLS PAUL & BETTY OSHAUGHNESSY	ANGWIN CA 94508

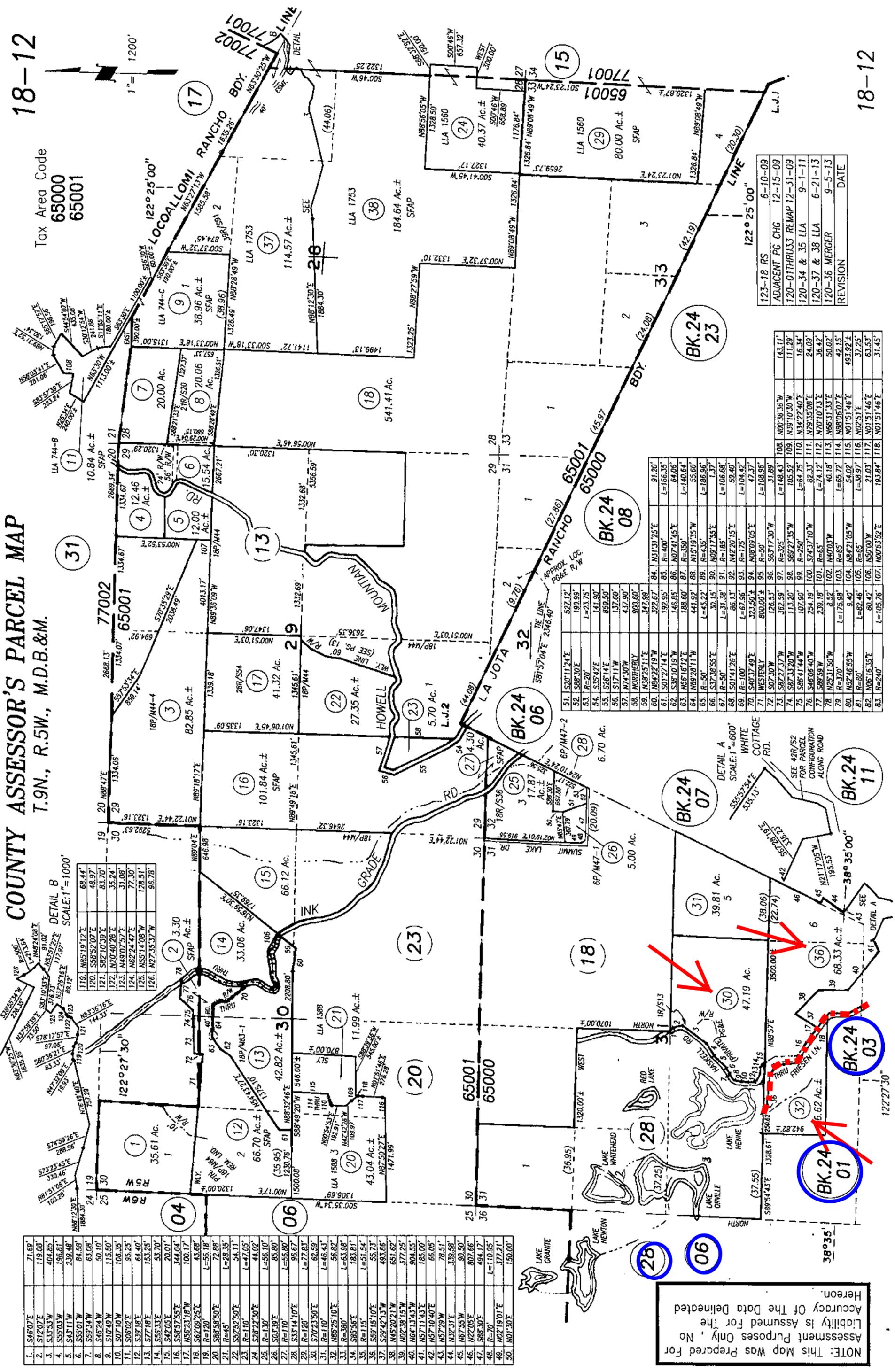
select: all none

\*\*The information provided here is deemed reliable, but is not guaranteed.

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COUNTY ASSESSOR'S PARCEL MAP  
T.9N., R.5W., M.D.B.&M.



1.	S46°07'E	71.69'
2.	S17°07'E	119.08'
3.	S33°53'W	404.85'
4.	S55°03'W	196.81'
5.	S43°11'W	239.48'
6.	S55°01'W	84.58'
7.	S59°34'W	63.08'
8.	S46°24'W	50.10'
9.	S10°49'W	115.50'
10.	S07°10'W	106.35'
11.	S08°02'E	95.25'
12.	S39°18'E	64.40'
13.	S77°18'E	153.25'
14.	S56°33'E	53.70'
15.	S42°05'E	20.01'
16.	S46°57'SSE	344.04'
17.	N56°23'18"W	100.17'
18.	N56°09'25"E	43.68'
19.	R=120'	L=56.18'
20.	S88°58'50"E	72.86'
21.	R=45'	L=28.35'
22.	S52°50'50"E	54.11'
23.	R=110'	L=47.05'
24.	S28°22'30"E	44.02'
25.	R=130'	L=56.10'
26.	S03°39'E	85.80'
27.	R=110'	L=56.80'
28.	S33°14'10"E	96.67'
29.	R=120'	L=72.81'
30.	S74°23'50"E	62.59'
31.	R=110'	L=46.43'
32.	N85°25'10"E	56.82'
33.	R=380'	L=63.98'
34.	S85°56'E	183.81'
35.	R=115'	L=51.54'
36.	S59°15'10"E	55.73'
37.	S29°42'13"W	493.66'
38.	N45°20'21"W	651.62'
39.	N02°38'15"W	377.85'
40.	N64°13'43"W	904.55'
41.	N57°11'43"E	185.00'
42.	N57°10'40"E	66.05'
43.	N57°29'W	78.51'
44.	N32°31'E	339.58'
45.	N67°55'W	90.50'
46.	N22°05'E	807.66'
47.	S88°30'E	494.17'
48.	R=70'	L=110.95'
49.	N02°19'01"E	372.21'
50.	N01°30'E	450.00'

DETAIL B  
SCALE: 1" = 1000'

119.	N65°19'12"E	68.44'
120.	S58°52'07"E	48.97'
121.	S82°10'39"E	63.70'
122.	N20°40'28"E	35.24'
123.	N48°07'57"E	31.08'
124.	N62°24'47"E	37.30'
125.	N55°14'08"W	128.51'
126.	N27°35'37"W	96.78'

NOTE: This Map Was Prepared For Assessment Purposes Only. No Liability Is Assumed For The Accuracy Of The Data Delimited Hereon.

REVISION	DATE
123-18 RS	6-10-09
ADJACENT PG CHG	12-15-09
120-01THRU33 REMAP	12-31-09
120-34 & 35 LLA	9-1-11
120-37 & 38 LLA	6-21-13
120-36 MERGER	9-5-13

51.	S20°11'24"E	577.12'
52.	S88°30'E	190.99'
53.	R=20'	L=23.75'
54.	S35°42'E	141.90'
55.	S26°14'E	899.50'
56.	S17°11'W	137.80'
57.	N74°30'W	437.90'
58.	N07°18'W	900.60'
59.	N38°25'11"E	347.99'
60.	N84°22'19"W	322.67'
61.	S01°22'14"E	192.95'
62.	S38°10'19'W	146.85'
63.	N55°16'12"E	188.60'
64.	N89°28'11'W	441.92'
65.	R=50'	L=45.22'
66.	S37°39'55"E	30.15'
67.	R=50'	L=31.38'
68.	S01°41'26"E	86.13'
69.	R=100'	L=67.96'
70.	S40°37'49"E	32.50'
71.	WESTERLY	800.00'±
72.	S07°30'W	126.53'
73.	S87°27'37'W	382.59'
74.	S87°33'20'W	113.20'
75.	S86°41'44'W	107.90'
76.	S48°08'40'W	294.19'
77.	S89°59'W	239.18'
78.	N25°31'50'W	8.52'
79.	R=170'	L=65.71'
80.	N52°46'55'W	9.40'
81.	R=60'	L=82.46'
82.	N06°16'35'E	60.42'
83.	R=240'	L=105.76'
84.	N31°31'25'E	91.20'
85.	R=400'	L=166.35'
86.	N07°41'45'E	64.06'
87.	R=350'	L=40.64'
88.	N15°19'35'W	55.60'
89.	R=635'	L=188.96'
90.	N09°17'55'E	1.37'
91.	R=185'	L=106.68'
92.	N47°20'15'E	59.40'
93.	R=175'	L=104.42'
94.	N08°09'05'E	47.37'
95.	R=50'	L=108.95'
96.	S63°17'30'W	31.80'
97.	R=325'	L=148.43'
98.	S89°27'35'W	105.52'
99.	S89°27'35'W	111.28'
100.	S74°37'10'W	16.34'
101.	R=65'	L=64.75'
102.	N40°03'W	82.33'
103.	N40°03'W	24.09'
104.	N84°21'05'W	50.02'
105.	R=65'	L=38.97'
106.	N50°00'W	49.192'
107.	N00°53'52'E	31.45'

Tax Area Code  
65000  
65001

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

<a href="#">Co / APN ▲ (View Detail) 2</a>	Owner Name	Situs Address
<input type="checkbox"/> <a href="#">NAP 018-120-001-000</a>	VON CRAWSONARD LLC	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-120-002-000</a>	VON CRAWSONARD LLC	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-120-003-000</a>	RUSSELL TAPLIN A	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-120-004-000</a>	DEBARTOLO BARNETTE JAMES	<b>1959 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-120-005-000</a>	HAMILTON DOUGLAS A & GAIL	<b>1777 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508-9659
<input type="checkbox"/> <a href="#">NAP 018-120-006-000</a>	KELLEY MICHAEL SHANE & DONNA GAIL	<b>1740 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508-9659
<input type="checkbox"/> <a href="#">NAP 018-120-007-000</a>	GLEFFE GARY & JOLENE MILLER	<b>1760 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508-9659
<input type="checkbox"/> <a href="#">NAP 018-120-008-000</a>	HENRY MICHAEL S & WENDY A	<b>1750 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508-9659
<input type="checkbox"/> <a href="#">NAP 018-120-009-000</a>	BERGLUND WM R	POPE VALLEY CA 94567
<input type="checkbox"/> <a href="#">NAP 018-120-011-000</a>	BERGLUND WM R	POPE VALLEY CA 94567
<input type="checkbox"/> <a href="#">NAP 018-120-012-000</a>	VON CRAWSONARD LLC	<b>1333 INK GRADE RD POPE VALLEY</b> CA 94567-9434
<input type="checkbox"/> <a href="#">NAP 018-120-013-000</a>	VON CRAWSONARD LLC	<b>1325 INK GRADE RD POPE VALLEY</b> CA 94567-9434
<input type="checkbox"/> <a href="#">NAP 018-120-014-000</a>	CAZET DENYS & DONNA MAURER	<b>1300 INK GRADE RD POPE VALLEY</b> CA 94567-9434
<input type="checkbox"/> <a href="#">NAP 018-120-015-000</a>	LARSON RICHARD A	<b>1200 INK GRADE RD POPE VALLEY</b> CA 94567-9459
<input type="checkbox"/> <a href="#">NAP 018-120-016-000</a>	BADE WILLIAM G & ELEANOR J	<b>1225 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-120-017-000</a>	GRIFFITH WILLIAM P & MARY LEFEVRE	<b>1435 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508-9674
<input type="checkbox"/> <a href="#">NAP 018-120-018-000</a>	BAGPIPE HOLDINGS LLC	<b>1400 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508-9673
<input type="checkbox"/> <a href="#">NAP 018-120-020-000</a>	BELL WILLIAM A & GAY E	<b>2200 SUMMIT LAKE DR ANGWIN CA</b> 94508-9782
<input type="checkbox"/> <a href="#">NAP 018-120-021-000</a>	LAMBORN FAMILY WINE COMPANY LP	ANGWIN CA 94508
<input type="checkbox"/> <a href="#">NAP 018-120-022-000</a>	FISHER JOHN C & LUISE K	<b>1415 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508

<input type="checkbox"/>	NAP <a href="#">018-120-023-000</a>	CLAY CLARENCE DON & LISA A	<b>1250 HOWELL MOUNTAIN RD</b> ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-120-024-000</a>	SHACKELFORD DONALEE	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-120-025-000</a>	ZINKE LENORA ANN & ERNEST EDWARD	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-120-026-000</a>	SPECHT WALLACE L & SALLY L	<b>1120 SUMMIT LAKE DR</b> ANGWIN CA 94508-9767
<input type="checkbox"/>	NAP <a href="#">018-120-027-000</a>	BADE WILLIAM G & ELEANOR J	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-120-028-000</a>	PAULSON ROBERT ARTHUR & LISA BISSELL	<b>1001 WHITE COTTAGE RD</b> ANGWIN CA 94508-9765
<input type="checkbox"/>	NAP <a href="#">018-120-029-000</a>	SHACKELFORD DONALEE	ANGWIN CA 94508
<input checked="" type="checkbox"/>	NAP <a href="#">018-120-030-000</a>	MANZANITA & DOGWOOD LLC	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">018-120-031-000</a>	HENRY LOIS M	<b>765 WHITE COTTAGE RD</b> ANGWIN CA 94508-9734
<input checked="" type="checkbox"/>	NAP <a href="#">018-120-032-000</a>	FIRST RESPONDER SUPPORT NETWORK INC	<b>600 WHISPERING PINES LN</b> ANGWIN CA 94508-9653
<input checked="" type="checkbox"/>	NAP <a href="#">018-120-036-000</a>	ADAMVS LLC	<b>555 COLLEGE AVE</b> ANGWIN CA 94508-9728
<input type="checkbox"/>	NAP <a href="#">018-120-037-000</a>	MAZZUCCO THOMAS C JR & KELLY	SAINT HELENA CA 94574
<input type="checkbox"/>	NAP <a href="#">018-120-038-000</a>	SHACKELFORD DONALEE	<b>5379 CHILES POPE VALLEY RD</b> SAINT HELENA CA 94574-9571

select: all none

\*\*The information provided here is deemed reliable, but is not guaranteed.

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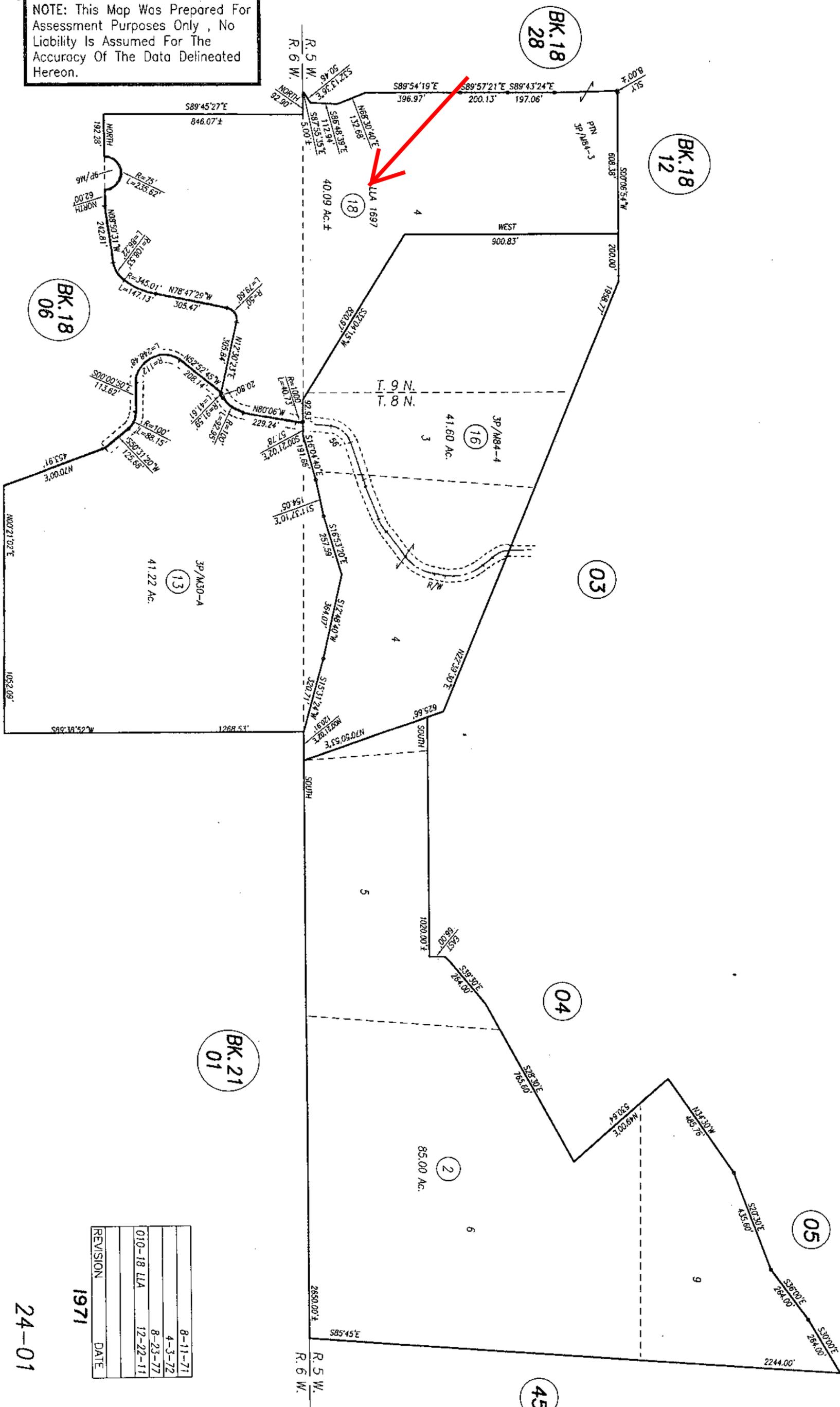


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**COUNTY ASSESSOR'S PARCEL MAP**  
 PTN. SEC. 6 T.8N., R.5W., M.D.B.&M.  
 PTN. SEC. 31 T.9N., R.5W., M.D.B.&M.  
 PTN. SEC. 36 T.9N., R.6W., M.D.B.&M.

Tax Area Code  
**65000**



**24-01**  
 PTN. 18-06

BK. 21  
 01

BK. 18  
 28

BK. 18  
 12

BK. 18  
 06

REVISION	DATE
8-11-71	
4-3-72	
8-23-77	
010-18 LLA	12-22-11

1971

24-01

**SHORT VIEW**

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

Co / APN ▲  
(View Detail) 2

Owner Name

Sitius Address

<input type="checkbox"/>	NAP <a href="#">024-010-002-000</a>	ST HELENA HOSPITAL	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">024-010-013-000</a>	CALABI CARLO K	<b>925 BELL CANYON RD</b> ANGWIN CA 94508-9691
<input type="checkbox"/>	NAP <a href="#">024-010-016-000</a>	VOGT STEPHEN & NITA JO	<b>865 BELL CANYON RD</b> ANGWIN CA 94508-9691
<input checked="" type="checkbox"/>	NAP <a href="#">024-010-018-000</a>	WOOLLS PAUL & BETTY OSHAUGHNESSY	<b>1000 BELL CANYON RD</b> ANGWIN CA 94508-9691

select: all none

\*\*The information provided here is deemed reliable, but is not guaranteed.

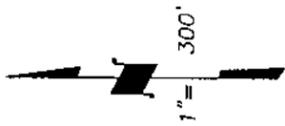
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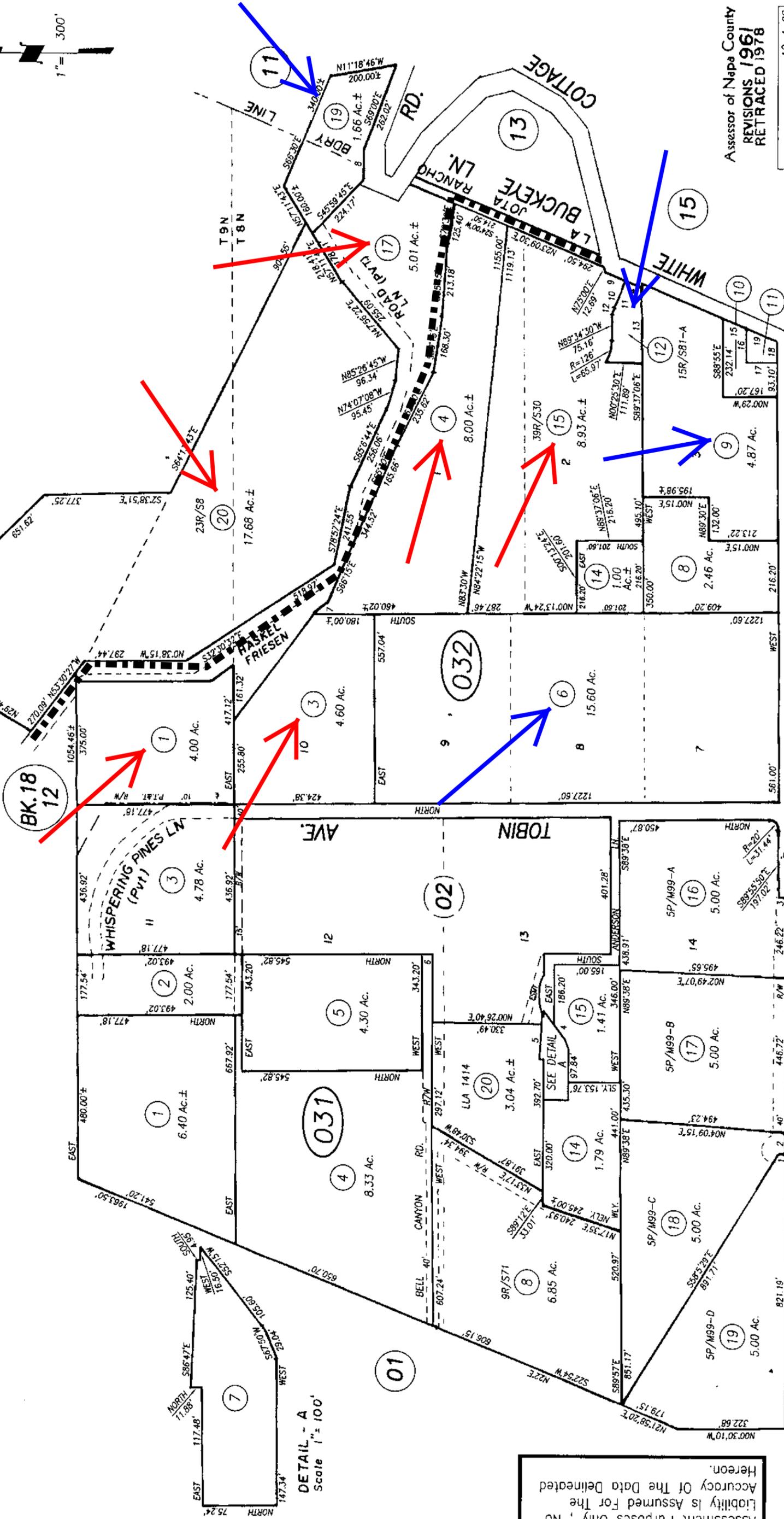
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Tax Area Code  
65000



**COUNTY ASSESSOR'S PARCEL MAP**

PTN. SEC. 6 T.8N., R.5W., M.D.B.&M.  
PTN. SEC. 31 T.9N., R.5W., M.D.B.&M.  
PTN. LA JOTA RANCHO



Assessor of Napa County  
**REVISIONS 1961  
RETRACED 1978**

032-15 CCOC	12-4-90
032-14 CCOC	8-31-98
031-01 AC CORR	3-31-04
031-20 LLA	4-20-05
032-15 RS	7-8-05
	9-3-08
REVISION	DATE

**DETAIL - A**  
Scale 1" = 100'

NOTE: This Map Was Prepared For Assessment Purposes Only, No Liability is Assumed For The Accuracy Of The Data Delineated Hereon.

1.	N00°05'10"W	16.25'	T.1.	S67°00'E	88.38'
2.	N89°54'50"E	58.36'	12.	R=74'	L=29.16'
3.	N07°01'40"E	26.82'	13.	N89°34'34"W	225.17'
4.	N52°15'E	43.71'	14.	S23°00'W	40.00'
5.	S86°47'E	102.67'	15.	S24°00'W	76.00'
6.	N08°47'E	27.72'	16.	N88°55'W	99.50'
7.	S66°30'E	53.46'	17.	S04°19'W	95.51'
8.	S85°49'48"W	71.10'	18.	WEST	65.10'
9.	N23°00'E	61.26'	19.	S24°00'W	102.20'
10.	N67°00'W	88.34'			

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

Co / APN  (View Detail) 	Owner Name	Situs Address
<input type="checkbox"/> NAP <a href="#">024-032-001-000</a>	HOGAN MICHAEL R & ROXANNE A	<b>785 FRIESEN DR</b> ANGWIN CA 94508-9668
<input type="checkbox"/> NAP <a href="#">024-032-003-000</a>	WILLARD DUDLEY K	<b>340 TOBBIN AVE</b> ANGWIN CA 94508-9775
<input type="checkbox"/> NAP <a href="#">024-032-004-000</a>	TILLAY DAVID W & JEANNIE M	<b>400 BUCKEYE LN</b> ANGWIN CA 94508
<input type="checkbox"/> NAP <a href="#">024-032-006-000</a>	BEATTY MICHAEL	ANGWIN CA 94508
<input checked="" type="checkbox"/> NAP <a href="#">024-032-008-000</a>	M & J MONDAVI	<b>550 KEYES AVE</b> ANGWIN CA 94508-9772
<input type="checkbox"/> NAP <a href="#">024-032-009-000</a>	CABAUD PHILIP GRAEME III & BOZENA B	<b>255 WHITE COTTAGE RD</b> ANGWIN CA 94508-9771
<input type="checkbox"/> NAP <a href="#">024-032-010-000</a>	NEAL FREDERICK J	<b>510 KEYES AVE</b> ANGWIN CA 94508-9772
<input type="checkbox"/> NAP <a href="#">024-032-011-000</a>	BANOUB SOUZAN H	<b>225 WHITE COTTAGE RD</b> ANGWIN CA 94508-9771
<input type="checkbox"/> NAP <a href="#">024-032-012-000</a>	NICOLA DELLA SUC	<b>295 WHITE COTTAGE RD</b> ANGWIN CA 94508-9771
<input type="checkbox"/> NAP <a href="#">024-032-014-000</a>	MONDAVI ALYCIA N	ANGWIN CA 94508
<input type="checkbox"/> NAP <a href="#">024-032-015-000</a>	PINA JOHN C & RICKIE L	<b>297 WHITE COTTAGE RD</b> ANGWIN CA 94508-9771
<input type="checkbox"/> NAP <a href="#">024-032-017-000</a>	TREZ JOSEPH & ERIKA	<b>449 WHITE COTTAGE RD</b> ANGWIN CA 94508-9716
<input type="checkbox"/> NAP <a href="#">024-032-019-000</a>	CHEEK DOROTHEA E	<b>465 WHITE COTTAGE RD</b> ANGWIN CA 94508-9716
<input type="checkbox"/> NAP <a href="#">024-032-020-000</a>	DOTZLER FRANK J & KATHY R	ANGWIN CA 94508

select: all none

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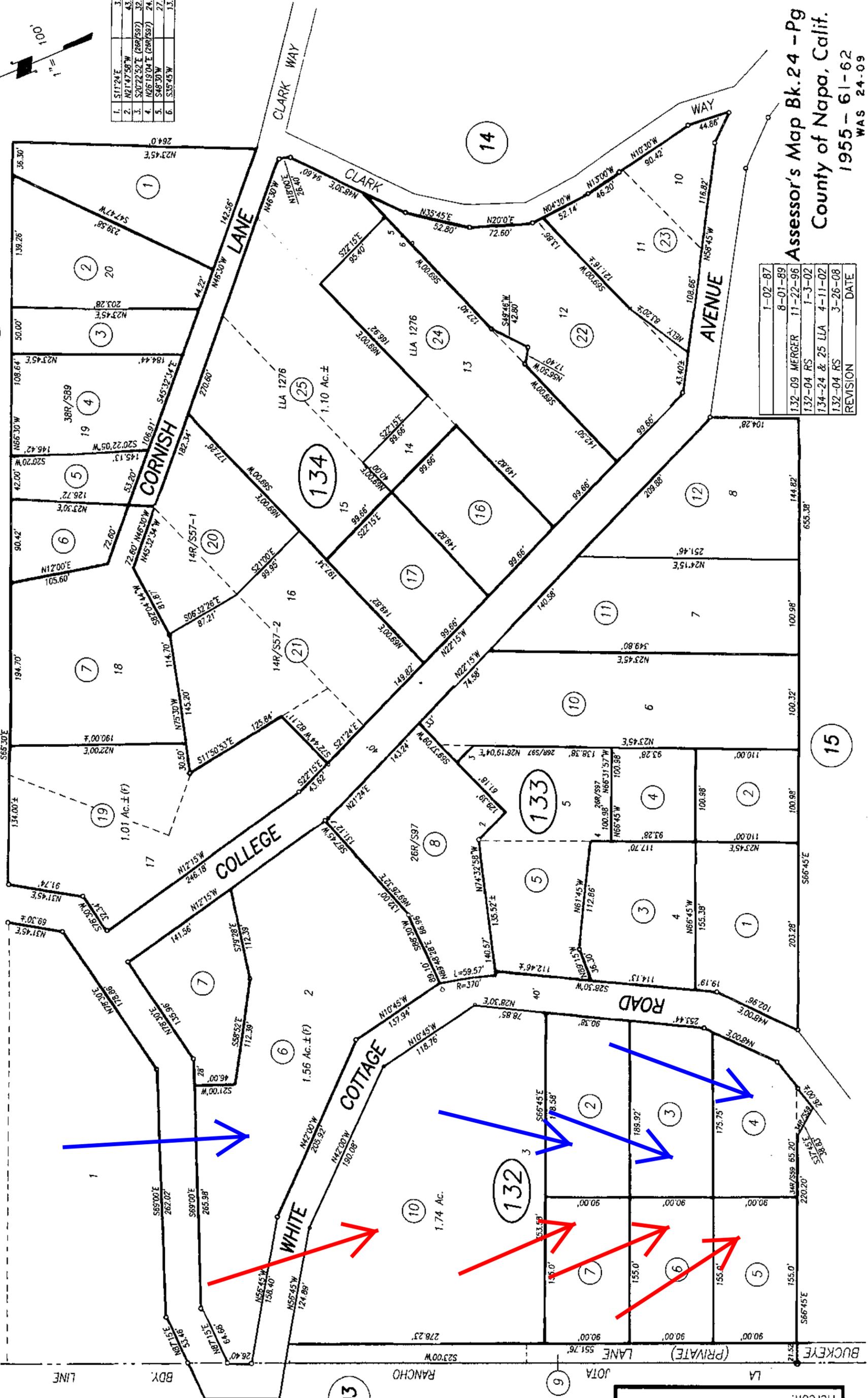
**COUNTY ASSESSOR'S PARCEL MAP**  
 PTN. SUB'D LOT 41, LA JOTA RANCHO  
 R.M. BK. 2, PG. 33

24-13

Tax Area Code  
**65000**



1.	S117'24"E	3.98'
2.	N21'47'58"W	43.63'
3.	S20'22'52"E (288'/S97)	32.21'
4.	N26'19'04"E (288'/S97)	24.42'
5.	S48'30"W	27.50'
6.	S38'45"W	33.20'



REVISION	DATE
1-02-87	
8-01-89	
132-09 MERGER	11-22-96
132-04 RS	1-3-02
134-24 & 25 LLA	4-11-02
132-04 RS	3-26-08

Assessor's Map Bk. 24 - Pg 13  
 County of Napa, Calif.  
 1955 - 61-62  
 WAS 24-09

NOTE: This Map Was Prepared For Assessment Purposes Only, No Liability Is Assumed For The Accuracy Of The Data Delineated Hereon.

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

Co / APN ▲  
(View Detail) 2

Owner Name

Situs Address

 NAP  
[024-132-002-000](#)CHESI RICHARD J & BERTOLINO  
KATHY J**345 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-132-003-000](#)

TIRADO BRIAN &amp; TAMARA

**341 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-132-004-000](#)ERMSHAR DOUGLAS EARL &  
SUSANNE ELEZA**335 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-132-005-000](#)DEARBORN DANA RICHARD &  
MARIE CHRISTINE**330 BUCKEYE LN** ANGWIN CA  
94508-9770 NAP  
[024-132-006-000](#)

KLINGBEIL SHANE &amp; JENNIFER

**340 BUCKEYE LN** ANGWIN CA  
94508-9770 NAP  
[024-132-007-000](#)

TEESDALE DAVE &amp; DEBRA

**350 BUCKEYE LN** ANGWIN CA  
94508-9770 NAP  
[024-132-009-000](#)

DOTZLER FRANK J &amp; KATHY R

ANGWIN CA 94508

 NAP  
[024-132-010-000](#)

SCOTT DANIEL L

**365 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-133-001-000](#)

CHAVEZ DAVID &amp; MARCIA L

**350 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-133-002-000](#)

CHAVEZ DAVID &amp; MARCIA L

ANGWIN CA 94508

 NAP  
[024-133-003-000](#)

CLARK FRANCES

**360 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-133-004-000](#)

CLARK FRANCES

ANGWIN CA 94508

 NAP  
[024-133-005-000](#)

SLACK JEFFERY &amp; KATHLEEN

**376 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-133-006-000](#)

VANCE ROBIN E &amp; MARIA G

**497 COLLEGE AVE** ANGWIN CA  
94508-9726 NAP  
[024-133-007-000](#)

VANCE ROBIN E &amp; MARIA G

ANGWIN CA 94508

 NAP  
[024-133-008-000](#)

CARPY CHARLES G &amp; DANIELLE V

**491 COLLEGE AVE** ANGWIN CA  
94508-9726 NAP  
[024-133-010-000](#)

FISHER MONTE &amp; ERIN

**461 COLLEGE AVE** ANGWIN CA  
94508-9726 NAP  
[024-133-011-000](#)WITT SUSAN R & GRUMMER  
FORREST W CS**435 COLLEGE AVE** ANGWIN CA  
94508-9726 NAP  
[024-133-012-000](#)

WESNER DAVID D II &amp; DIANA K

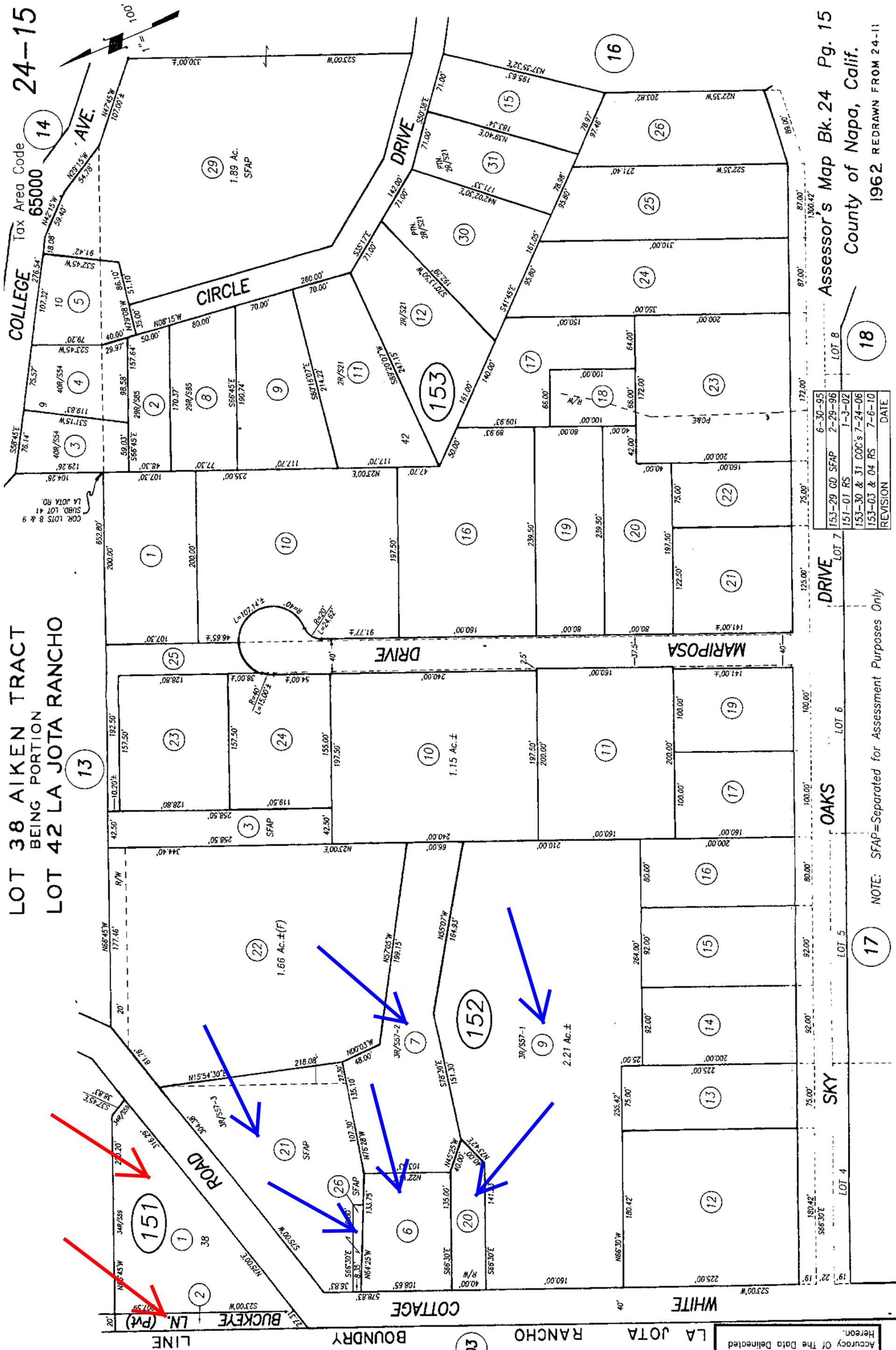
**425 COLLEGE AVE** ANGWIN CA  
94508-9726 NAP  
[024-134-001-000](#)SAMPLE MICHAEL R &  
PLERMCHIT C**458 CLARK WAY** ANGWIN CA  
94508-9752

**LOT 38 AIKEN TRACT  
BEING PORTION  
LOT 42 LA JOTA RANCHO**

COLLEGE Tax Area Code  
**65000**

**24-15**

Appendix



NOTE: This Map Was Prepared For Assessment Purposes Only, No Liability Is Assumed For The Accuracy Of The Data Delineated Hereon.

N-28

153-29 GD SFAP	6-30-95
151-01 RS	2-29-96
153-30 & 31 COC's 7-24-06	1-3-02
153-03 & 04 RS	7-6-10
REVISION	DATE

NOTE: SFAP=Separated for Assessment Purposes Only

Assessor's Map Bk. 24 Pg. 15  
County of Napa, Calif.  
1962 REDRAWN FROM 24-11

SHORT VIEW

Napa, CA JOHN TUTEUR, ASSESSOR

ParcelQuest

Co / APN ▲  
(View Detail) 2

Owner Name

Situs Address

 NAP  
[024-151-001-000](#)

AMMON DOUGLAS H &amp; CHERYL L

**315 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-151-002-000](#)

DOTZLER FRANK J &amp; KATHY R

ANGWIN CA 94508

 NAP  
[024-152-003-000](#)

OLAIZ JOHN H

ANGWIN CA 94508

 NAP  
[024-152-006-000](#)

BULLER JOANN

**312 WHITE COTTAGE RD**  
ANGWIN CA 94508-9621 NAP  
[024-152-007-000](#)

NORTHROP PENNY &amp; THOMAS A

**310 WHITE COTTAGE RD**  
ANGWIN CA 94508-9621 NAP  
[024-152-009-000](#)

WIEDMANN MELISSA A

**260 WHITE COTTAGE RD**  
ANGWIN CA 94508-9771 NAP  
[024-152-010-000](#)GREGORY SCHNEIDER A &  
LORD-SCHNEIDER CANDACE**235 MARIPOSA DR** ANGWIN  
CA 94508-9792 NAP  
[024-152-011-000](#)

MUHIC DANIEL P &amp; KRISTI M

**225 MARIPOSA DR** ANGWIN  
CA 94508-9792 NAP  
[024-152-012-000](#)

DEEB DANIEL PETER

**210 WHITE COTTAGE RD**  
ANGWIN CA 94508-9771 NAP  
[024-152-013-000](#)

MUNDY WILLIAM C &amp; H SUSI

**460 SKY OAKS DR** ANGWIN  
CA 94508-9700 NAP  
[024-152-014-000](#)

MOREL DENNIS W

**450 SKY OAKS DR** ANGWIN  
CA 94508-9700 NAP  
[024-152-015-000](#)

DOUGLAS BABCOCK C &amp; DIANE

**440 SKY OAKS DR** ANGWIN  
CA 94508-9700 NAP  
[024-152-016-000](#)LOPEZ GEORGE & ALVAREZ ROSA  
ELENA**430 SKY OAKS DR** ANGWIN  
CA 94508-9700 NAP  
[024-152-017-000](#)

JAUCH ROBERT E &amp; VIRGINIA A

**420 SKY OAKS DR** ANGWIN  
CA 94508-9700 NAP  
[024-152-019-000](#)

DICE ANNELIES RACHEL

**410 SKY OAKS DR** ANGWIN  
CA 94508-9700 NAP  
[024-152-020-000](#)GEPFORD ROBERT WILLIAM & MABEL  
E

ANGWIN CA 94508

 NAP  
[024-152-021-000](#)

JOHNS ELAINE

**320 WHITE COTTAGE RD**  
ANGWIN CA 94508-9769 NAP  
[024-152-022-000](#)

OLAIZ JOHN H

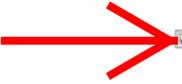
**330 WHITE COTTAGE RD**  
ANGWIN CA 94508-9724 NAP  
[024-152-023-000](#)

SCHNEBELT ERIC J

**255 MARIPOSA DR** ANGWIN  
CA 94508-9792 NAP  
[024-152-024-000](#)

HARRIS LAUREL A

**245 MARIPOSA DR** ANGWIN  
CA 94508-9792

<input type="checkbox"/>	NAP <a href="#">024-152-025-000</a>	CRUMBS IVALYNE	ANGWIN CA 94508
	<input checked="" type="checkbox"/>	NAP <a href="#">024-152-026-000</a>	JOHNS ELAINE ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">024-153-001-000</a>	ALIMPIC MILOVAN	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">024-153-002-000</a>	WALLIN KENNETH A	<b>407 CIRCLE DR</b> ANGWIN CA 94508-9806
<input type="checkbox"/>	NAP <a href="#">024-153-003-000</a>	FLAMSON DANIEL C & MARIA ISABEL RUBALCAVA	<b>417 COLLEGE AVE</b> ANGWIN CA 94508-9726
<input type="checkbox"/>	NAP <a href="#">024-153-004-000</a>	BOCK MICHAEL E & LORIE	<b>415 COLLEGE AVE</b> ANGWIN CA 94508-9726
<input type="checkbox"/>	NAP <a href="#">024-153-005-000</a>	PARRIOTT GERALD ALLEN & MICHELLE CAZET HW	<b>401 COLLEGE AVE</b> ANGWIN CA 94508-9726
<input type="checkbox"/>	NAP <a href="#">024-153-008-000</a>	GREGORY CATHRYN JEAN & CROUSE EDWIN D	<b>401 CIRCLE DR</b> ANGWIN CA 94508-9806
<input type="checkbox"/>	NAP <a href="#">024-153-009-000</a>	PACIFIC UNION COLLEGE	<b>395 CIRCLE DR</b> ANGWIN CA 94508-9725
<input type="checkbox"/>	NAP <a href="#">024-153-010-000</a>	SMITH DAVID M & JANET M	<b>250 MARIPOSA DR</b> ANGWIN CA 94508-9792
<input type="checkbox"/>	NAP <a href="#">024-153-011-000</a>	CHEEK DOROTHEA E	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">024-153-012-000</a>	CHEEK DOROTHEA E	ANGWIN CA 94508
<input type="checkbox"/>	NAP <a href="#">024-153-015-000</a>	TOROSSIAN AVANESS H & EDITH MARIE	<b>377 CIRCLE DR</b> ANGWIN CA 94508-9725
<input type="checkbox"/>	NAP <a href="#">024-153-016-000</a>	RICK GORDON & CHERYL	<b>234 MARIPOSA DR</b> ANGWIN CA 94508-9792
<input type="checkbox"/>	NAP <a href="#">024-153-017-000</a>	ROSENTHAL GREGORY & AMY	<b>364 SKY OAKS DR</b> ANGWIN CA 94508-9793
<input type="checkbox"/>	NAP <a href="#">024-153-018-000</a>	REBOK DOUGLAS E & BARBARA A	<b>366 SKY OAKS DR</b> ANGWIN CA 94508-9793
<input type="checkbox"/>	NAP <a href="#">024-153-019-000</a>	LINARES GUILLERMO AREVALO & KEY MARALBETH ANALY DO	<b>226 MARIPOSA DR</b> ANGWIN CA 94508-9792
<input type="checkbox"/>	NAP <a href="#">024-153-020-000</a>	JACOBO ISAIAS & NANCY R	<b>220 MARIPOSA DR</b> ANGWIN CA 94508-9792
<input type="checkbox"/>	NAP <a href="#">024-153-021-000</a>	CRANDALL ESTHER EDITH	<b>390 SKY OAKS DR</b> ANGWIN CA 94508-9790
<input type="checkbox"/>	NAP <a href="#">024-153-022-000</a>	ANDERSON CRAIG G & BARBARA A	<b>380 SKY OAKS DR</b> ANGWIN CA 94508-9793
<input type="checkbox"/>	NAP <a href="#">024-153-023-000</a>	WEHTJE RODNEY C & NIKKI	<b>370 SKY OAKS DR</b> ANGWIN CA 94508-9793
<input type="checkbox"/>	NAP <a href="#">024-153-024-000</a>	HENRY MATTHEW & TESSA	<b>360 SKY OAKS DR</b> ANGWIN CA 94508-9793
<input type="checkbox"/>	NAP <a href="#">024-153-025-000</a>	RAMIREZ AARON & DERAMIREZ MARA I LEON	<b>350 SKY OAKS DR</b> ANGWIN CA 94508-9793
<input type="checkbox"/>	NAP <a href="#">024-153-026-000</a>	VENEGAS LUZ O	<b>310 SKY OAKS DR</b> ANGWIN CA 94508-9793



**Figure 1.** View of typical habitat associated with the THP/TCP illustrating mixed chaparral alliance.



**Figure 2.** Manzanita alliance on the project site.



**Figure 3.** Doug-fir and Ponderosa pine trees with in Doug-fir alliance.



**Figure 4.** Reservoir on the property. No removal of vegetation within 100-feet.



**Figure 5.** Grey Pine and Chamise chaparral alliance.



**Figure 6.** Mixed Oak Woodland Alliance

# ***APPENDIX I***

---

## TIMBER CONVERSION PLAN

## Davis Estates, Friesen Vineyards

### Timberland Conversion Plan (TCP)

Prepared for  
Davis Estates  
15572 Computer Ln.  
Huntington Beach, CA 92649

By  
Environmental Resource Management  
889 Hwy 20-26  
Ontario, OR 97914

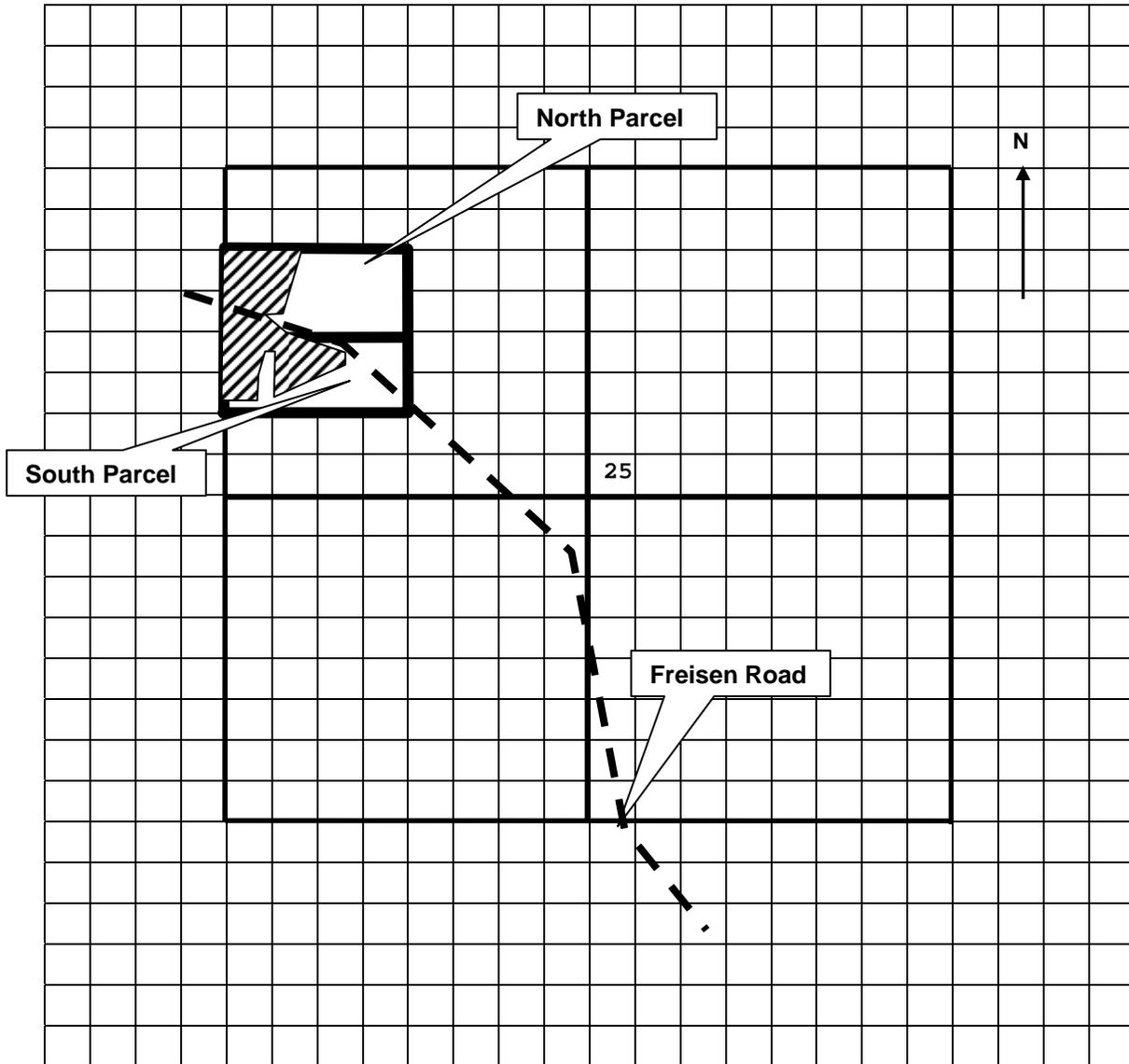
**Timberland Conversion Index**, applies to Timberland Conversion only

Description	Attachment	Page
Plat Map		3
THP/Conversion Map		38+
Timberland Conversion Permit Application and Plan		4
Plan		7
Professional reports, Some attached, others to be submitted		
Agriculture-Grazing		11
Soils		11
Archaeology		15
Surrounding Land Uses		17
Alternatives		22
Water Availability Analysis		24
Environmental Information Form		25
Project Description		30
Environmental Setting		30
Aerial Photo		36
<b>Attachments</b>		
Erosion Control Plan	#1	32
Soil report	#2	33
Integrated Pest Management Report	#3	34
Notice of Preparation for EIR	#4	35
Photos	#5	36
Maps and Figures	#6	37

**TIMBERLAND CONVERSION PLAT**

Applicant (s) Name (s) Davis Estates, Friesen Vineyards

Section (s) 25 Township 9N Range 6W MD B & M



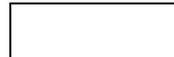
Scale 4 Inch (es) = 1 mile

Show section numbers in center of section on plat. Entire plat may be used as one section or as halves of adjoining sections if needed for large scale detail.

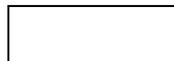
Show the conversion area not in a Timberland Production Zone or Coastal Zone by:



Show the conversion area in Timberland Production Zone by:



Show the conversion area in the Coastal Zone by:



**See THP conversion map**

**TIMBERLAND CONVERSION PERMIT APPLICATION AND PLAN**

Pursuant to Sections 4621-4628, Resources Code, and regulations contained in Title 14, California Code of Regulations, I (we)

	<u>North Parcel</u>	<u>South Parcel</u>
Name(s)	<b>Bercovich Edward L &amp; Darleen</b>	<b>Frost Fire Vineyards II, LLC</b>
Address(s)	<b>1591 Ellis Street, Apt 313</b>	<b>15572 Computer Ln.</b>
	<b>Concord, CA 94520</b>	<b>Huntington Beach, CA 92649</b>

hereby apply to the Director of Forestry and Fire Protection for a Timberland Conversion Permit to exempt the timberland described herein, and shown on the attached map or plat as a part of this application, from forest practice stocking requirements for conversion to a non-timber growing use and/or to enable final immediate rezoning from TPZ.

- Property description of area to be converted, Portion of A.P.N.  

	<u>North Parcel</u>	<u>South Parcel</u>
	<b>018-060-012</b>	<b>018-060-013</b>
- Subdivision(s) Section Township Range B&M  
Portion of 25 T8N R6W MDB&M
- Acres of timberland to be converted  

	<u>North Parcel</u>	<u>South Parcel</u>	<u>Total</u>
	<b>3.2 acres</b>	<b>6.8 acres</b>	<b>10</b>

**The total project area is +/- 14 acres, of which 10 acres meet the definition of commercial timberland and will be converted. The balance of the +/- 14 acres (4) is composed of grass, brush and ruderal acreage. The net acres of the vineyard will be 10.5 acres.**

- The owner(s) of record of this timberland is (are)  

	<u>North Parcel</u>	<u>South Parcel</u>
	<b>Bercovich, Edward L &amp; Darleen</b>	<b>Frost Fire Vineyards II, LLC</b>

**Frost Fire Vineyards is owned by Mike Davis. Mr. Davis purchased the southern parcel from John Edwards Peck and has a real estate contract to acquire the northern parcel within the next few years from Mr. Ed Bercovich. This delayed purchase is due to Mr. Bercovich's retirement plans. Mr. Bercovich supports Mr. Davis's proposals and Mr. Davis is responsible for all costs and liabilities associated with the proposed project to convert the property to a vineyard. Both signature are found on this application.**

- The recorded interest in this timberland is held under  

	<u>North Parcel</u>	<u>South Parcel</u>
deed dated	<b>8-13-1981</b>	<b>10-19-2012</b>
recorded in Document	<b>1981 Vol. 1212, page 614</b>	<b>2012R0027903</b>
official records in	<b>Napa County</b>	<b>Napa County</b>

- This timberland is assessed in the name of:  

	<u>North Parcel</u>	<u>South Parcel</u>
	<b>Bercovich, Edward L &amp; Darleen</b>	<b>Frost Fire Vineyards II, LLC</b>

7. I (we) intend to use this timberland in the future for commercial production of premium varietal grapes.

8. Conversion will begin about June, 2015 and be completed by October 15, 2016.

9. Is all or part of conversion area in a Timberland Production Zone (TPZ)?  
 \_\_\_\_\_yes  no If yes show the area in TPZ with diagonal black lines on the conversion plat or map, and complete the following items a through e.
- a. Is check or money order for \$100 payable to the California Department of Forestry and Fire Protection enclosed with this rezoning application as required?  
 \_\_\_\_\_yes \_\_\_\_\_no **N/A**
- b. Has application for immediate rezoning from TPZ been made to the county or city having property tax jurisdiction?  
 \_\_\_\_\_yes \_\_\_\_\_no **N/A**
- c. If applied for, has the county or city tentatively approved immediate rezoning from TPZ?  
 \_\_\_\_\_yes \_\_\_\_\_no **N/A**  
 If yes, give date \_\_\_\_\_ **N/A**
- d. Is there any other property zoned TPZ within one mile of the boundary of the TPZ area proposed for immediate rezoning?  
 \_\_\_\_\_yes \_\_\_\_\_no **N/A**
- e. Are there any proximate non-TPZ lands (on or off the property containing the TPZ proposed for rezoning) suitable for the proposed conversion use?  
 \_\_\_\_\_yes \_\_\_\_\_no **N/A**  
 If no, explain why such non-TPZ lands are not suitable.
10. a. Is check or money order for the basic **\$600 CDF** timberland conversion fee (payable to the California Department of Forestry and Fire Protection) enclosed with this application?  
 \_\_\_\_\_ yes \_\_\_\_\_no (See Title 14, 1104.2 CCR.)
- b. Is check or money order for the **\$1,250 Fish** and Game impact fee (Section 711.4(d)(2), Fish and Game Code) payable to the State of California enclosed?  
 \_\_\_\_\_ yes \_\_\_\_\_no  
 I will submit the fee when notified seven days in advance of filing the Notice of Determination and issuance of the permit.
11. Is any of the conversion area in a Coastal Zone as provided for by the California Coastal Act of 1976?  
 \_\_\_\_\_yes  no If yes, show the area in the Coastal Zone by horizontal black lines on the conversion plat or map, and complete the following item a.
- a. Has a Coastal Zone permit for the proposed conversion use been issued?  
 \_\_\_\_\_ yes \_\_\_\_\_no If yes, date of issuance \_\_\_\_\_, 20\_\_\_\_. **N/A**
12. What element(s) of the county or city general plan apply to the area within which the timberland proposed for conversion is located? **Agricultural Resources**
13. What is the zoning classification for all or part of the proposed conversion area that is neither TPZ nor Coastal Zone (use the designated zone term such as "Agriculture - Forest", not a letter - number designation)? **AW, Agriculture - Watershed**
14. Does the county, city or a district have a permit zoning, or other approval jurisdiction for the project that is the purpose of the conversion?  
 yes \_\_\_\_\_no If yes, complete the following items a. through d.
- See **the Erosion Control Plan attached, #P13-00373-ECPA.**
- a. Name of local government entity **County of Napa, Conservation, Development and Planning Department.**
- b. Name the type of approval, zoning, or permit required. **Erosion Control Plan, application # P13-00373-ECPA**
- c. Has the local government agency submitted an environmental impact report or negative declaration to the State Clearinghouse as required by the California Environmental Act (CEQA) and regulations? \_\_\_\_\_ yes  no
- d. What is the State Clearinghouse Number? **N/A This will be added later** (The Timberland Conversion Permit cannot be issued until this is done and local government adopts the documents.)

- e. Has the local government granted the necessary approvals, zoning, or permits required for the project? yes  no  
If no, explain in the appropriate section of the Timberland Conversion Plan.

**The Erosion Control Plan required by Napa County has been submitted and is being processed. Approval of the Napa County ECP will rely on the CEQA document (Environmental Impact Report) developed by CDF's environmental review of the Timber Harvest Plan (THP) and Timber Conversion Plan (TCP). A signed copy of the THP and TCP will be submitted to Napa County when they are approved. The ECP will be made a part of the THP.**

- 15. All property owners must sign the following affidavit unless the owner is a partnership, corporation or other organization, in which case the signer must be a partner, corporate officer, or organization officer respectively. An owner's agent may sign the affidavit, if power of attorney designating the agency, and signed by all the owners, a partner, or corporate or organization officer, for these respective kinds of ownership's accompanies the application. If the affidavit or power of attorney is signed in a state other than California, the signatures must be notarized.

**AFFIDAVIT**

I (We) own the herein described property, and declare a bona fide intent as defined in Section 1100(b), Title 14, California Code of Regulations to successfully complete conversion of the herein described timberland for the stated purpose in accordance with the conversion plan and plat or map, all hereby acknowledged as a part of this application, and in accordance with the timberland conversion permit, timber harvesting plan, and conditions required through the California Environmental Quality Act and related regulations.

I (We) understand that if the conversion fails or is abandoned, that I (we) can be required to restock with trees those areas that do not comply with forest practice stocking requirements, so that such areas meet forest practice stocking requirements. I (We) understand that if we fail to do so, the Director of Forestry and Fire Protection can have the restocking done, including necessary site preparation, and charge me (us) with the costs.

I (We) declare under penalty of perjury that I (we) have fully read this application, conversion plan and plat or map, and that the information given therein is correct to the best of my (our) knowledge.

**North Parcel**

Executed on 5-19-2014 2014, at Napa County State of California

Signature(s) of Property Owner(s)	Title(s)
	<u>Edward Bercovich</u>
<u>Darleen Bercovich</u>	<u>Darleen Bercovich</u>

**South Parcel**

Executed on 5-19-2014 2014, at Napa County State of California

Signature(s) of Property Owner(s)	Title(s)
	<u>FrostFire Vineyards II, LLC</u>
<u>MICHAEL A. DAVIS</u>	

TIMBERLAND CONVERSION PLAN

Instructions -Omitted-  
General

Timberland Owner **Frost Fire vineyards II, LLC**

1. The responsible person who may be contacted if different from those given in the Application section. **As above**
2. Have you received professional advice or assistance in planning this conversion?  
 Yes  No List name and address of people professionally trained in land management who are advising you on this conversion.

**See the consultation list below.**

**Consultant List****Landowner-Applicant**

Frost Fire Vineyards II, LLC  
 Mike Davis  
 15572 computer Lane  
 Huntington Beach, CA 92649  
 Phone: (741) 861-2201  
 Email address: [mike.davis@acsacs.com](mailto:mike.davis@acsacs.com)

**CEQA Consultant**

Analytical Environmental Services  
 Stephanie Henderson  
 1801 7<sup>th</sup> Street, Suite 100  
 Sacramento, CA 95811  
 Office: (916) 447-3479  
 Fax: (916) 447-1665  
 Email address: [shenderson@analyticalcorp.com](mailto:shenderson@analyticalcorp.com)

**Civil Engineer**

Napa Valley Vineyard Engineering, INC.  
 Drew Aspegren  
 176 Main St Ste B  
 Saint Helena, CA  
 Office: (707) 963-4927  
 Cell: (707) 287-7700  
 Email address: [napavve@aol.com](mailto:napavve@aol.com)

**Registered Professional Forester**

Environmental Resource Management  
 Scott R. Butler  
 889 hwy 20-26  
 Ontario, OR 97914  
 Office & Cell: (707) 468-8466  
 Home: (541) 823-0066, Fax (707) 220-0111  
 Email address: [scott.butler@sbcglobal.net](mailto:scott.butler@sbcglobal.net)

**Hydrologist**

O'Conner Environmental  
 Matt O'Connor  
 P. O. Box 794  
 Healdsburg, CA 95448  
 Office: (707) 431-2810  
 Email address: [matto@oe-i.com](mailto:matto@oe-i.com)

**Botanist & Biologist**

Daniel Kjeldsen  
 923 St. Helena Ave  
 Santa Rosa, CA 95404  
 Office: (707) 544-3091  
 Email address: [kjeldsen@sonic.net](mailto:kjeldsen@sonic.net)

**Archaeologist**

Tom Origer & Associates  
 Tom Origer  
 Archaeology/Historical Research  
 P.O. Box 1531  
 Rohnert Park, California, 94927.  
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**Geologist**

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**Vineyard Soil Technologies**

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**Pina Vineyard Management**

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**Agencies involved****Napa County Resource Conservation District**

Dave Steiner  
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**Napa County Planning**

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**California Department of Forestry, Sacramento**

Dennis Hall  
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 Sacramento, CA 94244-2460  
 Office: (916) 653-9422  
 Email: [Dennis.Hall@fire.ca.gov](mailto:Dennis.Hall@fire.ca.gov)

**California Department of Forestry, Santa Rosa**

Kim Sone  
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**California Department of Fish & Game****California Department of Mines and Geology**

Michael Huyette  
 135 Ridgeway Ave  
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 Email: [michael.huyette@fire.ca.gov](mailto:michael.huyette@fire.ca.gov)

3. Do you have or can you obtain sufficient financial resources to carry out this conversion?

Yes     No

Should the conversion fail or be abandoned do you have or can you obtain sufficient financial resources to return the land to timber production?

Yes     No

4. How will the timber be logged? (Will all or only some trees be cut? Will area be tractor-logged or cable-logged, etc.?) Describe:

**All non merchantable trees and vegetation will be removed, chipped and/or burned on the site. Crawler tractors and/or skidders will be utilized to move merchantable forest products to landings on existing roads. Suitable minor forest products will be removed as appropriate and as can be marketed. Slash, brush and non-commercial vegetation will be windrowed for burning. Logs will be merchandized onsite. No logs will be hauled from the project area.**

5. Slope percent ranges in gradient generally 0% to 27%. Slopes face generally toward the South. See the Draft Erosion Control Plan attached.

6. Describe special measures to be taken during and after logging, including road and skid road construction, and use to prevent erosion, protect soil, and to protect local streams, ponds, or lakes on or near the conversion area. EXPLAIN IN DETAIL:

**No new roads will be built. Due to the gentle nature of the ground no skid trails will be built. Stumps will be removed with an excavator and or crawler tractor. All exposed soils will be stabilized under the direction of the Erosion Control Plan approved by Napa County.**

7. Describe how the area will be prepared for new use after logging. Describe methods of slash disposal and woody vegetation treatment, and any additional land treatment measure that will be taken:

**All merchantable material will be utilized for sawlogs, fuelwood, chips or minor forest products. The remaining slash, roots and stumps will be mechanically concentrated chipped and/or burned. The area will be ripped, rock picked and cultivated. Soil amendments such as gypsum and lime will be applied as needed upon recommendation of vineyard consultants. Other soil treatments may also be applied according to the recommendations of the vineyard manager and/or consultant. Drip irrigation will be installed prior to planting. The vineyard will then be seeded for a permanent non till cover crop. The vineyard will require a "strip spray" herbicide application around the newly planted vines to avoid future weed competition. Installation of an appropriate trellis system will be required after the vines are in the ground and established. This system is usually installed in stages during the first couple of years of planting.**

8. If conversion fails, or is abandoned for any reason, how will the area be returned to timber growing use to meet the purpose of the Forest Practice Act? Describe land preparation, and seeding or planting measures:

**The vineyard will be mechanically site prepared and planted to Douglas-fir and Ponderosa Pine under a professional forester's supervision. Planting of seedlings would be on 12 foot spacing, yielding 300 per acre.**

9. Areas which conversion will be completed within 5 years +/- 10 Acres. Date by which logging will be completed: **Fall the year of start up of operations.** Date by which final conversion to new use will be completed: **Fall of the year after the area is cleared.**

10. What assurances can you give that this conversion is feasible?

**Established vineyards in Napa County have been producing premium grapes for several generations. Many of these vineyards have been developed on timberlands that are the same and/or similar to that of the project area. This landowner presently manages vineyards in the general area of this property. Several major commercial wineries exist in the same growing region of Napa County. Comparable neighboring property has been successfully planted to grapes and has been producing for many years.**

**Vineyard development within Napa County is occurring in many areas. This reflects the increasing demand for high quality varietal grapes from Napa County. The proposed project area is adjacent to several existing vineyards. This planting will supply grapes to the local wineries in the area.**

**The acreage to be converted and developed as vineyard has been selected because of the favorable topography, suitable soils and climate. The applicants and their advisors are competent growers with a history, of developing and management of vineyards. They have an intimate knowledge of the wine industry.**

**Significant financial resources exist to insure completion of the project. Professionals familiar with all aspects of developing and managing a productive vineyard have been consulted. These knowledgeable advisors have indicated that given appropriate cultural practices the proposed area will be able to grow premium varietal grapes on an economically feasible basis.**

11. Describe the specific plans for development of the new use:  
List and attach any documents and sketches illustrating or showing proposed use.

**The tentative plan of development is to complete the timber harvest portion of the project beginning in the spring of 2015. All sawlogs, fuelwood and miscellaneous wood products are expected to be removed prior to fall of 2015. Clearing, ripping, rock picking and permanent erosion control measures will then be installed prior to the fall of 2016. Burning of residue piles will occur as permitted by the California Department of Forestry and Fire Protection and the Bay Area Air Quality Management District. Basic irrigation installation is expected to be completed by the end of the 2015 season, if not it will be completed during the 2016 season. Vineyard planting will commence as soon as the vines become available. It must be emphasized that these schedules are estimates only and may be changed by factors beyond the control of the applicant. All erosion control measures of the ECP will be implemented prior to the winter period of the year the ECP is applied.**

**AGRICULTURE-GRAZING**

The following additional information is needed for lands to be devoted to agricultural purposes including grazing.

1. Has the suitability of the soil for the intended agricultural use been determined through examination by and consultation with farm advisors, Soil conservation District specialists, or other qualified professionals?  
 Yes     No

If "YES", give name and title of specialists and describe findings:

<p><b>Registered Professional Forester # 1851</b>  <b>Scott R. Butler</b>  <b>13,333 Low Gap Rd.</b>  <b>Ukiah, CA 95482</b>  <b>(707) 468-8466</b></p>	<p>"This forest area is comparable to other producing vineyards in the area. Forest site quality is moderate to low over the area. Slopes, soils and aspect have been considered by the applicant and their advisors. Implementation of the erosion control plan will control sediment transport and protect valuable resources associated with this environment."</p>
<p><b>Vineyard Soil Technologies</b>  <b>3379 Solano Ave. #505</b>  <b>Napa, CA 94558</b></p>	<p>"The soils of this vineyard site are variable and some areas are very well suited for high quality winegrape production, whereas some are essentially unsuitable to winegrape production. The soils are mapped by the Napa County Soil Survey as the Rock- Outcrop-Kidd complex. The most common soil series found on the property were the Kidd and Forward series, with a smaller area with the Aiken loam. The Aiken loam is considered one of very best mountain viticultural soils in northern California. It is commonly found in both the Diamond Mountain and Howell Mountain American Viticultural Area."</p>

2. Describe the soils now supporting timber or other woody vegetation: (clay, loam, sand, decomposed granite, etc.) Give soil series if known:

**The soils of this vineyard site are variable and some areas are very well suited for high quality winegrape production, whereas some are essentially unsuitable to winegrape production. The soils are mapped by the Napa County Soil Survey as the Rock- Outcrop-Kidd complex. The most common soil series found on the property were the Kidd and Forward series, with a smaller area with the Aiken loam. The Aiken loam is considered one of very best mountain viticultural soils in northern California.**

**See Anamosa soils report attached.**

3. Describe soil treatments necessary or desirable for the new use: (lime, fertilizers, mulch, etc., and rate of application).

**See the Erosion Control Plan attached.**

4. How will other woody vegetation left after logging be eliminated?  
 (Check method) Mechanical removal  Burn  Chemical eradication  Other

**After removal of merchantable logs, firewood and chip material, the remaining slash, stumps and roots will be concentrated with heavy equipment and burned or put through a tub grinder. The area will then be raked and ripped. Hand picking of roots and debris will be necessary. Burning according to Bay Area Air Pollution Control District regulations and CDF fire rules will occur as soon as permissible after timber removal.**

5. How will natural woody growth be prevented from revegetating the area?  
 (Check method) Mechanical removal  X  Reburn \_\_\_\_\_ Chemical eradication \_\_\_\_\_ Other \_\_\_\_\_.
6. What kind and rate of application of seed or kind and spacing of planting stock will be used?

**Seedling Requirements: All exposed or disturbed soils shall be seeded Seed and fertilizer shall be applied hydraulically or broadcast at the rates specified below. The Timber Harvest Plan shall not use grass seed considered invasive by the California Pest Plant council. Once the Erosion Control Plan is implemented, erosion control measures will be directed by the ECP and Napa County. See the attached ECP.**

<p><b>Napa Valley Ag supply</b>  <b>“Plowdown legumes”</b>  <b>@ 100 lbs/ac</b></p>	<p><b>Ball Beans</b>  <b>Forage Peas, VNS</b>  <b>Forage Peas, VNS</b>  <b>Common Vetch</b></p>	<p><b>40%</b>  <b>20%</b>  <b>20%</b>  <b>20%</b></p>
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**An alternative seed mix and/or fertilizer may be used after review and approval by Napa County Resource Conservation Department.**

**Fertilizer: Ammonium Phosphate sulfate (16-20-0) 200-240 lbs/ac**

**Straw Mulch shall be spread over all disturbed and seeded areas. The mulch shall be spread mechanically or by hand at the rate of 2 tons/acres.**

**The conversion area will be planted to vineyard following implementation of the ECP. The vinerows in Block C will run roughly cross slope with the contours, Blocks A, B and D vinerows will run roughly up and down the contours and rows will be 7’ apart.**

7. If conversion is for grazing, what kind and number of livestock are being grazed now on this property?  
**N/A**  
 What kind and number of livestock will be grazed after conversion is completed?  
**N/A**
8. What water developments exist now on the property?  
**The existing well currently produces 50 gallons per min.**
9. What additional water developments are planned for conversion?  
**None are planned at this time.**
10. What length of fence exists now in connection with the conversion area?  
**The west boundary of the property and associated vineyard blocks is presently fenced with Barbed wire.**
11. How much additional length of fence will be added in connection with conversion?  
**Vineyard fencing will be limited to the perimeter of the vineyard blocks, see the ECP attached. Approximately 5,800’**
12. Describe buildings or improvements now on property where conversion is planned: (Residence, barn, other and other farm structures)  
**None**
13. Describe buildings or improvements to be added in connection with conversion:  
**No additional buildings are planned for the conversion area.**

**SUBDIVISION Not Applicable**

Applicable only for lands in Timberland Production Zone. See item 8, informational page.

The following additional information is needed for lands to be devoted to real estate subdivisions:

1. Has "Combined Notice of Intention" per Section 11010, Business and Professions Code been filed with State Division of Real Estate?

\_\_\_\_\_ YES \_\_\_\_\_ NO If "YES", DATE FILED: \_\_\_\_\_

2. Is area approved for subdivision? \_\_\_\_\_ YES \_\_\_\_\_ NO

If "YES", by what local governing authority? \_\_\_\_\_

\_\_\_\_\_

3. Name the fire protection jurisdiction in which the subdivision will be (name of incorporated city, fire district, or other, name and describe):

\_\_\_\_\_

4. Will meeting fire protection standards of the fire protection jurisdiction, or of the safety element of the county or city general plan and county or city ordinance be a condition for county or city approval of the final subdivision map?

\_\_\_\_\_ YES \_\_\_\_\_ NO

(If not, this may be made a condition of the Timberland Conversion Permit.)

5. Provide copy of proposed general development plan and indicate plan is included by "X" \_\_\_\_\_

**RECREATION Not Applicable**

The following additional information is needed for lands to be devoted to recreational development:

1. Provide evidence of county or district zoning and approval with this plan, and list copies of document(s) submitted herewith showing such approval:

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_

2. Are documents attached with this conversion plan: \_\_ YES \_\_ NO

3. Does your plan comply with local health and sanitation requirements, and have approval?

\_\_\_\_\_ YES \_\_\_\_\_ NO

4. Will your plan meet county road standards, and have county approval of the roads?

\_\_\_\_\_ YES \_\_\_\_\_ NO

5. Provide copy of development plan and indicate plan is included by "X" \_\_\_\_\_

**WATER DEVELOPMENT PROJECTS Not Applicable**

The following additional information is needed for lands to be devoted to reservoirs or other water development projects:

1. Is the reservoir to be built and operated for private use or by a government agency?  
\_\_\_\_\_

2. If for a public agency, show name of agency:  
\_\_\_\_\_

3. If privately owned and operated, do you have a permit, certificate or similar documents from the State (California) Department of Water Resources? \_\_\_\_\_YES\_\_\_\_\_NO

4. Is a reservoir to be built under the Agricultural Conservation program?  
\_\_\_\_\_YES\_\_\_\_\_NO

If so, have you filed application? \_\_\_\_\_YES\_\_\_\_\_NO

Attach copy of application, document of approval, or copy of evidence of professional planning and design and indicate it is attached by "X": \_\_\_\_\_

5. Provide a map showing the high water line in relation to your property and indicate map is included by "X": \_\_\_\_\_

6. Is a permit to appropriate water required from the State Water Resources Control Board? \_\_\_\_\_YES\_\_\_\_\_NO

7. If 6 above is "YES", has application been made? \_\_\_\_\_YES\_\_\_\_\_NO

8. If 6 above is "YES", give date of application: \_\_\_\_\_

**MINING Not Applicable**

The following additional information is needed for lands to be devoted to mining purposes:

1. Has an assay or feasibility report been made to determine the quality and the economics of the venture?  
\_\_\_\_\_YES\_\_\_\_\_NO

If "YES", summarize findings:  
\_\_\_\_\_

2. Describe nature and extent of necessary disturbance.  
\_\_\_\_\_  
\_\_\_\_\_

3. Provide map of proposed development and indicate map is included by "X": \_\_\_\_\_

4. If a county approved reclamation plan required by the Surface Mining and Reclamation Act and county ordinance for this mine? \_\_\_\_\_YES\_\_\_\_\_NO

5. If 4 above is "YES", has the county approved a Reclamation Plan for this mine? \_\_\_\_\_YES\_\_\_\_\_NO  
(If "NO", issuance of the conversion permit may be delayed until the county approves the reclamation plan.)

## OTHER

Complete application detail for intended conversion purpose:  
Provide other pertinent information. -- Attach separate sheets if necessary:

### A. Archeology

Tom Origer and Associates have conducted an archaeological survey of the plan area. One arch site was identified during the course of the intensive archaeological field survey performed. Consultation with the landowner, Tom Origer and Associates and Chuck Whatford, CDF archaeologist, determined that further investigation of the site would be needed to develop the vineyard block location.

Consultation with the CDF Archaeologist Chuck Whatford in a memo dated 1-28-2014 states:

**Introduction:** On January 14, 2014, an in-field pre-submittal consultation took place for the proposed - Davis Timber Harvesting Plan (THP)/Timberland Conversion Project (TCP) in Napa County. Representatives of Tom Origer & Associates had previously conducted an archaeological survey of the plan area and prepared a draft Confidential Archaeological Addendum (CAA) (Del Bondio and Origer 2013a), a draft cultural resources survey report (Del Bondio and Origer 2013b) and a draft site evaluation report (Barrow, Del Bondio and Origer 2013), which were reviewed as part of the preconsultation Registered Professional Forester (RPF) Scott Butler requested. Present during the preconsultation were RPF Scott Butler, Licensed Timber Operator (LTO) Galen Bullock and the author. The purpose of the field meeting was to inspect the proposed project area in general and, in particular, to inspect site CA-NAP-1124 which was identified within the project area and, subsequently, was tested and proposed eligible for treatment as a sparse lithic scatter under the criteria specified in the California Office of Historic Preservation's "California Archaeological Resource Identification and Data Acquisition Program: Sparse Lithic Scatters (CARIDAP)

**Conclusion:** As documented in the report by Barrow, Del Bondio and Origer (2013), the research potential of site CA-NAP-1124 has now been exhausted (that research potential initially qualified the site for consideration as a Historical Resource eligible for inclusion in the California Register of Historical Resources under Criterion 4). However, it is a reasonable precaution—as recommended in Part 9 of the CAA—that a qualified archaeologist and Native American representative be present on site during all ground disturbing activities in the northwest block located north of the unnamed seasonal drainage where the site was identified. “

A record search by the Northwestern Information Center, Sonoma State University, disclosed no other archaeological sites on or near the project area. Letters were sent to Native American tribes in the County requesting input, no other sites were disclosed in or near the project area. The complete Archaeological report can be seen at the CDF Archaeologist office in Santa Rosa. **No significant adverse impacts are expected to occur.**

### Protection Measures:

All protection measures mentioned in the CAA report and subsequent CDF memo dated 1-28-2014 by Chuck Whatford have been incorporated into the planned project.

**B. Rare and Endangered Species.**

A biological survey and report were done by Kjeldsen Biological Consulting, see the report dated Jan, 2014. The following is a summary of that report.

“We find that the proposed project will not have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status species in local or regional plans, polices, or regulations, or by the California Department of Fish and Wildlife or U. S. Fish and Wildlife Service.

We find that the project as proposed will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, polices, regulations or by the California Department of Fish and Wildlife or the US Fish and Wildlife Service.”

**No significant adverse impacts are expected to occur.**

**C. Visual, see the THP****VISUAL**

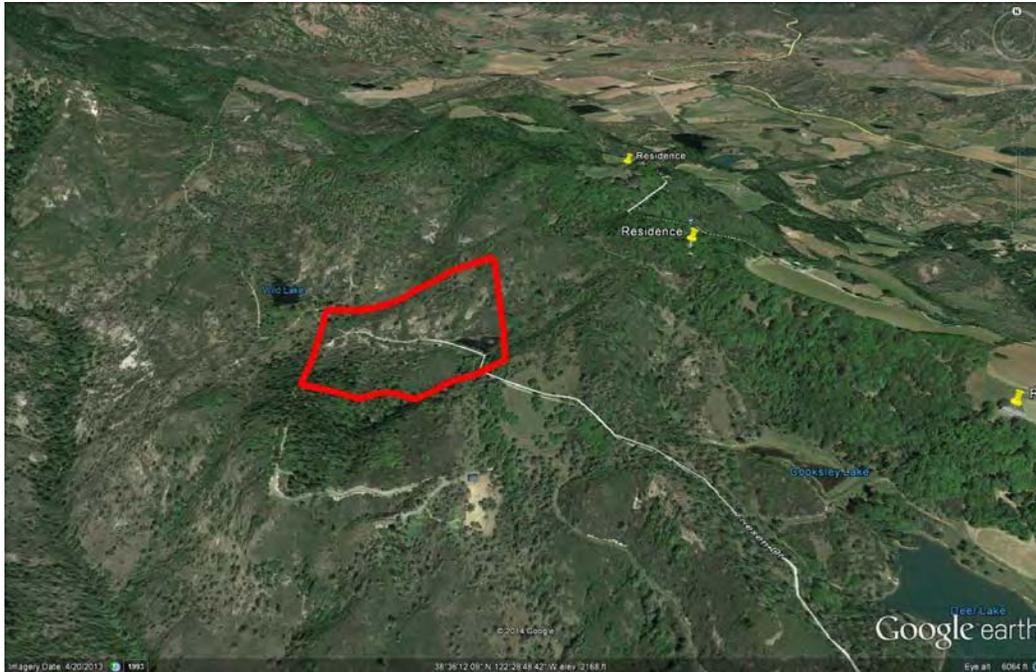
The visual assessment area is limited to the area visible by large numbers of people. There are no public roads that access the property or are in close proximity of the property.

Due to the location of the project area on top of a flat ridge, long distance views of the project are not available. Review of topographic maps and profiles indicate that the trending ridge and gentle nature of the slope, combined with the retained surrounding tree canopy combine to block the project from distant views. No significant, if any, view change can be expected.

**No significant adverse impacts are expected to occur.**

## Surrounding Land Uses

In general the area surrounding the proposed vineyard is very rural, three residences are found with in a half mile of the project area. Due to the southwesterly aspect of the property, and the remote nature of the area, it is very doubtful that any residence or public road has a view of the project area.



### North

The property to the north is zoned agriculture watershed, there is no residence and will not be impacted by the proposed project. The area is covered in brush, grass and some conifers

### West

The area to the west is owned by the Napa Valley Land Trust. Prior to ownership by the land trust the property was a hunting camp. The hunting lodge is still there. The use of the land trust property is for hiking. The proposed vineyard will be visible from the hunting lodge. Access to the land trust property is through several vineyards along Friesen Drive. The proposed project will provide similar views as found presently. The land trust also owns property on the east side of the proposed projects property. Friesen Drive passes through land trust property. The forester and vineyard manager have meet with the land trust to make them aware of the proposed project. At this time no objection was raised concerning the proposed project.

### South

The property to the south does not have a residence. There is evidence of a camping site and current use. Access for the property is over Friesen Drive. The proposed vineyard will be visible from this camp site. A 25 foot buffer has been provided adjacent to this property line.

### East

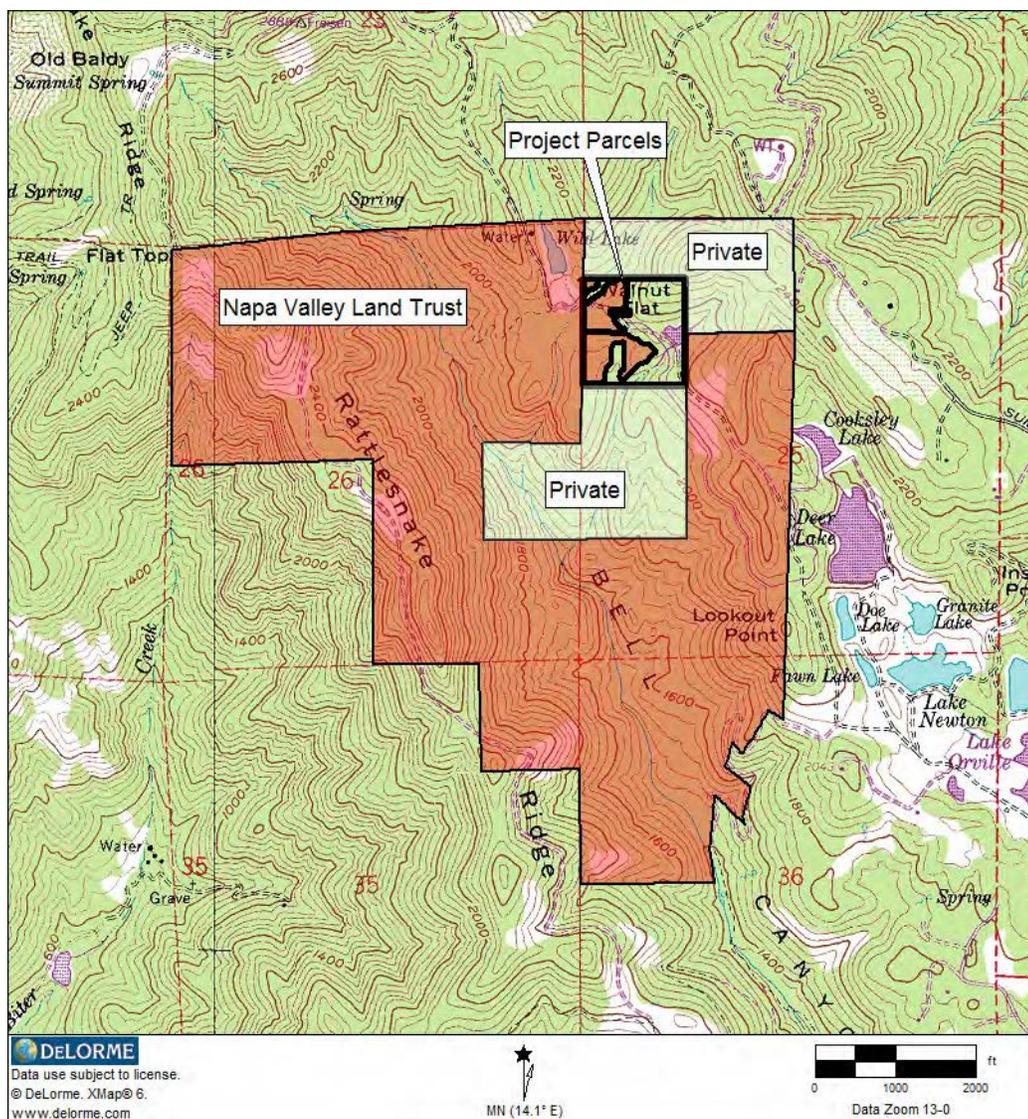
The property to the north east does have a residence. This residence lies in a different watershed, as such it does not have a view of the project area. The property to the south east is owned by the land trust, west above.

*Proximity to residences, communities, and towns:* The project is located in a rural part of Napa County. Three of the

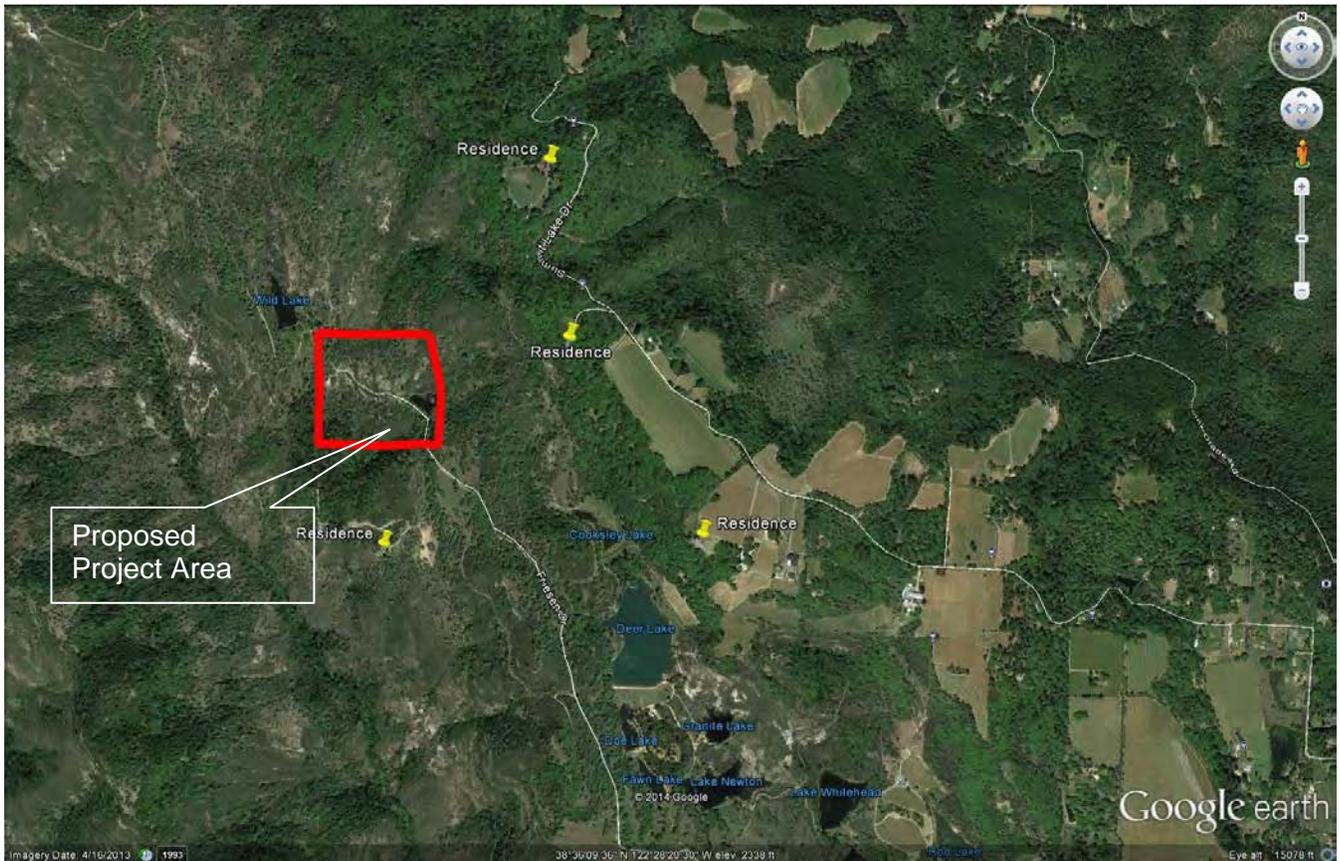
residences found within a half of a mile of the proposed project are in an adjacent watershed and do not have a view of the project area. The other residence south of the project is below the proposed vineyard and does not have a view of the proposed project.

*Adjacent ownership (public, private, industrial, etc.):* See the description above, north south east and west. There are no industrial ownerships. Rural land composed of brush, grass, conifer and deciduous forest surround the project parcel. Agriculture in the form of grazing and vineyards is also practiced in the general area. See aerial photo above.

*Parkland, open space, etc.:* Napa Valley Land Trust has property on two sides of the project area. See comment above (west). The area to the west is owned by the Napa Valley Land Trust. Prior to ownership by the land trust the property was a hunting camp. The hunting lodge is still there. The use of the land trust property is for hiking. The proposed vineyard will be visible from the hunting lodge. Access to the land trust property is through several vineyards along Friesen Drive. The proposed project will provide similar views as found presently. The land trust also owns property on the east side of the proposed projects property. Friesen Drive passes through land trust property. The forester and vineyard manager have meet with the land trust to make them aware of the proposed project. At this time no objection was raised concerning the proposed project.



*How does the proposed use fit the neighboring landscape?* Rural land composed of brush, grass, conifer and deciduous forest surround the project parcel. Agriculture in the form of grazing and vineyards is also practiced in the general area. See aerial photo. Past fires in the areas have added to the mosaic by creating open areas and brush fields. Open areas that are not suitable to agriculture are used for grazing. Open areas suitable to intensive agriculture have been planted to vineyard. Vegetation continues to develop in the brush and forested areas surrounding the project area. The town of Angwin and other residences continue to spread into surrounding agricultural and wild lands. See figure below. The proposed conversion and planting to vineyard will be consistent with other land uses in the area.



In conclusion, the area surrounding the proposed THP/Conversion will retain a forested appearance. The combination of vineyard and forest is compatible and similar to other ownerships in the area. This THP/conversion as proposed will not increase the vistas of the general public driving on county roads. The present views will remain the same along county roads in the area and therefore not present a significant adverse impact.

**No significant adverse impacts are expected to occur.**

**D. Roads, see Traffic in the THP Appendix H****TRAFFIC**

Traffic assessment issues are assessed as they apply Friesen Drive, White Cottage Lane, Howell Mountain Road, Deer Valley road and then into Hwy 128. All of these roads presently support heavy truck traffic similar to the truck traffic propose in this project. Vehicle traffic to the proposed project will utilize the existing gated entrance off of White Cottage Road. Howell Mountain and Deer Valley Road will be used to Hwy 128 which will be used in both directions to access destinations within the Napa Valley and abroad. These roads have and are being used for the transport of agricultural crops by a wide variety of landowners. Many of the roads in the area were originally built to transport agricultural products, including forest products and grapes, early in the last century. All trees harvested on the project will be milled onsite, cut into firewood and or chipped onsite. Milling products will be lumber and or cants. This material will be utilized onsite and or hauled to other locations within the valley. Transport will be with 10 wheelers, pickups and or trailers. The grape harvest will be transported in farm trucks to wineries in the Napa Valley area.. Approximately three 20-ton truckload of grapes will utilize the road over a 30-day harvest period each year. This type of traffic is minimal and very similar to other agricultural activities (Grapes, Cattle, Sheep, Horses, Apples, Rock aggregates, Fire wood etc.) presently taking place on these roads and will not be a significant increase in traffic.

These county and state roads have been used for agricultural products for well over a century, they are maintained by the county and the state for this and residential use. Residential use has increased significantly during the last century compared to agricultural use, which has probably decreased or remained the same. Neither the hauling of forest products nor the agricultural crop transport is a significant increase in traffic or traffic load on these roads. Due to the nature of large trucks, some limitations have been placed on their operation. It should be noted that Friesen Drive is presently used to transport grapes from the several vineyard adjacent to the road. Due to the sensitive nature of Friesen Drive and it's location all logs will be milled onsite. Forest products will be removed as processed material, limited to 10 wheelers or smaller vehicles and or trailers.

LTO operational information relative to traffic mitigation measures.

- The LTO shall advise all truck drivers to use extreme caution when transporting forest products along county roads, especially in areas of limited sight visibility.
- Large trucks are to operate with headlights on for safety and are not to exceed 25 miles per hour while on rural county roads.
- Truck drivers are not to use Jake Brakes in the immediate vicinity of residential neighborhoods.
- All forest harvesting activities shall be restricted to Monday through Saturday 7 am. to 7 pm. No activities may take place on Sundays & Holidays. Emergencies are excepted from this restriction.

**No significant adverse impacts are expected to occur.**

**E. California Environmental Quality Act:** An Environmental Impact Report is being proposed for this project. The following professionals and their associated reports, some included with this application others to be attached prior to approval, document review and analysis required by CEQA.

- Registered Professional Forester
- Botanist
- Wildlife Biologist
- Geologist
- Hydrologist
- Erosion Control Specialist and Engineer
- California Department of Forestry, Forester
- California Department of Forestry, Archaeologist
- California Department of Fish and Wildlife Biologist
- California Department of Fish and Wildlife Botanist
- California Department of Mines and Geology, Geologist
- Regional Water Quality Control Board, Hydrologist
- US Fish and Wildlife Service, Biologist
- National Marine Fisheries Service, Biologist

The proposed project reflects rules, mitigation and suggestions to protect the environment. The various reports prepared to satisfy CEQA requirements should be consulted for further information on this project. They are a part of this application and the proposed timber harvest plan.

**F. Zoning and Land Use**

The project property is zoned Agriculture/Watershed (AW). The proposed conversion to vineyard is compatible with this zoning.

**“The AW district classification is intended to be applied in those areas of the county where the predominant use is agriculturally oriented, where watershed areas, reservoirs and floodplain tributaries are located, where development would adversely impact on all such uses, and where the protection of agriculture, watersheds and floodplain tributaries from fire, pollution and erosion is essential to the general health, safety and welfare. “**

Agricultural uses, such as timber harvesting and vineyard production, is a permitted use. The Napa County Code of Regulations requires preparation of an Erosion Control Plan for any development or changed land use unless exempted. An Erosion Control Plan is being prepared to Napa County Technical Standards by a professional vineyard engineering firm for this project. A copy of the ECP has been made a part of this plan. An approved copy of the ECP will be submitted to CDF upon approval by Napa County Planning Department.

**G. Alternatives to the Proposed Project****STATEMENT OF ALTERNATIVES**

No potentially significant environmental effects have been identified in the THP as proposed. The RPF has analyzed alternatives that could avoid or substantially lessen environmental effects that are typically identified in the preparation and review of a timber harvest. In accordance with CEQA principles the alternatives selected for detailed examination in this project are limited to ones that would avoid or substantially lessen the significant effects of the project.

**Conclusion:**

After considering these alternatives it is the conclusion of the landowners and their advisors that this project, the conversion of forestland to a vineyard, is their best alternative. Adverse environmental effects have been considered and have been mitigated to levels of insignificance. The project as proposed is the least damaging alternative given the objectives of the landowner. **The EIR is being prepared and will be presented to CDF for comment and direction.**

**H. Timber Harvesting Plan**

The Timber Harvesting Plan required for this project will be submitted at approximately the same time as the Environmental Impact Report.

**I. Land Use Plans**

The vineyard development on this property will allow annual income to carry the property financially. Only a portion of the land topographically suitable for vineyard on this property is included in this project. The areas suitable for vineyard are low to moderate site quality timber areas. The steeper and rough forested areas will be reserved for visual objectives and wildlife diversity.

**J. Analysis of Timber Supply Depletion and Habitat fragmentation for Napa County as a Result of the Proposed Timberland Conversion.**

See the THP for a detailed analysis.

**K. Watercourses**

Watercourses exist adjacent to the project area. The proposed conversion boundaries have been set back to provide protection to these watercourses. See the attached ECP. Napa County sediment and hydrology ordinances requiring no net increase over preproject conditions, this ordinance will be met with this project. Sediment control has been proposed for the project in the form of a Timber Harvest Plan and Erosion Control Plan designed by a professional forester and engineer. No anadromous fisheries nor their habitat will be impacted by the proposed project .

**L. Water Usage**

See Phase 1 Water Availability Analysis for Napa County **attached**.

Water usage will be minimal on the proposed vineyard. It is the owner's objective to use drip irrigation. The young vines will require water almost daily during the heat of the summer for the first year to insure the highest rate of survival as possible. Calculated from a vine count of 3000 per acre and a usage of 80 gallons during the irrigation period water usage is expected to be 7.6 acre feet for the first year. After establishment the maturing vines will require approximately half this amount for the four-month irrigation season or 38 acre feet. As a perspective the average residential use is about 160,000 gallons of water per household per year. The vineyard will require 3.8 acre feet. This amount is less than that presently taking place due to the Evapotranspiration of the existing forest and brush proposed for conversion.

Water for drip irrigation will be supplied from the existing well. The well presently produces 50 gal/min. This well is supported by surface water infiltration and ground water aquifers. Napa county does not show this area as having a ground water shortage (see **phase one water availability analysis next page**).

The hydrologic effect of this small agricultural project will be insignificant. In a water balance equation replacement of forest cover by a no-till drip irrigated vineyard can yield a net positive increase in ground water yield. Forest cover, both conifers and hardwoods are notorious water consumers. Grapes are a relatively low water usage crop. Removal of tree cover and soil tilling will allow more water percolation into the soil mantle and ultimately into the ground water table. Exact water usage figures for forest cover are difficult to secure. An estimate, as per James' 1988 study of Redwood forest cover usage, is approximately 20,000 gallons per acre per day (Waste Water Disposal in a Forest Evapotranspiration System: B.B James PE-88). Obviously this figure would be less for the montane hardwood conifer forest on the project area, but it does provide a point of reference.

The commonly accepted Forest Hydrology proposition is that forest cover is a greater water user than agricultural crops. Actual experience shows that cleared or burned forest areas yield increased amounts of water.

### Phase 1 Water Availability Analysis

File #: \_\_\_\_\_ - \_\_\_\_\_ Owner: **Frostfire Vineyards LLC**  
 Parcel #: **018-060-012 , 018-060-013**

This form is intended to help those who must prepare a Phase 1 Water Availability analysis. The **Department will not accept an analysis that is not on the form.**

**BACKGROUND:** A Phase I Water Availability Analysis is done in order to determine what changes in water use will occur on a property as a result of the conversion. Staff uses this information to determine whether the project may have a detrimental effect on groundwater levels. If it may. Additional information will be required. You will be advised if additional information is needed.

**PERSONS QUALIFIED TO PREPARE:** Any person that can provide the needed information.

**PROCEDURE:**

**STEP 1:** Prepare and attaché to this form an 8-1/2" x 11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used shown.

**STEP 2:** Determine the allowable groundwater use allotment for your parcel(s).

Total size of parcel(s)	x	<u>40</u>	acre(s)
Multiply by parcel location factor	x	<u>0.5</u>	acre-foot per acre per year (see back)
Allowable groundwater allotment	=	<u>20</u>	acre-foot per year

**STEP 3:** Determine the estimated water use for all vineyards on your parcel(s) currently and after the planned conversion; actual water usage figures may be substituted for the current usage estimate (please indicated if this is done). Estimate future use for both the vineyard establishment period and thereafter.

**CURRENT USAGE:**

**EXISTING ACRES ONLY**

Number of planted acres		<u>0</u>	acres
Multiply by number of vines/acre	x	_____	vines per acre
Multiply be gallons/vine/year	x	_____	gallons of water per vine per year
Divide by 325,821 gallons/af	=	_____	af of water per yr used for vineyard irrigation

**FUTURE USAGE:**

**ADDITIONAL ACRES ONLY**

Number of planted acres		<u>10.2</u>	acres
Multiply by number of vines/acre	x	<u>3000</u>	vines per acre
Multiply be gallons/vine/year	x	<u>40</u>	gallons of water per vine per year (long-term)
	x	<u>80</u>	gallons of water per vine per year (establish)
Divide by 325,851 gallons/af	=	<u>3.8</u>	af of water per yr used (vineyard long-term)
	=	<u>7.6</u>	af of water per yr used (vineyard establish)

**STEP 4:** Using the guidelines on the next page, actual water usage figures, and/or detailed water use projection, tabulate the existing and projected future water usage on the parcel(s) in acre-foot per year (af/yr) {1 af = 325,821 gallons}.

**Existing Usage:**

Residential	_____ af/yr
Farm Labor Dwelling:	_____ af/yr
Winery	_____ af/yr
Commercial	_____ af/yr
Vineyard (long-term)	_____ af/yr
Vineyard (establish)	_____ af/yr
Other Agriculture	_____ af/yr
Landscaping	_____ af/yr
Other Usage	_____ af/yr
<b>TOTAL</b>	<b>_____ af/yr</b>

**Future Usage:**

Residential	_____ af/yr
Farm Labor Dwelling:	_____ af/yr
Winery	_____ af/yr
Commercial	_____ af/yr
Vineyard (long-term)	<u>3.8</u> af/yr
Vineyard (establish)	<u>7.6</u> af/yr
Other Agriculture	_____ af/yr
Landscaping	_____ af/yr
Other Usage	_____ af/yr
<b>TOTAL</b>	<b><u>3.8</u> af/yr</b>

**STEP 5:** Attach all supporting information that may be significant to this analysis including but not limited to all water use calculations for the various uses listed.

**ENVIRONMENTAL INFORMATION FORM**  
(To Be Completed By Applicant)

Date Filed **May 2014**

General Information

1. Name and address of developer or project sponsor:

**Frost Fire Vineyards II, LLC**  
**15572 Computer Ln.**  
**Huntington Beach, CA 92649**

2. Address of project

**Friesen Lakes Drive**  
**Angwin, CA 94508**  
Assessor Parcel Number **APN 018-060-012, 018-060-013**

3. Name, address, and telephone number of person to be contacted concerning this project

**Scott R. Butler**  
**889 Hwy 20-26**  
**Ontario, OR 97914 (707) 468-8466**

4. Indicate number of the permit application to which this form pertains: **None**

5. List and describe any other related permits and other public approvals required for this project, including those required by city regional, state and federal agencies:

- a. **Timber Harvest Plan: California Department of Forestry and Fire Protection**
- b. **Timberland Conversion Permit: California Department of Forestry and Fire Protection**
- c. **Erosion Control Plan: Napa County Planning Department, # P13-00373 ECPA**
- d. **Environmental Impact Report, CDF lead agency**

6. Existing zoning district: **Ag/Watershed**

7. Proposed use of site (Project for which this form is filed):

**Commercial production of premium varietal grapes (vineyard)**

**PROJECT DESCRIPTION**

- 8. Site size. **The total project area is 14 acres, of which 10 acres are forested and will be converted. The balance of the 14 acres (4) is composed of grass, brush and ruderal acreage. The net acres of the vineyard will be 10.5 acres.**
- 9. Square footage. **N/A**
- 10. Number of floors of construction. **N/A**
- 11. Amount of off-street parking provided. **N/A**
- 12. Attach plans. **N/A**
- 13. Proposed scheduling. **Logging and clearing 2015, Vineyard Planting 2016**
- 14. Associated project. **None**
- 15. Anticipated incremental development. **None**
- 16. If residential, include the number of units, schedule of unit sizes, range of sale prices or rents, and type of household size expected. **N/A**
- 17. If commercial, indicate the type, whether neighborhood, city or regionally oriented, footage of sales area., and loading facilities. **N/A**
- 18. If industrial, indicate type, estimated employment per shift, and loading facilities. **N/A**
- 19. If institutional, indicate the major function, estimated employment per shift, estimated occupancy loading facilities, and community benefits to be derived from the project. **N/A**
- 20. If the project involves a variance, conditional use or remaining application, state this and Indicate clearly why the application is required. **None**

Are the following items applicable to the project or its effects? Discuss below all items checked yes (attach additional sheets as necessary).

- 21. Change in existing features of any bays, tideland, beaches or hill, or substantial alteration of ground contours.
 

Yes	No
	X

No changes in topography will occur during development of this vineyard. Minor shaping will occur to smooth and cultivate the ground surface. This will include filling minor depressions and cutting minor high spots. Soil movement to accomplish these tasks will be minimal and not exceed one acre. Shaping will not significantly alter ground contours. See the **Erosion Control Plan attached.**

- 22. Change in scenic views or vistas from existing residential areas or public lands or roads.
 

Yes	No
	X

The project is located in a rural part of Napa County. Three of the residences found within a half of a mile of the proposed project are in an adjacent watershed and do not have a view of the project area. The other residence south of the project is below the proposed vineyard and does not have a view of the proposed project.

See the draft EIR to be submitted for more detail.

- 23. Change in pattern, scale or character of general area of project.
 

Yes	No
	X

The general area is forest/brush vegetation areas intermixed with agriculture, commercial wineries and some rural residences. No significant change is expected to occur. See the aerial photo page 28.

24. Significant amounts of solid waste or litter.

Yes	No
	X

25. Change in dust, ash, smoke, fumes or odors in vicinity.

Yes	No
X	

The clearing and agricultural operations will generate small amounts of dust and smoke. Trees, slash, roots and stumps, estimated at 25 tons per acre, will be burned and or chipped. The time period during which the burning will be done will be short. Burning will be done under both Bay Area Air Pollution Control District and California Department of Forestry and Fire Protection regulations on designated burn days. During vineyard operations some dust will be generated, but will not leave the property. Generation of dust and smoke will be insignificant due to small amounts, the limited work area and the general topography. Because of the size of the property and the distance to any developed area, most dust generated will remain on the property. Smoke impacts will be determined by weather conditions existing at the time burning under permit is allowed.

26. Change in ocean, bay, lakes, stream or ground water quality or quantity, or alteration of existing drainage patterns.

Yes	No
	X

Napa County ordinance requires the following.

**Napa County General Plan Policy: Con 48 and 50 (c) have been meet by implementation of the ECP.**

- Con reg 48 states “Proposed developments shall implement project-specific sediment and erosion control measures (e.g., erosion control plans and/or stormwater pollution prevention plans) that maintain pre-development sediment erosion conditions or at minimum comply with state water quality pollution control...”
- Con reg 50 states “The County shall require discretionary projects to meet performance standards designed to ensure peak runoff in 2-, 10-, 50-, and 100-year events following development is not greater than predevelopment conditions. See hyperlink for complete text.

<http://countyofnapa.org/pages/departmentcontent.aspx?id=4294971554>

As a result of implementation of the Erosion Control Plan and the Forest Practice Act, post project sediment erosion conditions and peak hydrological runoff are projected to be below pre project conditions. See the hydrological report and sediment report for details.

27. Substantial change in existing noise or vibration levels in the vicinity.

Yes	No
	X

See the EIR, to be submitted.

28. Site on filled land or on slope of 10 percent or more.

Yes	No
X	

The vineyard site has been selected for slope and topographical conditions that will permit agricultural operations. The slope varies form 8 to 27 percent. The owner's intent is to plant only on gentle sloping ground less than 30%.

The main concern with agricultural operations on slopes exceeding 10% is accelerated erosion. Both vineyard development and the vineyard operational plans take into account these slopes and incorporate the necessary measures to protect them. (See the Erosion Control Plan. The NVVE Erosion Control Plan has proposed several drainage improvements for the new vineyard blocks that include fiber rolls, water bars, a roadside diversion ditch, attenuation basins, earth diversion berms and rock stabilization to control the surface runoff and prevent erosion.

Specific erosion control measures, in addition to those required by the Forest Practice rules, are:

1. Temporary cover crop seeding with an erosion control seed mix.
2. Straw mulching of all bare soil areas after clearing
3. Energy dissipaters at waterbars on slopes exceeding 20%.
4. Monitor and patrol during winter period by the landowner and his vineyard crews.
5. Installation of two attenuation basins.
6. Site specific rock stabilization.
7. Development as per Erosion Control Plan.

The soils involved are Kidd, Forward and Aiken, see soil repot attached for more detail. These soils have a moderate to rapid permeability rate and limited potential for overland water flow. In an analysis of Erosion Hazard Rating done under the California Board of Forestry Technical Rule Addendum #1 protocol, the erosion hazard rating for the entire project area was found to be Moderate. No recent evidence of overland flow, which would cause significant accelerated erosion, has been found on the project site.

Vineyard erosion control practices recommended by competent advisors, both governmental and private, will be utilized for this project. The California Forest Practice Act erosion control regulations will apply during the harvesting phase and the Erosion Control Plan specifications during the vineyard development phase. As a result of implementation of the Erosion Control Plan and the Forest Practice Act, post project sediment erosion conditions and peak hydrological runoff are projected to be below pre project conditions. See the hydrological report and sediment report for details.

29. Use of and disposal of potentially hazardous materials, such as toxic substances, flammables or explosives

Yes	No
X	

See attached Sustainable Integrated Pest Management Report. Chemicals will not be kept onsite.

30. Substantial change in demand for municipal services (police, fire, water, sewage, etc.).

Yes	No
	X

The general area in which this project will occur is at risk from wildfire. Past forest fires have destructively burned over this area. Access for fire fighting resources in the area is fair. Two sides of the property have existing road access and the property itself has an existing road access through the middle. Fuel loading is moderate, with some of the vegetation types present in the area being broken and discontinuous. Installation of the proposed vineyard will further reduce fire susceptibility by breaking up some of the overstory fuels and providing a less fire sensitive irrigated agricultural crop than presently exist. Topography as it relates to fire sensitivity is moderate.

This proposed project will help reduce fire associated problems by providing improved access, breaking up continuous vegetation types with vineyard green belts, reducing fuel loading, furnishing safety islands with green belt vineyards and by providing water sources for professional fire fighters. Potential demands on the fire services will be reduced with the completion of this project.

Since no additional residences are proposed with this project no additional demands will be placed on Police, water districts or sewage.

31. Substantially increase fossil fuel consumption (electricity, oil, natural gas, etc.).

Yes	No
	X

32. Relationship to a larger project or series of projects.

Yes	No
	X

This proposed project represents the agricultural plan for these parcels. No other project other than the existing property management is planned to take place.

## ENVIRONMENTAL SETTING

33. Describe the project site as it exists before the project, including information on topography, soil stability, plants and animals, and any cultural, historical or scenic aspects. Describe any existing structures on the site, and the use of the structures. Attach photographs of the site. Snapshots or Polaroid photos will be accepted.

See the excerpt below from the Notice of Preparation for an EIR attached.

### Project Description

The Proposed Project would convert approximately 14 acres of timberland to a commercial vineyard within a 38.7- acre property. The 14 ± acres constitute the Project Site and the total area to be converted to vineyard. Four vineyard blocks are proposed for development within the Project Site (Figure 3). The vineyard blocks will include wine grape vines as well as internal farm avenues and space for vineyard maintenance operations; therefore, the net area of the vineyard will be approximately 10.5 acres. The establishment of the vineyard as part of the Proposed Project is consistent with the current Napa County zoning designation of Agricultural Watershed (AW).

The Project Site is not located within a Timberland Protection Zone (TPZ). However, since the Proposed Project would convert “non-TPZ timberland to a non-timber growing use” through timberland operations in which “future timber harvests will be prevented or infeasible because of land occupancy and activities thereon,” a TCP and approval is required from CAL FIRE consistent with the Z’Berg-Nejedly Forest Practice Act (Division 4, Chapter 8, Public Resources Code) and California Forest Practice Rules (Title 14, California Code of Regulations). CAL FIRE will therefore be the CEQA Lead Agency on the EIR.

Harvested timber would be processed on-site using a portable mill. All non-merchantable trees and vegetation would be removed, chipped, and/or burned on-site, consistent with CAL FIRE, Napa County, and San Francisco Bay Air Quality Management District standards. Suitable forest products such as lumber, sawlogs, chips, etc. would be milled on-site and marketed as appropriate. Wood products leaving the site would be limited to transport on 3-axle trucks and would not require the use of logging trucks. No new roads, except internal farm avenues within the new vineyard, would be built.

As a result of implementation of the Erosion Control Plan and the Forest Practice Act, post project sediment erosion conditions and peak hydrological runoff are projected to be below pre project conditions. See the hydrological report and sediment report for details.

Chapter 18.108 of the Napa County Code (Conservation Regulations) requires an ECP be prepared by a Licensed Civil Engineer for the Proposed Project and approved by Napa County because slopes on the Project Site are greater than 5 percent. Consequently, Napa County will be a Responsible Agency for the EIR.

34. Describe the surrounding properties, including information on plants and animals and any cultural, historical or scenic aspects. Indicate the type of land use (residential, commercial, etc.), intensity of land use (one-family, apartment houses, shops, department stores, etc.), and scale of development (height, frontage, setback, rear yard, etc.). Attach photographs of the vicinity. Snapshots or Polaroid photos will be accepted.

See surrounding land uses and aerial photo on pages 17, 18 and 19 of this application.

**CERTIFICATION**

I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this initial evaluation to the best of my ability, and the facts, statements and information presented are true and correct to the best of my knowledge and belief.

5-1-2014

Date



Signature

**Attachment #1**  
Erosion Control Plan

**SHEET INDEX**  
**1. TITLE SHEET**  
**2. PLAN & DETAILS**

# DAVIS FAMILY ESTATE FRIESEN VINEYARD EROSION CONTROL PLAN FOR NEW VINEYARD

**Legend**

- (0.35) AREA 1: INCREASE WITH SLOPES GREATER THAN 30%
- BLOCK BOUNDARY
- VINEYARD BOUNDARY (APPROX.)
- DETAIL 1, SHEET 2
- DIVERSION DITCH
- EXISTING
- FIBER ROLL
- HINUM SETBACK
- PLANTING LINE
- PROPERTY LINE APPROXIMATE LOCATION
- ROGUE DISPOSAL AREA
- SOIL CONSERVATION SERVICE
- SCS SOIL MAPPING UNIT
- SCS SOIL TYPE BOUNDARY
- TOP OF BANK
- WATER BAS
- WILDLIFE EXCLUSION FENCE

**DAVIS FAMILY ESTATE  
 FRIESEN VINEYARD  
 EROSION CONTROL PLAN  
 FOR NEW VINEYARD**

**Napa Valley Vineyard Engineering, Inc.**  
 176 Main St., Suite B  
 St. Helena, CA 94574  
 (707) 963 4827

October 22, 2025  
 DATE

APRIL L. CHRISTENSEN, PE  
 REG. NO. 10000

THIS DOCUMENT AND THE DEFS AND DRAWINGS INCORPORATED HEREIN ARE THE PROPERTY OF NAPA VALLEY VINEYARD ENGINEERING, INC. AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY PROJECT WITHOUT THE WRITTEN AUTHORIZATION FROM NAPA VALLEY VINEYARD ENGINEERING, INC.



**Project Notes**

Water Bank shall be constructed within which in the City, in accordance with the approved plan. Water bank shall remain as permanent structures and shall be maintained as necessary prior to each rainy season.

**Maintenance:** A winter cover crop shall be planted at the end of year P-1. Seeding and mudding of the winter cover crop shall be completed by September 15. At the end of year P, a permanent cover crop shall be planted. The cover crop may be planted in the fall or spring. The cover crop shall be maintained for a minimum of 4" that be maintained for establishing annual and perennial grasses. As a normal cultural practice, no ripping or more tillage shall take place after vineyard is planted. Optimize a ground cover of 80% or greater will be obtained, with the owner being responsible for reseeding and maintenance in order to reach the desired degree of cover.

**Annual Winterization:** After harvest and prior to first rain, but, no later than September 15 such year, the following winterization shall be completed:

- 1) The condition of the winter cover crop shall be evaluated, including areas outside the vineyard, and the stability and adherence of the seed mix shall be evaluated. If necessary, the winter cover crop shall be reseeded and those areas shall be reseeded and mudding.
- 2) All eroded and unvegetated areas which are not rodded or banked shall be seeded as needed and mulched, and shall remain undisturbed throughout the rainy season.
- 3) All ditches and existing culverts shall be inspected, cleaned and/or repaired as necessary.
- 4) All other existing erosion control and drainage features shall be inspected, cleaned and/or repaired as necessary.

All erosion control measures shall be inspected after each storm event, and repairs shall be promptly performed.

**Special Notes**

**1) Bank:** The following soil avoidance measures shall be implemented prior to the commencement of vineyard development and implementation activities:

A qualified biologist shall conduct a habitat assessment by potential suitable wildlife habitat. The assessment shall include a visual inspection of the site to determine suitable habitat. A qualified biologist shall conduct a preconstruction survey during peak activity periods. It shall be noted that during peak activity periods, the qualified biologist shall submit an avoidance plan to the County and shall evaluate the length of time disturbance, no-work zones and type of habitat present at the Project site. In the event the soil avoidance measures required by the County result in a reduction or modification of vineyard block boundaries, the erosion control plan shall be updated by the geotechnical engineer and submitted to the County.

**2) Riprap:** The following riprap preconstruction surveys shall be conducted prior to the commencement of vineyard development and implementation activities:

For each disturbing activities occurring between April 1 through September 15, a qualified wildlife biologist shall conduct a riprap preconstruction survey. The survey shall be conducted no more than 14 days prior to vegetation removal and ground disturbing activities are to commence (surveys shall be conducted a minimum of 3 separate days during the 14 day time to disturbance).

If active nests are found during a preconstruction survey, a 300-foot disturbance buffer shall be created around active nests and a 50-foot buffer zone shall be established around the nests. The riprap shall be installed within the 50-foot buffer zone and shall be maintained by a qualified biologist that is young have fledged. These riprap zones may be modified in coordination with DFW based on existing construction timing and remain in place until the end of the breeding season or until young have fledged.

If a 15 day or greater lapse of riprap-survey were occur during the breeding season, another riprap preconstruction survey and consultation with DFW will be required before project work can be reinitiated.

REV. 1 - REVISIONS TO SHEET AND BLOCKS D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z

**APN & Owners**

Edward A. Decker (Investor)  
 190 Ellis St. #313  
 Concord, CA 94504

018-080-013 Friesen Vineyard LLC  
 15972 Conquistador Lane  
 Huntington Beach, CA 92649

Site Address: 1979 Friesen Drive, Aptown

Contact: David Pines, PE @ 707-963-4827  
 David Pines, PE @ 707-963-4827  
 PO Box 373  
 Oakville, CA 94562

Mapping: Napa County GIS Data (2020)

**Implementation Schedule:**

Work may begin during the first growing season after project approval. Erosion control measures shall be installed in accordance with the approved plan. Erosion control measures shall be installed in accordance with the approved plan. Erosion control measures shall be installed in accordance with the approved plan.

Year P-1  
 April 1 thru Sept 15

Rainy Season  
 Sept 16 thru March 31

Year P  
 April 1 thru Sept 15

**Soil Conservation and Cultivation Practices**

Year	Cultivation during growing season	Cover Crop planted at end of growing season
Pre-plant (P-1)	no and disk	winter cover crop
Planting (P)	furrow	permanent cover crop
P+1 Forward	roll	permanent cover crop

All ground disturbing activities shall be completed by September 1 of each year, and all erosion control measures shall be in place by September 15.

**Seeding Requirements:** All exposed or disturbed soils shall be seeded. Seed and fertilizer shall be applied hydraulically or broadcast at the following specified rates:

Soil Type	Seeding Rate (lb/acre)	Fertilizer Rate (lb/acre)
Davis Estate MHA	45%	45%
Annual Rye Grass	45%	45%
Chimera Cover	10%	10%

On all vineyard areas/contours which are not rodded, "Fram" fall hedges shall be added to the rms @ 5' bank.

**Fertilizer:** Ammonium phosphate sulfate (16-20-0) 200-240 lb/acre.

An alternate seed mix and/or fertilizer may be used after review and approval by Napa County.

**Strip Mulch:** shall be spread over all disturbed and seeded areas. The mulch shall be spread mechanically or by hand at the rate of 2 tons/acre.

**Fiber Rolls:** shall be installed at the locations shown in the plan in accordance with the approved detail. Four rolls shall be maintained through the vine after planting, after which they may be removed.

**Diversion Ditches and Drop Inlets:** shall be constructed where shown in accordance with the detail. Ditch hedges shall be spaced to clean at 2' x 4'.

**Rock Stabilization:** shall be constructed using RSP in low flow spots located within the perimeter vineyard, in accordance with the detail. Some are shown in the plan.

**Attraction Basins:** shall be constructed where shown in the plan, in accordance with the detail.

**Narrative**

This project consists of the development of approximately 113.73 acres, less 11.02 net acres of one vineyard within APN 018-080-012 and 018-080-013 a total of 102.71 acres located at 1979 Friesen Drive, Aptown. The parcels include 22.3 acres of vineyard, brush and wooded tracts. There is existing access from Friesen Drive. Existing ground cover within the project area range from 8% to 25%, with all areas being in need of erosion control. The project area is located on a steep slope with a P-1 and D-1 vineyard and an existing vineyard and down the contours and down will be 7' steep. New vineyard areas will be planted with a permanent cover crop. The vineyard will be planted with a permanent cover crop. The vineyard will be planted with a permanent cover crop. The vineyard will be planted with a permanent cover crop.

The USGS 9.5 Helms 7.5 minute Quad Map shows two "Quaternary" terraces, one in the NW corner of APN 018-080-012 and the other SE corner of APN 018-080-013. These terraces slope from the East Canyon Creek, the present line with the Bad Canyon Reservoir subwatershed. Stream setbacks have been established as prescribed in Napa County Conservation Regulations.

The Biological Resources Survey prepared by Kjusken Biological Consulting, dated September 2013, revealed that the riparian status species will be impacted by this project.

Rock disposal will be accomplished by rock surfacing, erosion control features, and disposal along vineyard margins where shown.

Soils within the block boundaries have been classified in the USDA Soil Conservation Service, New County Soil Survey, as SCS# 138 Forward gently low, and SCS# 177 Rock out crop-hold complex.

Vegetation removal consists of existing trees, brush and grasses. All organic material to be burned or chipped shall be utilized at strategic locations within the cleared area. Burning of the organic material shall be done prior to any other disturbing activities within the approved plan.

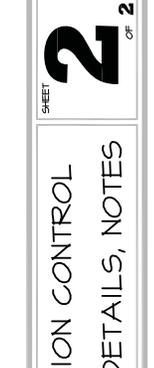
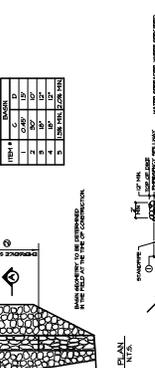
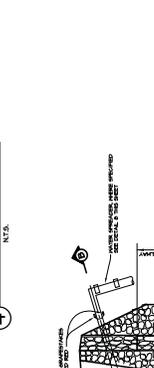
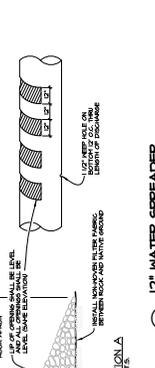
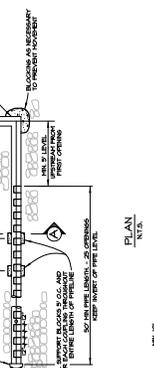
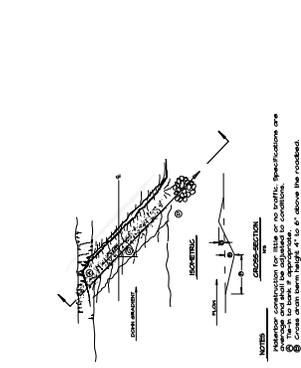
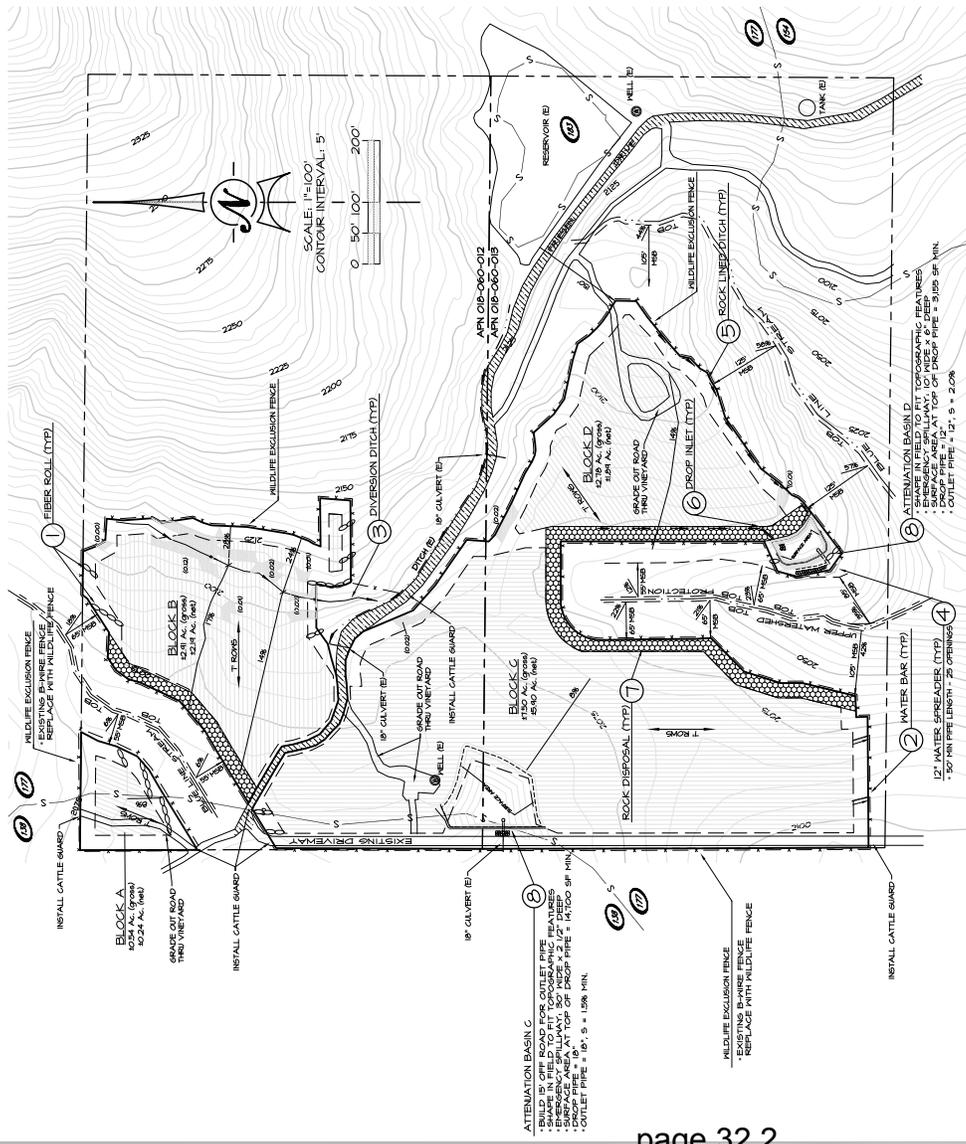
**Ground preparation:** The ground may be tilled and disk, some areas of rock may need to be blasted. Rocks generated from the tilling or blasting shall be placed in rock disposal areas at the locations marked on the plan. The rock disposal areas shall be located at the locations marked on the plan. The rock disposal areas shall be located at the locations marked on the plan. The rock disposal areas shall be located at the locations marked on the plan.

**Wildlife Exclusion Fencing:** shall be installed around the vineyard, as shown on the plan, with gates and/or cattle guards provided where convenient for vineyard access. For convenience, this fence may be rodded around trees and other existing physical features, and additional gates may be installed. Existing cattle guards shall be maintained. The fence shall be installed at the locations marked on the plan. The fence shall be installed at the locations marked on the plan. The fence shall be installed at the locations marked on the plan.

**Temporary Erosion Control Measures:** consist of the installation of rock rolls and the application of straw mulch where seeding occurs. The installation of all fiber rolls shall be completed in accordance with the approved detail along the contours at locations shown on the plan, no later than September 15 in years P-1 through P+1. The installation of all fiber rolls shall be completed in accordance with the approved detail along the contours at locations shown on the plan, no later than September 15 in years P-1 through P+1. The installation of all fiber rolls shall be completed in accordance with the approved detail along the contours at locations shown on the plan, no later than September 15 in years P-1 through P+1.

**Permanent Erosion Control Measures:** consist of the following:

- 1) Clean, repair or replace existing drainage features as needed at the locations shown in the plan.
- 2) Construction of water bars where shown in the plan in accordance with the appropriate detail.
- 3) Construction of rock stabilization areas shown in the plan in accordance with the appropriate detail.
- 4) Grading of diversion ditches and installation of drop inlets and water spreaders where shown in the plan in accordance with the appropriate detail.
- 5) Construction of attraction basins where shown in the plan and in accordance with specifications and detail.
- 6) A winter cover crop, using the seed mix shown in the Project Notes, shall be planted within the new vineyard areas in years P-1 thru P+1. At the end of the growing season, shall be planted within the new vineyard areas in years P-1 thru P+1. At the end of the growing season, shall be planted within the new vineyard areas in years P-1 thru P+1. At the end of the growing season, shall be planted within the new vineyard areas in years P-1 thru P+1.
- 7) Permanent cover crop shall be planted (refer to the cultivation plan under Project Notes). The roll cover crop shall be planted in the fall or spring. The cover crop shall be planted in the fall or spring. The cover crop shall be planted in the fall or spring. The cover crop shall be planted in the fall or spring.
- 8) A permanent cover crop, using the seed mix shown in the Project Notes, shall be planted within the new vineyard areas in years P-1 thru P+1. At the end of the growing season, shall be planted within the new vineyard areas in years P-1 thru P+1. At the end of the growing season, shall be planted within the new vineyard areas in years P-1 thru P+1.
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**Attachment #2**  
NRCS Soil Report

# Custom Soil Resource Report for Napa County, California

**Davis Estates, Freisen Vineyard**



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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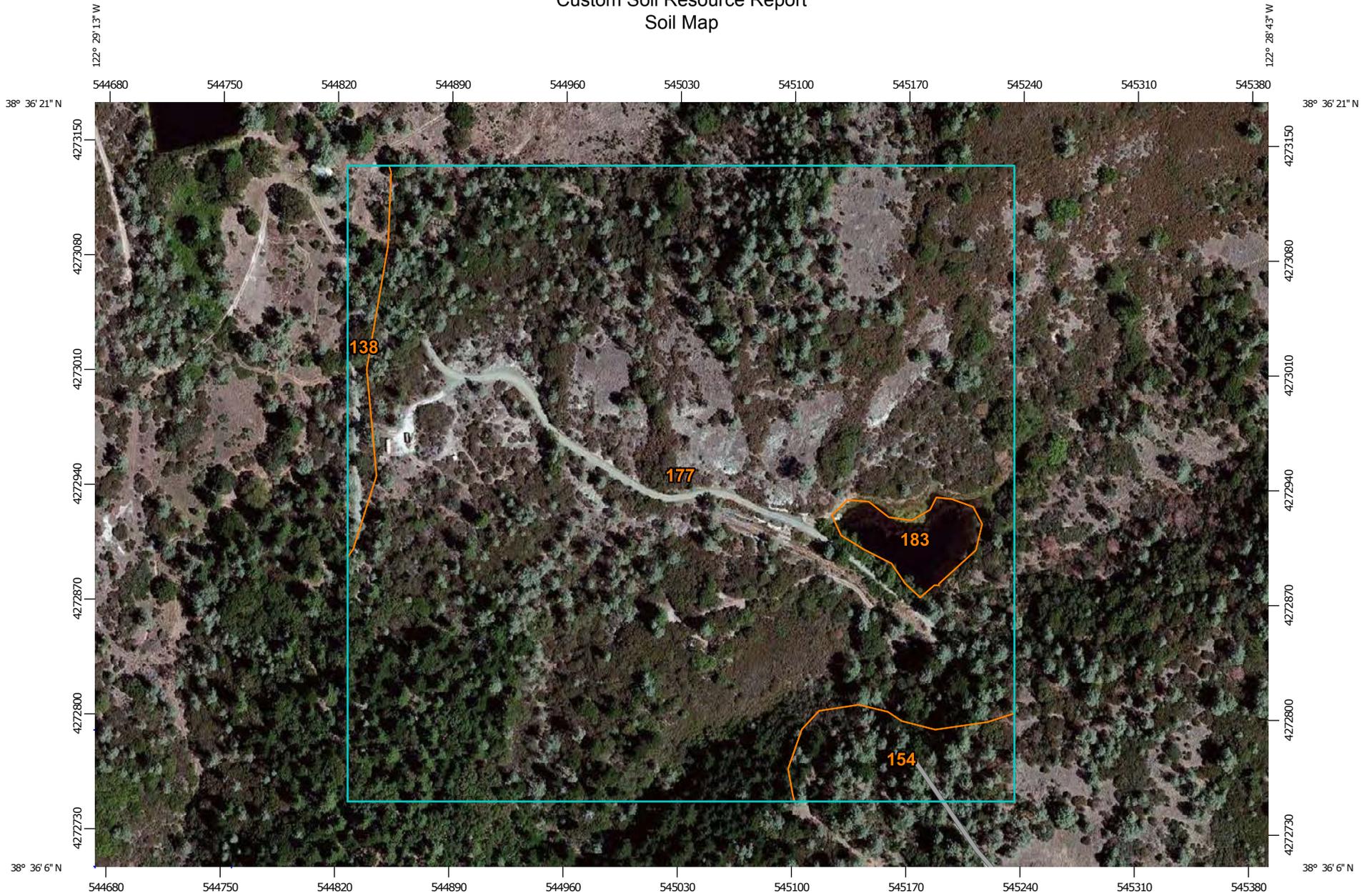
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# Soil Map

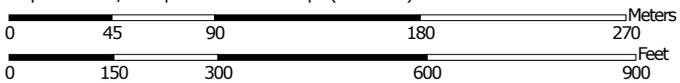
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Map Scale: 1:3,290 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California  
 Survey Area Data: Version 5, Nov 25, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 2, 2010—Feb 17, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Napa County, California (CA055)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
138	Forward gravelly loam, 2 to 9 percent slopes	1.0	2.6%
154	Henneke gravelly loam, 30 to 75 percent slopes	1.7	4.3%
177	Rock outcrop-Kidd complex, 50 to 75 percent slopes	35.8	91.1%
183	Water	0.8	2.0%
<b>Totals for Area of Interest</b>		<b>39.3</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that

## Custom Soil Resource Report

have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Napa County, California

### 138—Forward gravelly loam, 2 to 9 percent slopes

#### Map Unit Setting

*Elevation:* 400 to 4,500 feet

*Mean annual precipitation:* 30 to 50 inches

*Mean annual air temperature:* 54 to 55 degrees F

*Frost-free period:* 200 to 230 days

#### Map Unit Composition

*Forward and similar soils:* 85 percent

#### Description of Forward

##### Setting

*Landform:* Hillslopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Residuum weathered from rhyolite

##### Properties and qualities

*Slope:* 2 to 9 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 2.0 mmhos/cm)

*Available water capacity:* Low (about 6.0 inches)

##### Interpretive groups

*Farmland classification:* Not prime farmland

*Land capability classification (irrigated):* 4e

*Land capability (nonirrigated):* 4e

*Hydrologic Soil Group:* B

##### Typical profile

*0 to 4 inches:* Gravelly loam

*4 to 35 inches:* Loam, gravelly loam

*35 to 59 inches:* Weathered bedrock

### 154—Henneke gravelly loam, 30 to 75 percent slopes

#### Map Unit Setting

*Elevation:* 500 to 4,000 feet

*Mean annual precipitation:* 25 to 45 inches

## Custom Soil Resource Report

*Mean annual air temperature:* 59 to 63 degrees F  
*Frost-free period:* 220 to 260 days

### Map Unit Composition

*Henneke and similar soils:* 85 percent

### Description of Henneke

#### Setting

*Landform:* Hills  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Residuum weathered from serpentinite

#### Properties and qualities

*Slope:* 30 to 75 percent  
*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock  
*Drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high  
(0.01 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 2.0 mmhos/cm)  
*Available water capacity:* Very low (about 2.2 inches)

#### Interpretive groups

*Farmland classification:* Not prime farmland  
*Land capability classification (irrigated):* 7e  
*Land capability (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* ROCKY SERPENTINE (R015XD128CA)

#### Typical profile

*0 to 7 inches:* Gravelly loam  
*7 to 15 inches:* Very gravelly clay loam  
*15 to 25 inches:* Unweathered bedrock

## 177—Rock outcrop-Kidd complex, 50 to 75 percent slopes

### Map Unit Setting

*Elevation:* 500 to 4,300 feet  
*Mean annual precipitation:* 30 to 60 inches  
*Mean annual air temperature:* 50 to 57 degrees F  
*Frost-free period:* 220 to 260 days

### Map Unit Composition

*Rock outcrop:* 70 percent  
*Kidd and similar soils:* 25 percent

## Description of Rock Outcrop

### Setting

*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Free face  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex

### Properties and qualities

*Slope:* 50 to 75 percent  
*Depth to restrictive feature:* 0 inches to lithic bedrock  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 in/hr)

### Interpretive groups

*Farmland classification:* Not prime farmland  
*Land capability (nonirrigated):* 8

## Description of Kidd

### Setting

*Landform:* Hills  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Residuum weathered from rhyolite

### Properties and qualities

*Slope:* 50 to 75 percent  
*Depth to restrictive feature:* 14 to 18 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to high (0.01 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 2.0 mmhos/cm)  
*Available water capacity:* Very low (about 2.1 inches)

### Interpretive groups

*Farmland classification:* Not prime farmland  
*Land capability classification (irrigated):* 7e  
*Land capability (nonirrigated):* 7e  
*Hydrologic Soil Group:* D

### Typical profile

*0 to 14 inches:* Loam  
*14 to 18 inches:* Unweathered bedrock

**183—Water**

**Map Unit Composition**

*Water:* 100 percent

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**Attachment #3**  
Integrated Pest Management Report

# **Sustainable Integrated Pest Management (IPM) Davis Friesen Project**

**By Justin Leigon  
Viticulturist  
Piña Vineyard Management  
2013**

## **Introduction**

The purpose of this report is to provide an outline of the practices to be performed at the proposed new vineyard development site, **Davis Friesen**. It will include a description of the materials to be applied, cultural practices to be performed, and a discussion of how the use of these materials and implementation of these practices could potentially affect the surrounding environment.

1. Philosophy
2. Responsibility
3. Irrigation Management
4. Nutrition Management
5. Pest Management
  - a. Invertebrate Pests
  - b. Vertebrate Pests
6. Soil Management
  - a. Weed Management
7. Disease Management
  - a. Grapevine Viral Disease
  - b. Grapevine Fungal Disease & Spray Program
8. Erosion Control Practices
9. Environmental Impact and Risk Assessment
  - a. Risk Mitigation
10. Regulatory Environment and Reporting

## Philosophy

Our intention on this site is to use a multi-pronged approach to farming and management, derived from the best possible combination of **sustainable practices, integrated pest management (IPM)**, and the use of **certified organic materials** wherever possible.

Over the past decade, the farming community has made large strides toward a more sustainable model. The focus has been on building soil health, reducing chemical inputs, and measuring the impact on the local ecosystem. We believe that the production of ultra-premium wine grapes does not have to come at the cost of the environment. In fact, by using a more balanced approach, the lifespan of a vineyard is lengthened and the need for intervention is decreased. All farming decisions are based on a holistic approach with an increase in biodiversity as a main objective.

## Responsibility

The practices laid out below are representative of our program. However, in extreme circumstances, such as severe disease infestation, the best management practice might temporarily differ from those stated in this report. This will only occur when all alternatives have been considered. In cases of change, we will include the consultation of a licensed Pest Control Advisor (PCA; information available at <http://www.cdpr.ca.gov/docs/license/adviser.htm>).

We will implement the following accountability practices:

1. Utilize **closed systems** for materials applications where appropriate. A closed system is defined in the California Department of Pesticide Regulations (CDPR) Code of Regulations (<http://www.cdpr.ca.gov/docs/legbills/calcode/010101.htm> )
2. Maintain a **wastewater capture or containment** program for equipment washing where appropriate. These methodologies are addressed in CDPR Pesticide Management Plan for Water Quality (<http://www.cdpr.ca.gov/docs/emon/surfwtr/maaplan.htm> )
3. Implement a **“no spill” protocol** to ensure that all existing surface runoff systems and groundwaters remain free of contaminants from farming practices
4. Maintain a log of all materials transported
5. Maintain a record of all irrigation and fertilizer applications
6. Maintain and report to Napa County, all applications of pesticide, including rates and method of application.

## Irrigation Management

Water is a valuable resource and continues to become scarcer. We will use information from the soil reports and regular monitoring of vine water status to ensure that the vines receive only the minimum quantity of water required to produce premium wine quality. Steps to be taken include:

- Maintain log of water usage
- Monitor for leaks & clogs
- Deficit irrigation
- Test for distribution & uniformity

Irrigations will be performed using a drip-irrigation system.

Canopy management will be performed to ensure balanced vines and to not contribute to excessive use of water reserves. Water use for this development is expected to fall substantially below available and permitted water use.

## Nutrient Management

**Plant tissue samples** will be taken annually to determine fertility of vines. Nutrient, fertilizer, and pH-adjusting agents will be applied according to recommendations. Fertifications will be used when applicable. We will focus on building soil health in order to decrease the need for inputs. All materials used will be chosen to ensure there is **no groundwater contamination**.

Rates and application methods will be as required on the labels. “Ground-based application” (<http://www.cdpr.ca.gov/docs/legbills/calcode/010101.htm> ) will be used, which will target feeder root zones or be precisely directed at grapevine foliage only.

Amendment strategies could include:

1. **Lime and/or gypsum application** – this would occur if needed pre-plant, and on rare occasions during the life of the vineyard. Material use is not expected to exceed 5 T/ac pre-plant and 1 T/ac thereafter. These materials are immobile, or scarcely mobile, in the soil.
2. **Liquid fertilizers** – materials will be chosen for their sustainable record, preferably OMRI-certified. No materials will be used if there is a potential for any groundwater contamination. Application will be to the feeder root zone to promote soil microbial health.
3. **Foliar fertilizers** – materials applied will include Zinc and Boron to assist in fruit set. OMRI-listed materials are available.
4. **Compost** – annual application during the life of the vineyard. Material use is not expected to exceed 5 T/ac.

## Pest Management

The use of Integrated Pest Management (IPM) is an integral part of sustainable farming. Some general strategies that will be employed include:

- Monitor for pests
- Use reduced risk pesticides
- Use economic thresholds
- Check sprayer coverage and timing for lowest impact on beneficial populations

### A. Invertebrate Pests

The main invertebrate pests of grapevines in this area include **leafhoppers**, **sharpshooters**, **Willamette mites**, **whiteflies**, **Grape mealybugs** and **Vine mealybugs**. Recent quarantine efforts from the County include the listing of the **Light Brown Apple Moth (LBAM)** and **European Grapevine Moth (EGVM)** as a potential agricultural threat.

General biological control principles will be employed to keep populations of these insects at or below tolerable levels using the following **IPM** techniques:

1. **Biological Refugia** – buffer strips, insectaries, nectaries and other habitat designed to foster the sustained population of predators of vineyard pests
2. **Releases of bio-control predators** – predatory mites, beneficial wasps, e.g.
3. **Artificial Habitat for predators** – bluebird houses, owl boxes, e.g.
4. **Persistent monitoring** using regular seasonal counts to recognize if treatable thresholds have been exceeded. Last resort management would be to implement a limited and targeted spray program using Organic materials (preferable) or low-impact synthetics.

We intend to specifically manage these pests as follows:

- a) **Leafhoppers / Sharpshooters** – bluebird habitat, biocontrol with lacewings, spiders; if populations severely exceed treatable levels, pesticide materials would include Pyganic (OMRI-listed).
- b) **Mites** – releases of predatory mites, suppression of dust using misting of water on avenues or OMRI-listed dust suppressants such as Dust-Off; if populations severely exceed treatable thresholds, Acramite or similar product might be spot-applied.
- c) **Whiteflies** – best managed with building beneficial insect populations or spot treatment of Pyganic (OMRI-listed) if excessive / severe damage is present.
- d) **Grape Mealybug** – Refugia, insectaries, and cover cropping will foster habitat for mealybug predators such as the mealybug destroyer. Good canopy and crop management will minimize mealybug proliferation. If populations

become excessive, materials include Admire or Movento, used at the lowest rates.

- e) **Vine Mealybug** – similar to Grape mealybug, however tolerance levels are much lower due to the serious impact on fruit quality.
- f) **LBAM** – full compliance with all requirements of the County-mandated Quarantine procedures.
- g) **EGVM** – full compliance with all requirements of the County-mandated Quarantine procedures.

## **B. Vertebrate Pests**

The main vertebrate pests of grapevine in this area include **gophers, voles, field mice,** and **bird predation of ripe fruit.** We intend to set up and maintain raptor, barn owl and nesting bird habitat, using **owl boxes, raptor perches, bird boxes.** Vineyard canopy **bird netting** will be used at veraison to discourage bird predation of berries. We may implement additional individual gopher traps in spots of significant damage.

## **Soil Management**

Maintaining good soil tilth is a fundamental principle of sustainable farming. Some pre-planting amendments may be required as listed in the above section. Where possible, recommendations provided by **Paul R. Anamosa, Ph.D., Vineyard Soil Technologies** will be followed. We will minimize tillage, take soil samples, minimize erosion, and utilize cover crops for multiple purposes.

### **A. Weed Management**

We will use the following to reduce weed pressure:

1. **Cover cropping** programs to suppress the growth of weeds
2. **Under-vine treatment** may include the use of Round-up at the lowest rate in a strip spray leaving no less than 80% permanent ground cover, while shovels will be used in maintenance throughout the season
3. The use of **drip irrigation**
4. **Mowing** and/or **tilling** will be used where appropriate, and as provided for in the Napa County Erosion Control Plan (**ECP**)
5. Use **shredded vine clippings** to act as **mulch** and suppress weeds in active weed banks

We will not be using any herbicides that have any known residual activity, pre-emergent or otherwise.

## Disease Management

### A. Grapevine Viral Disease

We will utilize grapevine plant material known as ‘Certified’ to the State of California (Regulations viewable at <http://groups.ucanr.org/iv/files/28206.pdf>). We also intend to perform more exhaustive testing of the requisite plant material for the presence of all known grapevine viral diseases, and intend to avoid any material not deemed “clean”.

### B. Grapevine Fungal Disease & Spray Program

We will similarly perform exhaustive testing of all grapevine materials prior to planting to eliminate any material that might be harboring known fungal pathogens.

Sustainable management practice combined with the use of Organic (as certified by the Organic Materials Review Institute (OMRI; <http://www.omri.org> ) and low-impact materials will be performed as follows:

1. **Pruning strategies**, such as late pruning, will be implemented to minimize the trunk canker diseases – *Eutypa* spp, *Botryosphaeria* spp etc.
2. **Round-Up** – may be used at the lowest rate for strip spraying in spring for efficient control of under-vine weed populations.
3. **Copper** (OMRI-listed) – for early-season botrytis and phomopsis control
4. **Sulfur** (OMRI-listed) – During the pre-veraison period to control powdery mildew
5. **PureSpray Green** (OMRI-listed) – Biological oil used at budbreak for mildew suppression or during May-June for powdery mildew suppression and control, and mite / leafhopper control
6. **Sonata / Serenade / Regalia** (OMRI-listed) – biological fermentation byproducts used pre-veraison to reduce powdery mildew growth
7. Other materials – may be used as recommended by a licensed PCA.

All materials used will be applied by a **Qualified Applicator** (QA; as licensed by CDPR; see <http://www.cdpr.ca.gov/docs/license/qal.htm> ), and all materials will be chosen for their low residual impact and **non-contamination of groundwater resources**.

Information regarding a material’s likelihood for contamination of groundwater resources is derived from each specific material’s MSDS and Label, as listed at the Crop Data Management Systems Inc (CDMS) database (<http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=>). Labels describe the known environmental hazards, breakdown products, restrictions on use and timing, and describe rates that are allowable per EPA / CDPR regulations.

## Erosion Control Practices

All erosion control devices will be installed as outlined in the Napa County Erosion Control Plan (ECP), and as detailed elsewhere in this submission.

In addition to those listed, we intend to use:

- Some **hand application of farming practices**, and
- **Tractors with rubber tracks**, to minimize soil compaction

**Cover cropping** will be implemented using any combination of **barley, vetch, pea, clover and native grasses**, as outlined in the ECP. This combination will allow the fixation of nitrogen, promote habitat, and minimize soil loss through structural degradation and erosion. **Straw** will be laid down during the winter period in areas of potential erosion.

## Environmental Impact and Risk Assessment

### A. Risk Mitigation

All measures for mitigation of soil loss, erosion, material application, and material composition will be performed as detailed in the Erosion Control Plan (ECP), **Attachment A**, and this report.

1. There will be no permanent storage of fertilization and pesticide materials on site.
2. We will wash all equipment away from runoff hazards, using containment systems and controls where appropriate.
3. We will utilize County, State and Federal procedures for movement of materials to and from the site.
4. We will, through the sustainability procedures described above, minimize the need to bring materials to the site.
5. We intend to avoid the use of inputs on the site; however when necessary, we will use Organic (OMRI-certified) materials where appropriate.
6. We will respect all local noise ordinances.
7. We will ensure all non-biodegradable wastes and residual materials are transported offsite in closed containers.
8. All vineyard prunings and clippings will either be biodegraded in situ in the vineyard proper, or chipped and used as mulch for biocontrol in the vineyard proper or immediately adjacent to the vineyard.
9. The suggested materials described here are not known to be bio-accumulators, and have sufficiently rapid degradative half-life or sufficient non-toxicity to pose little threat as an environmental accumulator.

## **Regulatory Environment and Reporting**

All registered materials will be purchased, transported, applied and disposed off as described by the requirements of local, State and Federal Regulatory Agencies. In addition, all reporting will be performed as required by those same agencies. The full set of regulations is available at the California Department of Pesticide Regulation website ([www.cdpr.ca.gov](http://www.cdpr.ca.gov) ). Labels of registered products are available at the CDMS website (<http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=> ), while a record for all reportable applied materials and further information is available at the Napa County Agricultural Commissioners Office (<http://www.co.napa.ca.us/GOV/Departments/DeptDefault.asp?DID=26400> ).

**Attachment #4**  
Notice of Preparation of Draft Environmental Impact Report

**Attachment #5**  
Photos



**Figure 1.** View of typical habitat associated with the THP/TCP illustrating mixed chaparral alliance.



**Figure 2.** Manzanita alliance on the project site.



**Figure 3.** Doug-fir and Ponderosa pine trees with in Doug-fir alliance.



**Figure 4.** Reservoir on the property. No removal of vegetation within 100-feet.

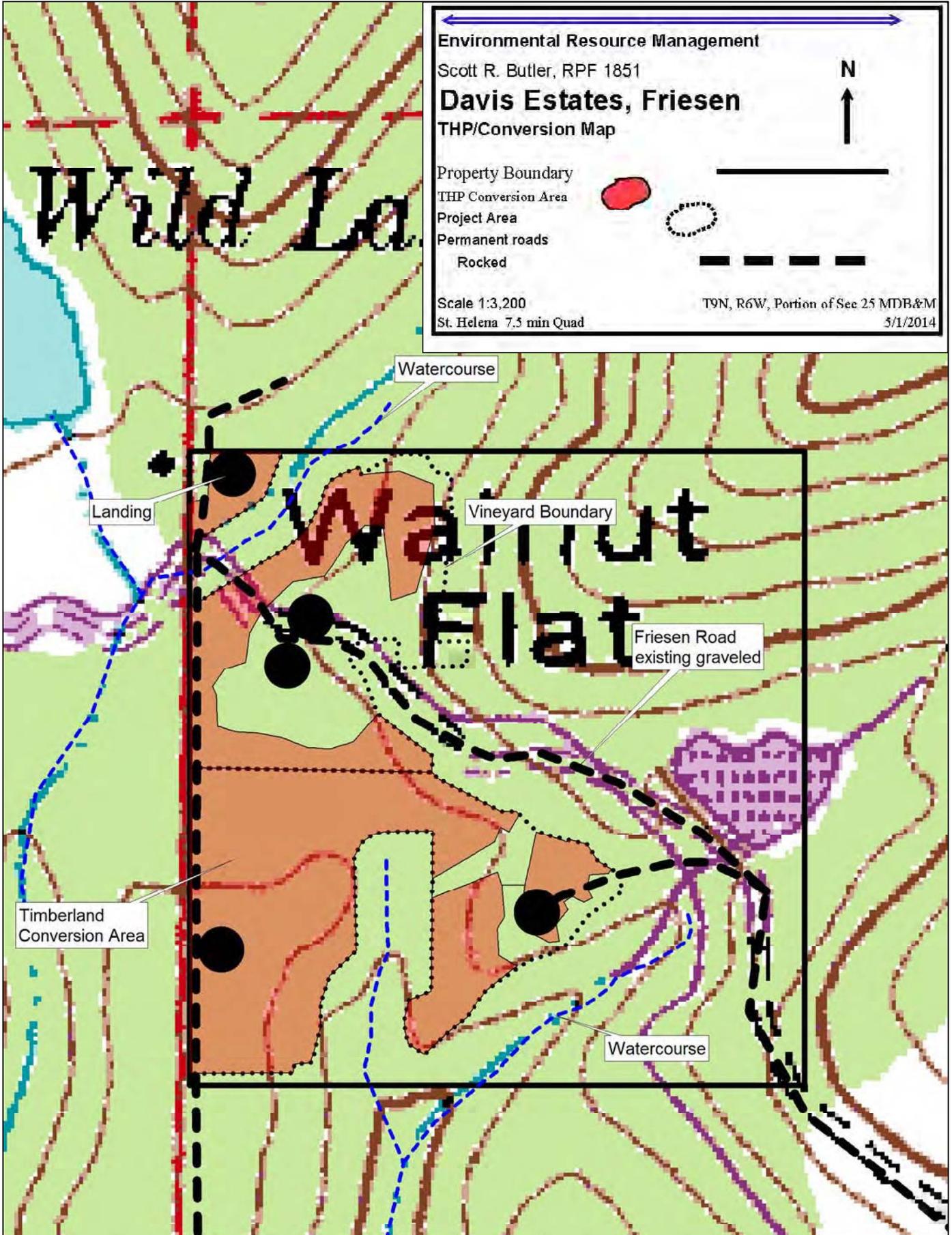


**Figure 5.** Grey Pine and Chamise chaparral alliance.



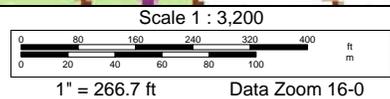
**Figure 6.** Mixed Oak Woodland Alliance

**Attachment #6**  
Maps and Figures



Data use subject to license.  
 © DeLorme. XMap® 6.  
 www.delorme.com

TN  
 MN (14.1°E)  
 Page 37.1

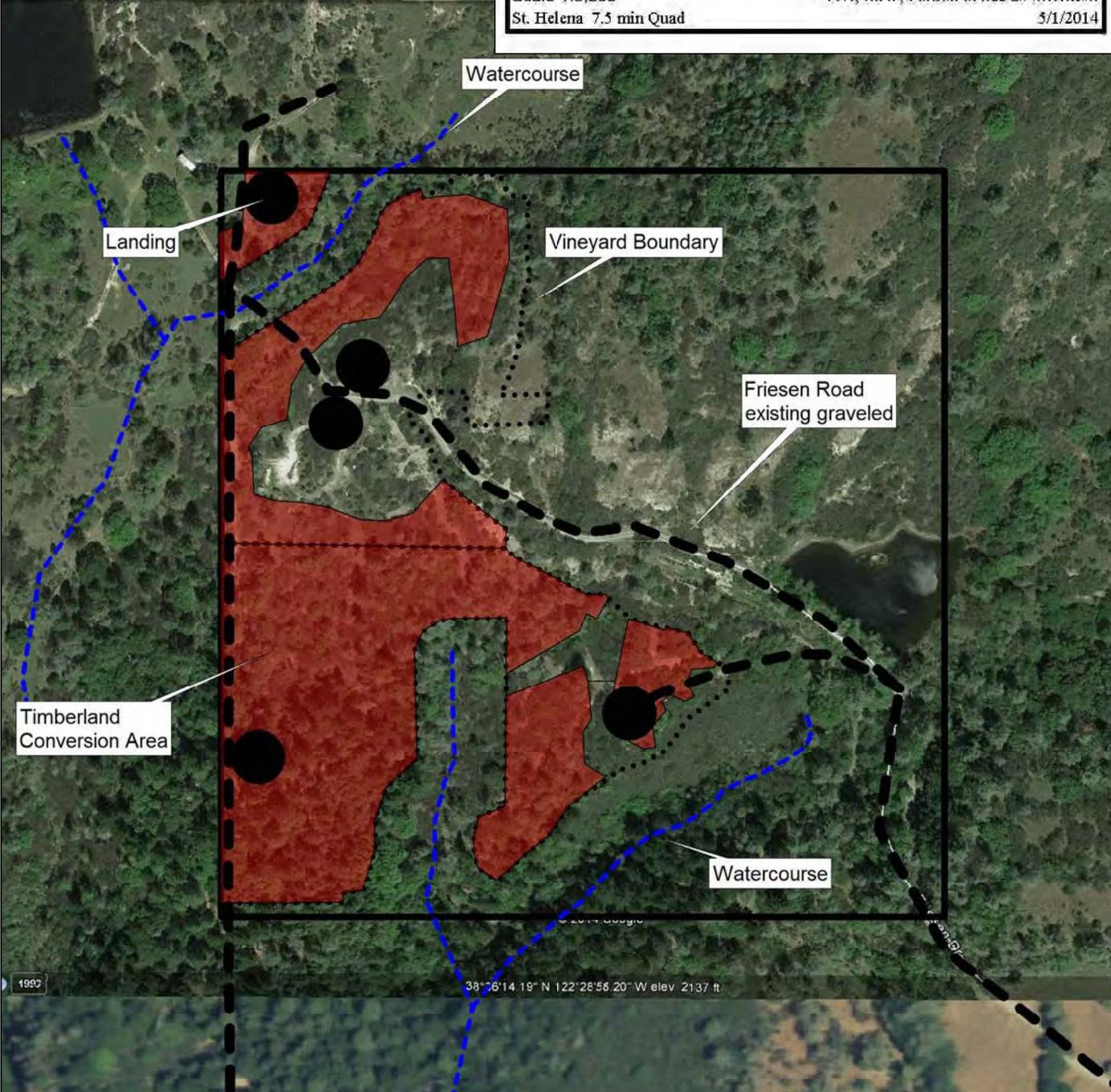


Environmental Resource Management  
 Scott R. Butler, RPF 1851  
**Davis Estates, Friesen**  
 THP/Conversion Map

Property Boundary  
 THP Conversion Area  
 Project Area  
 Permanent roads  
 Rocked

Scale 1:3,200  
 St. Helena 7.5 min Quad

T9N, R6W, Portion of Sec 25 MDB&M  
 3/1/2014



# ***APPENDIX J***

---

## **INTEGRATED PEST MANAGEMENT (IPM) PLAN**

# **Sustainable Integrated Pest Management (IPM) Davis Friesen Project**

**By Justin Leigon  
Viticulturist  
Piña Vineyard Management  
2013**

## **Introduction**

The purpose of this report is to provide an outline of the practices to be performed at the proposed new vineyard development site, **Davis Friesen**. It will include a description of the materials to be applied, cultural practices to be performed, and a discussion of how the use of these materials and implementation of these practices could potentially affect the surrounding environment.

1. Philosophy
2. Responsibility
3. Irrigation Management
4. Nutrition Management
5. Pest Management
  - a. Invertebrate Pests
  - b. Vertebrate Pests
6. Soil Management
  - a. Weed Management
7. Disease Management
  - a. Grapevine Viral Disease
  - b. Grapevine Fungal Disease & Spray Program
8. Erosion Control Practices
9. Environmental Impact and Risk Assessment
  - a. Risk Mitigation
10. Regulatory Environment and Reporting

## Philosophy

Our intention on this site is to use a multi-pronged approach to farming and management, derived from the best possible combination of **sustainable practices, integrated pest management (IPM)**, and the use of **certified organic materials** wherever possible.

Over the past decade, the farming community has made large strides toward a more sustainable model. The focus has been on building soil health, reducing chemical inputs, and measuring the impact on the local ecosystem. We believe that the production of ultra-premium wine grapes does not have to come at the cost of the environment. In fact, by using a more balanced approach, the lifespan of a vineyard is lengthened and the need for intervention is decreased. All farming decisions are based on a holistic approach with an increase in biodiversity as a main objective.

## Responsibility

The practices laid out below are representative of our program. However, in extreme circumstances, such as severe disease infestation, the best management practice might temporarily differ from those stated in this report. This will only occur when all alternatives have been considered. In cases of change, we will include the consultation of a licensed Pest Control Advisor (PCA; information available at <http://www.cdpr.ca.gov/docs/license/adviser.htm>).

We will implement the following accountability practices:

1. Utilize **closed systems** for materials applications where appropriate. A closed system is defined in the California Department of Pesticide Regulations (CDPR) Code of Regulations (<http://www.cdpr.ca.gov/docs/legbills/calcode/010101.htm> )
2. Maintain a **wastewater capture or containment** program for equipment washing where appropriate. These methodologies are addressed in CDPR Pesticide Management Plan for Water Quality (<http://www.cdpr.ca.gov/docs/emon/surfwtr/maaplan.htm> )
3. Implement a **“no spill” protocol** to ensure that all existing surface runoff systems and groundwaters remain free of contaminants from farming practices
4. Maintain a log of all materials transported
5. Maintain a record of all irrigation and fertilizer applications
6. Maintain and report to Napa County, all applications of pesticide, including rates and method of application.

## Irrigation Management

Water is a valuable resource and continues to become scarcer. We will use information from the soil reports and regular monitoring of vine water status to ensure that the vines receive only the minimum quantity of water required to produce premium wine quality. Steps to be taken include:

- Maintain log of water usage
- Monitor for leaks & clogs
- Deficit irrigation
- Test for distribution & uniformity

Irrigations will be performed using a drip-irrigation system.

Canopy management will be performed to ensure balanced vines and to not contribute to excessive use of water reserves. Water use for this development is expected to fall substantially below available and permitted water use.

## Nutrient Management

**Plant tissue samples** will be taken annually to determine fertility of vines. Nutrient, fertilizer, and pH-adjusting agents will be applied according to recommendations. Fertigations will be used when applicable. We will focus on building soil health in order to decrease the need for inputs. All materials used will be chosen to ensure there is **no groundwater contamination**.

Rates and application methods will be as required on the labels. “Ground-based application” (<http://www.cdpr.ca.gov/docs/legbills/calcode/010101.htm> ) will be used, which will target feeder root zones or be precisely directed at grapevine foliage only.

Amendment strategies could include:

1. **Lime and/or gypsum application** – this would occur if needed pre-plant, and on rare occasions during the life of the vineyard. Material use is not expected to exceed 5 T/ac pre-plant and 1 T/ac thereafter. These materials are immobile, or scarcely mobile, in the soil.
2. **Liquid fertilizers** – materials will be chosen for their sustainable record, preferably OMRI-certified. No materials will be used if there is a potential for any groundwater contamination. Application will be to the feeder root zone to promote soil microbial health.
3. **Foliar fertilizers** – materials applied will include Zinc and Boron to assist in fruit set. OMRI-listed materials are available.
4. **Compost** – annual application during the life of the vineyard. Material use is not expected to exceed 5 T/ac.

## Pest Management

The use of Integrated Pest Management (IPM) is an integral part of sustainable farming. Some general strategies that will be employed include:

- Monitor for pests
- Use reduced risk pesticides
- Use economic thresholds
- Check sprayer coverage and timing for lowest impact on beneficial populations

### A. Invertebrate Pests

The main invertebrate pests of grapevines in this area include **leafhoppers**, **sharpshooters**, **Willamette mites**, **whiteflies**, **Grape mealybugs** and **Vine mealybugs**. Recent quarantine efforts from the County include the listing of the **Light Brown Apple Moth (LBAM)** and **European Grapevine Moth (EGVM)** as a potential agricultural threat.

General biological control principles will be employed to keep populations of these insects at or below tolerable levels using the following **IPM** techniques:

1. **Biological Refugia** – buffer strips, insectaries, nectaries and other habitat designed to foster the sustained population of predators of vineyard pests
2. **Releases of bio-control predators** – predatory mites, beneficial wasps, e.g.
3. **Artificial Habitat for predators** – bluebird houses, owl boxes, e.g.
4. **Persistent monitoring** using regular seasonal counts to recognize if treatable thresholds have been exceeded. Last resort management would be to implement a limited and targeted spray program using Organic materials (preferable) or low-impact synthetics.

We intend to specifically manage these pests as follows:

- a) **Leafhoppers / Sharpshooters** – bluebird habitat, biocontrol with lacewings, spiders; if populations severely exceed treatable levels, pesticide materials would include Pyganic (OMRI-listed).
- b) **Mites** – releases of predatory mites, suppression of dust using misting of water on avenues or OMRI-listed dust suppressants such as Dust-Off; if populations severely exceed treatable thresholds, Acramite or similar product might be spot-applied.
- c) **Whiteflies** – best managed with building beneficial insect populations or spot treatment of Pyganic (OMRI-listed) if excessive / severe damage is present.
- d) **Grape Mealybug** – Refugia, insectaries, and cover cropping will foster habitat for mealybug predators such as the mealybug destroyer. Good canopy and crop management will minimize mealybug proliferation. If populations

become excessive, materials include Admire or Movento, used at the lowest rates.

- e) **Vine Mealybug** – similar to Grape mealybug, however tolerance levels are much lower due to the serious impact on fruit quality.
- f) **LBAM** – full compliance with all requirements of the County-mandated Quarantine procedures.
- g) **EGVM** – full compliance with all requirements of the County-mandated Quarantine procedures.

## **B. Vertebrate Pests**

The main vertebrate pests of grapevine in this area include **gophers, voles, field mice,** and **bird predation of ripe fruit.** We intend to set up and maintain raptor, barn owl and nesting bird habitat, using **owl boxes, raptor perches, bird boxes.** Vineyard canopy **bird netting** will be used at veraison to discourage bird predation of berries. We may implement additional individual gopher traps in spots of significant damage.

## **Soil Management**

Maintaining good soil tilth is a fundamental principle of sustainable farming. Some pre-planting amendments may be required as listed in the above section. Where possible, recommendations provided by **Paul R. Anamosa, Ph.D., Vineyard Soil Technologies** will be followed. We will minimize tillage, take soil samples, minimize erosion, and utilize cover crops for multiple purposes.

### **A. Weed Management**

We will use the following to reduce weed pressure:

1. **Cover cropping** programs to suppress the growth of weeds
2. **Under-vine treatment** may include the use of Round-up at the lowest rate in a strip spray leaving no less than 80% permanent ground cover, while shovels will be used in maintenance throughout the season
3. The use of **drip irrigation**
4. **Mowing** and/or **tilling** will be used where appropriate, and as provided for in the Napa County Erosion Control Plan (**ECP**)
5. Use **shredded vine clippings** to act as **mulch** and suppress weeds in active weed banks

We will not be using any herbicides that have any known residual activity, pre-emergent or otherwise.

## Disease Management

### A. Grapevine Viral Disease

We will utilize grapevine plant material known as ‘Certified’ to the State of California (Regulations viewable at <http://groups.ucanr.org/iv/files/28206.pdf>). We also intend to perform more exhaustive testing of the requisite plant material for the presence of all known grapevine viral diseases, and intend to avoid any material not deemed “clean”.

### B. Grapevine Fungal Disease & Spray Program

We will similarly perform exhaustive testing of all grapevine materials prior to planting to eliminate any material that might be harboring known fungal pathogens.

Sustainable management practice combined with the use of Organic (as certified by the Organic Materials Review Institute (OMRI; <http://www.omri.org>) and low-impact materials will be performed as follows:

1. **Pruning strategies**, such as late pruning, will be implemented to minimize the trunk canker diseases – *Eutypa* spp, *Botryosphaeria* spp etc.
2. **Round-Up** – may be used at the lowest rate for strip spraying in spring for efficient control of under-vine weed populations.
3. **Copper** (OMRI-listed) – for early-season botrytis and phomopsis control
4. **Sulfur** (OMRI-listed) – During the pre-veraison period to control powdery mildew
5. **PureSpray Green** (OMRI-listed) – Biological oil used at budbreak for mildew suppression or during May-June for powdery mildew suppression and control, and mite / leafhopper control
6. **Sonata / Serenade / Regalia** (OMRI-listed) – biological fermentation byproducts used pre-veraison to reduce powdery mildew growth
7. Other materials – may be used as recommended by a licensed PCA.

All materials used will be applied by a **Qualified Applicator** (QA; as licensed by CDPR; see <http://www.cdpr.ca.gov/docs/license/qal.htm>), and all materials will be chosen for their low residual impact and **non-contamination of groundwater resources**.

Information regarding a material’s likelihood for contamination of groundwater resources is derived from each specific material’s MSDS and Label, as listed at the Crop Data Management Systems Inc (CDMS) database (<http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=>). Labels describe the known environmental hazards, breakdown products, restrictions on use and timing, and describe rates that are allowable per EPA / CDPR regulations.

## Erosion Control Practices

All erosion control devices will be installed as outlined in the Napa County Erosion Control Plan (ECP), and as detailed elsewhere in this submission.

In addition to those listed, we intend to use:

- Some **hand application of farming practices**, and
- **Tractors with rubber tracks**, to minimize soil compaction

**Cover cropping** will be implemented using any combination of **barley, vetch, pea, clover and native grasses**, as outlined in the ECP. This combination will allow the fixation of nitrogen, promote habitat, and minimize soil loss through structural degradation and erosion. **Straw** will be laid down during the winter period in areas of potential erosion.

## Environmental Impact and Risk Assessment

### A. Risk Mitigation

All measures for mitigation of soil loss, erosion, material application, and material composition will be performed as detailed in the Erosion Control Plan (ECP), **Attachment A**, and this report.

1. There will be no permanent storage of fertilization and pesticide materials on site.
2. We will wash all equipment away from runoff hazards, using containment systems and controls where appropriate.
3. We will utilize County, State and Federal procedures for movement of materials to and from the site.
4. We will, through the sustainability procedures described above, minimize the need to bring materials to the site.
5. We intend to avoid the use of inputs on the site; however when necessary, we will use Organic (OMRI-certified) materials where appropriate.
6. We will respect all local noise ordinances.
7. We will ensure all non-biodegradable wastes and residual materials are transported offsite in closed containers.
8. All vineyard prunings and clippings will either be biodegraded in situ in the vineyard proper, or chipped and used as mulch for biocontrol in the vineyard proper or immediately adjacent to the vineyard.
9. The suggested materials described here are not known to be bio-accumulators, and have sufficiently rapid degradative half-life or sufficient non-toxicity to pose little threat as an environmental accumulator.

## **Regulatory Environment and Reporting**

All registered materials will be purchased, transported, applied and disposed off as described by the requirements of local, State and Federal Regulatory Agencies. In addition, all reporting will be performed as required by those same agencies. The full set of regulations is available at the California Department of Pesticide Regulation website ([www.cdpr.ca.gov](http://www.cdpr.ca.gov) ). Labels of registered products are available at the CDMS website (<http://www.cdms.net/LabelsMsds/LMDefault.aspx?t=> ), while a record for all reportable applied materials and further information is available at the Napa County Agricultural Commissioners Office (<http://www.co.napa.ca.us/GOV/Departments/DeptDefault.asp?DID=26400> ).

# ***APPENDIX K***

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CONFIDENTIAL ARCHEOLOGICAL SURVEY  
REPORT

Cultural Resources Survey for the  
Friesen – Davis Vineyard Conversion Project  
Angwin, Napa County, California  
Confidential  
(bound under a separate cover)

# ***APPENDIX L***

---

TECHNICAL ADEQUACY LETTER FOR ECP



## Napa County Resource Conservation District

1303 Jefferson St., Ste. 500B  
Napa, California 94559  
Phone: (707) 252-4188  
Fax: (707) 252-4219  
[www.naparcd.org](http://www.naparcd.org)

---

### Interoffice Memorandum

**Date:** July 6<sup>th</sup>, 2015  
**To:** Napa County PBES  
**From:** Charles Schembre, Vineyard Conservation Coordinator, Napa County RCD  
**Re:** Erosion Control Plan for P13-00373, Frost Fire Freisen  
**cc:** Bill Birmingham, NVVE, Scott Butler

---

The Napa County RCD finds the referenced Plan technically adequate for erosion and sediment control. Please let me know if you have any questions or if I may otherwise be of assistance.

**Note:** this finding **does not constitute Plan approval**, authority for which rests with the Napa County Department of Planning, Building, and Environmental Services.

Sincerely,

Charles Schembre

# ***APPENDIX M***

---

SOIL REPORTS

---

# SOIL ANALYSIS FOR VINEYARD DEVELOPMENT



## **Soil Analysis for Vineyard Development**

**For  
Michael Davis  
Davis Estates  
15572 Computer Lane  
Huntington Beach, CA 92649**

**For the  
Friesen Road Property  
Napa APN: 018-060-012 & 018-060-013**

**Project 12-178**

**Prepared by**

**Paul R. Anamosa, Ph.D.  
Vineyard Soil Technologies  
3379 Solano Ave. #505, Napa, CA 94558  
[www.VineyardSoil.com](http://www.VineyardSoil.com)**

**January 2013**

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Maps and Charts of Soil Physical and Chemical Characteristics

## **Introduction**

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The goal of this study is to assess the land on the Michael Davis properties on Friesen Road in Angwin, California, to provide information concerning the soil chemical and physical properties and recommendations for design and installation of vineyards. The specific objectives are:

1. Quantify the pertinent soil physical, chemical, and biological properties and how they change across the landscape of the potentially planted areas.
2. Assess these properties in their impact on winegrape vine growth particularly relating to water holding capacity, soil fertility, soil chemical hazards, and soil physical impediments.
3. Provide detailed recommendations for re-establishment of vineyards and continued vineyard management.

Twenty-eight (28) backhoe pits were evaluated at the property November 16, 2012. The soil was described and profile logs were recorded. Fifty-one (51) soil samples were taken from horizons at the sites and submitted for analysis of physical and chemical characteristics. Twenty-eight (28) soil samples were collected from the surface soil at each hole and submitted for nematode analysis. The Soil Profile Logs for the backhoe pits and Laboratory Data Sheets for all samples are included as part of this report.

Soil pit locations in longitude and latitude (units of decimal degrees) were recorded using a Geo-Positioning Satellite (GPS) receiver and were used to plot the soil sites on the attached maps. The Napa County office of Geographic Information Systems provided the Digital Parcel Layer (2010) that delimits the boundaries of each parcel in the county and a color aerial photograph (2011). The limits of the original study area for this project were provided by Napa Valley Vineyard Engineering (NVVE). Their study area was placed as a layer over the Napa County 2011 Aerial Photograph. The area of each block was measured. There is an error in this original study area map as it is presented. Napa Valley Vineyard Engineering did the original slope and site assessment. They realized that there was insufficient area within the boundaries of Parcel: 018-060-012, so they extended the northern property boundary to capture the extra area needed. These parcels should be surveyed by a licensed surveyor to determine the exact boundaries. In retrospect, this decision has very little impact on this project report, because only a very small amount of plantable land extends north of the northern boundary into the area extended by Napa Valley Engineering. No soil test pits were located in the northern extended area.

This report is accompanied by many maps that show the spatial arrangement of soil properties of the many soil sites. These maps are arranged in order of their discussion in this report. So as you read the report, you can follow the discussion with each map in sequence. The relevant chemical data are shown in Appendix Tables A4 and in

accompanying charts for each element assayed. The data are identified on the horizontal axes of the charts by Site number.

We generally sampled three layers in each profile: topsoil (layer No. 1), upper (2) and lower (3) subsoil in each profile for chemical analysis. The importance of these layers are: Layer 1 for nutrient uptake (topsoil); Layer 2 for water uptake when the vines are established (topsoil and upper subsoil); and Layer 3 for possible source of toxic elements (lower subsoil).

The chemical data are compared to threshold or critical values for judging whether an element is high and low. These critical and threshold values should not be regarded as definitive but rather as indicative guides that need to be considered with a variety of other factors including, for example, soil condition, vine performance, tissue analysis, etc. In general, most elements are not analyzed for their critical minimum levels, although these criteria can be useful in foreshadowing nutrient deficiencies. However we are interested in the toxic levels of elements to predict threats to vine survival and growth.

The calculation of acres in this report is approximate only. The actual legally registered area of the land should be verified by a licensed surveyor.

### ***Slope and Aspect Analysis***

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**Topographical Features:** The topographic features are presented on the color aerial photograph (2011), which was provided by the Napa County Office of Geographic Information Systems. The approximate property lines were placed as a digital layer (Parcels) on the maps and were provide by the Napa County Office of Geographic Information Systems. The area of the parcel is approximately 38 acres. The Napa County Digital Parcel Layer is approximate only - the actual area of the parcel should be verified by a licensed land surveyor.

The land representing the Napa County Assessors Parcels Number 020-360-024 was analyzed for slope and aspect. The USGS 7.5 minute Quadrangle Topographic map was examined for blue line streams. No blue line streams were found on the property. The Napa County Soil Series were provided by the US Natural Resource Conservation Service and were placed as a layer on the aerial photograph.

**Slope:** Slope is the change in rise (vertical distance) of a landform divided by the run (horizontal distance) of the landform. The slope map is based on 10 meter Digital Elevation Model (DEM) data provided by Napa County Office of Geographic Information Systems. This data-set is a grid of elevations (elevations every 33 ft) from which 5ft. contours are calculated. Slope and Aspect are then calculated from the contours. Slope categories (range included in each color type) were chosen to facilitate decisions on vineyard establishment and management.

- See Slope Map.

- Most of the area less than 30% slope is located in the Study Area determined by NVVE. However there is a high plateau in the far northeast corner that has slopes of 20-30%.
- Due to other Napa County regulations regarding land clearing, the NVVE study area has been presented as the most land that can be cleared from this property.

**Directional Aspect / Exposure:** The aspect is the direction (compass heading) that the sloping land is facing. When the slope is zero the land is level, and there is no aspect. As the slope increases the aspect becomes increasingly agriculturally important because southern and western aspect have more sun exposure and higher evapotranspirational demands than northern aspects (which will have less sun and more shade). Therefore, vines grown on distinctly different aspects will have different irrigation demands and ripening; both criteria which are hoped to be uniform within an irrigation or management block.

Aspect typically changes abruptly at the apex of hills and in the troughs of valleys. Changes that occur on a curved side-slope are more gradual (although still mapped with distinct boundaries).

The aspect for the plantable areas was consigned to the 8 major compass headings (N, NE, E, SE, S, SW, W, and NW). See map: Aspect. The aspect on all slopes less than 5% were left WHITE to improve comprehension of the map. The aspect on slopes of less than 5% is inconsequential.

Aspects can be grouped into 3 distinct types that are based on the evapotranspiration potential: (1) warmer: S, SW, and SE; (2) neutral: E, W, and none; and (3) cooler: NW, N, and NE than a flat section of land in the same area.

- Most of the land within the study area has either North, Northeast, and East aspect or West aspect.

### **Soil Morphology & Physical Characteristic Definitions**

---

The physical attributes of the soils were assessed by standard pedological methods, but adapted to conform to the commercial objectives of the assessment.

**Soil Color:** The color of undisturbed samples from each soil horizon was determined with Munsell Soil Color Charts. The designation of color on the Soil Profile Logs conforms to this internationally recognized system of color communication. Since soil color changes according to moisture content, all colors were determined on moist samples.

**Soil texture** is the relative proportion of sand, silt, and clay in a soil. Most soil samples have some particles of each size class. Loam is a relatively even mixture of all three classes. As any one size class becomes the predominant constituent, its

name is used first as a modifier, and if it is the major constituent of the sample, the textural class takes its name (loam > clay loam > clay).

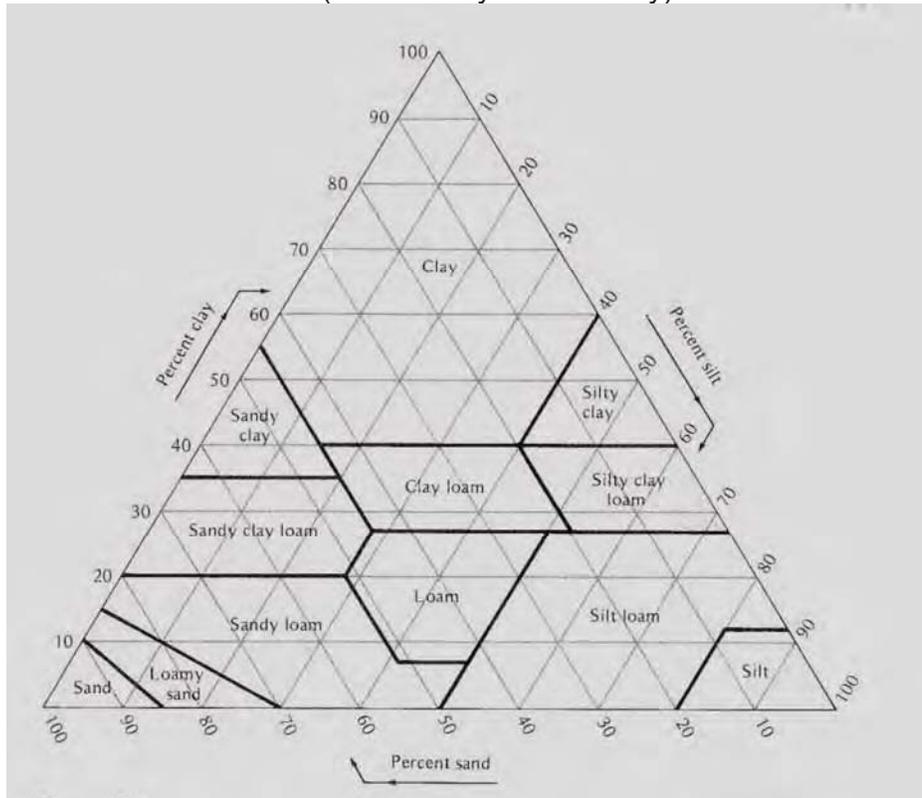


Figure 1. USDA soil textural triangle.

**Plastic clay:** Plastic clay is clay that has a high propensity to deform and smear when under pressure rather than break. The goal of tillage operation is to break large soil aggregates into smaller pieces when they are sufficiently dry to be brittle. Plastic clay is not brittle and will smear and compress when exposed to the shear force of a tillage implement. It is very important that tillage of plastic clay be conducted at water content that is less than the plastic limit of the soil. This property will need to be measured prior to tillage if plastic clays are present in the tillage rip depth.

**Soil structure:** The soil's structure refers to the organization of the soil particles into aggregates. Water is held in pores by capillary attraction of the water for the soil particles surface. Very large pores will drain due to the force of gravity, and leave a thin water film along the soil particles surface. Smaller pores will have two or more soil particle surfaces sufficiently close that they only drain by the force of evaporation or the evapotranspirational force of a root that sucks the water from the pore. Larger pores allow roots to easily penetrate the soil mass.

A well aggregated soil (granular or blocky) has a broad range of pore sizes that hold water with increasing tension as the pores become smaller. Massively structured soil has predominantly very small pores that do not readily give up water to roots, or allow roots to penetrate the soil mass.

The hardness (friability/deformability) is the level of force the soil will withstand before rupture. This is measured as the penetrability and relates to the ease of penetration by roots. Soil becomes less friable and harder as its moisture content decreases. The hardness is classified from most favorable to least favorable as: loose, friable, firm, hard, and rigid.

**Rock Content:** Moderate (20-40%) amounts of rock (greater than 1/8 of an inch in diameter) are considered favorable for grapevines, because: (1) roots are able to exploit the soil/rock interface to extend deeper into the soil profile; and (2) the gravel reduces the available water content thus allowing greater control over water availability. The gravel content of each horizon is listed in Soil Profile Logs. Rounded gravel is usually the result of tumbling through a stream or river. Angular gravel is typically fractured from bedrock and has not moved appreciably from its origin. Weathered gravel has started to decompose and may have sufficient pore volume to store significant amounts of plant available water. Rigid rock is either only slightly fractured or non-fractured and will severely limit or not permit penetration by roots or frequently tillage implements.

**Rust Mottles** result from decomposition of organic matter under anaerobic conditions of low or no oxygen. The anaerobic condition is due to the utilization of all available oxygen by microorganisms and the poor transport of atmospheric oxygen into the area of decomposition. The poor distribution of oxygen is due to a high water content in the pores that blocks the easy movement of oxygen where it is needed. Mottles are commonly found in soils that are seasonally very wet (near saturation) for an extended period of time, and thus experience poor drainage. If the anaerobic condition is nearly continual the soil may become *gleyed* and the soil color becomes gray.

### **Soil Distribution**

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**Soil Types:** The United States Department of Agriculture and the National Resource Conservation Service (formerly the Soil Conservation Service) have published the Napa County Soil Survey. This survey describes the characteristics and locations of soils throughout the county. Each soil **map unit** is named after a soil series, but may contain more than just one soil type. In many cases soils that are closely associated with one another are found within a map unit. Additionally, soils may vary in the characteristics that are described in the survey. There may be differences in soil textures and depths and colors of horizons. Because of these differences in the soil properties in the real-world landscape, these maps and descriptions are recommended to be used as first order diagnostic tools in planning land use activities, and that any planned land management activities be preceded by a detailed site analysis by a qualified soil scientist prior to implementation.

- The soils of this vineyard site are mapped by the Napa County Soil Survey as being predominantly the Rock-Outcrop-Kidd complex with just a sliver of Forward loam along the western border and Henneke loam in the southeast corner. See Map: Soil Series.

- The Kidd loam consists of well drained soils on mountain terraces derived from weathered rhyolite. The Kidd is characterized by a brown surface horizon to a depth of 8” to 12” of friable medium angular blocky structured loam. The upper subsoil to a depth of 18” is brown to strong brown (reddish yellow brown) loam of firm to friable massive structure. The lower subsoil is composed of white shattered rhyolitic tuffa.
- The Forward gravelly loam consists of well drained soils on uplands and mountain slopes and is formed in materials wreathed from rhyolite. The surface layer is light gray to dark grayish brown gravelly (10-30% angular rhyolite) granularly structured loam to 10” to 18” over an upper subsoil of gravelly (20-40% angular rhyolite) grayish brown to brown medium blocky to granular loam. The lower subsoil is weak granular to very fine angular blocky gravelly weathered rhyolite or volcanic tuffa.
- The data generated for this report strongly supports the Kidd throughout most of the property. The data also supports the Forward loam, but not as uniformly as the map would indicate. The data also support the Aiken loam in the southwest portions of the study area.
- The Aiken series consists of well drained soils on uplands. These soils are derived from material weathered from volcanic rhyolite. The soils are characterized by a surface horizon of dark brown or dark reddish brown granularly structured friable loam to a depth of 8” to 14” depth. The upper subsoil is reddish brown or dark reddish brown loam or clay loam with firm weakly developed coarse angular blocky structure. This upper subsoil may also have fine to very fine angular blocky if the larger (coarse) blocky structured has not developed. The lower subsoil is from a depth of about 36’ to 40” is yellowish red clay loam or clay. Below a depth of 44’ to 60” is slightly to moderately fractured and/or weathered volcanic andesite.
- Examples of these soils are shown below.

		Very low drainage	Low drainage	Too Low	Questionable	Undesirable					
Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Root density	
					Hardness	Type					
in.	Profile No: 2	Shallow Brown Loamy over Rocky Gray Sandy Soil									17
17		Dark Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Friable	Medium Granular	Moderate	Abund	No	Many	
18		Light Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	Few	

Figure 2. Site 2: Kidd loam.

		Very low drainage	Low drainage	Too Low	Questionable		Undesirable				
Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Root density	
					Hardness	Type					
in.	Profile No: 6	Rocky Brown Loamy over Gray Sandy Soil									19
19		Dark Brown	Loam	40 % < 1 inch Weathered rhyolite	Friable	Fine Granular	Moderate	Abund	No	Many	
47		Dark Reddish Brown	Loam	50 % < 1 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Many	No	Few	
48		Light Yellowish Gray	Medium Sandy loam	70 % < 1 inch Weathered rhyolite	Rigid	Massive	Low	No	No	Zero	

Figure 3. Site 6 Forward loam.

		Very low drainage	Low drainage	Too Low	Questionable		Undesirable				
Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Root density	
					Hardness	Type					
in.	Profile No: 13	Brown Loamy over Brown Loamy Soil									25
16		Dark Reddish Brown	Loam	10 % 1 to 2 inch Weathered rhyolite	Friable	Fine Granular	Moderate	Abund	No	Abundant	
25		Reddish Brown	Loam	40 % 2 to 4 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Many	No	Many	
48		Reddish Brown	Loam	70 % 4 to 8 inch Weathered rhyolite	Hard	Fine Blocky	Moderate	Few	No	Few	
50		Light Reddish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	Zero	

Figure 4. Site 16. Aiken loam.

### **Soil Textures, Structure, Rocks, Mottles, and Drainage Issues**

**Soil Texture:** The soil texture was determined in the field by the “hand feel method” and in the laboratory by the saturation percentage method. The saturation percentage was mapped for the surface and upper subsoil horizons.

- See maps: Saturation Percentage. The texture of the surface horizons was loam (favorable) at all sites except Site 20 where it was sandy loam over weathered rhyolitic tuffa was near the surface.
- The texture of the upper subsoil horizons was either loam or sandy loam.
- The lower subsoil was mostly rock as most sites. However, the soil at several of the deeper sites was loam and clay loam.

**Soil Structure:** The soil morphological properties are described for each soil evaluation site in the soil profile logs (Table A1).

- The soil structure in the surface layers was fine to medium granular (favorable) at all sites.
- The structure in the upper subsoil ranged from fine (acceptable) angular blocky at those sites with less rock and massive at those sites with greater than 80% rock.
- The structure of the lower subsoil was rock except for the few Aiken loam sites, where it was either massive or very fine angular blocky.
- The hardness in the surface horizons was friable at all sites.
- The hardness in the upper subsoil was firm (poor)
- The hardness of the lower subsoil was firm (poor) to hard or rigid (very poor).
- The harness “Rigid” implies that the rock layer is probably not readily penetrable by a ripper shank. Although today with massive D9 bulldozers almost any rock is rippable, the rigid hardness indicates that the rock is not well fractured and is very hard.

**Rocks and Drainage:** The volumetric rock content of each horizon was estimated during the soil profile evaluation.

- The concentration of rock in the top 24” of soil was calculated and is presented in Table A1 and shown in map: Rock Content in top 24”.
- The concentration of rock in the top 24” ranged from 10% to 85%.and averaged about 35%. The rock content increased with depth. The higher rock content soils were on the central and northeastern portions of the study area.
- The impact of this variability in rock content will be shown in the maps showing the Total Available Water.

- Several areas (Sites 16, 20, 23) have volcanic ash so close to the surface that there is only 4" to 6" of soil. These areas are not realistically plantable without severely modifying the soil with dynamite.



Figure 5. Soil profile at Site 16.



Figure 6. Soil profile at Site 20.

**Rust Mottles:** Rust mottles result from decomposition of organic matter under anaerobic conditions of low or no oxygen. The anaerobic condition is due to the utilization of all available oxygen by microorganisms and the poor transport of atmospheric oxygen into the area of decomposition. The poor distribution of oxygen is

due to a high water content in the pores that blocks the easy movement of oxygen where it is needed. Mottles are commonly found in soils that are seasonally very wet (near saturation) for an extended period of time, and thus experience poor drainage. If the anaerobic condition is nearly continual the soil may become *gleyed* and the soil color becomes gray.

- Rust mottles were not found in any of the profiles.
- These soils rest on slightly fractured bedrock. They may perch water for short periods of time after a rain fall, but would still be considered very well drained.
- The installation of drainage tiles does not appear to be warranted unless for engineering purposes to avoid soil erosion.

### **Total Available Water in the Effective Rooting Depth**

**Effective Rooting Depth (ERD)** is the depth to which 80-90% of plant roots are located. This depth will change for each profile, but is typically limited to the surface layer or upper subsoil. The ERD may be increased by soil tillage that loosens (decreases the hardness) the soil to allow for deeper root penetration. Deep tillage may actually decrease the ERD if the tillage degrades soil structure by causing compaction.

**Total Available Water (TAW)** is the amount of water available to the plant in the effective rooting depth. It is calculated as the amount of water that exists in the soil between the Field Capacity (FC) and the Permanent Wilting Point (PWP). The Field Capacity is the maximal amount of water a soil will hold if allowed to become fully wetted and drain by gravity (i.e. no evaporation or plant transpiration). The PWP is the amount of water that is still present in a soil when it becomes so dry that plants growing in the soil wilt and die. For example if the FC is 35% by volume and the PWP is 4% by volume the TAW is 31%. The TAW is frequently presented not as a percent but in units of inches of water per inches of soil depth. The ERD and TAW are closely correlated. As the ERD increases so does the TAW. However, the increase in the ERD may not be proportional to an increase in the TAW because an increase in the ERD caused by deep tillage may allow root penetration into a soil layer with 80% rock, for example. Therefore the ERD may increase by 50% from 18" to 24" but the TAW may only increase by 20% from 1.5" to 1.8" of water.

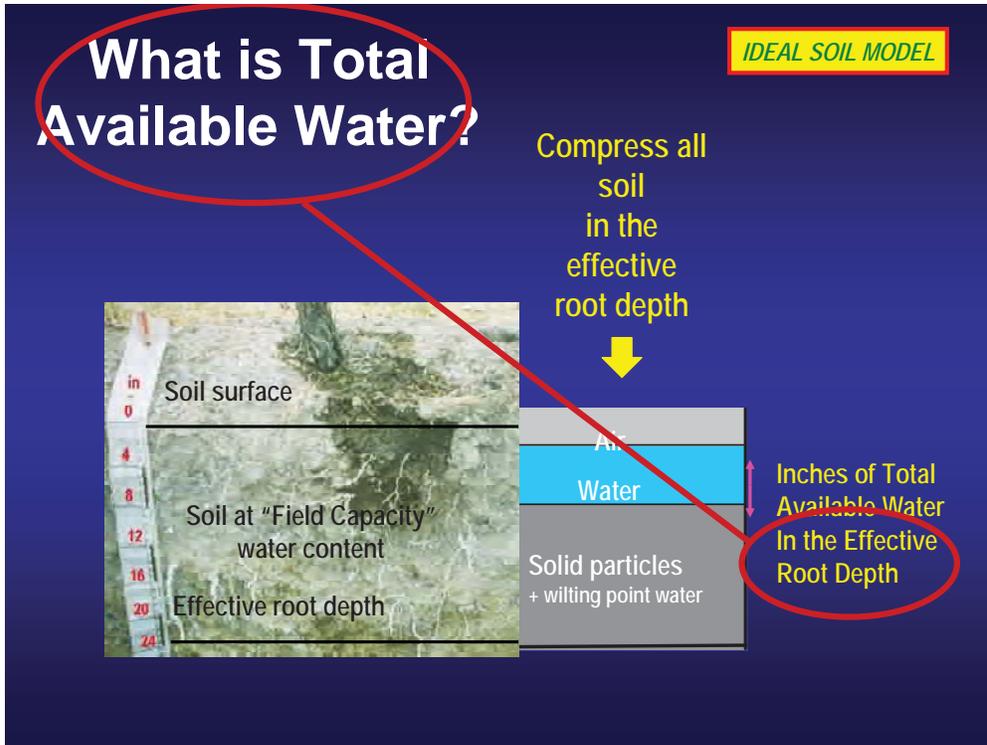


Figure 7. Total available water.

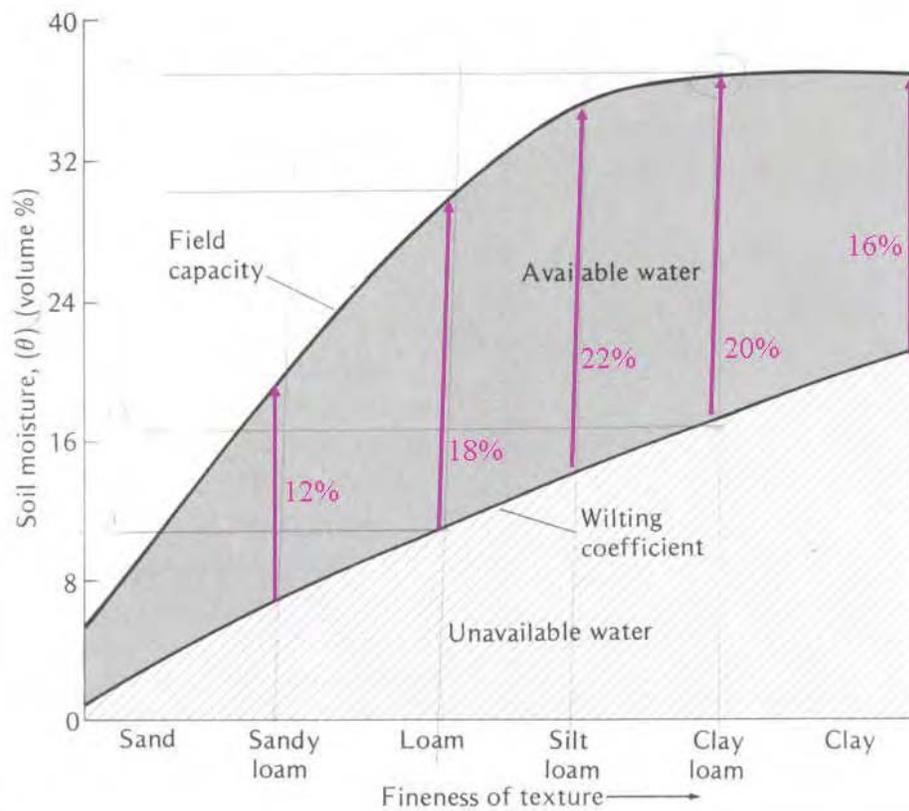


Figure 8. Soil water availability by soil texture.

The physical properties and the way that ripping and amelioration change these properties will determine the available water reserves. Available water in turn will, in large measure, determine the vigor of the vines planted on these soils. On this basis, it is possible to classify soils into various classes of water storage in the potential root zone, as a first estimate of vine vigor. Other factors, such as soil chemistry, climate, rootstock, and management, will also affect vigor.

The vineyards of high price-point wines in the north coast viticultural areas are typically managed to induce mild to moderate water stress on the vines between berry set and veraison and again from veraison to harvest. A critical period for positive impact on fruit quality is the period between berry set and veraison, because this is the period when vines have the highest potential to increase their size through cell enlargement. The period between veraison and harvest does not include berry cell creation but only a resumption of berry cell expansion. Because of the strong hydraulic connection between vine and fruit, water deficits are most effective on limiting berry size between berry set and veraison. With the propensity of wine makers to prefer harvesting grapes that are between 25 and 28 degrees brix, water stress near harvest can push the vines to permit desiccation of the berries. Therefore, the impact of extreme water stress on vines is potentially much more detrimental between veraison and harvest, because it may result in severe damage to the crop (desiccation and/or berry juice oxidation). Yet, mild water deficits prior to veraison and during fruit maturation may be beneficial through hormonal stimulation of the biochemical apparatus responsible for ripening.

By definition the inducement of water stress requires that the soil water potential be limiting to vine uptake. However, even minor water stress (Leaf Water Potentials – LWP) of less than -8 bars is sufficient to reduce flower fertilization and impact future yields. In order to ensure that water stress is possible just following berry set, sufficient water must be removed from the rootzone to allow irrigation applications to fine tune water availability. Therefore, the vineyard soil water content should be sufficiently reduced in the ERD to avoid stress during bloom, and yet to be further reduced after berry set to avoid excessive berry size.

As a first estimate, the general relationship between potential vine vigor and total available water (TAW) for high quality wine production is:

TAW in the ERD (inch)	Soil Type	Rating	Management and Vine Performance Implications
< 1.5	I	Very low	Irrigation critical; Fruit quality often good
1.5 - 2.5	II	Low	Irrigation necessary; Fruit quality good
2.5 - 3.5	III	Moderate	Irrigation desirable; Fruit quality optimal
3.5 - 4.5	IV	Moderate High	Irrigation desirable; Fruit quality optimal
4.5 - 6.0	V	High	Irrigation optional; Yields high; Quality?
6.0 - 8.0	VI	Very high	Irrigation unnecessary; Quality?
> 8.0	VII	Excessive	Not suitable for premium winegrape production

**Figure 9. Total Available Water Type classes.**

For the California North Coast Viticultural areas with access to water for irrigation the best balance between quality and quantity is generally found by managing vineyard in the Soil Type III and IV categories.

The Total Available Water (TAW) was estimated using a model that uses the following input data: (1) soil texture; (2) saturation percentage; (3) soil structure; (4) porosity, and (5) effective rooting depth. The TAW was estimated: (1) for the Effective Rooting Depth (ERD); (2) top 18” of soil; (3) top 24” of soil; (4) top 36” of soil; and (5) top 48” of soil.

- These simulated Total Available Water regimes show the estimated water holding capacity for each depth indicated and forms the basis for the initial decisions for block design. Generally, we prefer to plan vineyard design around Types III and IV classes, because they allow for moderate amounts of water storage, but also permit judicious management of the water after berry-set.
- The Effective Rooting Depth (ERD) was quite similar across the sites and ranged from 4” to 48” and averaged 28”. See Map: Effective Rooting Depth. These depths are highly varied. AN ERD of only 4” is quite shallow, whereas an ERD of 48” is quite deep. The deepest rooting was in the Aiken series where the roots were from Douglas Fir trees.
- The TAW in the ERD for the current vineyard is also quite variable with a range of Type class I, II, III, IV and V. This is indicative of the high concentration of rock at some sites and the variability in the depth of the ERD.
- The TAW values in the top 18” of soil are in the Type Class I, II, and III, and also quite variable. The TAW at Site 11 is so high because the soil hardness is friable to depths of 38”, so even if we tilled the land to only 18”, it is highly likely that the roots of new vines would penetrate to at least 38” where upon they would encounter a firm layer that would stop their depth. Notice that those with the higher gravel concentrations have lower TAW values. Sites 1, 3, 16, 19, 20,

and 23 are still in the Type Class I because of the very high concentration of rock.

- The TAW values for the water content in the top 24” are still quite variable but generally higher and more uniform than at only 18”. We still see the same pattern with the Sites 1, 3, 9, 16, 19, 20, and 23 all in Type Class I because the soil is very shallow over bedrock.
- The TAW values in the top 36” increases the TAW values into higher classes. Notice that Sites 1, 16, 19, 20, and 23 are still in Type class I due to high concentrations of rock.
- The TAW values from the water content in the top 48” increases the variability in the TAW values . For example Sites 11, 12, 13, 14, and 15 are quite high, whereas sites 16, 10 and 23 are low.
- Table A-1 has a column entitled Depth of Rigid Rock. Rock classified as “Rigid” is considered too hard to be effectively ripped. However, with today’s super-sized bulldozers, even this rock is rippable. However, ripping it will require expensive rock removal and will not add appreciably to the TAW values because the rock does not hold water.
- Sites 16,19, and 23 have rigid rock within 8” of the surface.

### **Tillage Considerations**

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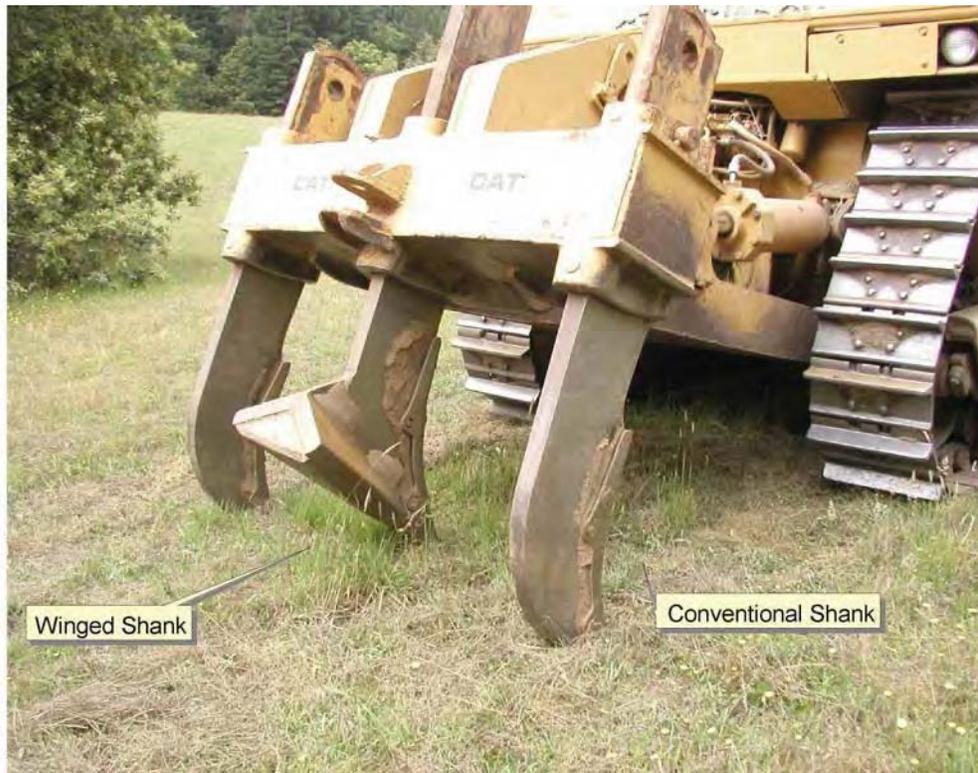
Tillage is used to breakup soil structure and make the soil in the vine’s future rootzone more friable and penetrable. Since one of the major contributors to vine vigor is access to water, the depth of tillage is frequently used to limit vine rooting depth so as to prevent access to easily available water following bloom. Water availability between bloom and veraison heavily influences berry size, and generally this period is used by vineyard managers to limit vines access to water to keep berry size smaller than is potentially possible.

The winged tine is a relatively new tillage implement and provides superior soil structural development compared to a conventional straight shank. The straight shank does not have the geometric shape to allow the soil to be lifted and broken. Instead it presents most of its force in a horizontal vector that compresses the soil to the sides of the shank. If the soil is very dry it and brittle will break the soil in the narrow channel of the shank’s path. If the soil is too moist the shank will simply compress and smear the soil. Due to the narrow rip channel, tillage with a conventional shank frequently requires several passes to adequately break up the soil mass. This results in a checkerboard of soil structures and hardness and some vines may be planted directly in a single rip zone, some in a double rip intersection, and some in soils between rips. This consequently results in a high degree of variability of soil structure and hardness and results in variability in initial plant growth.

The winged tine presents its force upward so that the soil on the upward side of the wings is lifted and then tumbled off of the back of the wing. Lateral compaction is

essentially non-existent. This results in much better structural products. This tillage requires only one pass on the future vine row and consequently all plants are put in soil of the same hardness and similar structure.

The following photograph shows both a winged tine and a conventional shank. These are shown together to facilitate their transportation. Typically either the winged tine or the shanks are removed prior to tillage.



**Figure 10. Comparison between a winged and conventional straight tillage shank.**

Timing of the ripping operation is very important. Most soils should only be ripped at the plastic limit water content. Generally, for well-drained situations supporting actively growing pasture species, the plastic limit will be reached at 24 inches about 2 to 3 weeks after the last significant rain. The condition of the pasture will begin to decline at this point, signaling that readily available water reserves are exhausted. The soil at 12 to 24 inches depth should be monitored for water content prior to ripping. (Soils in less well-drained situations (swales and hollows) will be too wet to fracture optimally and judgment needs to be made regarding their inclusion in the general assessment of timing of ripping.

- Based on the soil texture, structure, porosity, and rock content the optimal deep tillage depths are 24" to 30" depending on location.
- Deeper tillage than those recommended will require tillage into more slightly fractured volcanic ash. This will in turn increase the variability in the TAW from site to site due to rock concentrations.

- See Appendix Table A5 Vineyard Design Parameters for the tillage depth for each block.
  
- Recommendations:
  1. *Remove vines from current vineyard blocks.*
  2. *Disk all blocks to be planted to vineyards and plant them to a “Non-host” covercrop for the winter.*
  3. *In the mid-summer after the soils have dried sufficiently to be effectively tilled, mow the covercrop and till all blocks. See the Appendix Table A-5 Vineyard Layout and Design to determine the depth of tillage and the type of implement to be used.*
  4. *See Appendix Table A-6 Amendment Chart to see which blocks should be receiving pre-tillage lime and compost. These materials should be broadcast applied just prior to deep tillage.*
  5. *Rip all blocks on 3.0 ft centers with a straight shank perpendicular to the future vine row. Then come back and rip each block with a winged shank parallel to the future vine row on 3 ft centers. Both passes with their respective shanks and direction are essential.*

### **Soil Chemistry and Vine Nutrition**

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**Soil pH:** The soil pH is the relative measure of soil acidity, with a value of pH 7.0 being neutral, below 7.0 acid and above 7.0 being alkaline. The pH of the soil environment governs the biological availability of soil-borne plant nutrients. Generally, problems related to soil pH become more serious for grapes as the soil pH drops below 5.5 or goes above 7.8. Phosphorus becomes increasingly bound to the soil surface and unavailable for plant uptake as the pH drops below 5.5. Aluminum becomes increasingly soluble and toxic as the pH drops below 4.8. Potassium becomes increasingly susceptible to leaching as the pH decreases below pH 5.2. Soils with pH values above 7.5 frequently contain *free lime*, which is naturally occurring calcium carbonate. This material will co-precipitate several soil-borne plant nutrients and reduce their bioavailability.

- The pH of the surface soil samples range from 5.4 (strongly acid) to 6.0 (slightly acid).
- The pH of the subsoil samples range from 4.9 (very strongly acid) to 6.0 (slightly acid).
- Soil pH values below 5.8 would be expected to constrain the bioavailability of some soil-borne plant nutrients. Soil pH values less than 4.8 are capable of supporting toxic levels of soluble aluminum. Critical values for toxic aluminum have not been firmly established. However, anecdotal evidence suggests that devigoration is initiated at 150-300 mg/kg (ppm) aluminum.

- The subsoil at Sites 15, 21, and 28 have insufficient concentrations of soluble aluminum to be toxic. Therefore, treatment to reduce the amount of soluble aluminum will not be recommended.
- The lime requirement determined by the laboratory for each surface soil was statistically modeled and is shown on the map. This map was then interpreted in relation to rock content and probable rooting depth to arrive at the Actual Lime Application Recommendation.
- Recommendation:
  - See Appendix Table A-6 Amendment Chart for rates of lime for each block.

**Electrical Conductivity:** The electrical conductivity (EC) of the soil is an indicator of the concentration of all soluble salts in the soil solution. Soluble salts increase the osmotic potential of the soil solution. As the soluble salt concentration increases it becomes more difficult for the vine to absorb water from the soil. A high EC value is an indicator of high-salt irrigation water or poor drainage or both.

- The electrical conductivity is low (favorable) for all sites.

**Sodium (Na):** Sodium is detrimental for two soil properties. First, it becomes toxic as concentrations exceed 10 meq/l, and is highly toxic at concentrations above 30 meq/l. However, sodium is also detrimental to soil structure and degrades structure as the Sodium adsorption Ratio exceeds 6 (see SAR).

- The concentration of sodium is low (favorable) at all sites.

**Sodium Adsorption Ratio (SAR)** is the relative concentration of sodium on the cation exchange complex compared to the concentrations of calcium and magnesium. As sodium begins to predominate on the exchange sites, it can cause dispersion (destruction) of soil aggregates and greatly reduces the average pore size. The reduction in the average pore size reduces the speed at which water will infiltrate and pass through the soil. Water moves much faster through large pores than through the same volume of small pores. Therefore, a moderate (5-6) to high (7-10) SAR is an indicator of degraded soil structure and impaired soil drainage.

- The SAR is low (favorable) at all sites.

**Boron (B):** Boron is an essential plant nutrient. The range in the boron concentration from deficient to toxic is rather narrow. Boron concentrations at the lower end of the toxic range can be tolerated for years and may show a reduction in berry set (flower fertilization). Toxicity symptoms of leaves, which are demonstrated by red freckling around the leaf margin, indicate sufficiently toxic concentrations that yields would be expected to be seriously impaired.

- Boron levels (saturated paste extraction) for toxicity considerations are low (favorable) at all sites

- The boron levels are very low for vine nutritional considerations and would be expected to induce mild deficiency symptoms.
- Boron deficiencies are readily addressed with a pre-bloom foliar or soil applied fertilizer.

**Cation Balance:** Cations are positively charged ions ( $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{K}^+$ ,  $\text{Na}^+$ ,  $\text{Al}^{3+}$ , and  $\text{H}^+$ ) which are attracted to the negatively charged soil surfaces. The cation exchange capacity (CEC) is the sum total of these negatively charged sites per volume of soil. The CEC represents the major nutrient holding capacity of the soil. Generally, the CEC increases with increased clay and/or organic matter content.

The concentrations of the cations that make up the CEC can be indexed into ratios to determine their balance relative to one another. Unbalanced relationships can indicate a propensity for deficiencies in these nutrients or flag a potential problem. Magnesium percentage above 50% of the soil Cation Exchange Capacity (CEC) frequently will be reflected in degraded soil structure and porosity, slowed vine growth, and/or K deficiency symptoms. It is desirable for the soil cation balance to reflect the calcium percentage to be above 60%.

- The concentration of Magnesium in the surface and upper subsoil is well below the optimal range. Since lime will be applied to raise soil pH values, the dolomitic lime will be recommended because it contains magnesium.
- The subsoils also have slightly higher amounts of magnesium, but are still mostly deficient.

**Organic Matter (OM%):** Organic matter plays a crucial role in both the chemical and physical behavior of a soil. Organic matter provides many of the essential plant nutrients in a slow release formulation. It also supplies negatively charged sites that contribute to the CEC, which in turn holds many of the plant nutrients in forms that are readily available to plants. Soil OM also plays a role in improving soil structure and water and gas transport, by providing resins and lignins that glue soil aggregates together and improve soil porosity. About 1-1.5% of the soil's OM is naturally decomposed each year and should be replaced on an annual or biannual basis through recycling vineyard residues, and/or application of organic manures or composts, and/or cover-cropping.

- The organic matter content ranges from moderately low (undesirable) to very high (favorable).
- The deep tillage process is used to loosen the subsoil to allow for uniform deep penetration of vine roots. However, the process causes degradation of the surface soil structure due to the track-layer grinding of the surface soil. Therefore, the application of organic matter will facilitate the re-establishment of soil structure by distributing small pieces of organic matter into the soil mix. This organic matter will decompose over the following 2-4 months and leave an air pore that will become part of the new structure.

**Nitrate Nitrogen (NO<sub>3</sub>-N):** Nitrate nitrogen is a product of microbial decay of soil organic matter (as well as from mineral fertilizer applications). Nitrate is negatively charged, and therefore it is repelled by and not attracted to the cation exchange capacity (CEC). Consequently, it is very mobile in the soil solution and is readily leached from the root zone. Most fertilizer nitrogen applications are rapidly converted to nitrate in the soil. Nitrate in poorly aerated soil will convert to atmospheric nitrogen (N<sub>2</sub>) and be lost from the soil environment. Soil nitrate levels are rather temporal and can change rapidly following rainfall or irrigation.

- Nitrate concentration are moderate (acceptable) in most surface samples and very high in the samples from Sites 16 and 17 that were near to the human activities most recently on this property.
- The soil organic matter is the best indicator of the relative concentrations of nitrate available during a growing season, because most of the soil nitrogen is stored in the soil organic matter.
- Nitrate levels are a double edged sword for vineyard management in that moderately low levels are need for proper vine development, but high soil concentrations will support excessive vigor in vegetative production.

**Phosphorus (P):** Phosphorus exists in soils in the organic matter fraction and attached to soil particle surfaces. The availability of phosphorus to plant root uptake is measured by extraction methods that are correlated to the uptake process. These methods are frequently influenced by the soil mineralogy or the natural pH of the soil solution. The interpretation of bioavailability indexes of phosphorus is dependent on several soil characteristics. Additionally, soil fungi known as mycorrhizae can greatly increase phosphorus uptake by a plant by extending the effective root area into the soil. These organisms frequently colonize grapevine roots and are a significant impact on water uptake and phosphorus nutrition.

Phosphorus is one of the elements that are readily complexed by soluble iron, aluminum in acidic soils and free lime in alkaline soils. Phosphorus is typically determined by two methods: (1) Olsen sodium bicarbonate; and (2) Bray-P1 dilute acid fluoride. The Olsen method is reliable for soils with pH values of greater than 6.0. The Bray method is for soils of pH less than 6.5. These two methods should show close agreement in extracted phosphorus concentrations in the pH range 6.0-7.0.

- The appropriate extractant for phosphorus for this range in pH is the Bray method. The maps created to show phosphorus were made from the appropriate test method for each soil pH at each site.
- Phosphorus levels range from low (undesirable) at a few sites, to very high (favorable).
- The phosphorus concentrations in the upper subsoil range from low moderately low.
- Since most of the surface phosphorus values are less than optimal (15 ppm P), and since surface applied phosphorus leaches very slowly, it would be

better to add phosphorus to the planting hole so that it is relatively evenly distributed throughout the immediate rootzone.

**Potassium (K):** The bioavailability of potassium is highly correlated to its concentrations in extractants used to measure the cation exchange capacity. This essentially measures the potassium that is electrostatically attached to soil particles surfaces. However, depending on the mineralogy of a soil, additional soil potassium is usually sandwiched in the mineral inter-layer space and becomes slowly available as the most readily available levels decrease.

- Potassium levels range from moderately high (favorable) to very high (acceptable) in the surface and subsoil horizons.
- The Forward, Kidd, and Aiken soils are derived from parent material that is high in potassium.
- High soil potassium values and high potassium uptake can result in undesirably high berry juice pH values. Rootstock selection should include those that are relatively poor assimilators of potassium (Berlandieri parentage). The rootstocks 101-14 and 44-53 should be avoided.

**Micronutrients (Iron, Zinc, Manganese, Copper, and Nickel):** The plant micronutrients are used in much smaller quantities than the previously discussed major nutrients. However, they are still of great importance to vine nutrition. The bioavailability of the micronutrients in soil is not readily assessed with just one method of extraction. However, the bioavailability of these nutrients is not correlated to a high degree of precision even to their best extraction method. Most routine analyses use the DTPA extractant to determine extremes in availability. Therefore, these methods are used to interpret extremes at the deficient and excessive range of concentrations.

- The concentration of Zinc is low in all surface horizons (undesirable) except at Sites 16 where it is high. This is probably not natural, but it is not wide spread either. Zinc deficiencies treatment would be to apply zinc as a foliar spray along with pre-bloom fungicides if it is deficient. Do not apply zinc to the soil.
- The concentration of Iron is moderately low to moderate at all sites. The concentration of Iron changes in relation to the oxidation/reduction potential of the soil, which is dependent on water content and soil drainage. Generally, soil levels are sufficient to provide adequate quantities to vines. Monitor leaf petiole values to determine if deficiencies are occurring.
- The concentration of Manganese is high (favorable). The concentration of Manganese changes in relation to the oxidation/reduction potential of the soil, which is dependent on water content and soil drainage. Generally, soil levels are sufficient to provide adequate quantities to vines. Monitor leaf petiole values to determine if deficiencies are occurring.
- The concentration of Copper is low (deficient) except at Site 16, where it is high. Copper should be applied foliarly incorporated into the spring mildew management program until petiole values attain concentrations of at least 12 ppm.

- Nickel is an essential element required in miniscule quantities, and is toxic if concentrations exceed 30-50 ppm. Nickel is rarely at concentrations that are toxic to grapevine. However, the concentration of nickel can be high in soils also high in magnesium. The concentration of Nickel is very low (favorable) in all samples.
- Each of these nutrients (except Nickel) should be monitored in bloom-time leaf petiole analysis and appropriate foliar sprays applied if found deficient.

**Nematode Screening**

- One soil sample was collected from each hole and submitted for nematode screening. Nematode populations are temporal and repeated screening may recover different populations.

SAMPLE ID	Root Knot Meloidogyne	Ring C. xenoplax	Xiphinema americanum	Pin Paratylenchus	Gracilacus
Site	--- #/ /kg ---				
1	NPN *				
2			24		
3			6		9
4			4		10
5	NPN *				
6	NPN *				
7	NPN *				
8			4		
9		8			
10		5	10		
11			18	23	12
12			4		
13	NPN *				
14	NPN *				
15	NPN *				
16	5				
17	NPN *				
18	8				
19		6		55	168
20	NPN *				
21		3	10		
22	NPN *				
23	NPN *				
24		278		24	
25		17		4	
26	NPN *				
27				13	18
28		10			7
* NPN - No plant parasitic nematode recovered					

**Figure 11. Nematode populations at soil sites.**

- Root Knot nematodes are considered harmful to winegrape rootstocks. The populations at Sites 16 and 18 are low.

- Ring nematodes (*C. xenoplax*) are considered harmful to winegrape rootstocks. The populations are generally low, except at Site 24, where they are high. Ring nematodes are an external feeder (ectophytes) and are susceptible to some nematicides.
- *Xiphinema americanum* is native to the soils of northern California and is considered harmful when populations exceed 300-400 per kilogram. These populations are low.
- Pin and *Gracilacus* nematodes are not considered harmful to winegrape rootstocks.

### **Irrigation Water Analysis**

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- The current well on the property is dry (Davie Pina – personal communication).
- These soils contain sufficient amounts of rock in most block such that irrigation will be necessary for typical yields of 3 to 4 tons/acre.

### **Block Layout and Design**

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The layout and design of the vineyard blocks was based on the following three objectives:

Create a vine growth environment that will allow for the optimal quality of winegrapes from this property considering its soils and climatic characteristics.

1. Create blocks to maximize the uniformity of characteristics that influence the growth and maturity of vines and fruit.
2. Create block shapes that maximize the economic efficiency for NE/SW row orientation.

The maximization of block uniformity is paramount to harvesting fruit that has similar characteristics throughout the block. The process for drawing block lines to maximize uniformity is to evaluate the spatial arrangement of soil and probable climatic influences starting with those that have the greatest impact on vine growth and maturation and working towards those that have less influence on vine growth. Where differences in the spatial arrangement of soil properties exist block lines are drawn.

The following chart shows the azimuth and the angle of incidence of the sun on May 25 (bloom), July 31 (veraison), and September 5 (typical Labor Day heat spike) for Napa valley. The figures are interpreted by assuming the sun's rays are being directed to the center of the circle from the direction of the outer circle along the lines representing the time of day. The circle represents the 360° of the compass.

The preference for rows with a NE/SW orientation is based on the fact that the hottest part of the day between veraison and harvest is between 2:00 pm and 3:00 pm and

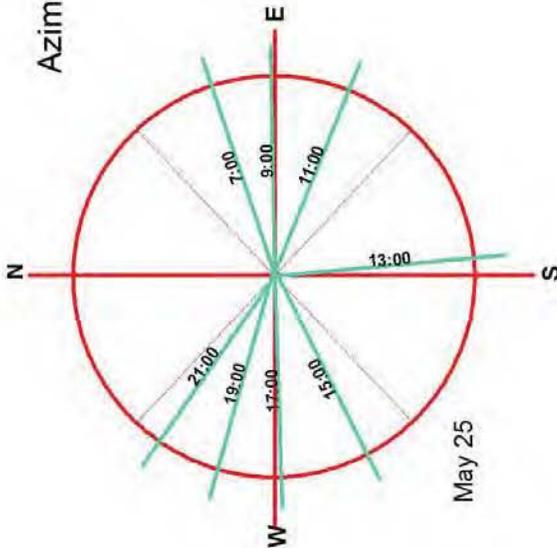
that avoidance of direct sunlight on the berries by canopy shade during heat spikes will help reduce the incidence of cluster dehydration and possible collapse.

Optimal row orientations are based on the following:

- Row orientations of 10° east of north provide nearly equal amounts of light to both sides of the vine. Early morning solar radiation is less intense than afternoon solar radiation due to fog and the greater absorption of the light by water vapor when the humidity is higher.
- Row orientations of 25°-30° provide nearly equal heat unit accumulation to both sides of the vine, because the afternoon is much warmer than the morning.
- Row orientation of 45° provides that the sun will be directly over the canopy at 3:00 pm and will provide maximal shade to the berries.
- Row orientations of 25° east of north starts to provide shade to the clusters by the canopy on a simple vertical trellis starting at about 1:15 pm, but will then start to shed light on the NW side of the vine starting at about 3:30 pm. This is actually the optimal orientation, because it allows the grower to pull leaves and laterals from the SE side and allow sun exposure onto the berries before it gets too hot (greater than 95° F) to cause sunburn. However, this exposure does provide a much longer exposure to the SE side of the canopy and may cause over-accumulation of the tannins if light exposure is not carefully managed. Cross-arms can be installed to lengthen to duration of time that protection is provided.
- Berry temperatures of greater than 110° cause physiological damage to enzymes responsible for phenol and anthocyanin development in the skins. Berries in direct sunlight can have temperatures 10-15° higher than ambient temperatures. Therefore berries should be shaded during the times of the day that temperatures greater than 95° F are possible. This means that the row orientation is used to protect the fruit during those few days each year of extremely hot temperatures.
- The actual ability of a canopy to protect its fruit from the sun is also dependent on the width of the canopy, and on leaving lateral shoots on one side of a vine to provide extra protection. Although the row orientation and sun exposure are important factors, it should be considered along with block geometry and other soil properties to provide the best compromise to provide the highest quality fruit.
- The recommended row orientations for each block are presented in the Table A-5 Block Design and Layout.

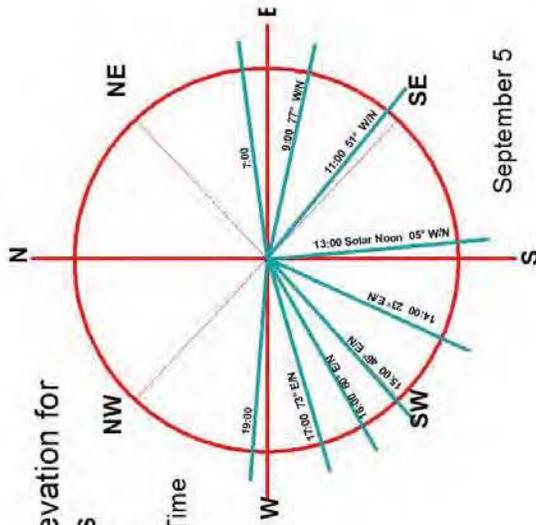
**Azimuth degrees and angles of elevation for  
Napa & Sonoma Counties  
(~38.5000 N Latitude)**

Corrected for Day Light Savings Time



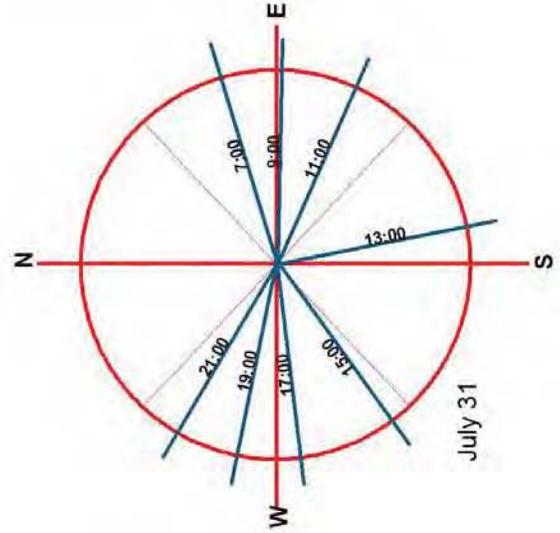
May 25

Azimuth for July 31 (vernalson)		
Time of Day	Degrees East of North	Angle of Sun above Horizon
7:00	73.3	8.3
9:00	91.0	31.4
11:00	114.8	54.3
13:00	169.4	69.5
15:00	235.7	59.6
17:00	263.8	37.5
19:00	282.1	14.1
21:00	300.5	-7.9



September 5

Azimuth for May 25 (bloom)		
Time of Day	Degrees East of North	Angle of Sun above Horizon
7:00	72.3	11.8
9:00	89.6	34.9
11:00	113.4	57.9
13:00	175.2	72.7
15:00	243.0	60.1
17:00	268.6	37.3
19:00	286.0	14.1
21:00	304.3	-7.2



July 31

Azimuth for Sept. 5 (heat spike)		
Time of Day	Degrees East of North	Angle of Sun above Horizon
7:00	83.2	3.0
9:00	102.4	26.0
11:00	129.0	47.0
13:00	176.2	59.0
15:00	226.0	50.0
17:00	254.6	29.0
19:00	274.1	6.0
21:00	309.0	-11.2

**Block Boundaries:** The block design boundaries are based on the following criteria:

1. All blocks are within the outlines of the Napa Valley Vineyard Engineering Study Area.
2. The area around Sites 16, 19, 20, 21, and 23. Were excluded from the final vineyard design because of lack of soil at those sites. There was less than 6" of soil over volcanic ash. Actually sites 19 and 21 had more than 6" of soil, but each was in an area that was bordered by very shallow soil (< 6") or very steep slopes (> 30%).
3. The northern portions of Blocks B and C were in an area that is not yet to be determined to be Davis land. If these northern sections are found to be within the parcel, then the vineyard should be extended to the northern boundary.

The following initial design criteria and production goals are suggested (Table A-5 and A-6):

- Row spacing: 6 ft rows x 4 ft between vines ;
- Row Orientation: see Block Map and Table A-5.
- Production objectives: 3.0 to 4.0 tons/acre
- Trellis: vertical with 12" cross-arms to broaden canopy panel;
- Vine training: bilateral cane with no renewal spurs

**Varieties:** The varietal selection process is most commonly determined by the prevailing climate.

- The selection of the variety will be left to the client. This region of Napa County is dominated by Cabernet Sauvignon and the varieties that support a Bordeaux style blend. This area may be too cool to adequately ripen Petite Verdot in most years. Therefore any substitutions of Bordeaux varieties should include only Merlot and Malbec. Cabernet Sauvignon clones should be ones that have good ripening potential in cool seasons (169, 685 etc.).
- The Block Layout Design Table A-5 and Amendment Chart Table A-6 is provided to summarize recommendations concerning pre-plant tillage, pre-plant and post-plant amendments, row orientation, plant spacing, and rootstocks.

**Rootstock Selections:** Rootstock selection is based on a balance of soil properties, vine spacing, variety, and trellis system.

- The well on the property is dry. These shallow soils will require a source of irrigation water. Although the rootstock selections for this property are among the most tolerant to water stress, they will still need to be irrigated with 10 to 20 gallons/vine/year
- Rootstock selections were made based on soil properties (TAW and potassium) and nematode species present. Block A-3 has the much deeper Aiken loam soil, and the rootstock 420A was chosen for that spot. Otherwise most of the

other block are recommended to have 110R. Block C is so small that you may not want to plant it. If it is planted it should receive rootstock 3309C.

- Due to the high potassium concentrations of this soil, the rootstock 101-14 should be avoided.

## **Summary**

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The soils of this vineyard site are variable and some areas are very well suited for high quality winegrape production, whereas some are essentially unsuitable to winegrape production. The soils are mapped by the Napa County Soil Survey as the Rock-Outcrop-Kidd complex. The most common soil series found on the property were the Kidd and Forward series, with a smaller area with the Aiken loam. The Aiken loam is considered one of very best mountain viticultural soils in northern California. It is commonly found in both the Diamond Mountain and Howell Mountain American Viticultural Area.

The soil texture of the surface layers is loam at most sites. The subsoils were loam sandy loam, clay loam, and clay. The structure of the surface horizons was granular (favorable) at all sites. The structure of the subsoils was mostly blocky (acceptable) or massive (very poor). The soils' hardness was friable (acceptable) in the surface horizons, but ranged from firm to hard in the upper and lower subsoils. Modeling of the Total Available Water shows a high degree of variability in rooting depth, rock content, and water holding capacity across the landscape. Deep tillage is recommended with a winged shank on 3.5 ft centers and to depths of 30" to 36" depending on the block.

The soil chemistry is favorable for most characteristics. The pH of the surface soil samples range from 5.4 (strongly acid) to 6.0 (slightly acid). The pH of the subsoil soil samples range from 4.9 (strongly acid) to 6.0 (slightly acid). Three sites have safe subsoil concentrations of soluble aluminum. Lime is recommended to raise surface layer pH. The EC, SAR, and boron levels are all low and optimal.

Overall soil fertility is moderately low. The concentration of organic matter ranges from moderately low to high. The concentration of soil nitrate is moderate. The concentration of phosphorus ranges from very low in the subsoils, but low to moderately high in the surface layers. The concentration of potassium is high. The concentration of magnesium is low in the surface and upper subsoils.

Nematode screening indicated a few locations with low populations of Root Knot, Ring, and *Xiphinema americanum* nematodes. Root Knot nematodes are difficult to manage other than with rootstock. Ring nematodes can be managed through rootstock choice and organic nematicides.

The current well on the property is dry. Due to the concentration of rock in these soils, it would be very unlikely that most areas could be dry-farmed. The only block that could possibly be dry farmed is Block A-3. Therefore, a water source is needed.

***Disclaimer***

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The conclusions and/or recommendations included in this report are based upon the data and information available to Vineyard Soil Technologies at the time this report was prepared. All conclusions and recommendations are time and site specific and are directed to the specific and stated needs of the addressed clients only.

Paul R. Anamosa, Ph.D.  
Soil Scientist & Viticulturist



Davis Estates, Friesen Drive Properties, Angwin, California

Table A1: Soil location and profile features, critical depths, properties affecting ripping and recommendations.

Profile No.	Soil Name and major subsoil sequence)	Soil Group <sup>1</sup>	Total available soil water class (TAW) pre-rip (inches)	Internal soil drainage status and depth of lowest class rating		Rock conditions and content (%) and depths to rock (inches) that affect ripping				Soil conditions and depths to factors affecting ripping (inches)										Soil slip planes					
				Class <sup>2</sup>	Depth (inches)	Underlying rock type	Average profile rock content	Average rock to 24 inches or rigid	Rock diam. in top 24" (small<8">large)	Depth to rippable rock (>2% rock)	Depth to unrippable rock (rigid rock)	Topsoil thickness	Topsoil physical condition <sup>3</sup>	Subsoil physical condition <sup>3</sup>	Depth to firm/hard soil	Depth to very plastic clay	Thickness of very plastic clay	Depth to calcareous soil	Depth to mottled soil	Depth to gleyed colors	Depth to perched water table	Depth to ground water table	Slope at each soil profile %	plane	plane**
23	Shallow Brown Loamy over Rocky Gray Sandy Soil	Kd	I	9	Hi	0	Rhyolite	26	10	Large	9	9	G	P	9							6			
24	Shallow Brown Loamy over Rocky Gray Sandy Soil	Kd	II	18	Hi	0	Rhyolite	28	20	Large	18	18	G	P	18							22	18		18
25	Brown Loamy over Brown Loamy Soil	Fw	III	27	Hi	0	Rhyolite	42	20	Small	>61	12	G	P	12							19			
26	Brown Loamy over Rocky Gray Sandy Soil	Fw	III	22	Hi	0	Rhyolite	22	15	Large	22	22	G	P	11							27	11		22
27	Shallow Brown Loamy over Rocky Gray Sandy Soil	Kd	II	15	Hi	0	Rhyolite	32	10	Large	15	15	G	P	15							5			
28	Brown Loamy over Brown Loamy Soil	Fw	IV	31	Hi	0	Rhyolite	24	13	Small	31	61	G	P	16							5			
							Average	46	35																

<sup>1</sup>Soil Morphological Groups:

- Ak Aiken loam
- Fw Forward loam
- Kd Kidd loam

<sup>2</sup>Internal drainage rate:

Class	Rating	Rate in./day
V.Hi	Very high	> 300
Hi	High	30 to 300
Mod	Moderate	3 to 30
Low	Low	0.03 to 3
V.Low	Very low	< 0.03

<sup>3</sup>G=Good, P=Poor

"Good" means soil is porous and well aerated (air-filled porosity > 15 %), highly permeable, not water logged for any time (hydraulic conductivity >> 24 inches/day), soft, friable or loose, readily penetrable to roots (penetration resistance < 300 psi at field capacity water content); Poor is opposite.

<sup>4</sup>Optimizing TAW:

TAW is optimized when variability is minimized (maximum number of profiles fall in one TAW Class) and absolute magnitude of the T consistent with desired fruit quality specifications and rootstock preferences.

Davis Estates, Friesen Drive Properties, Angwin, California

Table A2: Estimated total available soil water (TAW) and effective root depth (ERD) before and after simulation of ripping.

In this table, water availability is classified for smaller, closely spaced (~6 feet x ~3 feet) vines in wetter (>15 inches/year) - see criteria below.

Profile No.	Soil Group <sup>1</sup>	Rock content to 24 inches (%)	Before deep ripping				After ripping to 18 inches				After ripping to 24 inches				After ripping to 36 inches				After ripping to 48 inches			
			Observed ERD		TAW Class	Water availability	Expec- ted ERD <sup>3</sup>		TAW Class	Water availability	Expec- ted ERD <sup>3</sup>		TAW Class	Water availability	Expec- ted ERD <sup>4</sup>		TAW Class	Water availability	Expec- ted ERD <sup>4</sup>		TAW Class	Water availability
			TAW <sup>2</sup>	inch			TAW	inch														
1	Fw	58	1.4	20	I	Very low	1.4	18	I	Very low	1.4	20	I	Very low	1.4	20	I	Very low	1.4	20	I	Very low
2	Kd	20	2.3	17	II	Low	2.3	17	II	Low	2.3	17	II	Low	2.3	17	II	Low	2.3	17	II	Low
3	Fw	65	1.4	28	I	Very low	1.4	18	I	Very low	1.4	24	I	Very low	1.6	28	II	Low	1.6	28	II	Low
4	Fw	59	2.0	37	II	Low	1.5	18	I	Very low	1.7	24	II	Low	2.1	36	II	Low	2.1	37	II	Low
5	Fw	67	1.4	31	I	Very low	1.1	18	I	Very low	1.3	24	I	Very low	1.6	31	II	Low	1.6	31	II	Low
6	Fw	42	1.9	19	II	Low	1.9	19	II	Low	2.3	24	II	Low	3.4	36	III	Mod. low	4.3	47	IV	Mod. high
7	Kd	59	1.6	14	II	Low	1.7	14	II	Low												
8	Fw	20	1.3	10	I	Very low	2.4	18	II	Low	3.0	22	III	Mod. low	3.0	22	III	Mod. low	3.0	22	III	Mod. low
9	Fw	66	1.1	17	I	Very low	1.2	18	I	Very low	1.4	24	I	Very low	1.8	36	II	Low	2.0	42	II	Low
10	Kd	10	2.1	14	II	Low	2.1	14	II	Low	2.1	14	II	Low	2.1	14	II	Low	2.1	14	II	Low
11	Fw	20	3.6	30	IV	Mod. high	2.4	18	II	Low	3.2	24	III	Mod. low	4.3	36	IV	Mod. high	4.7	47	V	High
12	AK	54	2.8	48	III	Mod. low	1.6	19	II	Low	1.9	24	II	Low	2.5	36	II	Low	3.1	48	III	Mod. low
13	AK	20	3.2	25	III	Mod. low	2.6	18	III	Mod. low	3.2	24	III	Mod. low	3.9	36	IV	High	4.5	48	V	High
14	AK	21	3.0	25	III	Mod. low	2.5	18	II	Low	3.2	24	III	Mod. low	4.0	36	IV	Mod. high	4.3	48	IV	Mod. high
15	AK	19	3.5	28	III	Mod. low	2.7	18	III	Mod. low	3.3	24	III	Mod. low	3.9	36	IV	Mod. high	4.2	48	IV	Mod. high
16	Kd	20	0.9	7	I	Very low	0.9	7	I	Very low	0.9	7	I	Very low	0.9	7	I	Very low	0.9	7	I	Very low
17	Kd	10	2.3	15	II	Low	2.3	15	II	Low	2.3	15	II	Low	2.3	15	II	Low	2.3	15	II	Low
18	Fw	28	1.9	14	II	Low	2.3	18	II	Low	2.9	24	III	Mod. low	3.0	25	III	Mod. low	3.0	25	III	Mod. low
19	Fw	75	1.2	38	I	Very low	0.9	18	I	Very low	1.0	24	I	Very low	1.2	36	I	Very low	1.3	38	I	Very low
20	Kd	83	0.1	4	I	Very low	0.2	7	I	Very low	0.2	7	I	Very low	0.2	7	I	Very low	0.2	7	I	Very low
21	Fw	56	1.7	25	II	Low	1.5	18	I	Very low	1.8	24	II	Low	1.8	25	II	Low	1.8	25	II	Low
22	Kd	10	2.0	13	II	Low	2.0	13	II	Low	2.0	13	II	Low	2.0	13	II	Low	2.0	13	II	Low
23	Kd	10	1.4	9	I	Very low	1.4	9	I	Very low	1.4	9	I	Very low	1.4	9	I	Very low	1.4	9	I	Very low
24	Kd	20	2.4	18	II	Low	2.4	18	II	Low	2.4	18	II	Low	2.4	18	II	Low	2.4	18	II	Low
25	Fw	20	3.3	27	III	Mod. low	2.5	18	III	Mod. low	3.2	24	III	Mod. low	4.4	36	IV	Mod. high	5.1	48	V	High
26	Fw	15	2.9	22	III	Mod. low	2.6	18	III	Mod. low	3.2	22	III	Mod. low	3.2	22	III	Mod. low	3.2	22	III	Mod. low
27	Kd	10	2.3	15	II	Low	2.3	15	II	Low	2.3	15	II	Low	2.3	15	II	Low	2.3	15	II	Low
28	Fw	13	4.1	31	IV	Mod. high	2.7	18	III	Mod. low	3.5	24	IV	Mod. high	5.0	36	V	High	6.2	48	VI	Very high

<sup>1</sup>Soil Morphological Groups: Legend: Class limits for Total Available Water (inches in the effective root depth):



Davis Estates, Friesen Drive Properties, Angwin, California

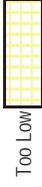
Table A3: Summary of soil profile properties



Very low drainage



Low drainage



Too Low



Questionable



Undesirable

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
in.	Profile No: 1	Rocky Brown Loamy over Rocky Gray Sandy Soil																			
9		Dark Brown	Loam	30 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.1	5.8	3	470	8	2	0.16	0.5		
20		Strong Brown	Loam	80 % 2 to 4 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	0.3	5.4	2	421	5	2	0.08	0.6		
21		Light Yellowish Gray	Medium Sandy loam	99 % 4 to 8 inch Rigid rhyolite	Hard	Massive	Low	No	No	No	Few	0.0									

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
in.	Profile No: 2	Shallow Brown Loamy over Rocky Gray Sandy Soil																			
17		Dark Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Friable	Medium Granular	Moderate	Abund	No	No	Many	2.3	5.5	7	372	4	1	0.10	0.5		
18		Light Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Few	0.0									

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
<p>Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: </p> <p>Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth</p>																				
Rocky Brown Loamy over Rocky Gray Sandy Soil      ERD (in.): 28      N: 38.60291; W: -122.48249																				
in.		Dark Yellowish Brown	Loam	50 % 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	1.0	5.7	5	429	8	2	0.17	0.3	
12		Light Brown	Loam	80 % 4 to 8 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	0.4	5.2	2	296	5	2	0.08	0.5	
28		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Few	0.0								
29																				
Rocky Brown Loamy over Rocky Gray Sandy Soil      ERD (in.): 37      N: 38.60274; W: -122.48306																				
in.		Dark Brown	Loam	50 % 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Many	No	No	Many	1.4	5.8	3	546	7	2	0.13	0.4	
17		Dark Reddish Brown	Loam	80 % 4 to 8 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Few	No	No	Many	0.5	5.1	3	351	11	2	0.07	0.4	
37		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Hard	Massive	Low	No	No	No	Few	0.0								
38																				

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg cmolc-/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Rocky Brown Loamy over Rocky Gray Sandy Soil																				
Profile No: 5 N: 38.60248; W: -122.48344 ERD (in.): 31																				
10		Dark Brown	Loam	50 % 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	0.8	6.0	5	507	11	2	0.15	0.2	
31		Dark Reddish Brown	Loam	80 % 4 to 8 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	0.6	5.5	3	379	6	2	0.08	0.4	
33		Light Yellowish Gray	Medium Sandy loam	99 % 4 to 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Few	0.0								

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg cmolc-/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Rocky Brown Loamy over Gray Sandy Soil																				
Profile No: 6 N: 38.60313; W: -122.4831																				
19		Dark Brown	Loam	40 % < 1 inch Weathered rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	1.9	5.8	6	415	3	1	0.08	0.4	
47		Dark Reddish Brown	Loam	50 % < 1 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Few	1.9	5.4	6	333	7	2	0.06	0.6	
48		Light Yellowish Gray	Medium Sandy loam	70 % < 1 inch Weathered rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg cmolc-/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Profile No: 7																				
Shallow Rocky Brown Loamy over Rocky Gray Sandy Soil																				
14		Dark Brown	Loam	30% 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.6	5.8	13	354	8	3	0.12	0.4	
32		Light Gray	Medium Sandy loam	99% 4 to 8 inch Weathered rhyolite	Rigid	Massive	Low	Few	No	No	Zero	0.0								
33		Light Pink	Medium Sandy	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

Profile No: 8																				
Shallow Brown Loamy over Rocky Gray Sandy Soil																				
10		V.Dk. Brown	Loam	20% 1 to 2 inch Weathered rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.3	5.6	10	324	8	2	0.15	0.4	
22		Dark Yellowish Brown	Loam	20% 1 to 2 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Few	1.3	5.3	6	312	8	3	0.11	0.5	
24		Light Greenish Gray	Fine Loamy sand	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties



Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
Rocky Brown Loamy over Rocky Gray Sandy Soil																					
Profile No: 9 N: 38.60343; W: -122.48428 ERD (in.): 17																					
17		V.Dk. Brown	Loam	60% < 1 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	1.1	6.1	12	527	6	1	0.12	0.2		
42		Dark Reddish Brown	Loam	80% 4 to 8 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Few	0.7	5.4	8	375	6	1	0.06	0.3		
44		Light Yellowish Gray	Medium Sandy loam	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	Few	No	No	Zero	0.0									

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
Shallow Brown Loamy over Rocky Gray Sandy Soil																					
Profile No: 10 N: 38.60363; W: -122.48486 ERD (in.): 14																					
14		V.Dk. Brown	Loam	10% 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	2.1	5.3	6	141	1	0	0.08	0.7		
16		Light Gray	Medium Sandy loam	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0									

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
in.	Brown Loamy over Brown Sandy Soil ERD (in.): 30 N: 38.60314; W: -122.48488																				
11		Dark Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	1.5	6.0	6	312	2	1	0.07	0.3		
30		Dark Reddish Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Few	No	No	Many	2.1	5.5	6	151	0	0	0.04	0.6		
47		Dark Reddish Brown	Medium Sandy loam	70 % 4 to 8 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Few	No	No	Few	0.6									
49		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0									

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
in.	Rocky Brown Loamy over Rocky Gray Sandy Soil ERD (in.): 48 N: 38.60297; W: -122.48423																				
19		Dark Reddish Brown	Loam	50 % 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.6	5.6	10	471	6	1	0.12	0.2		
48		Reddish Brown	Loam	70 % 4 to 8 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	1.2	5.4	4	378	6	1	0.07	0.4		
50		Light Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0									

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:

Low drainage:

Too Low:

Questionable:

Undesirable:

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
in. Profile No: 13 Brown Loamy over Brown Loamy Soil ERD (in.): 25 N: 38.60265; W: -122.48493																				
16		Dark Reddish Brown	Loam	10 % 1 to 2 inch Weathered rhyolite	Friable	Fine Granular	Moderate	Abundant	No	No	Abundant	2.4	6.2	4	485	8	1	0.11	0.2	
25		Reddish Brown	Loam	40 % 2 to 4 inch Weathered rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	0.7	5.7	3	561	6	2	0.08	0.4	
48		Reddish Brown	Loam	70 % 4 to 8 inch Weathered rhyolite	Hard	Fine Blocky	Moderate	Few	No	No	Few	0.9	5.4	3	540	5	3	0.05	0.5	
50		Light Reddish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

in. Profile No: 14 Brown Loamy over Brown Loamy Soil ERD (in.): 25 N: 38.60257; W: -122.48454																				
11		V.DK. Brown	Loam	10 % < 1 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abundant	No	No	Abundant	1.7	6.6	6	696	8	2	0.14	0.1	
25		Dark Reddish Brown	Loam	30 % 2 to 4 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	1.3	6.0	4	519	2	1	0.06	0.3	
35		Reddish Brown	Loam	60 % 2 to 4 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Few	No	No	Few	0.5	5.4	4	570	1	2	0.04	0.5	
48		Reddish Brown	Medium Sandy loam	80 % 2 to 4 inch Weathered rhyolite	Hard	Massive	Low	Few	No	No	Few	0.2								
50		Light Yellowish	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties



Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Profile No: 15 Brown Loamy over Rocky Brown Sandy Soil ERD (in.): Kd N: 38.60226; W: -122.48472																				
		Dark Reddish Brown	Loam	10 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	2.6	5.8	3	355	6	1	0.10	0.4	
17		Dark Reddish Brown	Loam	40 % 2 to 4 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Few	No	No	Many	0.9	5.2	3	335	5	2	0.07	0.5	
28		Reddish Brown	Medium Sandy loam	80 % 2 to 4 inch Weathered rhyolite	Hard	Massive	Low	No	No	No	Few	0.5	4-9	2	342	4	3	0.06	0.6	50
54																				

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Profile No: 16 Shallow Brown Loamy over Rocky Gray Sandy Soil ERD (in.): 7 N: 38.60392; W: -122.48475																				
		V.Dk. Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	0.9	5.3	9	974	10	4	0.20	0.7	
7		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								
8																				

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage: 

Low drainage: 

Too Low: 

Questionable: 

Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorus, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg cmolc-/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
in. Profile No: 17 Shallow Brown Loamy over Rocky Gray Sandy Soil ERD (in.): 15 N: 38.60428; W: -122.48424																				
15		V.Dk. Brown	Loam	10 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	2.3	5.3	4	433	6	2	0.21	0.7	
17		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

in. Profile No: 18 Brown Loamy over Rocky Gray Sandy Soil ERD (in.): 14 N: 38.60399; W: -122.48387																				
14		Dark Yellowish Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	1.9	5.6	3	293	11	5	0.15	0.5	
25		Grayish Brown	Loam	40 % 4 to 8 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Few	0.9	5.4	3	320	9	5	0.11	0.7	
26		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Rocky Brown Loamy over Rocky Gray Sandy Soil																				
Profile No: 19 N: 38.60418; W: -122.48324																				
9		Dark Yellowish Brown	Loam	50 % 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Many	No	No	Many	0.8	5.8	3	307	11	4	0.18	0.6	
38		Light Gray	Loam	90 % > 8 inch Fractured rhyolite	Hard	Fine Granular	Moderate	Many	No	No	Many	0.5	5.4	4	564	8	4	0.12	0.9	
54		Light Gray	Medium Sandy loam	95 % > 8 inch Fractured rhyolite	Rigid	Fine Blocky	Low	Few	No	No	Few	0.1								

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Shallow Rocky Brown Sandy over Rocky Gray Sandy Soil																				
Profile No: 20 N: 38.60447; W: -122.48334																				
4		Dark Yellowish Brown	Medium Sandy loam	70 % 2 to 4 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	0.1	6.0	6	273	8	4	0.11	0.6	
7		Light Gray	Medium Sandy loam	99 % 2 to 4 inch Cemented rhyolite	Hard	Massive	Moderate	Few	No	No	Few	0.0								
9		Light Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Moderate	No	No	No	Zero	0.0								

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
Profile No: 21 Rocky Brown Loamy over Rocky Gray Sandy Soil N: 38.60467; W: -122.4836 ERD (in.): 25																					
																					
16		V.Dk. Brown	Loam	50% > 8 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.3	5.5	9	363	10	4	0.20	0.3		
25		Dark Yellowish Brown	Loam	70% > 8 inch Fractured rhyolite	Firm	V.Fine Blocky	Moderate	Many	No	No	Many	0.4	5.4	4	365	10	5	0.11	0.6	37	
26		Light Gray	Medium Sandy loam	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Few	0.0									

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg	
					Structure	Type															
Profile No: 22 Shallow Brown Loamy over Rocky Gray Sandy Soil N: 38.60464; W: -122.48433 ERD (in.): 13																					
																					
13		Dark Brown	Loam	10% 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	2.0	5.6	12	625	4	1	0.07	0.4		
15		Light Gray	Medium Sandy loam	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0									

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														

Profile No: 23																				
Shallow Brown Loamy over Rocky Gray Sandy Soil																				
ERD (in.): 9 N: 38.60431; W: -122.48487																				
9		V.Dk. Brown	Loam	10 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Many	1.4	5.2	19	560	4	1	0.13	0.5	
11		Light Yellowish Gray	Medium Sandy loam	99 % > 8 inch Rigid rhyolite	Rigid	Massive	Low	Few	No	No	Zero	0.0								

Profile No: 24																				
Shallow Brown Loamy over Rocky Gray Sandy Soil																				
ERD (in.): 18 N: 38.60484; W: -122.48394																				
18		Dark Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	Abundant	2.4	5.5	5	265	8	3	0.13	0.6		
20		Light Gray	Medium Sandy loam	99 % 4 to 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	Zero	0.0									

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc-/kg	Mg cmolc-/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
in. Profile No: 25 Brown Loamy over Brown Loamy Soil ERD (in.): 27 N: 38.60549; W: -122.48403																				
12		Dark Brown	Loam	10 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.8	5.6	3	457	8	3	0.07	0.4	
27		Strong Brown	Loam	30 % 1 to 2 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	1.4	5.5	5	499	8	4	0.07	0.6	
44		Strong Brown	Loam	50 % 2 to 4 inch Fractured rhyolite	Hard	Fine Blocky	Moderate	Few	No	No	Few	1.2	5.2	4	364	9	6	0.07	0.8	
53		Yellowish Brown	Medium Sandy loam	90 % 4 to 8 inch Weathered rhyolite	Hard	Massive	Low	Few	No	No	Zero	0.1								

in. Profile No: 26 Brown Loamy over Rocky Gray Sandy Soil ERD (in.): 22 N: 38.60528; W: -122.48355																				
11		Dark Brown	Loam	10 % 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	1.7	5.7	3	465	12	4	0.10	0.3	
22		Dark Yellowish Brown	Loam	20 % 1 to 2 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Many	No	No	Many	1.2	5.1	3	311	9	6	0.09	0.7	
24		Light Gray	Medium Sandy loam	99 % 4 to 8 inch Rigid rhyolite	Hard	Massive	Low	No	No	No	Few	0.0								

Davis Estates, Friesen Drive Properties, Angwin, California

Table A3: Summary of soil profile properties

Very low drainage:  Low drainage:  Too Low:  Questionable:  Undesirable: 

Abbreviations: TAW=Total available water, P=Phosphorous, K=Potassium, Ca=Exchangeable calcium, Mg=Magnesium, EC=Electrical conductivity, ESP=Exchangeable sodium %, Al=Aluminum, ERD=Effective root depth

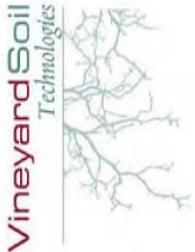
Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Profile No: 27 Shallow Brown Loamy over Rocky Gray Sandy Soil N: 38.60543; W: -122.48494																				
		V.Dk. Brown	Loam	10% 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	2.3	6.0	16	537	10	2	0.12	0.3	
15		Light Yellowish Gray	Medium Sandy loam	99% > 8 inch Rigid rhyolite	Rigid	Massive	Low	No	No	No	Zero	0.0								
20																				

Depth	Scale in feet and inches. Second scale if present in cm.	Color	Texture	Rock	Soil Structure		Plasticity	Visible pores	Mottles	Free lime	Root density	TAW inch	pH	P mg/kg	K mg/kg	Ca cmolc+/kg	Mg cmolc+/kg	EC dS/m	SAR	Al mg/kg
					Structure	Type														
Profile No: 28 Brown Loamy over Brown Loamy Soil N: 38.60461; W: -122.48475																				
		Dark Yellowish Brown	Loam	10% 1 to 2 inch Fractured rhyolite	Friable	Fine Granular	Moderate	Abund	No	No	Abundant	2.4	5.8	4	810	7	3	0.09	0.4	
16		Strong Brown	Loam	20% 1 to 2 inch Fractured rhyolite	Firm	Fine Blocky	Moderate	Few	No	No	Many	1.6	5.1	3	511	7	3	0.08	0.7	
31		Strong Brown	Clay loam	40% 2 to 4 inch Weathered rhyolite	Hard	Fine Blocky	High	Few	No	No	Few	0.9	-5.0	5	325	7	4	0.05	0.5	47
48																				

# Appendix Table A4

Date

For   
 Client   
 Property   
 Project Number



**3377 Solano Ave. #505**  
**Napa, CA 94558**  
**ph/fax: (707)255-3176**  
**www.VineyardSoil.com**

Log In #   
 Date Sampled   
 Date Submitted   
 Date Reported

## Report of Soil Analysis

Profile	Layer*	Method > Sample Depth (in)	Saturation Extract										Extractable Nutrients										Extractable Cations				
			S-1.00		S-1.10		S-1.60		S-1.60		S-1.70		S-1.40		Free Lime	S-3.10 mg/kg NO <sub>3</sub> -N	S-4.10 mg/kg P <sub> Bray</sub>	S-4.20 mg/kg K	S-6.10 mg/kg Zn	S-6.10 mg/kg AI	S-6.10 mg/kg Ni	S-10.10 mg/kg SEC	S-5.10 Ca	S-5.10 Mg	S-5.10 K	S-5.10 Na	S-5.10 H+Al
			Sat%	pH	dS/m	Ca	Mg	Na	SAR	B	SO <sub>4</sub>	Cl	mg/kg	mg/kg													
1	1	0	52	5.8	0.2	0.9	0.5	0.4	0.5	0.06	0.3		0	2.5	3	7	470	0.5		0.1	16.5	48	12	7	0	32	
1	2	9	42	5.4	0.1	0.3	0.2	0.3	0.6	0.05	0.1		0	2.2	2	3	421	0.2		0.1	12.1	41	13	9	1	36	
2	1	0	44	5.5	0.1	0.3	0.2	0.2	0.5	0.04	0.1		0	3.5	7	17	372	1.1		0.1	12.6	35	8	8	1	49	
3	1	0	51	5.7	0.2	0.8	0.4	0.2	0.3	0.04	0.2		0	1.9	5	13	429	1.2		0.1	15.5	51	12	7	0	30	
3	2	12	43	5.2	0.1	0.3	0.2	0.2	0.5	0.05	0.1		0	1.8	2	4	296	0.2		0.1	11.5	44	15	7	1	34	
4	1	0	48	5.8	0.1	0.5	0.3	0.2	0.4	0.04	0.1		0	2.2	3	5	546	0.4		0.1	14.9	47	10	9	0	33	
4	2	17	49	5.1	0.1	0.2	0.2	0.2	0.4	0.02	0.0		0	1.5	3	2	351	0.2		0.1	19.0	60	11	5	1	24	
5	1	0	53	6.0	0.2	0.8	0.3	0.1	0.2	0.05	0.2		0	2.0	5	13	507	1.5		0.1	19.0	61	9	7	0	23	
5	2	10	45	5.5	0.1	0.3	0.2	0.2	0.4	0.05	0.1		0	2.1	3	4	379	0.4		0.1	13.6	44	12	7	1	37	
6	1	0	50	5.8	0.1	0.3	0.2	0.2	0.4	0.03	0.1		0	1.9	6	7	415	0.4		0.1	11.1	25	7	10	1	58	
6	2	19	41	5.4	0.1	0.2	0.2	0.2	0.6	0.03	0.1		0	1.9	6	7	333	0.2		0.1	16.8	44	14	5	1	35	
7	1	0	49	5.8	0.1	0.5	0.3	0.3	0.4	0.03	0.2		0	2.9	13	29	354	2.1		0.2	16.8	47	15	5	1	31	
8	1	0	40	5.6	0.2	0.6	0.3	0.3	0.4	0.05	0.1		0	2.2	10	25	324	1.9		0.1	16.2	51	14	5	1	30	
8	2	10	39	5.3	0.1	0.4	0.3	0.3	0.5	0.04	0.1		0	2.1	6	13	312	0.4		0.2	16.1	48	20	5	1	26	
9	1	0	53	6.1	0.1	0.5	0.3	0.1	0.2	0.05	0.1		0	2.7	12		527	0.6		0.1	14.6	44	10	9	0	36	
9	2	17	48	5.4	0.1	0.2	0.2	0.1	0.3	0.03	0.0		0	2.4	8	10	375	0.2		0.1	13.7	44	10	7	1	39	
10	1	0	46	5.3	0.1	0.2	0.2	0.3	0.7	0.02	0.0		0	2.9	6	16	141	0.2		0.1	8.5	7	2	4	1	85	
11	1	0	50	6.0	0.1	0.3	0.2	0.1	0.3	0.03	0.1		0	2.1	6	6	312	0.2		0.1	10.1	24	6	8	1	61	
11	2	11	30	5.5	0.0	0.1	0.1	0.2	0.6	0.02	0.1		0	2.0	6	4	151	0.2		0.1	7.9	5	3	5	1	86	
12	1	0	48	5.6	0.1	0.5	0.3	0.1	0.2	0.03	0.1		0	2.1	10	21	471	0.6		0.1	14.2	42	9	8	0	40	
12	2	19	45	5.4	0.1	0.3	0.2	0.2	0.4	0.04	0.0		0	2.1	4	6	378	0.2		0.1	13.4	45	11	7	1	36	

# Appendix Table A4

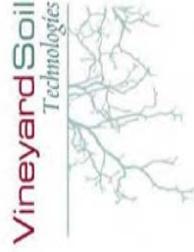
Date 4-Dec-2012

For Vineyard Soil Technologies

Client DAVIS - FRIESEN

Property 0

Project Number 12-178



3377 Solano Ave. #505  
Napa, CA 94558  
ph/fax: (707)255-3176  
www.VineyardSoil.com

Log In # 3211568

Date Sampled 41231

Date Submitted 41239

Date Reported 41247

## Report of Soil Analysis

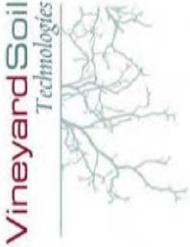
Profile	Layer*	Sample Depth (in)	Extractable Cations										PARTICLE SIZE ANALYSIS								
			S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	S-5.10 mg/kg	% Active Lime	tons/acre-ft S2.50 Lime Req. (pH 5.5)	tons/acre-ft S-2.50 Lime Req. (pH 6.0)	tons/acre-ft Gypsum Req. to raise Ca to 60% of soil CEC	% Sand	% Silt	% Clay	Classification
1	1	0 9	1593	245	470	18	53	6.8	34	0.2	7.7	2.8	3.3								
1	2	9 20	987	199	421	21	44	3.2	26	0.1	2.5	1.9	3.9								
2	1	0 17	880	117	372	20	62	4.2	38	0.2	4.8	3.9	5.2								
3	1	0 12	1574	230	429	15	46	10.5	40	0.2	5.7	2.2	2.4								
3	2	12 28	1008	204	296	15	40	2.1	16	0.2	2.4	1.5	3.1								
4	1	0 17	1409	188	546	16	48	9.3	42	0.4	4.5	2.1	3.2								
4	2	17 37	2270	249	351	22	46	1.4	13	0.1	1.4	1.7	0.1								
5	1	0 10	2303	211	507	12	44	9.0	36	0.3	7.7	2.2	2.4								
5	2	10 31	1189	195	379	16	51	4.5	28	0.2	4.1	2.4	3.8								
6	1	0 19	552	99	415	16	64	4.8	25	0.2	4.6	3.1	6.5								
6	2	19 47	1488	295	333	28	59	2.4	18	0.1	1.9	2.8	4.4								
7	1	0 14	1588	310	354	25	53	8.4	53	0.3	6.3	2.9	3.6								
8	1	0 10	1642	273	324	19	48	5.0	61	0.3	4.5	2.6	2.5								
8	2	10 22	1555	391	312	33	42	2.6	66	0.4	2.0	2.0	3.2								
9	1	0 17	1299	179	527	13	53	6.6	35	0.3	5.5		3.8								
9	2	17 42	1215	160	375	19	53	4.4	31	0.2	2.3	2.8	3.6								
10	1	0 14	117	25	141	23	73	4.6	42	0.2	6.5	4.8	7.6								
11	1	0 11	496	74	312	14	62	3.7	21	0.3	6.1	3.2	6.0								
11	2	11 30	83	25	151	25	68	5.7	29	0.2	3.7	3.0	7.3								
12	1	0 19	1187	161	471	16	57	8.8	76	0.3	4.9	2.3	4.4								
12	2	19 48	1207	177	378	17	48	5.1	42	0.3	2.3	1.9	3.3								



# Appendix Table A4

Date 4-Dec-2012

For Vineyard Soil Technologies  
 Client DAVIS - FRIESEN  
 Property 0  
 Project Number 12-178



**3377 Solano Ave. #505**  
**Napa, CA 94558**  
**ph/fax: (707)255-3176**  
**www.VineyardSoil.com**

Log In # 3211568  
 Date Sampled 41231  
 Date Submitted 41239  
 Date Reported 41247

## Report of Soil Analysis

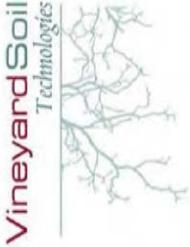
Profile	Layer*	Sample Depth (in)	Extractable Cations										PARTICLE SIZE ANALYSIS					
			S-5.10 mg/kg		S-5.10 mg/kg		S-6.10 mg/kg		S-6.10 mg/kg		S-9.10 %		tons/acre-ft		tons/acre-ft		tons/acre-ft	
			Ca	Mg	K	Na	H	Mn	Fe	Cu	Organic Matter	Active Lime	S2.50 Lime Req. (pH 5.5)	S-2.50 Lime Req. (pH 6.0)	Gypsum Req. to raise Ca to 60% of soil CEC	% Sand	% Silt	% Clay
13	1	0	1526	126	485	15	33	6.6	24	0.3	2.8			0.6				
13	2	16	25	1182	250	561	13	29	1.2	10	0.3	1.0		2.5	1.0			
13	3	25	48	1009	392	540	18	29	0.4	6	0.1	0.6		4.2	1.0			
14	1	0	11	1704	261	696	17	0	3.7	34	0.6	5.3						
14	2	11	25	474	109	519	10	44	5.6	25	0.3	2.5		5.1	1.9			
14	3	25	35	191	263	570	21	46	2.4	10	0.1	0.8		7.7	2.4			
15	1	0	17	1290	104	355	12	35	4.4	23	0.4	2.9		1.0	1.5			
15	2	17	28	1028	247	335	16	31	1.3	10	0.2	1.0		2.6	1.3			
15	3	28	54	751	322	342	23	37	0.4	13	0.1	0.9		4.9	1.4			
16	1	0	7	2092	425	974	96	62	10.7	65	3.1	4.4		5.6	3.4			
17	1	0	15	1231	302	433	41	46	2.2	68	0.3	3.7		4.3	2.7			
18	1	0	14	2141	559	293	40	35	3.4	59	0.4	2.5		1.9	1.3			
18	2	14	25	1891	562	320	54	37	3.7	73	0.5	1.7		3.1	1.5			
19	1	0	9	2142	457	307	46	33	6.1	63	0.3	3.2		0.9	1.2			
19	2	9	38	1690	490	564	85	35	3.4	72	0.2	2.0		3.7	1.2			
20	1	0	4	1692	424	273	43	20	2.0	29	0.3	1.4		0.7	0.3			
21	1	0	16	2096	450	363	31	51	17.5	79	0.3	6.2		2.9	2.8			
21	2	16	25	1933	586	365	43	44	7.1	61	0.3	2.3		3.9	2.1			
22	1	0	13	765	125	625	18	90	6.8	32	0.2	7.6		9.2	5.5			
23	1	0	9	905	162	560	29	90	13.3	69	0.3	8.5		8.9	7.0			
24	1	0	18	1605	361	265	31	51	6.4	71	0.2	4.2		3.5	2.8			



# Appendix Table A4

Date 4-Dec-2012

For Vineyard Soil Technologies  
 Client DAVIS - FRIESEN  
 Property 0  
 Project Number 12-178



**3377 Solano Ave. #505**  
**Napa, CA 94558**  
**ph/fax: (707)255-3176**  
**www.VineyardSoil.com**

Log In # 3211568  
 Date Sampled 41231  
 Date Submitted 41239  
 Date Reported 41247

## Report of Soil Analysis

Profile	Layer*	Sample Depth (in)	Extractable Cations										PARTICLE SIZE ANALYSIS					
			S-5.10 mg/kg		S-5.10 mg/kg		S-5.10 mg/kg		S-6.10 mg/kg		S-6.10 mg/kg		S-2.50 tons/acre-ft		S2.50 tons/acre-ft		tons/acre-ft	
			Ca	Mg	K	Na	H	Mn	Fe	Cu	Organic Matter	% Active Lime	Lime Req. (pH 5.5)	Lime Req. (pH 6.0)	Gypsum Req. to raise Ca to 60% of soil CEC	% Sand	% Silt	% Clay
25	1	0	1673	350	457	20	53	10.0	25	0.5	2.7	2.4	3.9					
25	2	12	1552	466	499	36	53	5.5	19	0.4	1.6	2.5	5.4					
25	3	27	1763	753	364	53	35	1.8	10	0.1	0.7	1.4	5.0					
26	1	0	2509	447	465	20	48	7.6	27	0.4	3.6	2.3	1.4					
26	2	11	1785	697	311	50	53	6.7	31	0.3	1.9	2.9	6.1					
27	1	0	1943	184	537	20	48	2.2	57	0.2	5.3	3.0	1.4					
28	1	0	1432	311	810	20	51	3.5	40	0.2	3.6	2.6	5.0					
28	2	16	1363	395	511	39	46	1.6	21	0.1	1.3	2.6	4.8					
28	3	31	1386	502	325	47	44	1.5	11	0.1	0.5	1.9	5.0					

\*Layer 1 is Topsoil; Layer 2 is Upper Subsoil; Layer 3 is Lower Subsoil

Table A5: Vineyard Design Parameters

Block	Acres	Variety	Rootstock	Tillage Depth inches	Spacing Row x Vine feet	Row Orientation degrees <sup>1</sup>
Blk A-1	2.44	Cab. Sauv.	110R	36	6 x 4	22 East of North
Blk A-2	2.06	Cab. Sauv.	110R	36	6 x 4	North-South
Blk A-3	2.10	Cab. Sauv.	420A	30	6 x 4	22 East of North
Blk B	1.44	Cab. Sauv.	110R	36	6 x 4	North-South
Blk C	0.19	Cab. Sauv.	3309C	36	6 x 4	North-South
Total	8.23					

<sup>1</sup>  $N_t = N_m + 14.4$  where  $N_t$  is true north and  $N_m$  is magnetic north

Table A6 Amendment Chart

Block	Acres	Compost tons/acre <sup>2</sup>	Dolomitic lime tons/acre <sup>2</sup>	Compost lb/vine <sup>3</sup>	12-61-0 oz/vine <sup>3</sup>
Blk A-1	2.44	5	5	1	2
Blk A-2	2.06	5	5	1	2
Blk A-3	2.10	5	5	1	2
Blk B	1.44	5	8	1	2
Blk C	0.19	5	5	1	2
Total	8.23				

<sup>2</sup> Broadcast compost and lime, several days prior to deep tillage.

<sup>3</sup> Thoroughly mix the 12-62-0 into the soil of the planting hole

Michael Davis  
 Friesen Road Properties  
 Napa APN:  
 018-060-012  
 018-060-013

-  Proposed Vineyard Blocks
-  22 ft perimeter avenue
-  Property Lines
-  Elevation Contours
-  5 ft. contours
-  25 ft. contours



Aerial Photo: Napa County Ortho 2011  
 Anamosa Inc. - Vineyard Soil Technologies  
 3379 Solano Ave. #505, Napa, CA 94558  
 Phone / Fax: (707) 255-3176  
 www.VineyardSoil.com



Michael Davis  
Friesen Road Properties  
Napa APN:  
018-060-012  
018-060-013

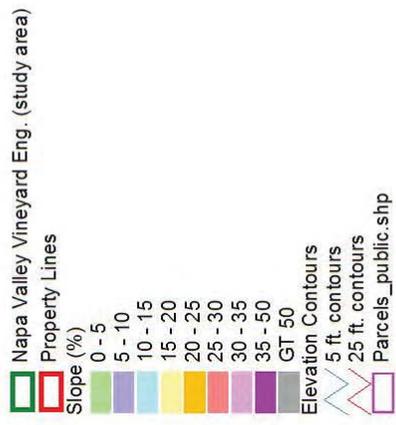
- Napa Valley Vineyard Eng. (study area)
- Property Lines
- Elevation Contours
- 5 ft. contours
- 25 ft. contours



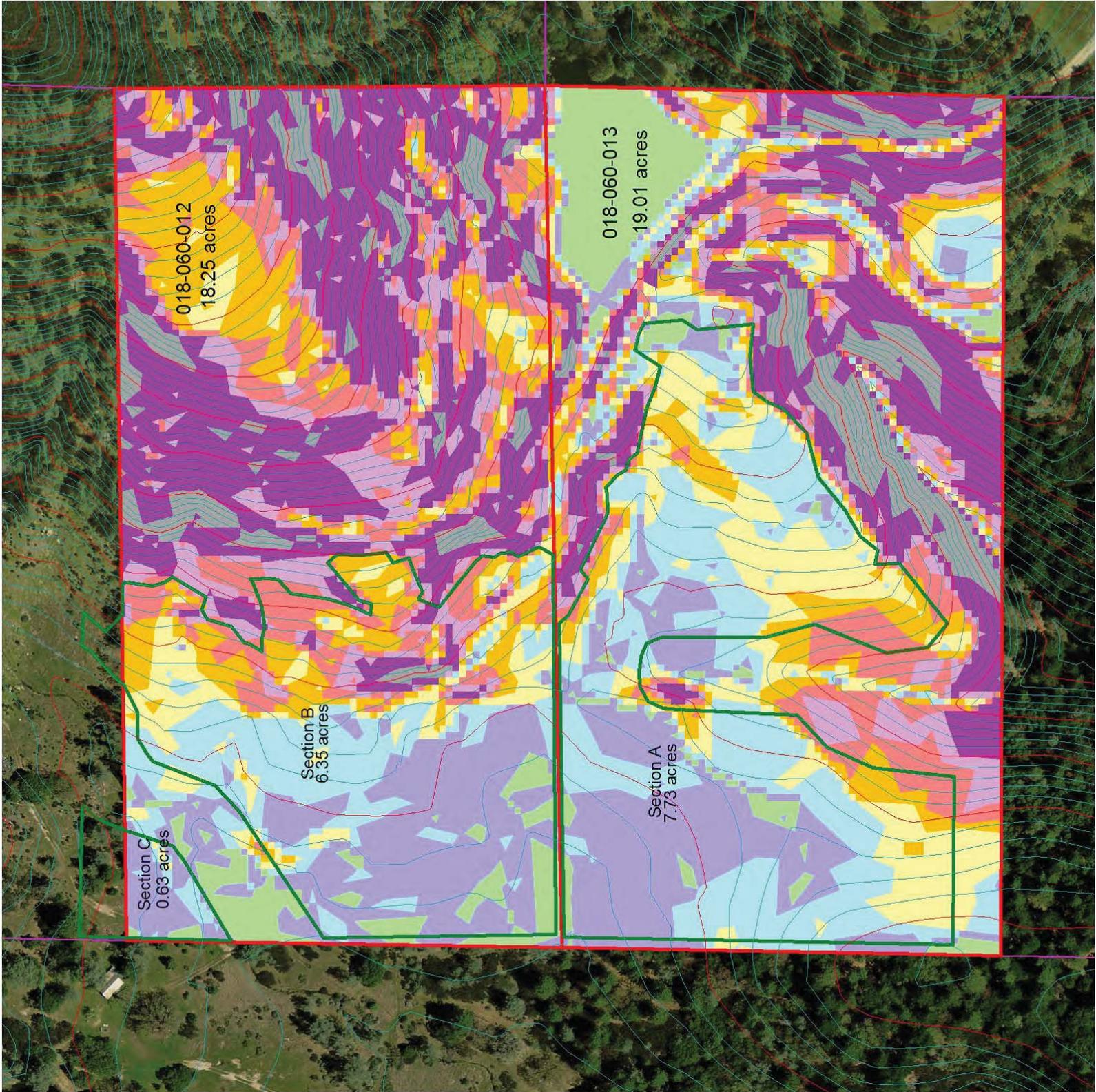
Aerial Photo: Napa County Ortho 2011  
Anamosa Inc. - Vineyard Soil Technologies  
3379 Solano Ave. #505, Napa, CA 94558  
Phone / Fax: (707) 255-3176  
www.VineyardSoil.com



Michael Davis  
Friesen Road Properties  
Napa APN:  
018-060-012  
018-060-013

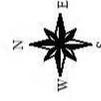


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Anamosa Inc. - Vineyard Soil Technologies  
3379 Solano Ave. #505, Napa, CA 94558  
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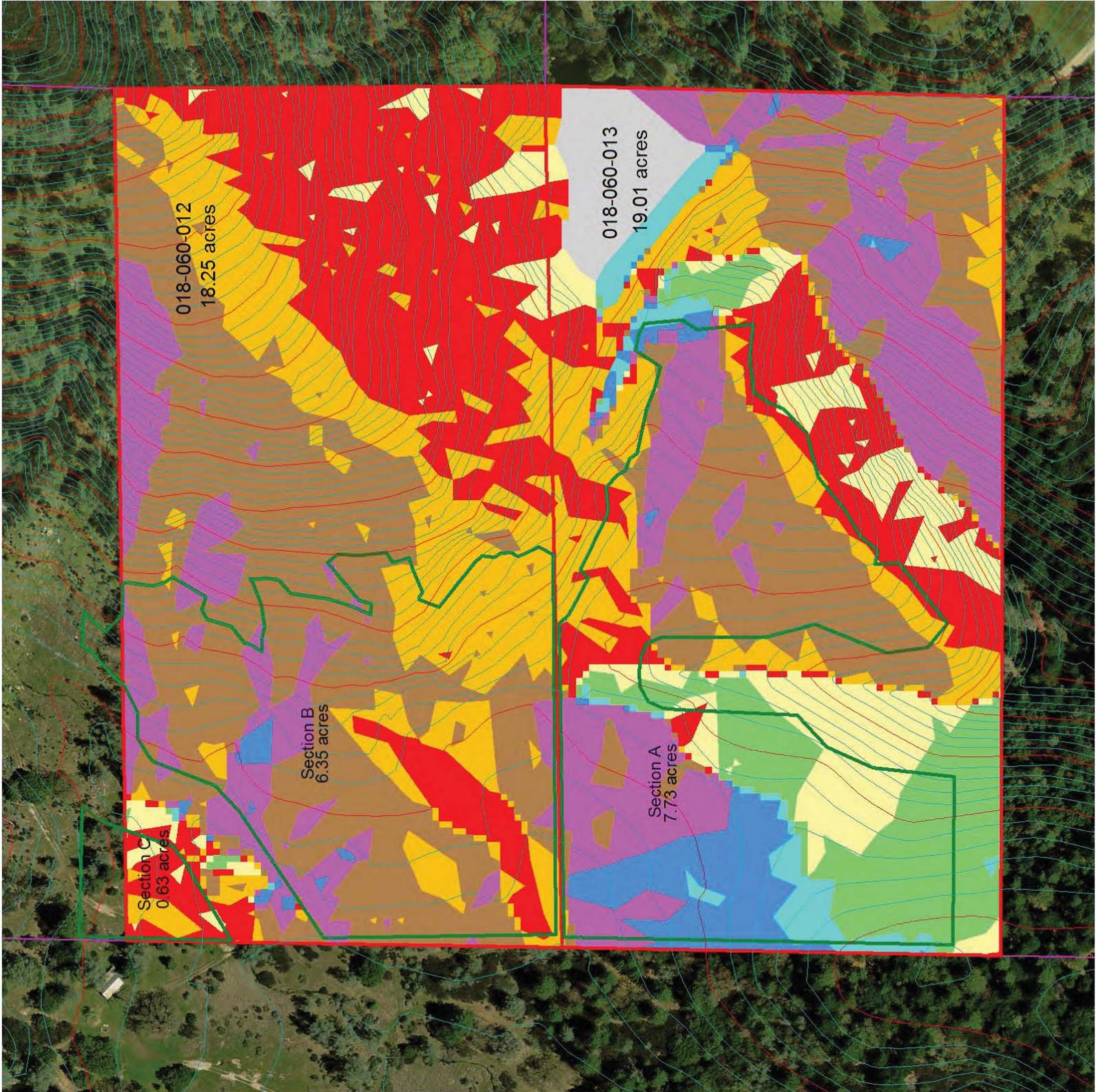


Michael Davis  
 Friesen Road Properties  
 Napa APN:  
 018-060-012  
 018-060-013

- Napa Valley Vineyard Eng. (study area)
- Property Lines
- Aspect / Exposure
  - Flat (<5% slope)
  - North
  - Northeast
  - East
  - Southeast
  - South
  - Southwest
  - West
  - Northwest
- Elevation Contours
  - 5 ft. contours
  - 25 ft. contours
- Parcels\_public.shp

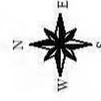


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 018-060-013

- Soil Series by Morphology
- Aiken Loam
  - Forward loam
  - Kidd loam
  - Soil Sites
- Napa County Soil Series
- 138 Forward gravelly loam, 2-9% slopes
  - 140 Forward gravelly loam, 30-75% slopes
  - 154 Henneke gravelly loam, 30-75% slopes
  - 177 Rock outcrop-Kidd complex, 50-75% slopes
- Water
- Property Lines
- Elevation Contours
- 5 ft. contours
  - 25 ft. contours



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Surface layer Saturation Percentage (texture)

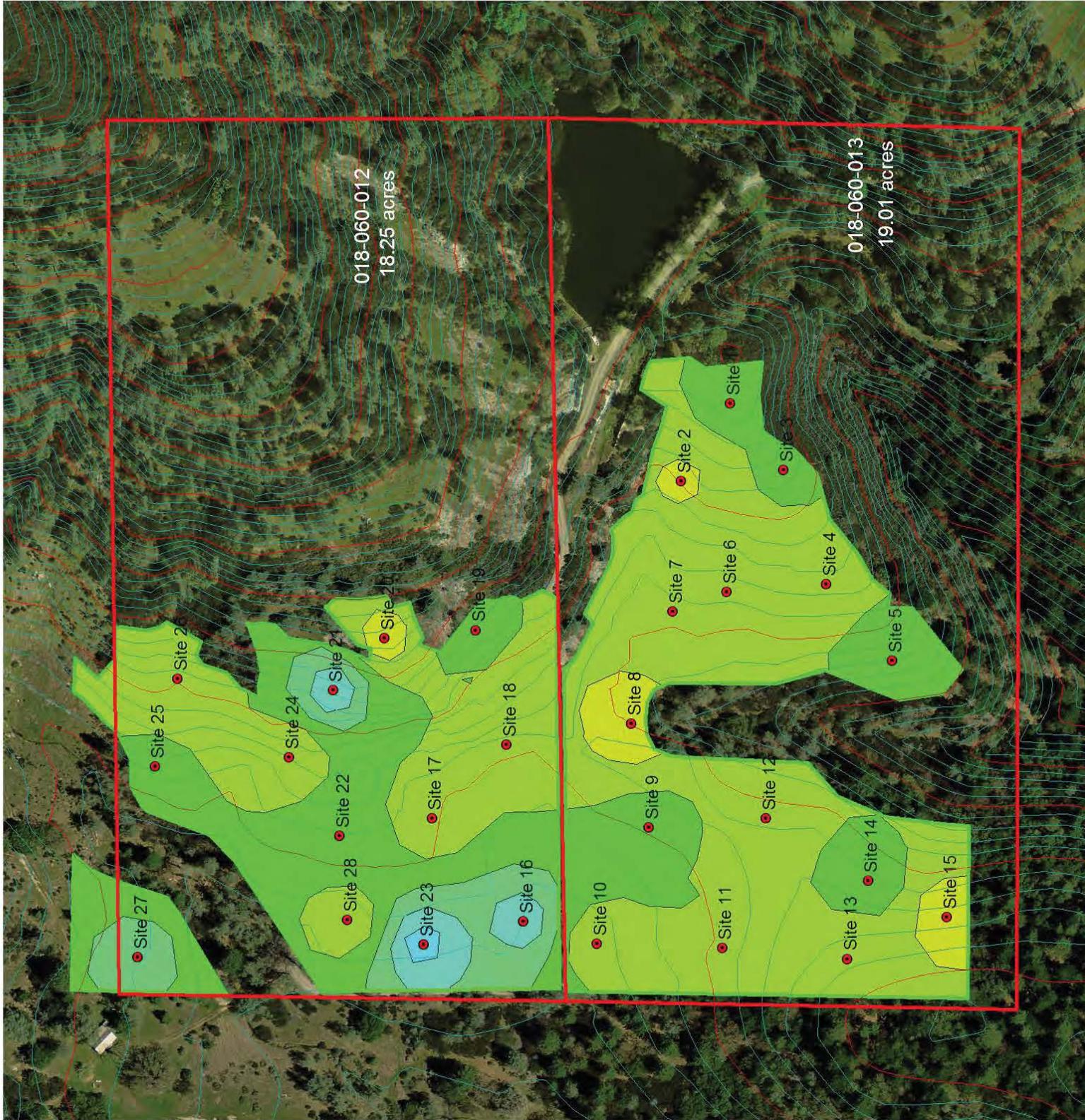
10 - 20	(loamy sand)
20 - 25	(sandy loam)
25 - 30	(sandy loam)
30 - 35	(sandy loam)
35 - 40	(loam)
40 - 45	(loam; silt loam)
45 - 50	(loam; silt loam)
50 - 55	(clay loam; silty clay loam)
55 - 60	(clay loam; silty clay loam)
60 - 65	(clay loam; silty clay)
65 - 70	(clay silty clay)
70 - 75	(clay; silty clay)
75-150	(clay)

- Soil Sites
- Study Area (Napa Valley Vineyard Engineering)
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- 5 ft. contours
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Upper Subsoil Saturation Percentage (texture)

- 10 - 20 (loamy sand)
- 20 - 25 (sandy loam)
- 25 - 30 (sandy loam)
- 30 - 35 (sandy loam)
- 35 - 40 (loam)
- 40 - 45 (loam; silt loam)
- 45 - 50 (loam; silt loam)
- 50 - 55 (clay loam; silty clay loam)
- 55 - 60 (clay loam; silty clay loam)
- 60 - 65 (clay loam; silty clay)
- 65 - 70 (clay silty clay)
- 70 - 75 (clay; silty clay)
- 75-150 (clay)

Soil Sites

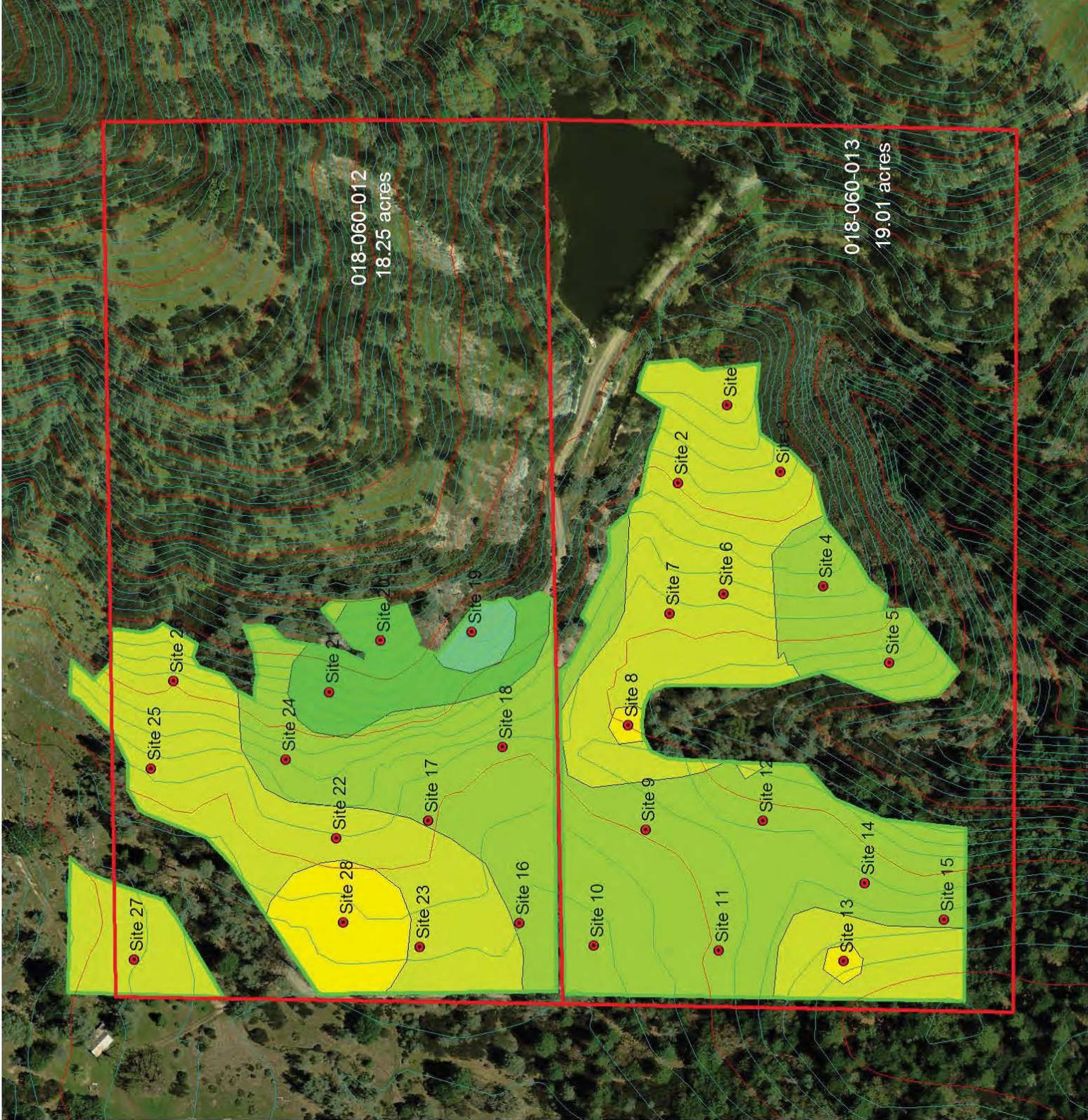
- Study Area (Napa Valley Vineyard Engineering)
- Property Lines

- Elevation Contours
- 5 ft. contours
- 25 ft. contours

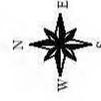
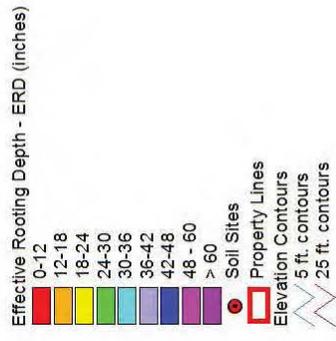


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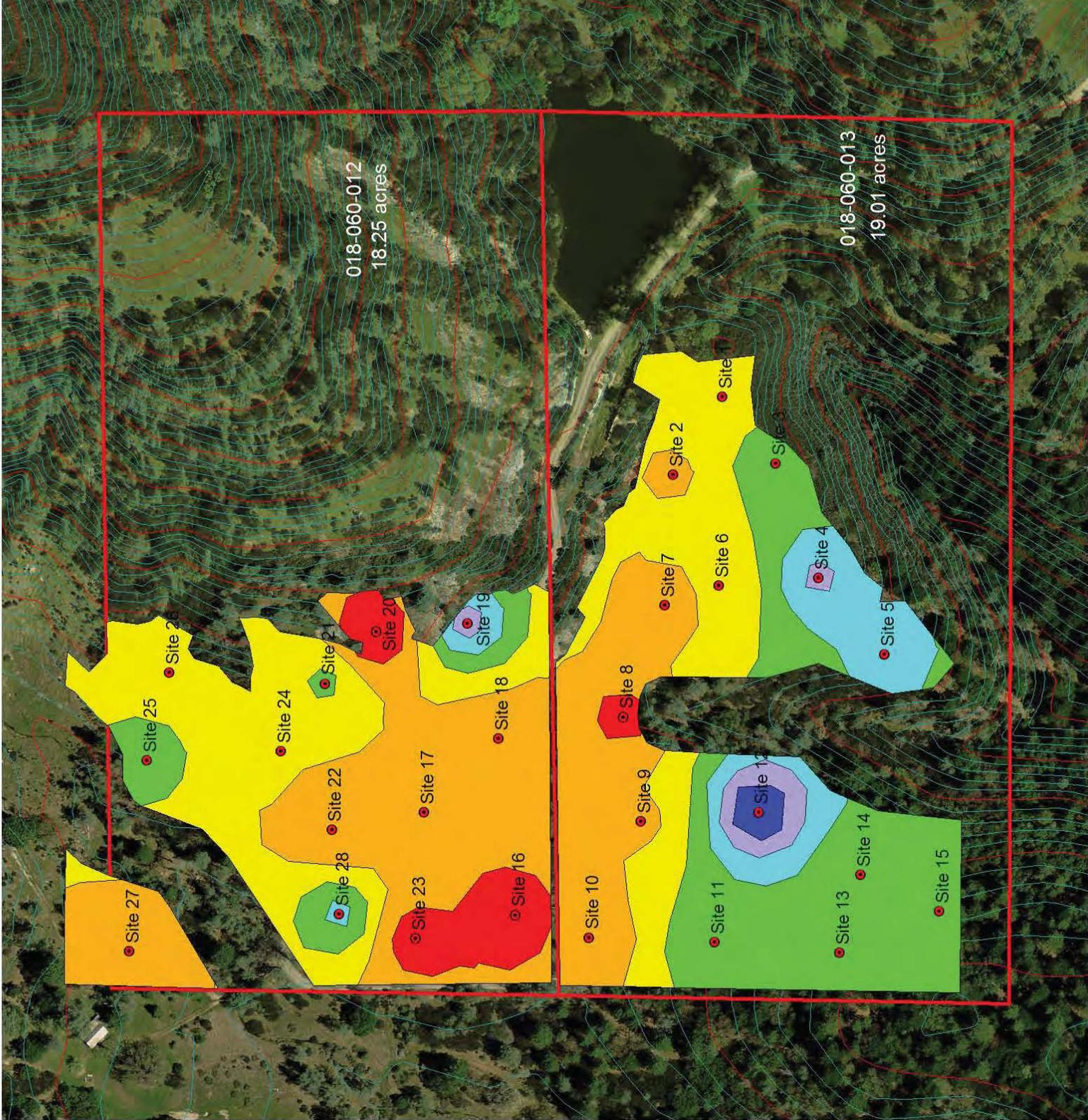
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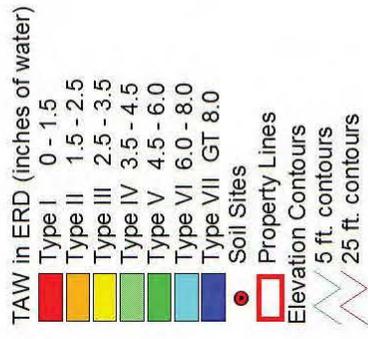
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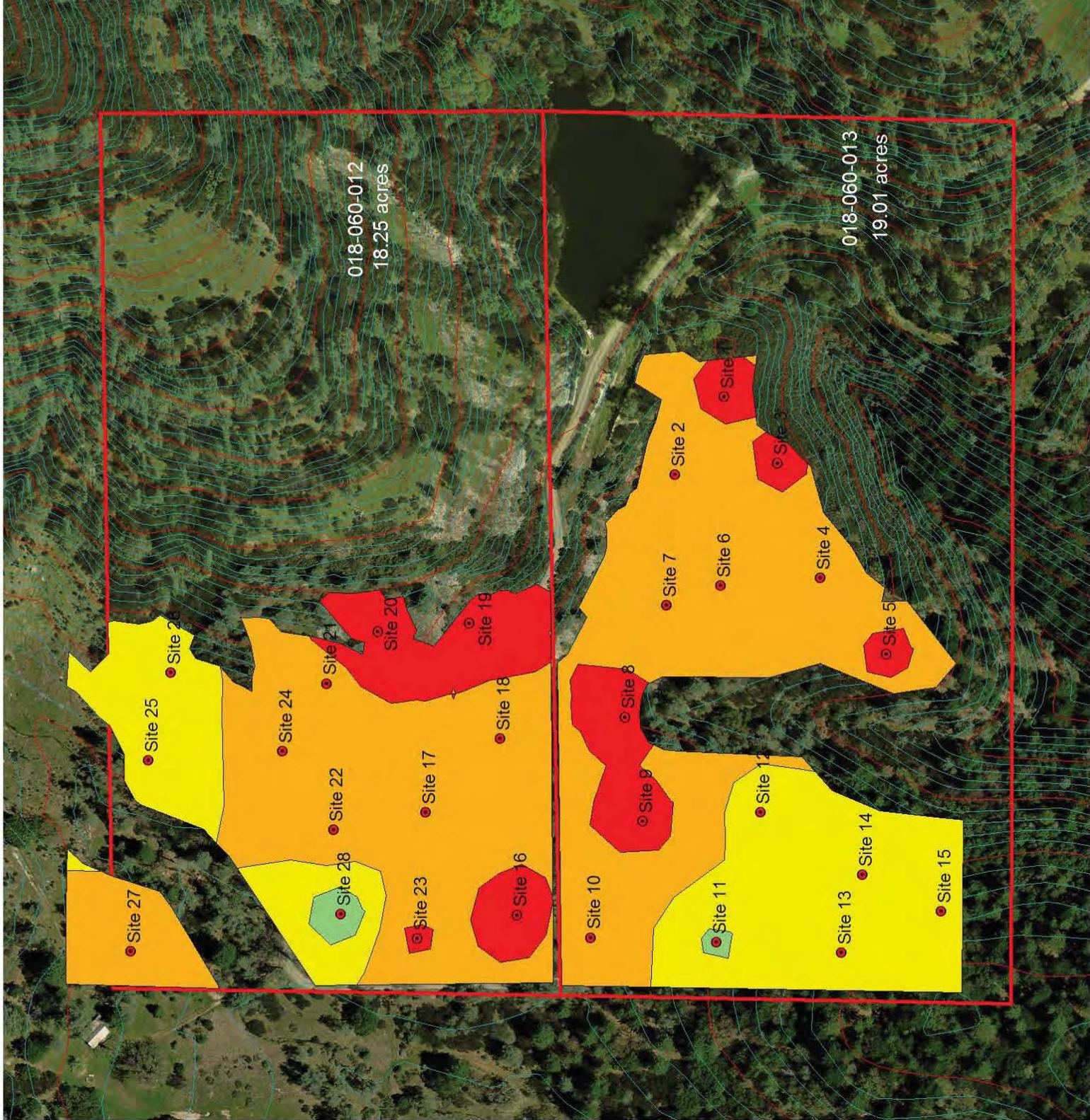
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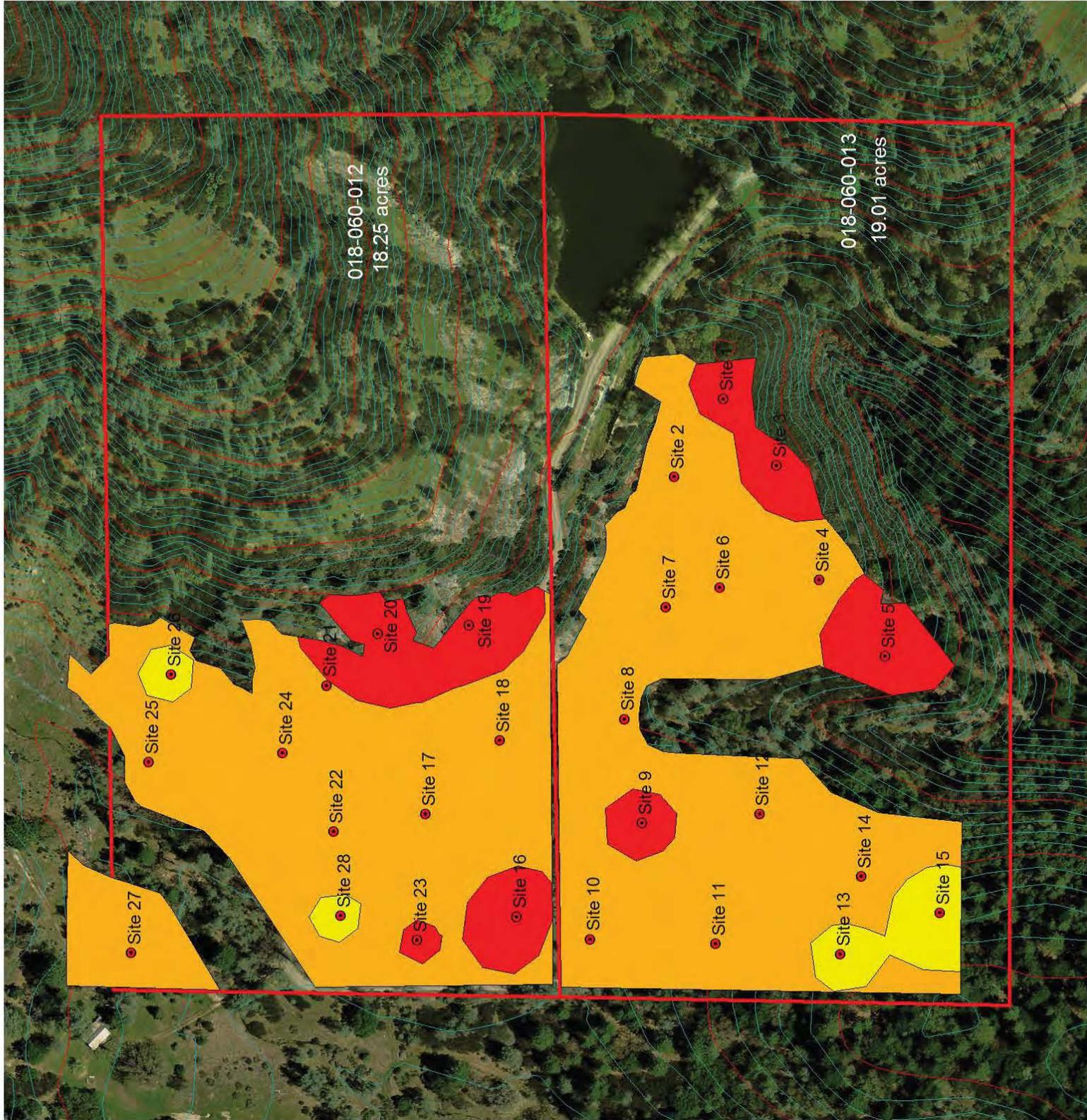
TAW in the top 18" of soil (inches of water)

Type I	0 - 1.5
Type II	1.5 - 2.5
Type III	2.5 - 3.5
Type IV	3.5 - 4.5
Type V	4.5 - 6.0
Type VI	6.0 - 8.0
Type VII	GT 8.0

Soil Sites  
 Property Lines  
 Elevation Contours  
 5 ft. contours  
 25 ft. contours



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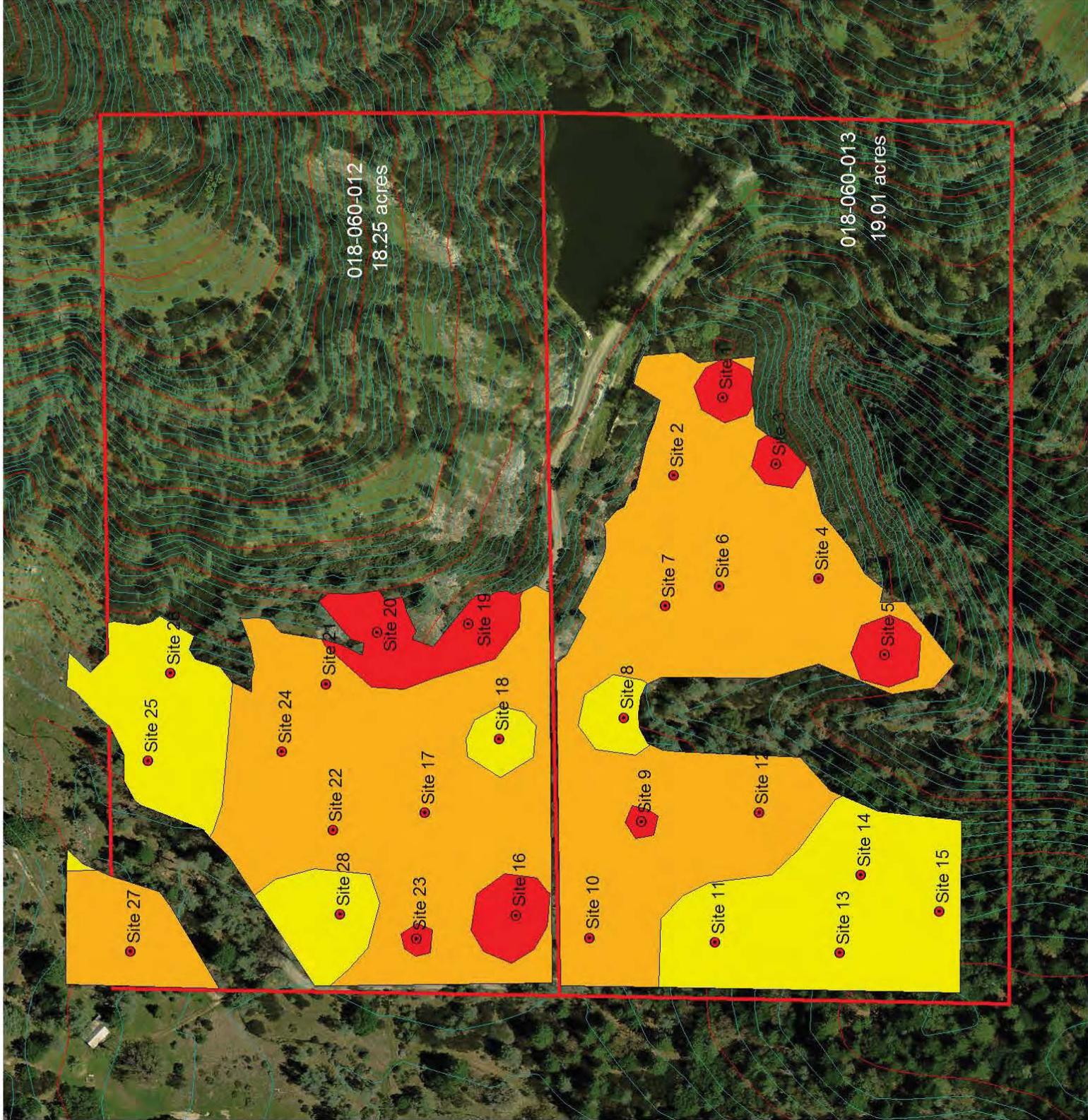


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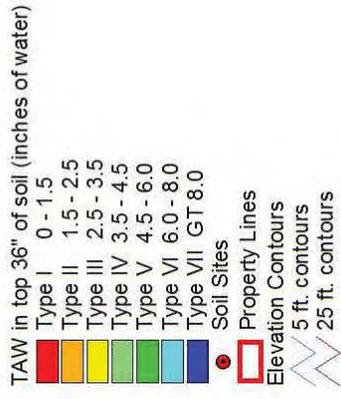
- TAW in the top 24" of soil (inches of water)
- Type I 0 - 1.5
  - Type II 1.5 - 2.5
  - Type III 2.5 - 3.5
  - Type IV 3.5 - 4.5
  - Type V 4.5 - 6.0
  - Type VI 6.0 - 8.0
  - Type VII GT 8.0
- Soil Sites
  - Property Lines
  - Elevation Contours
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  - 25 ft. contours



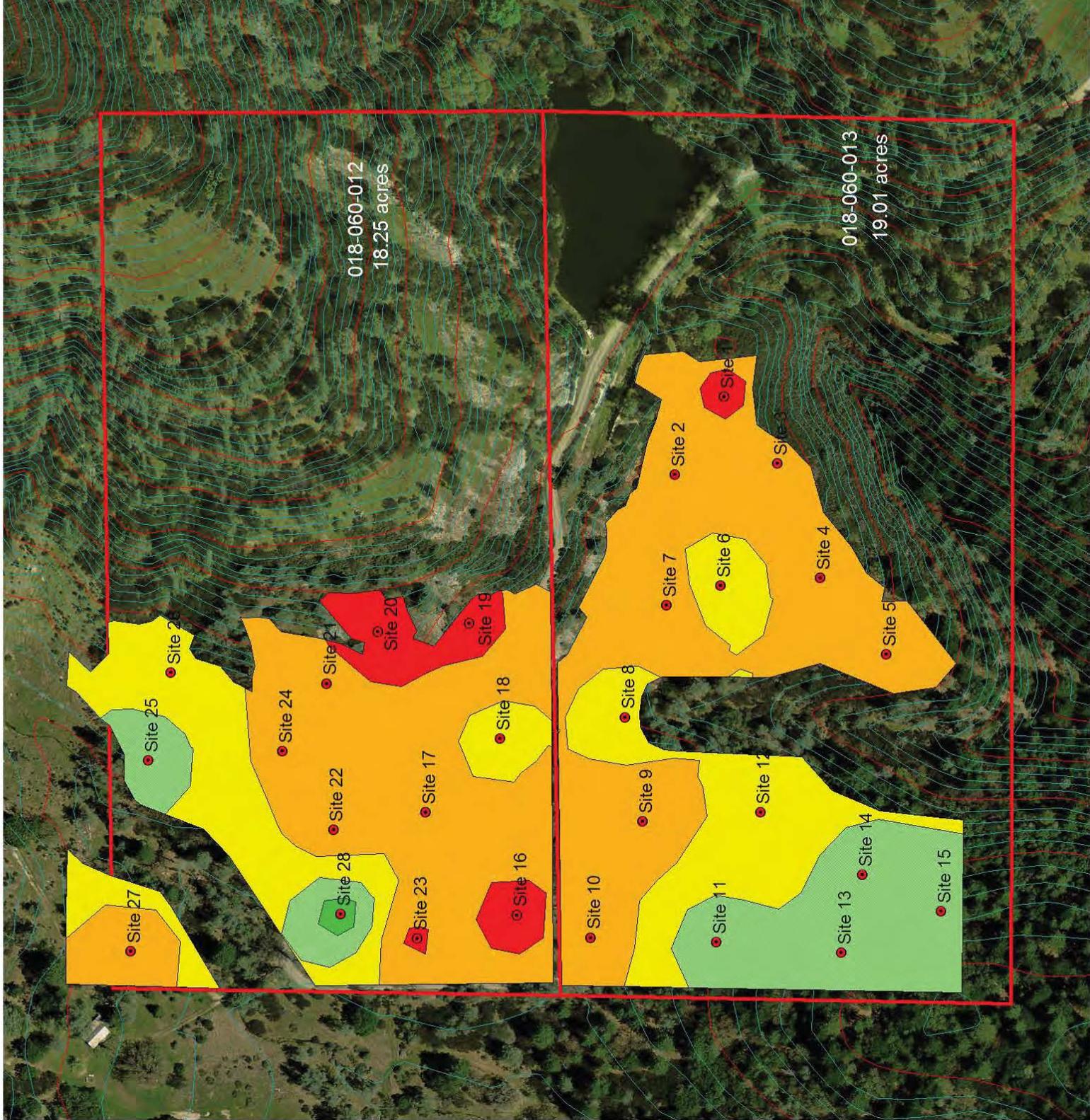
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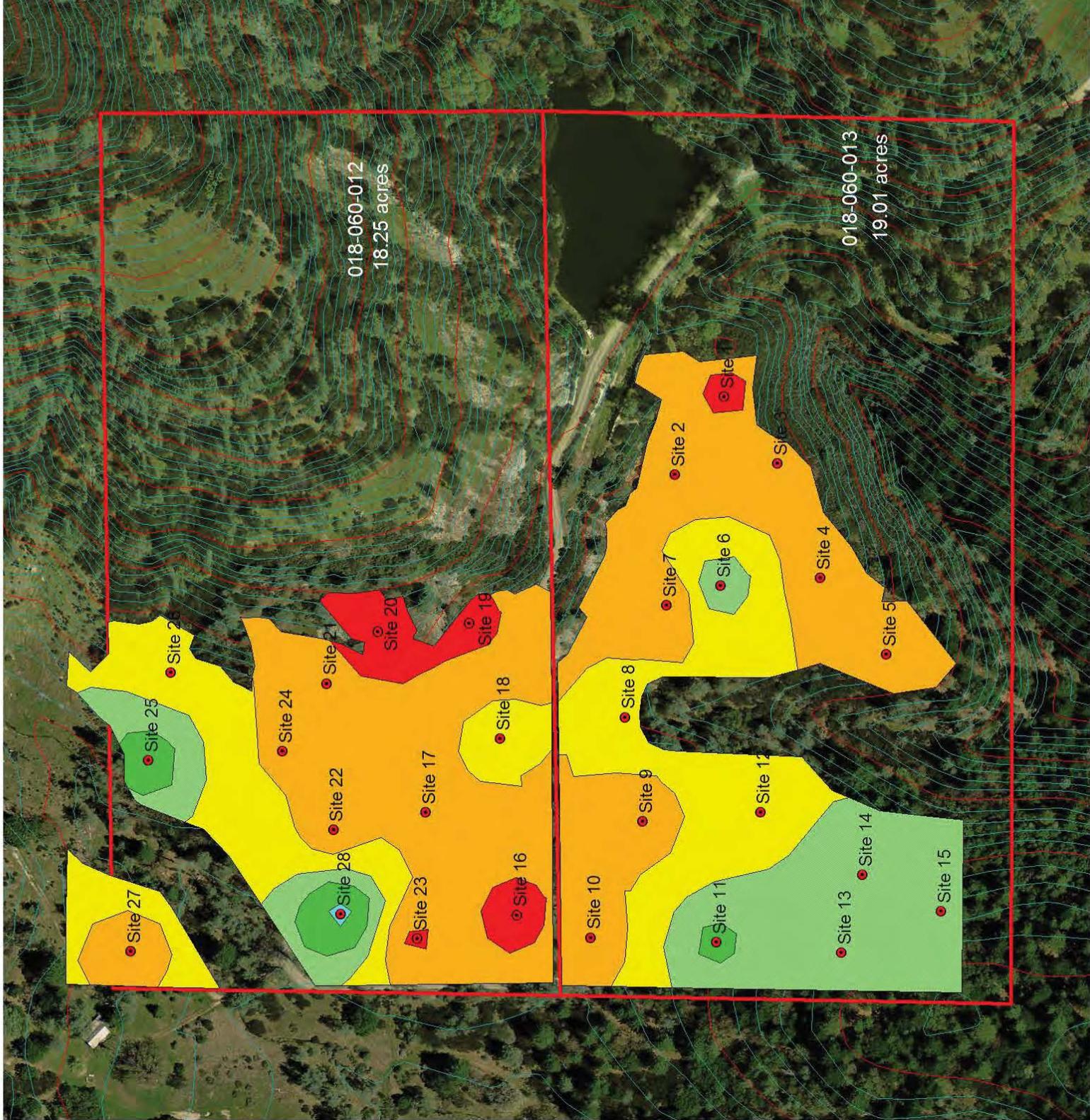


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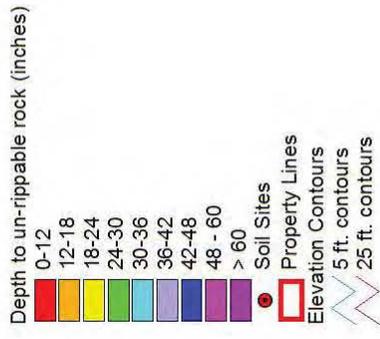
- TAW in top 48" of soil (inches of water)
- Type I 0 - 1.5
  - Type II 1.5 - 2.5
  - Type III 2.5 - 3.5
  - Type IV 3.5 - 4.5
  - Type V 4.5 - 6.0
  - Type VI 6.0 - 8.0
  - Type VII GT 8.0
- Soil Sites
  - Property Lines
  - Elevation Contours
  - 5 ft. contours
  - 25 ft. contours



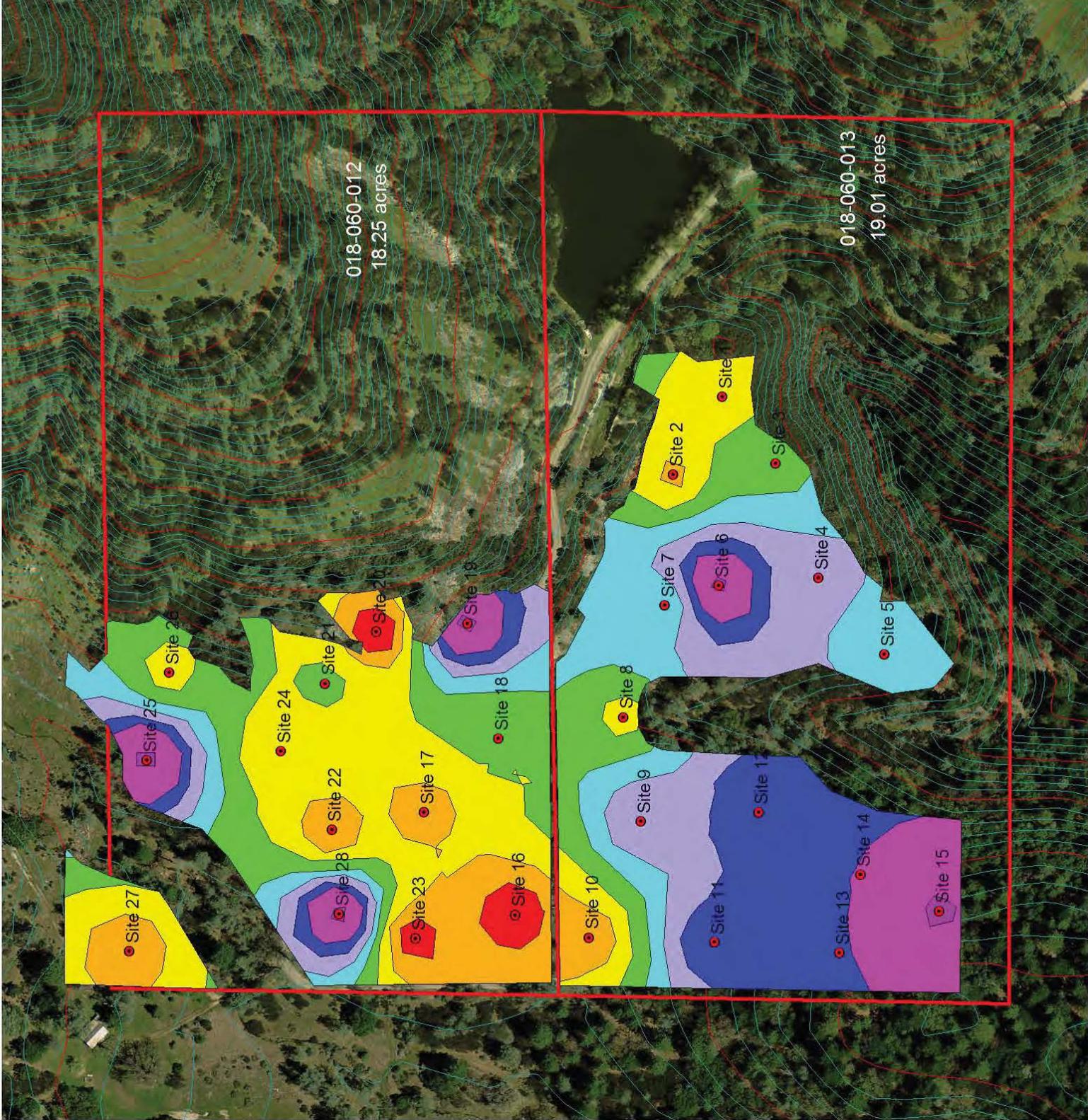
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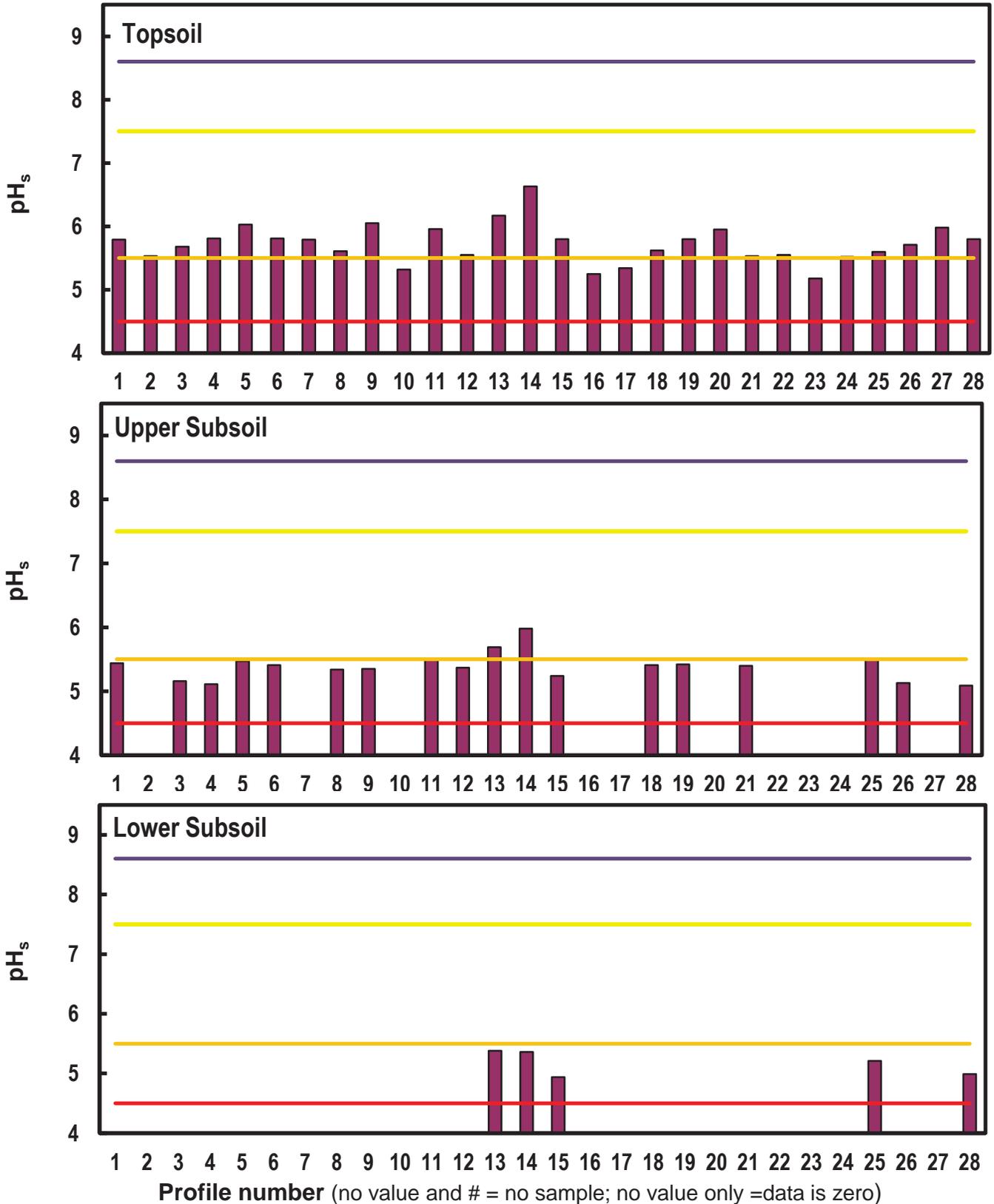


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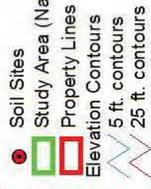
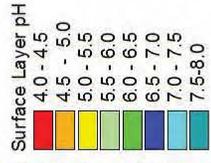


### Saturated Paste pH

■ pH and Critical limits: — Very Acid pH < 4.5  
— Acid pH 4.5-5.5 — Neutral pH 5.5-7.5  
— Calcareous pH 7.5-8.6 — Alkaline pH > 8.6

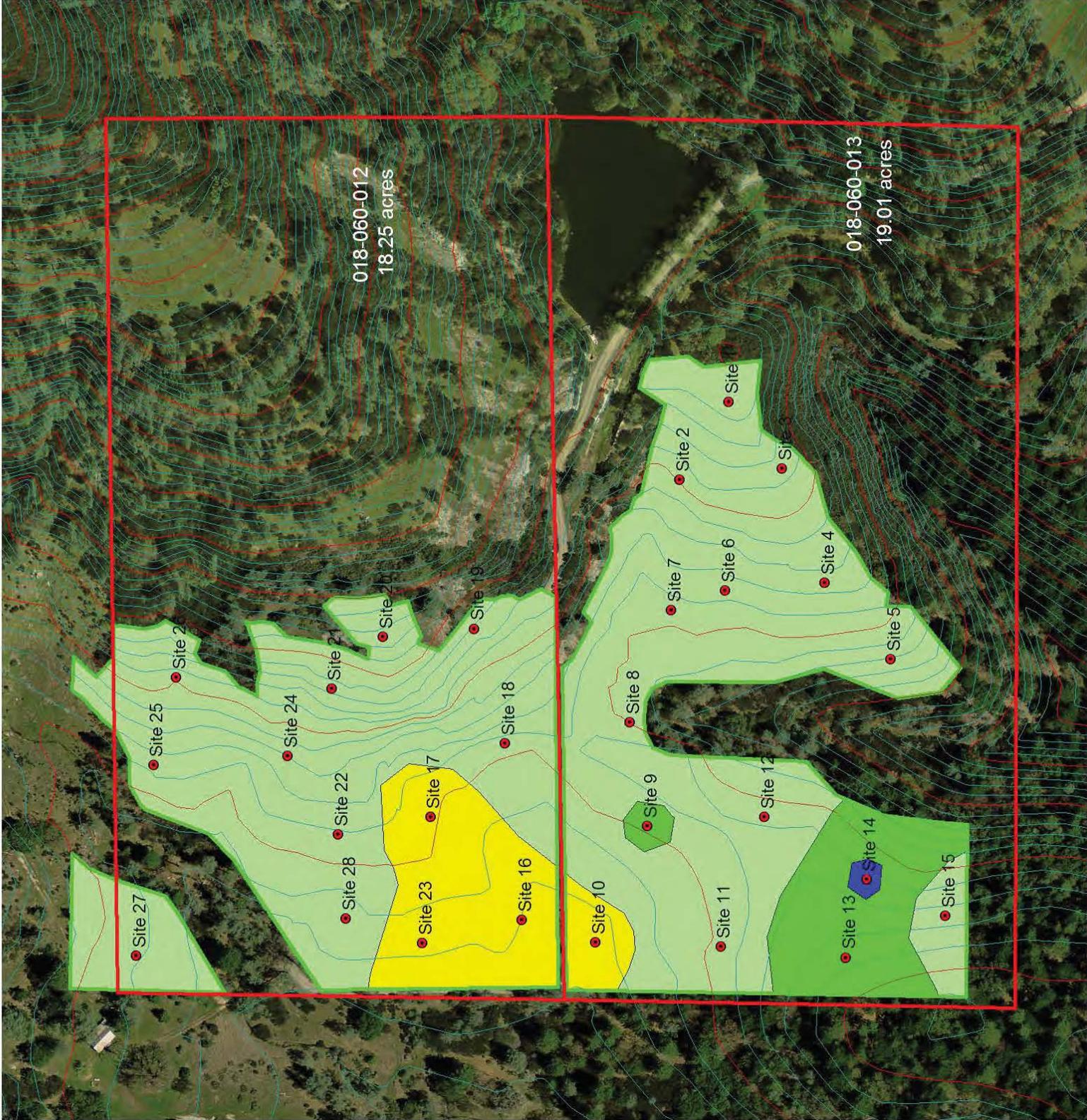


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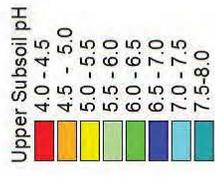


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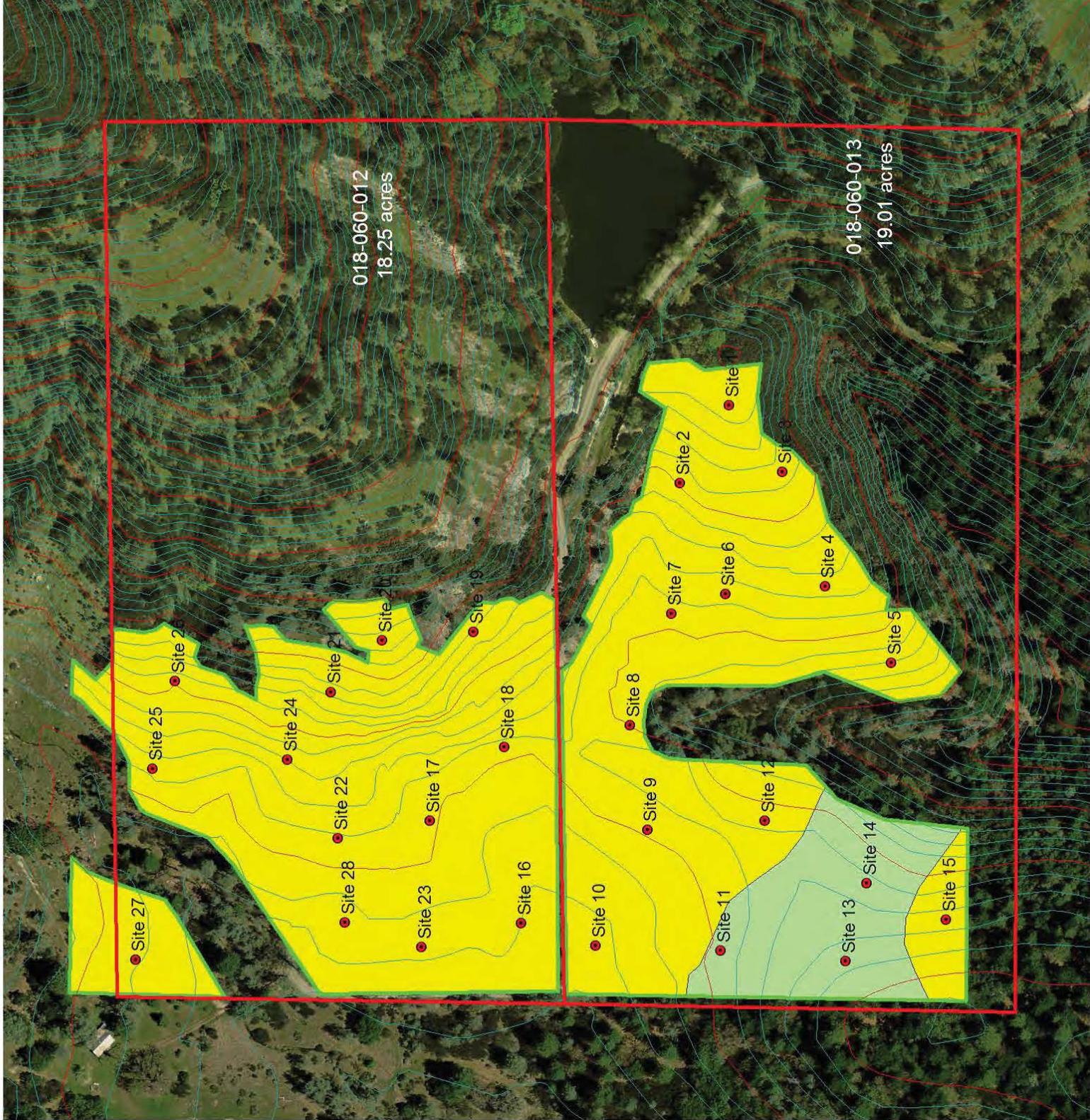


- Soil Sites
- Study Area (Napa Valley Vineyard Engineering)
- Property Lines
- Elevation Contours
- 5 ft. contours
- 25 ft. contours



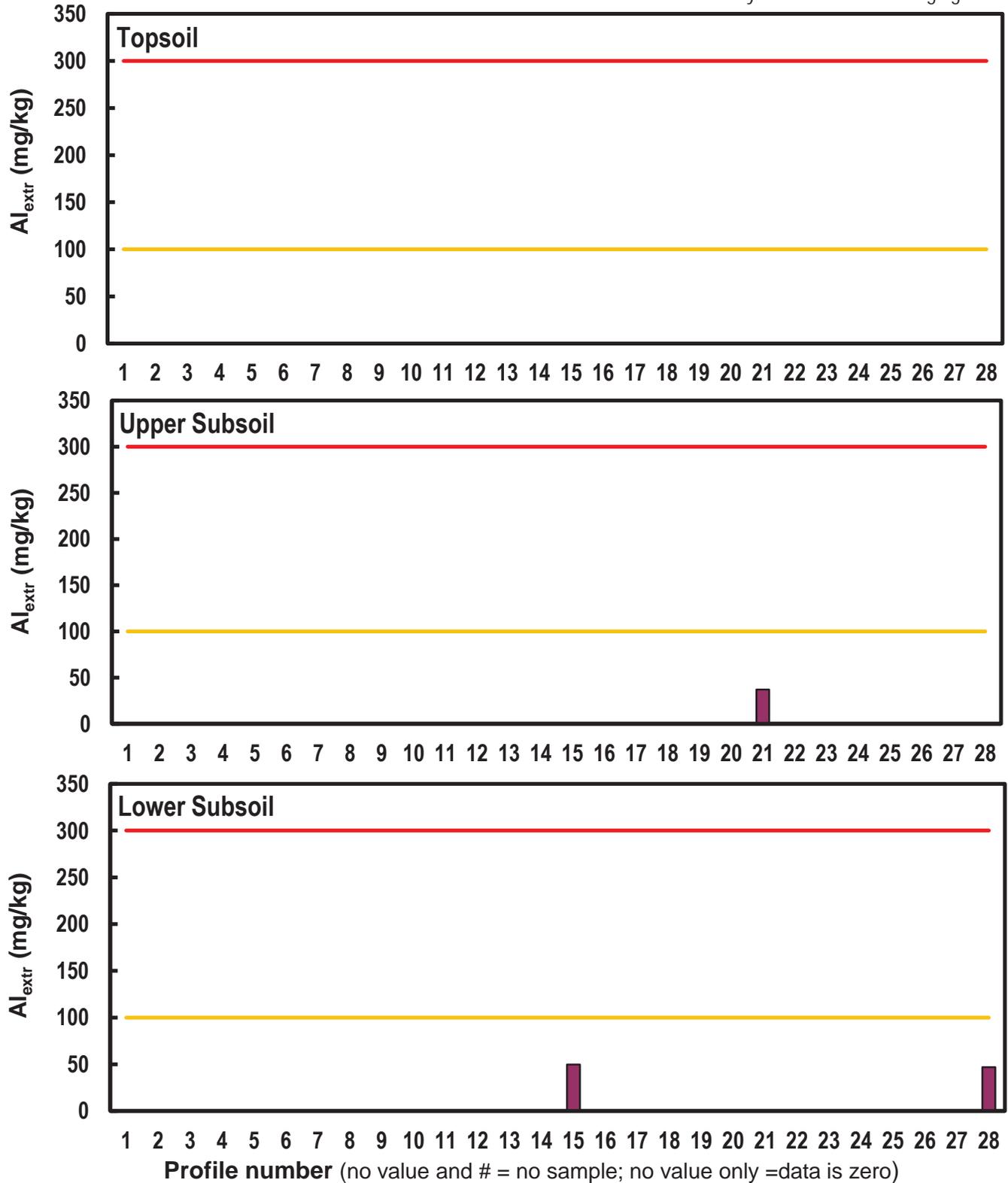
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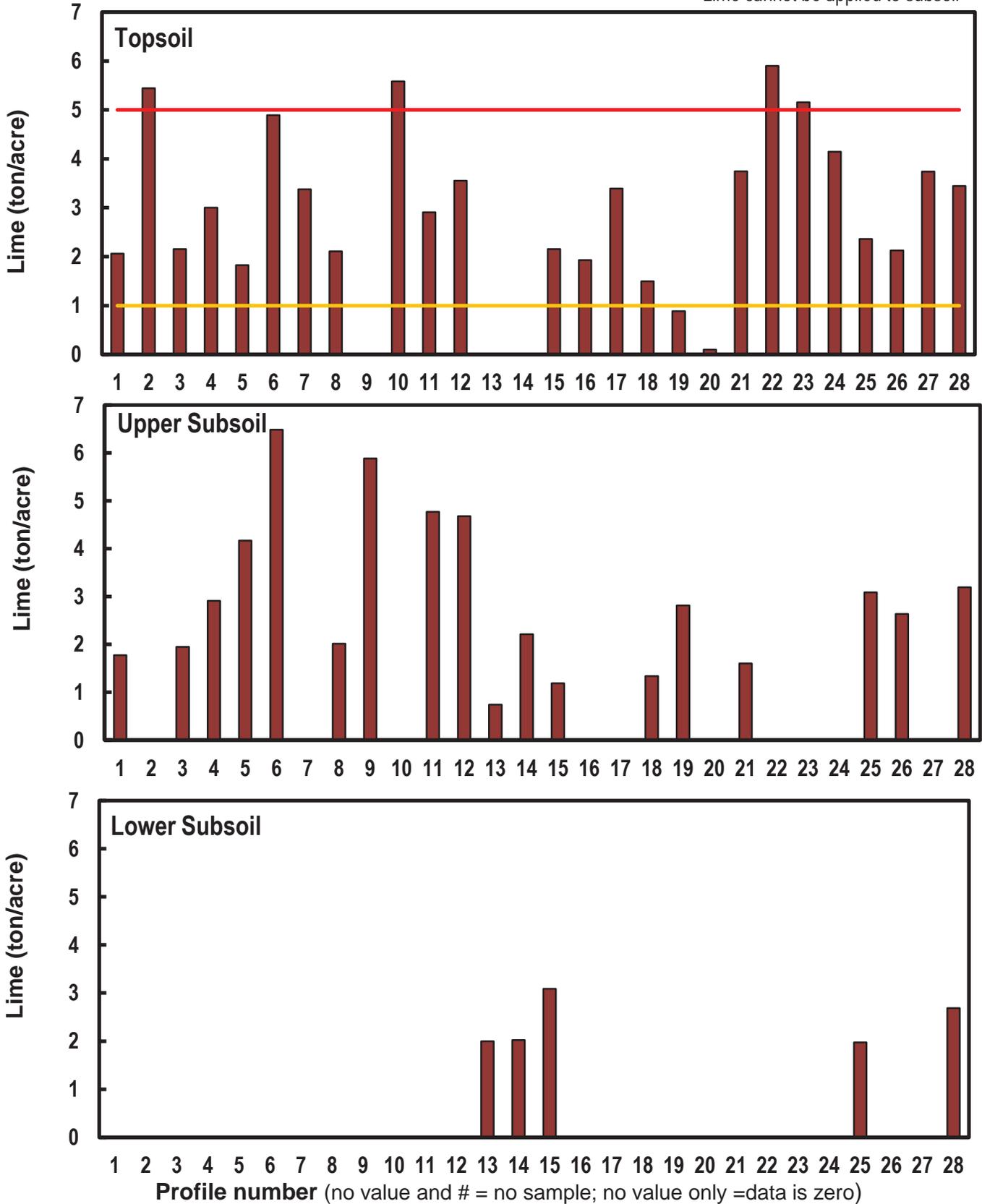
### Extractable Aluminum

- Al and Critical limits:
- Non-aluminous Al <100 mg/kg
- Aluminous Al 100-300 mg/kg
- Very Aluminous Al >300 mg/kg



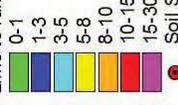
### Lime Requirement for pH 6 target (adjusted for layer thickness)

- Lime and Application Rate Limits:
- Desirable Maximum ~1 ton/acre
- Extreme Maximum ~5 ton/acre
- Lime cannot be applied to subsoil

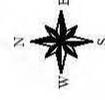


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Lime to raise pH to 6.0 to 18" depth (tons/ac)

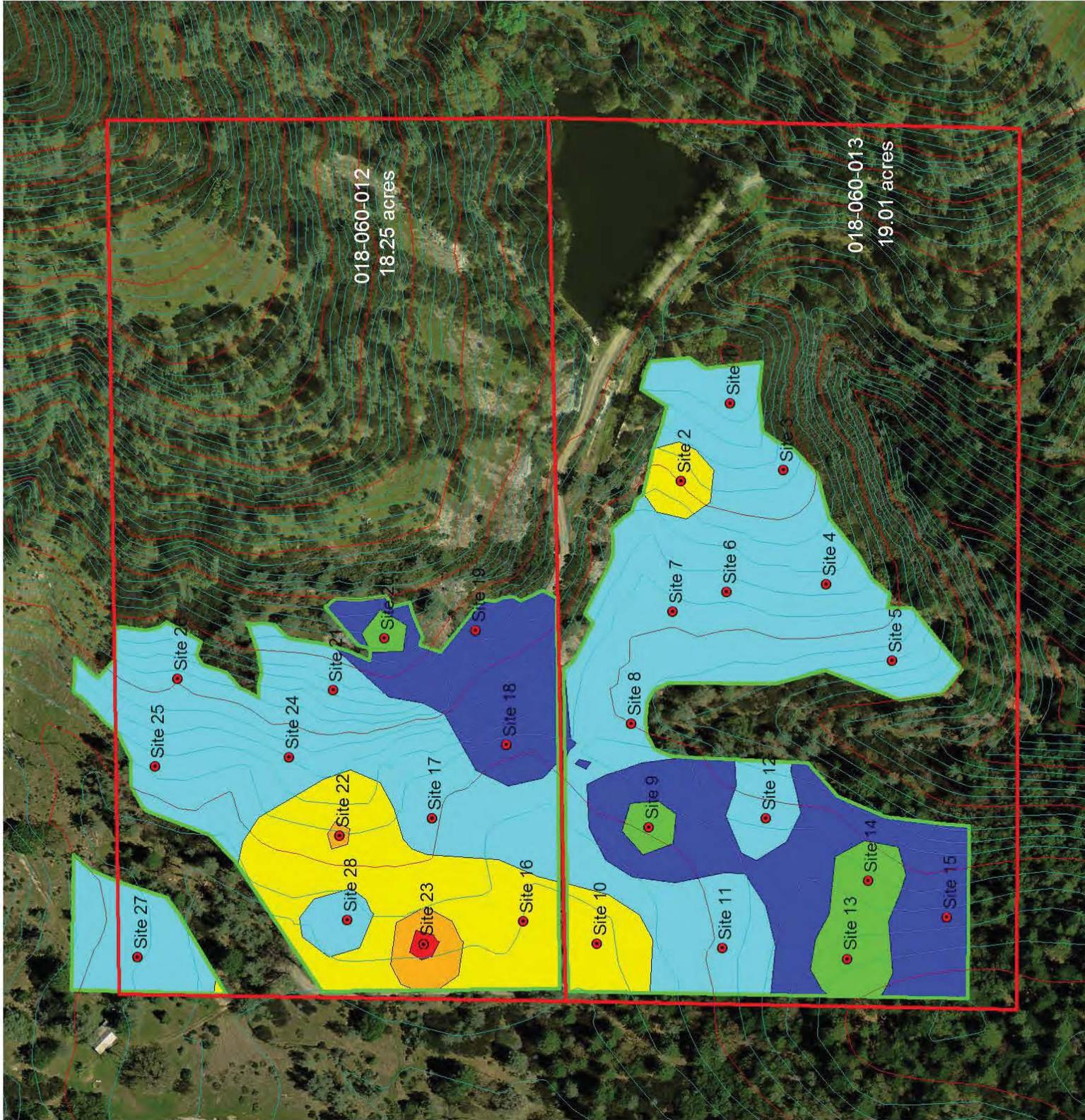


- Soil Sites
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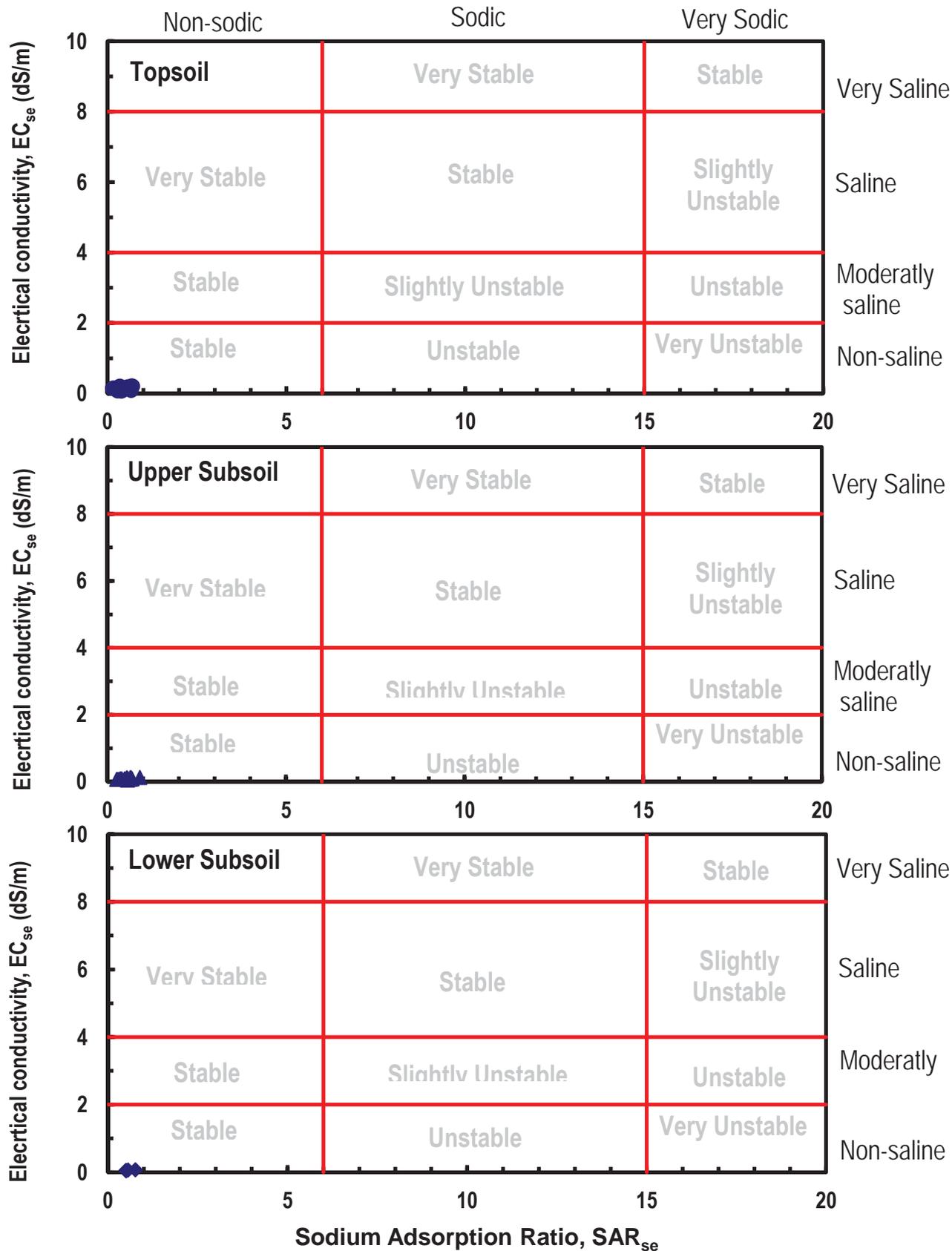


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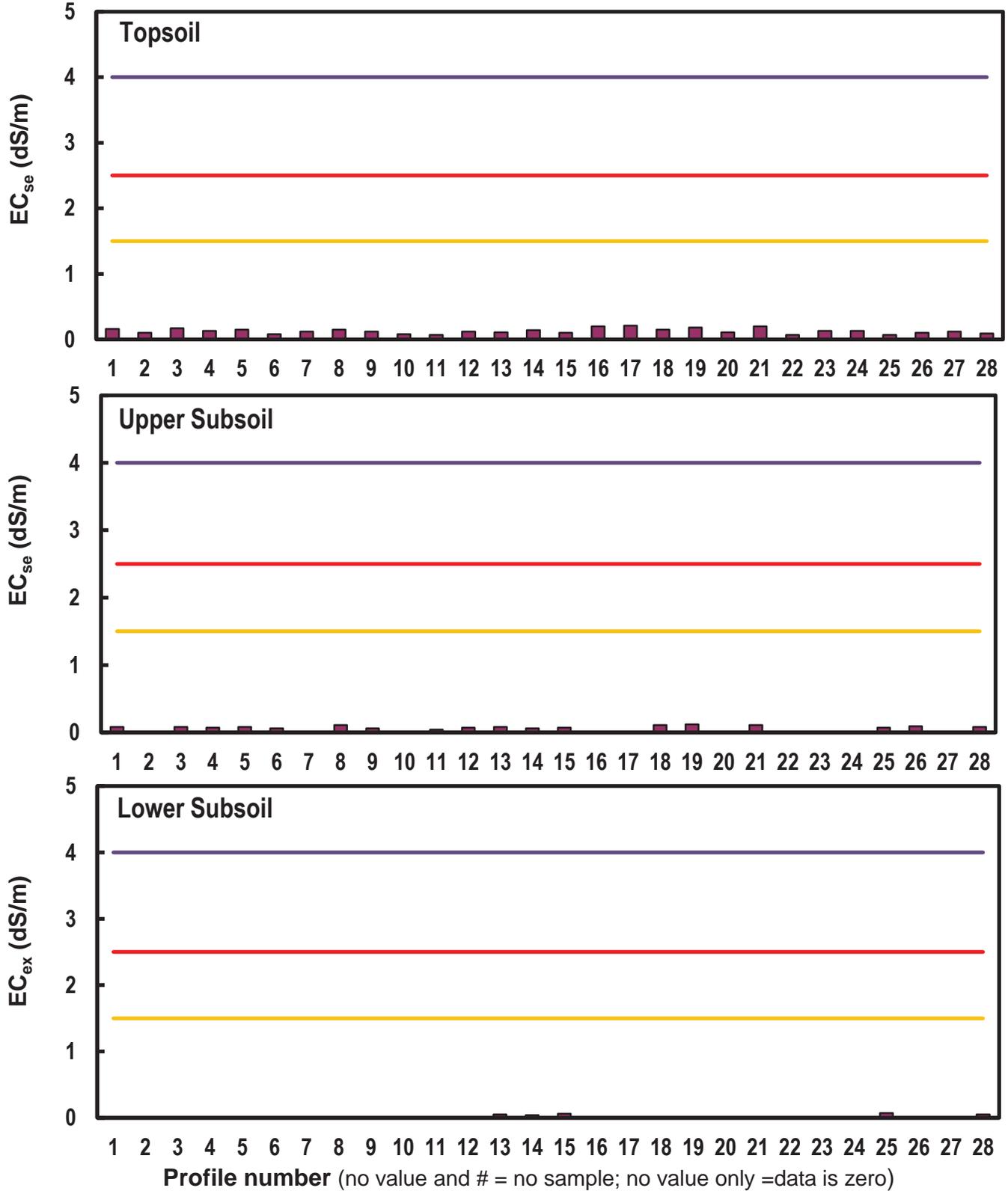


### Salinity, Sodicty and Structure Stability Classification



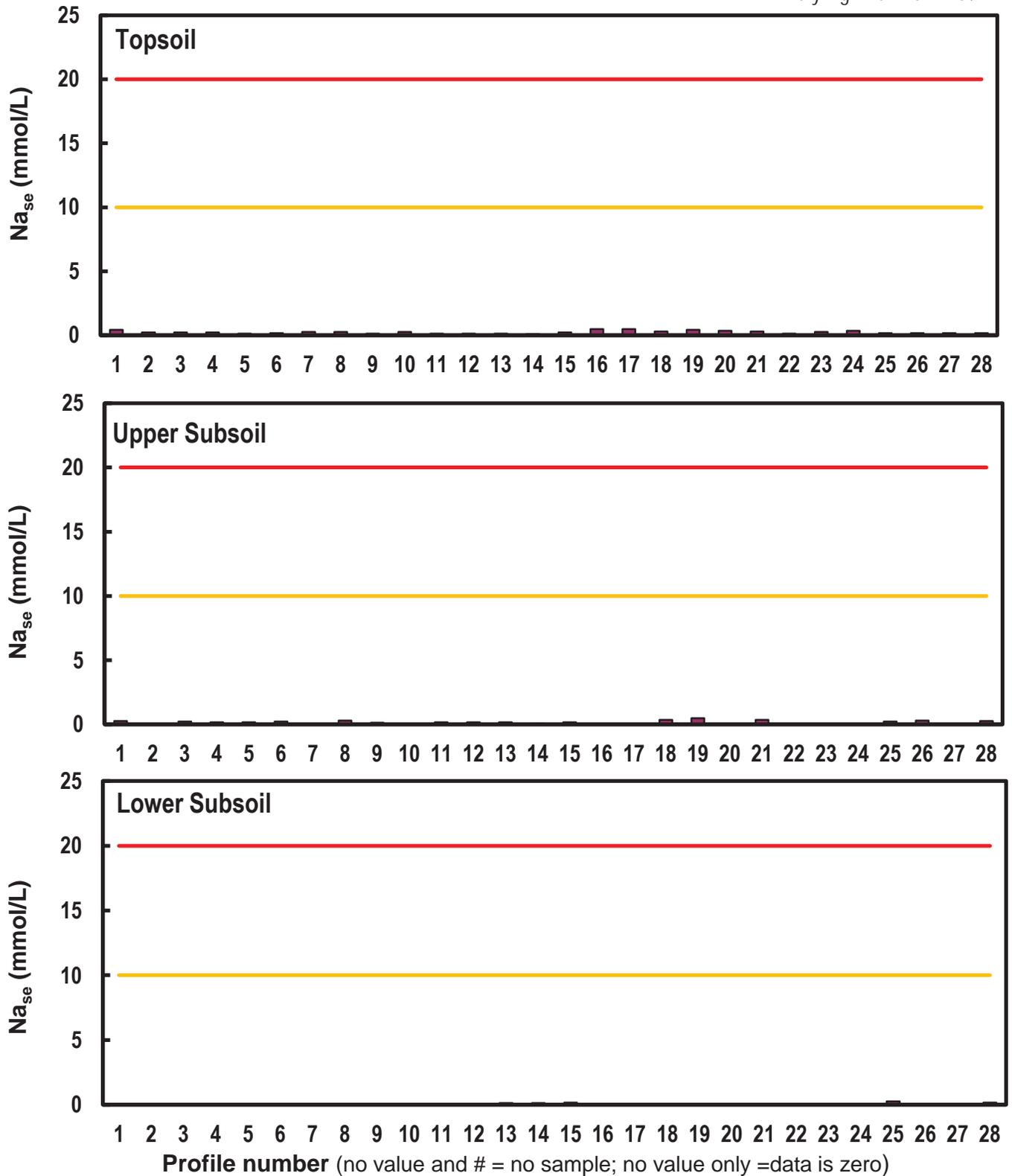
**Saturation Extract Salinity  
(Saturation Extract Electrical  
Conductivity, EC<sub>se</sub>)**

- EC and Critical limits:
- Not critical <1.5 dS/m
- Critical EC (chloride salinity) 1.5-4 dS/m
- Critical EC (sulfate salinity) 2-4 dS/m
- Extreme EC >4 dS/m



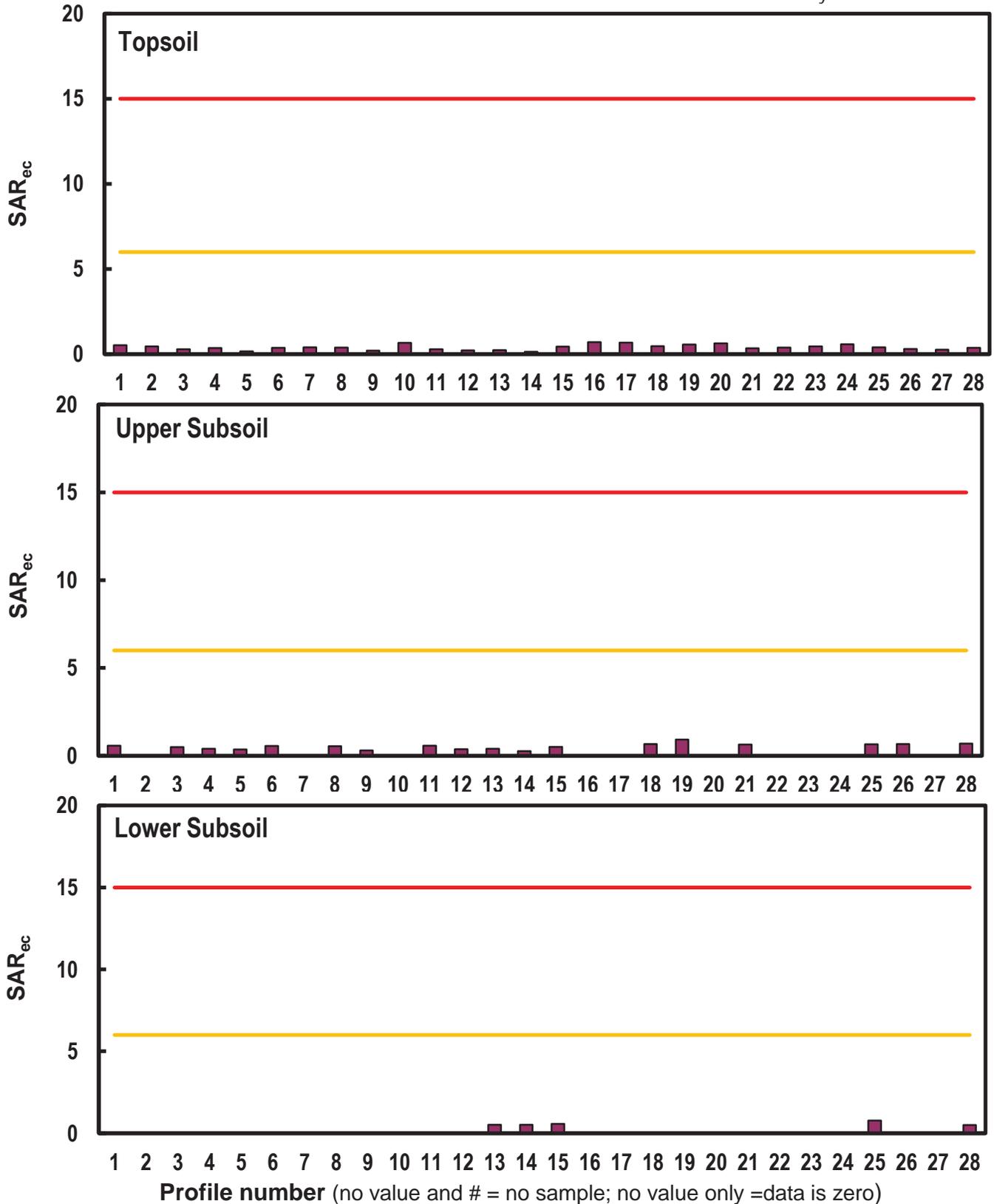
### Saturation Extract Sodium

- Na and Critical limits:
- Not critical Na <10 mmol/L
- High Na 10-25 mmol/L
- Very high Na >20 mmol/L



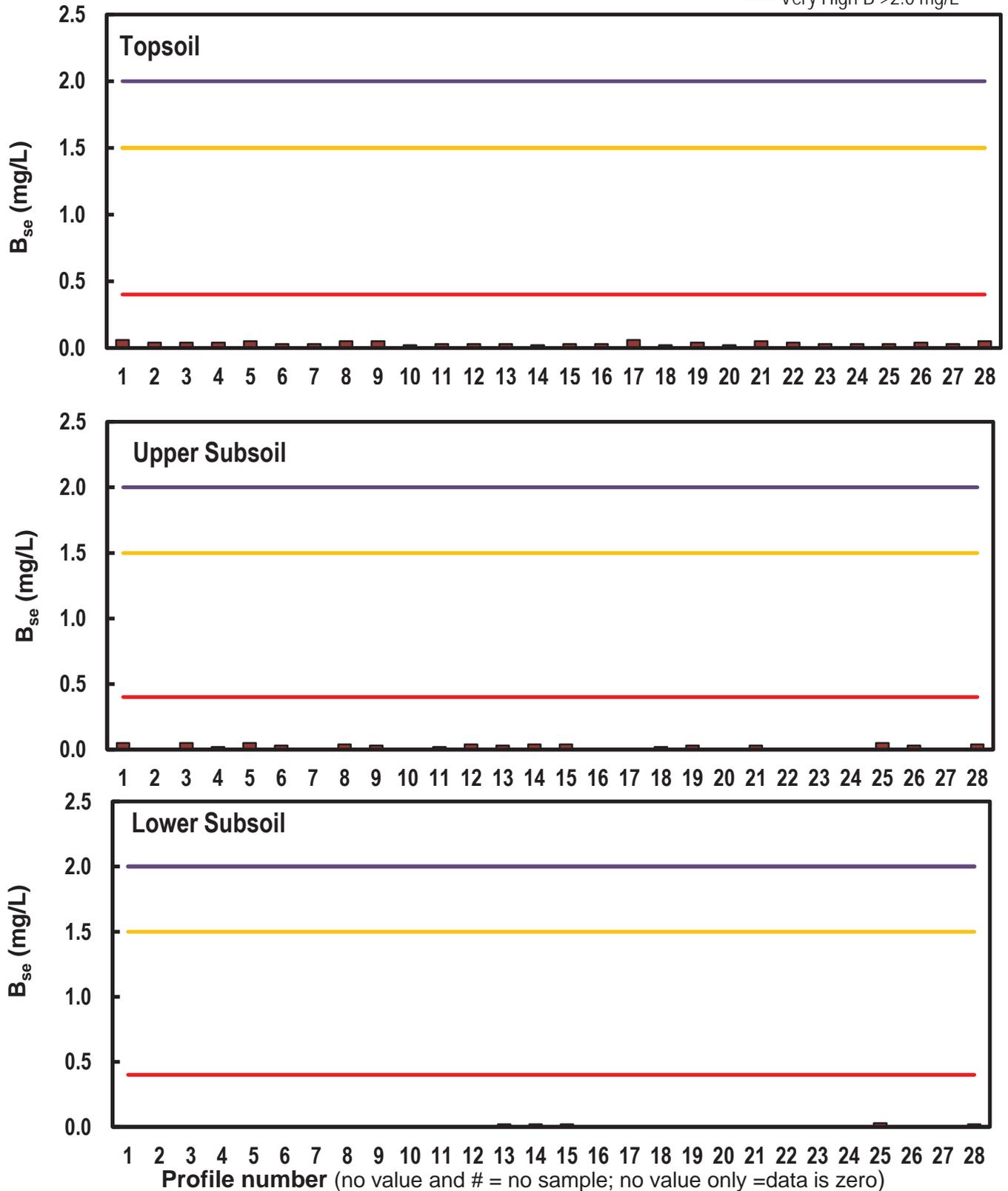
### Saturation Extract Sodicty (Sodium Adsorption Ratio, SAR<sub>se</sub>)

- SAR and Critical limits:
- Non-sodic SAR < 6
- Sodic SAR 6-15
- Very sodic SAR > 15

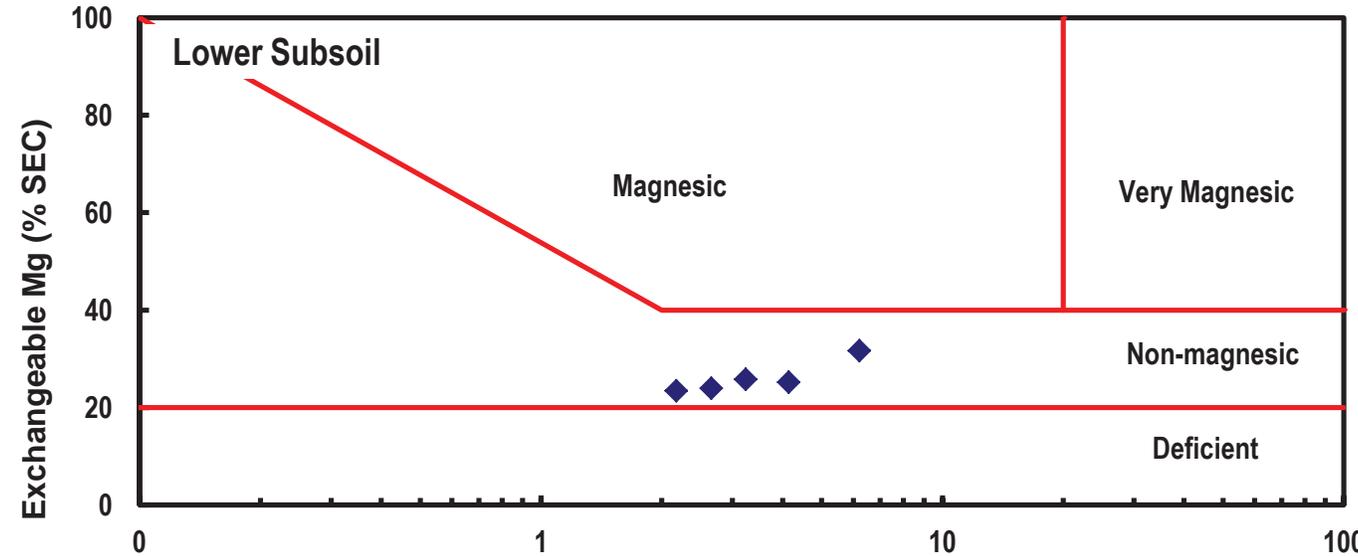
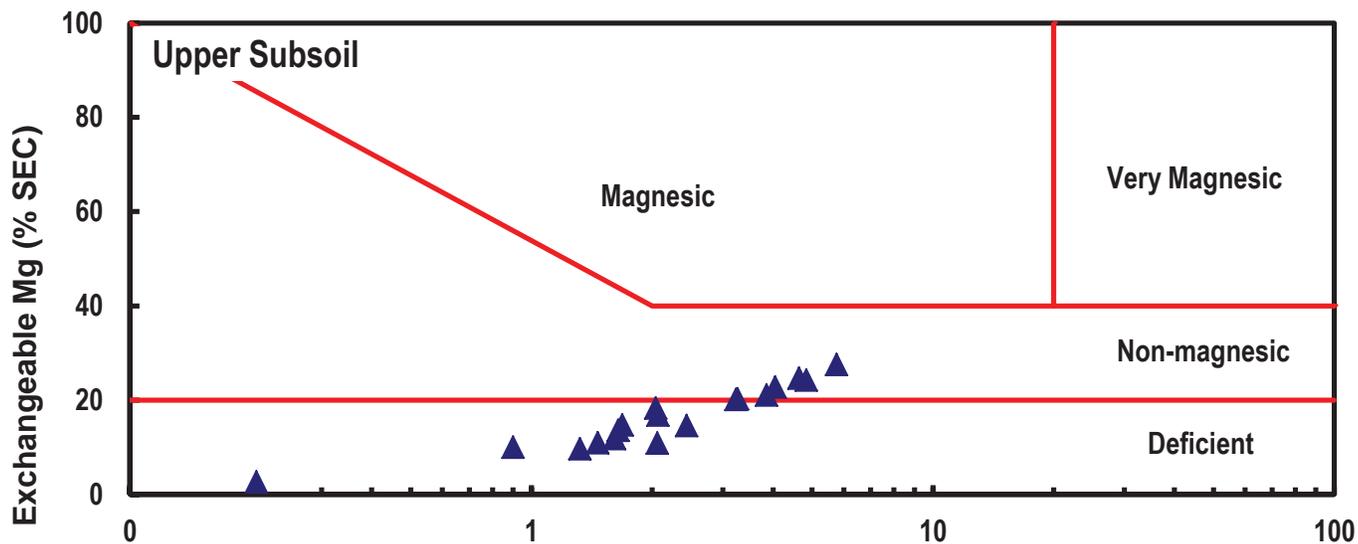
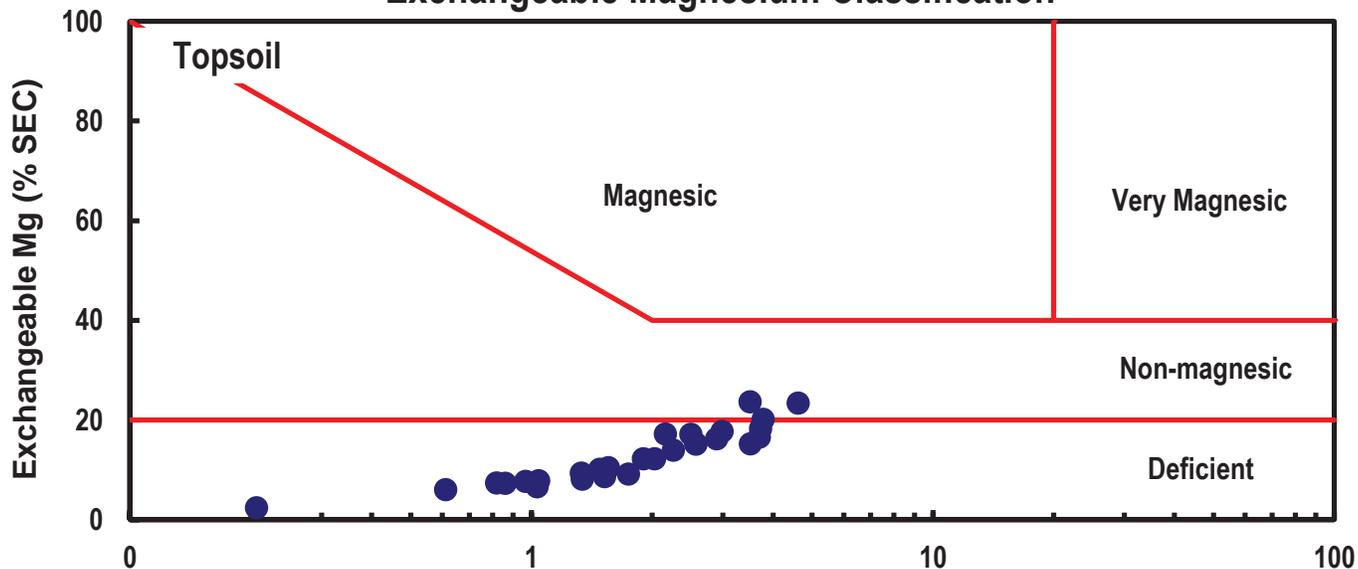


- B and Critical limits:
- Low B <0.4 mg/L
- Adequate B 0.4-1.5 mg/L
- High B 1.5-2.0 mg/L
- Very High B >2.0 mg/L

### Saturation Extractable Boron



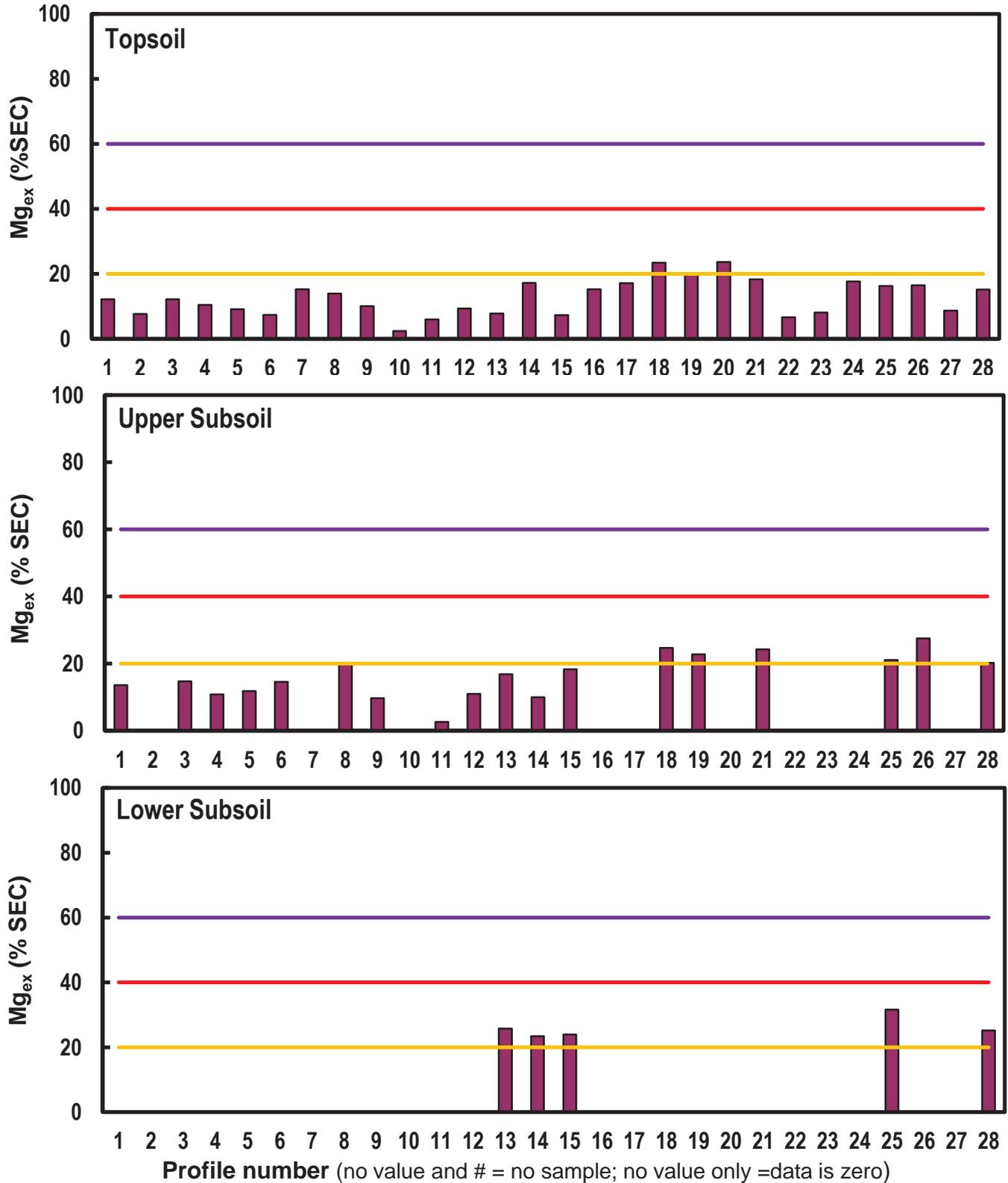
### Exchangeable Magnesium Classification



Exchangeable Mg Concentration (cmol+/kg)

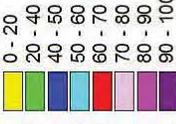
### Proportion of Exchangeable Magnesium (SEC is Sum of Exchangeable Cations)

- Mg and Critical limits:
- Likely Deficient 0-20%
- Non-magnesian 20-40%
- Magnesian 40-60%
- Likely Very Magnesian >60%



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Surface Layer Magnesium (%Mg on CEC)



Soil Sites

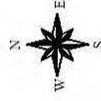
Study Area (Napa Valley Vineyard Engineering)

Property Lines

Elevation Contours

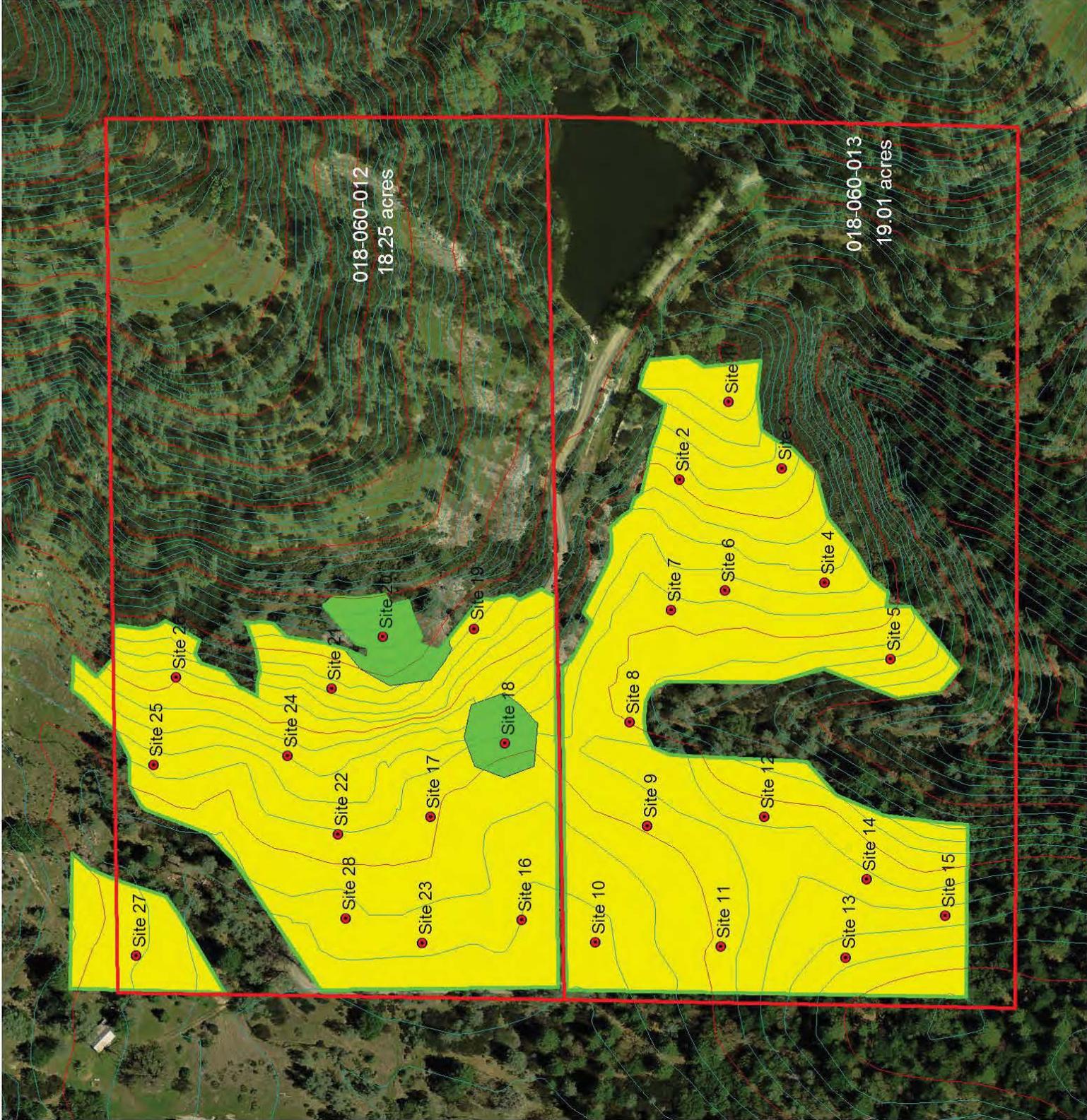
5 ft. contours

25 ft. contours



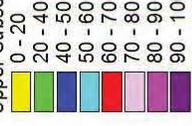
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Upper Subsoil Magnesium (%Mg on CEC)



Soil Sites

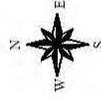
Study Area (Napa Valley Vineyard Engineering)

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Elevation Contours

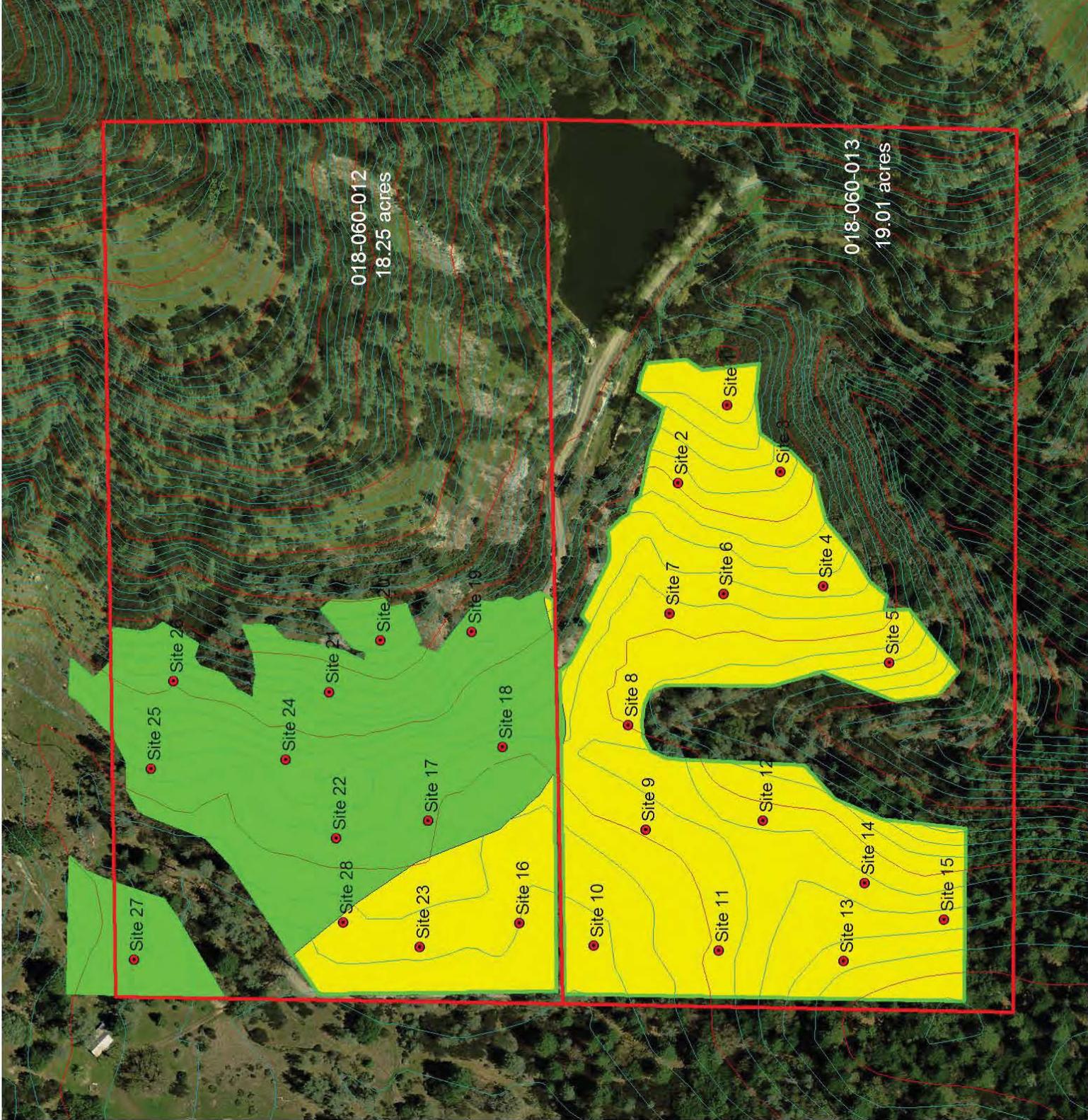
5 ft. contours

25 ft. contours



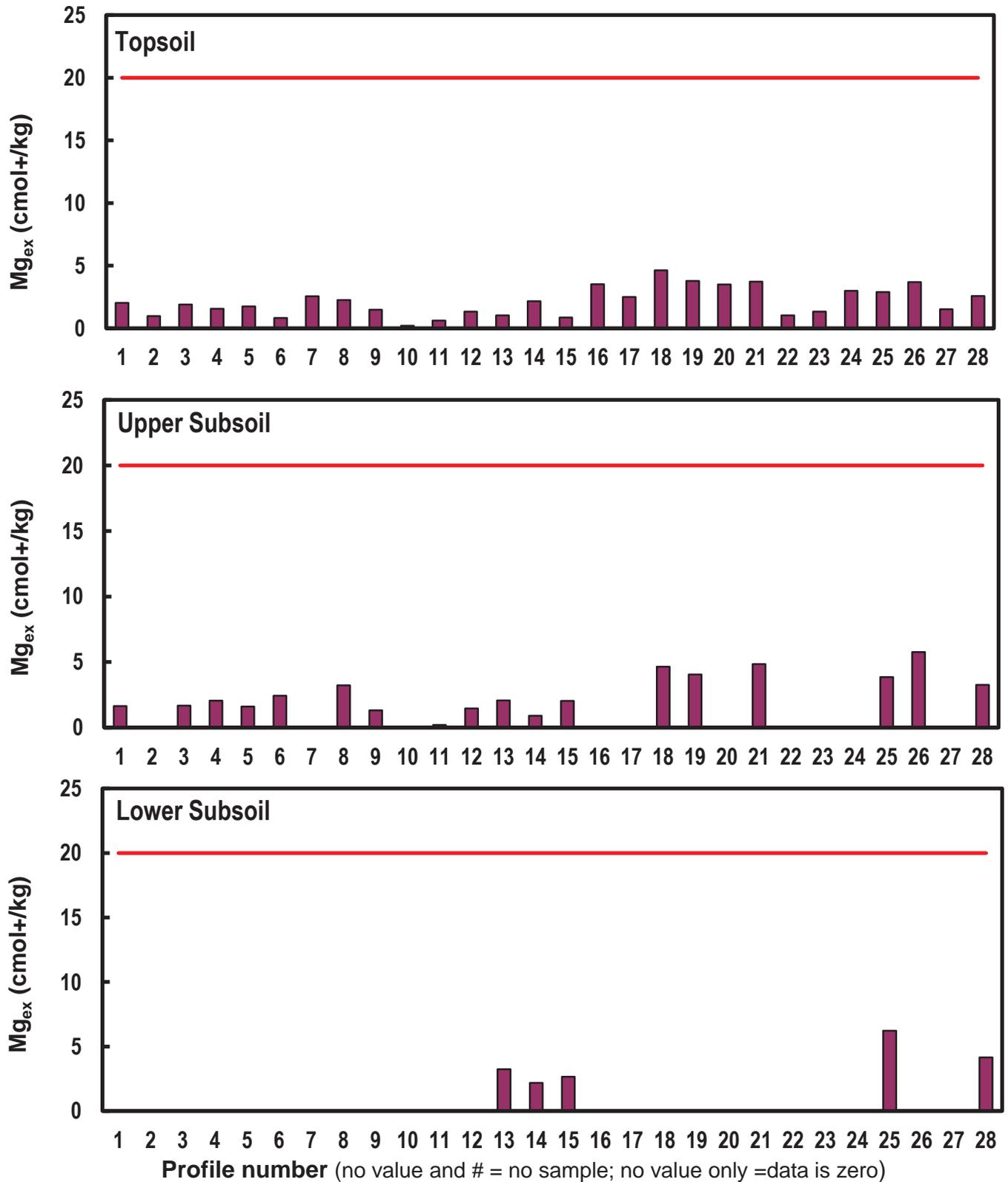
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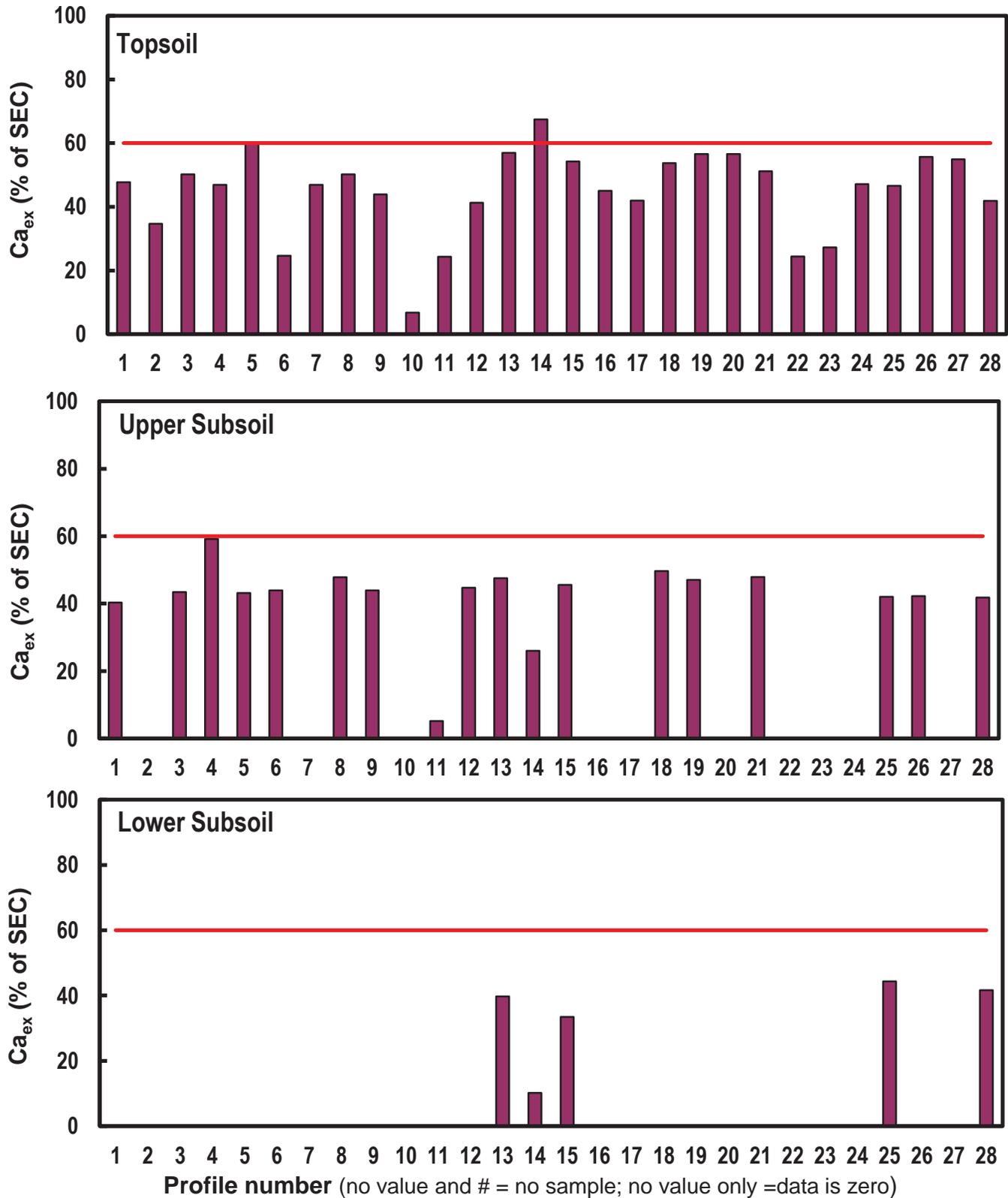
### Absolute Exchangeable Magnesium

■ Absolute Mg and Critical limits:  
 — Very Magnesian >20 cmol/kg



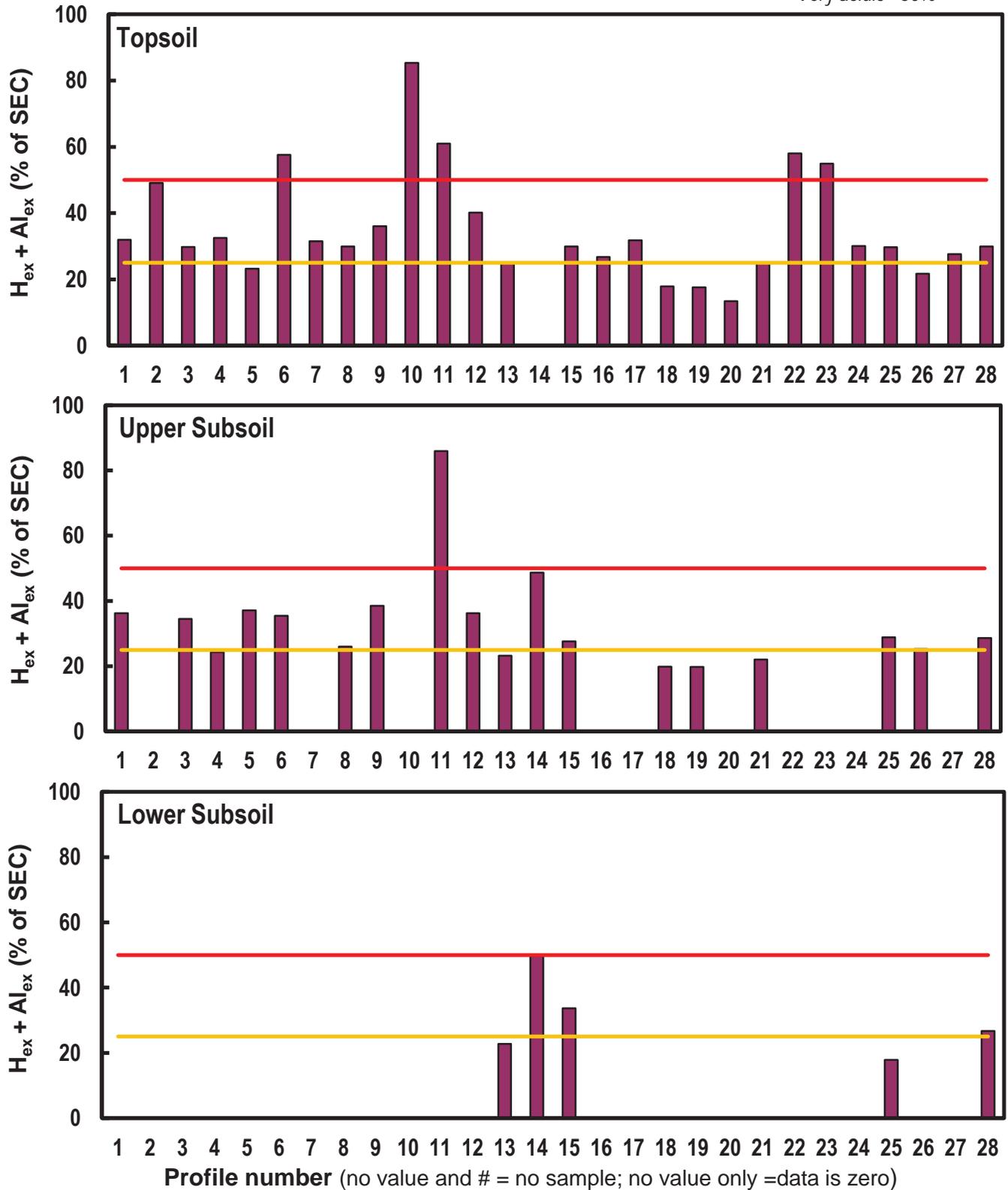
### Proportion of Exchangeable Calcium (SEC is Sum of Exchangeable Cations)

■ Ca and Critical limits:  
— Calcic >60%



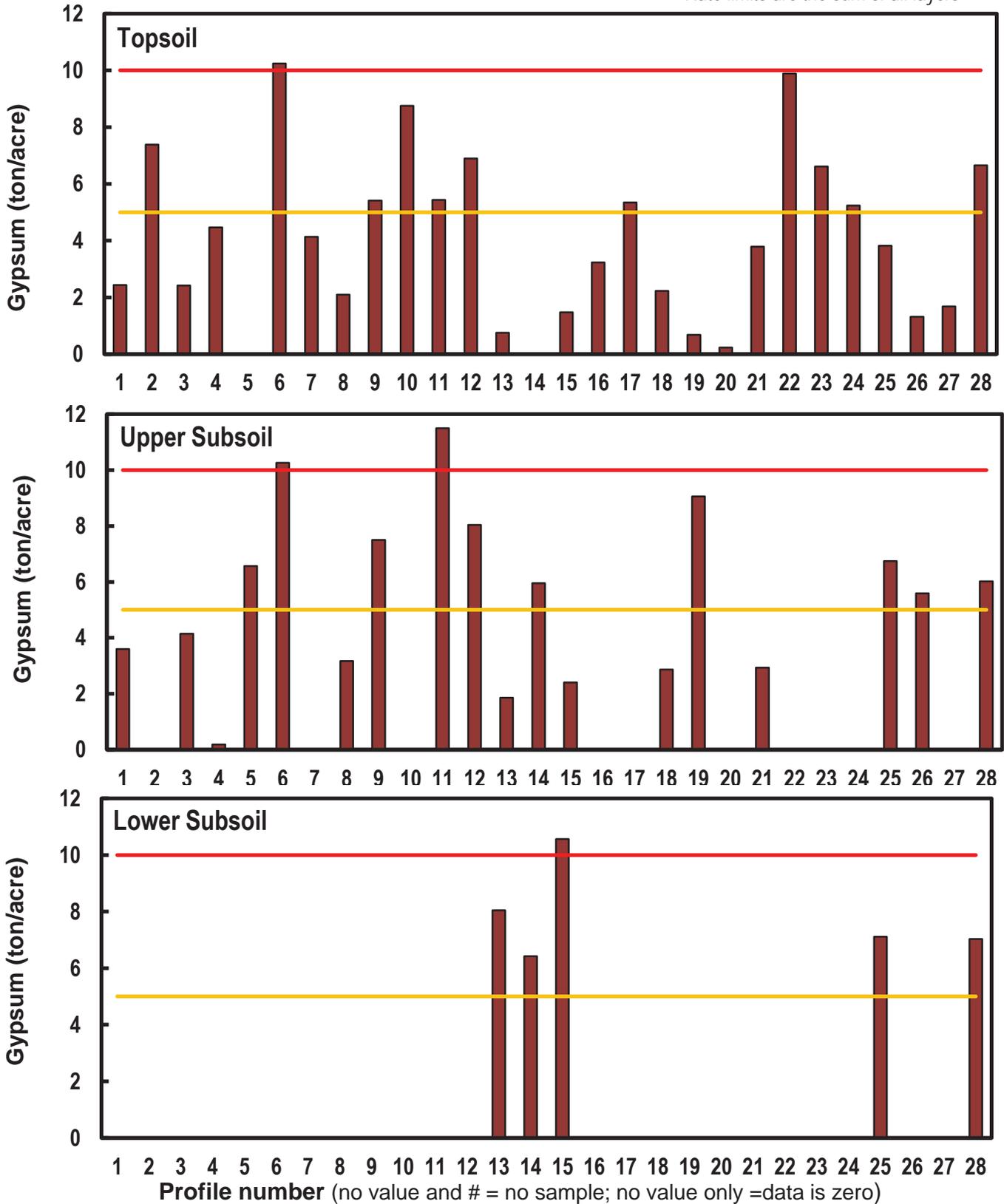
### Proportion of Exchangeable Acidic Cations (Hydrogen, H<sup>+</sup> and Aluminum, Al<sup>3+</sup>)

- H and Al and Critical limits:
- Non-acidic <25%
- Acidic 25-50%
- Very acidic >50%



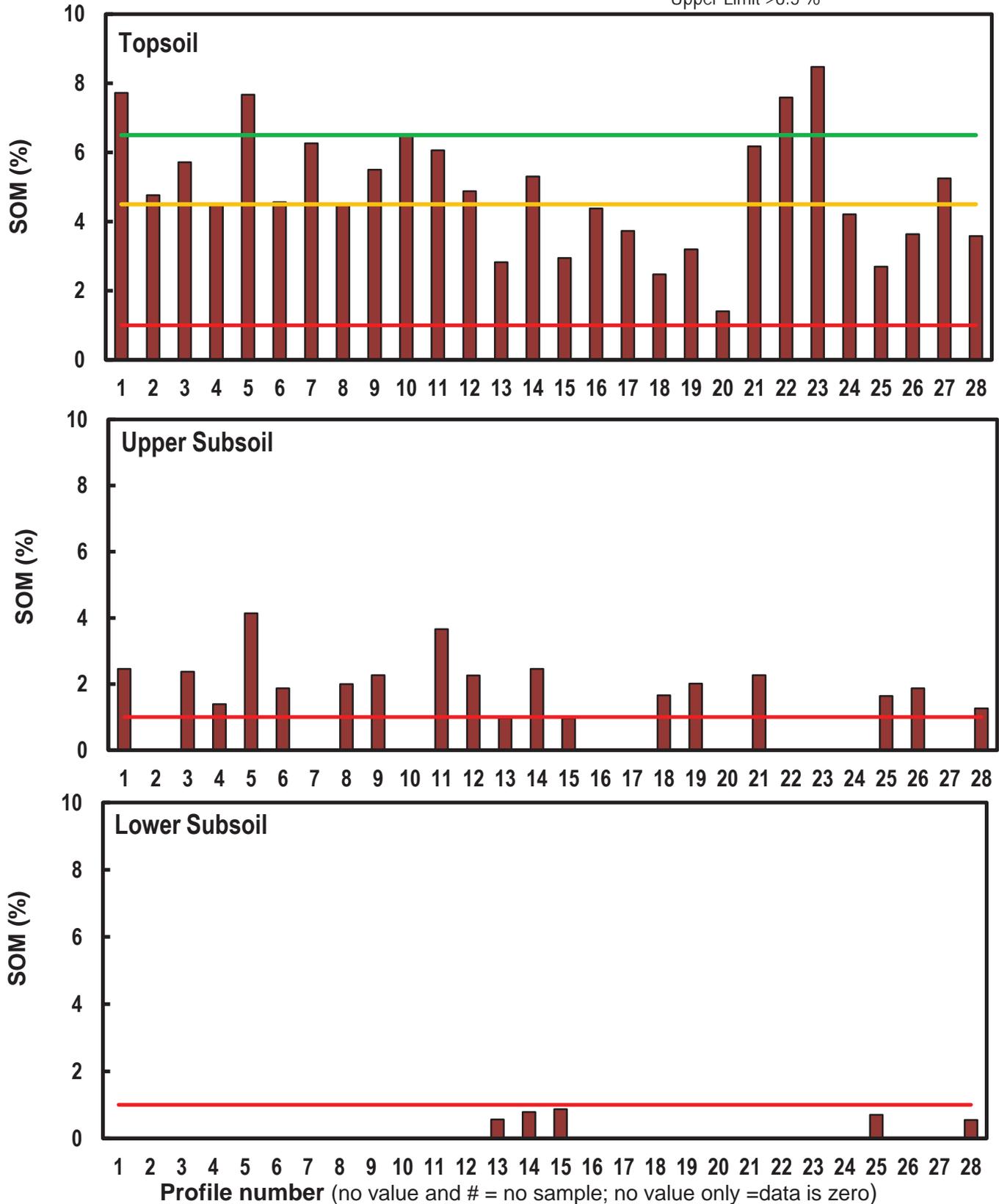
### Gypsum Requirement for 60% Ca (adjusted for layer thickness)

■ Gypsum and Application Rate Limits:  
— Desirable Maximum ~5 ton/acre  
— Extreme Maximum ~10 ton/acre  
 Rate limits are the sum of all layers

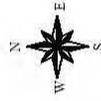
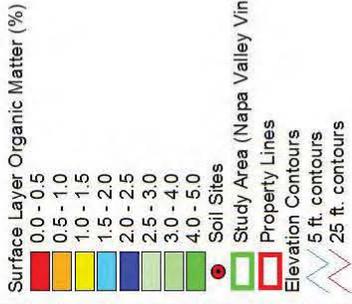


### Soil Organic Matter

- SOM and Natural Surface Soil Limits:
- Lower Limit <1 %
- Average 4.5 %
- Upper Limit >6.5 %



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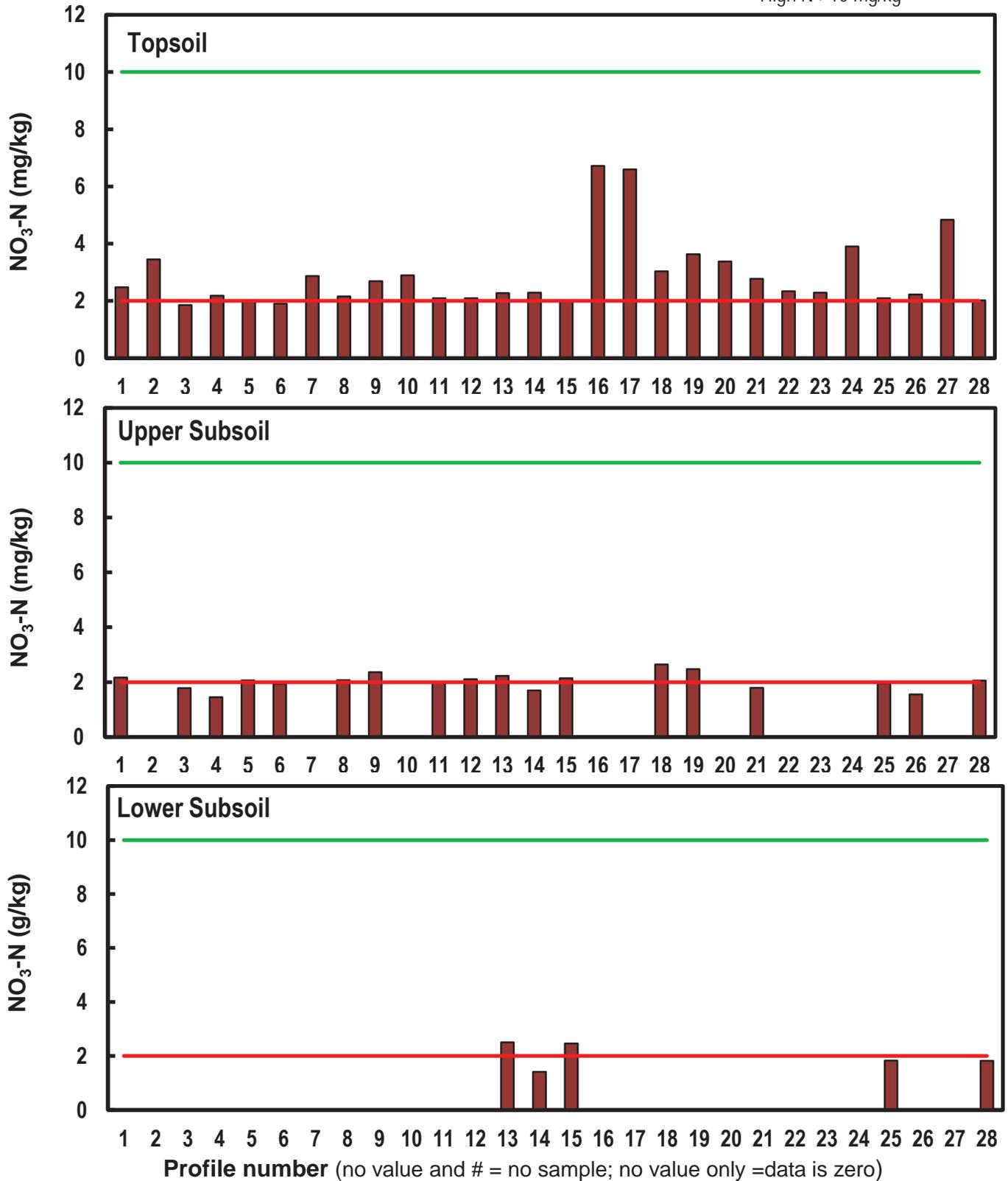
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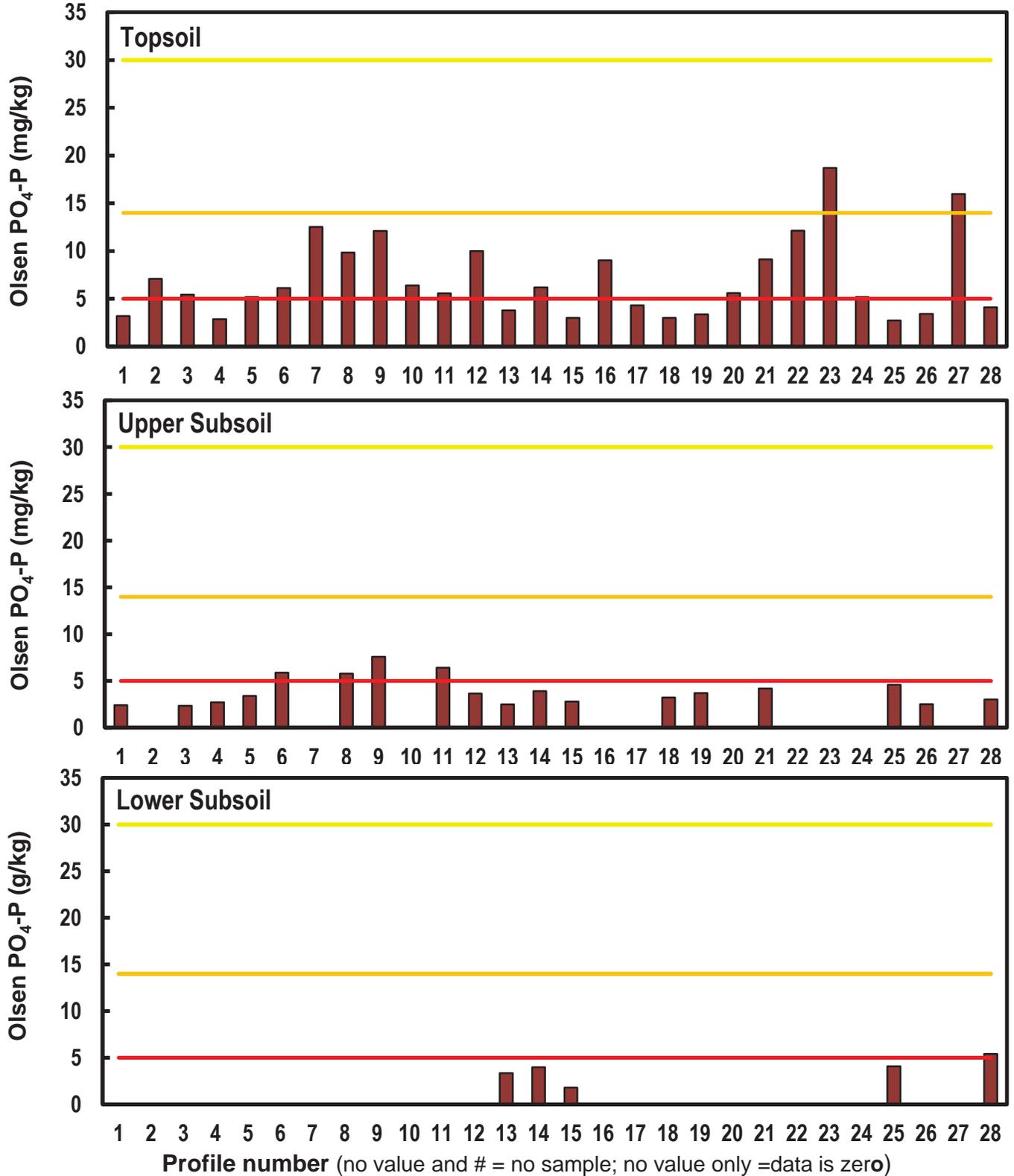
### Extractable Nitrate Nitrogen

- NO<sub>3</sub>-N and Critical limits:
- Low N <2 mg/kg
- Adequate N 2-10 mg/kg
- High N >10 mg/kg



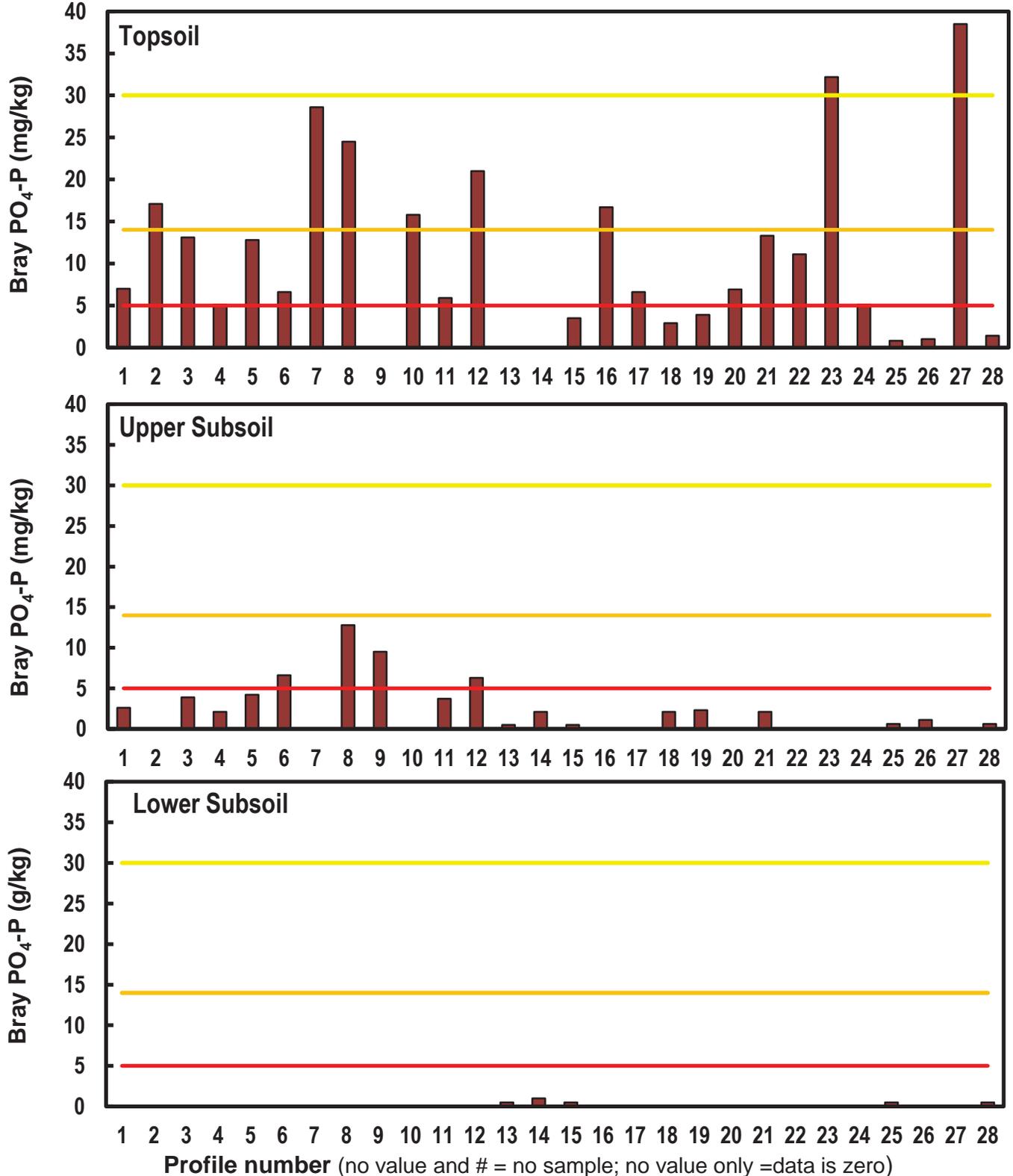
### Olsen Extractable Phosphate Phosphorus

- Olsen PO<sub>4</sub>-P and Critical limits:
- Very Low P <5 mg/kg
- Low P 5-14 mg/kg
- Adequate P 14-30 mg/kg
- High P >30 mg/kg



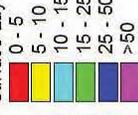
### Bray Extractable Phosphate Phosphorus

- Bray PO<sub>4</sub>-P and Critical limits:
- Very Low P <5 mg/kg
- Low P 5-14 mg/kg
- Adequate P 14-30 mg/kg
- High P >30 mg/kg

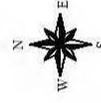


Michael Davis  
 Friesen Road Properties  
 Napa APN:  
 018-060-012  
 018-060-013

Surface Layer Phosphorus (ppm P Bray)

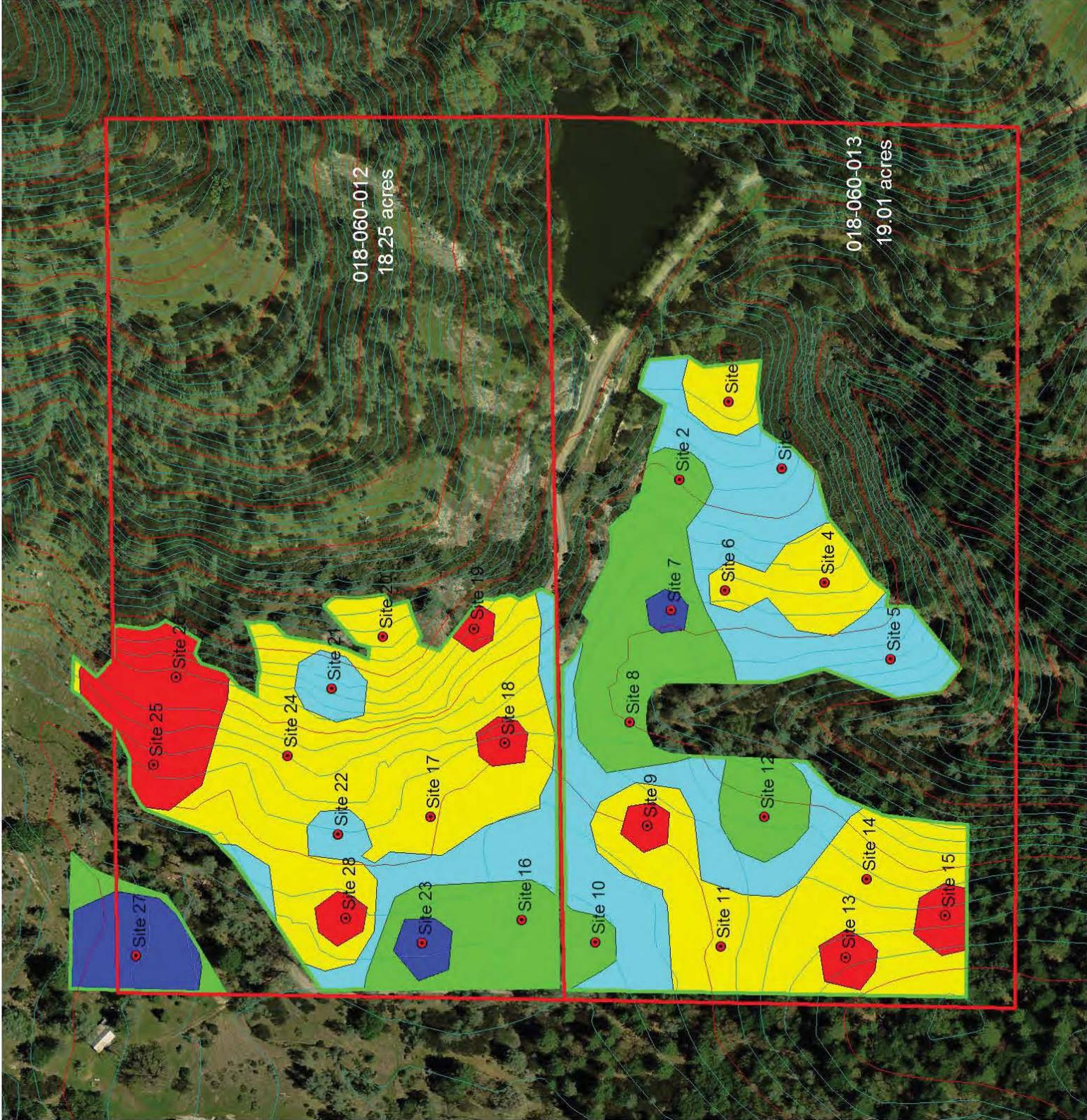


- Soil Sites
- Study Area (Napa Valley Vineyard Engineering)
- Property Lines
- Elevation Contours
- 5 ft. contours
- 25 ft. contours



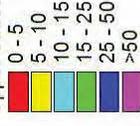
Aerial Photo: Napa County Ortho 2011  
 Project 12-178

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 3379 Solano Ave. #505, Napa, CA 94558  
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Michael Davis  
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 Napa APN:  
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 018-060-013

Upper Subsoil Phosphorus (ppm P Bray)

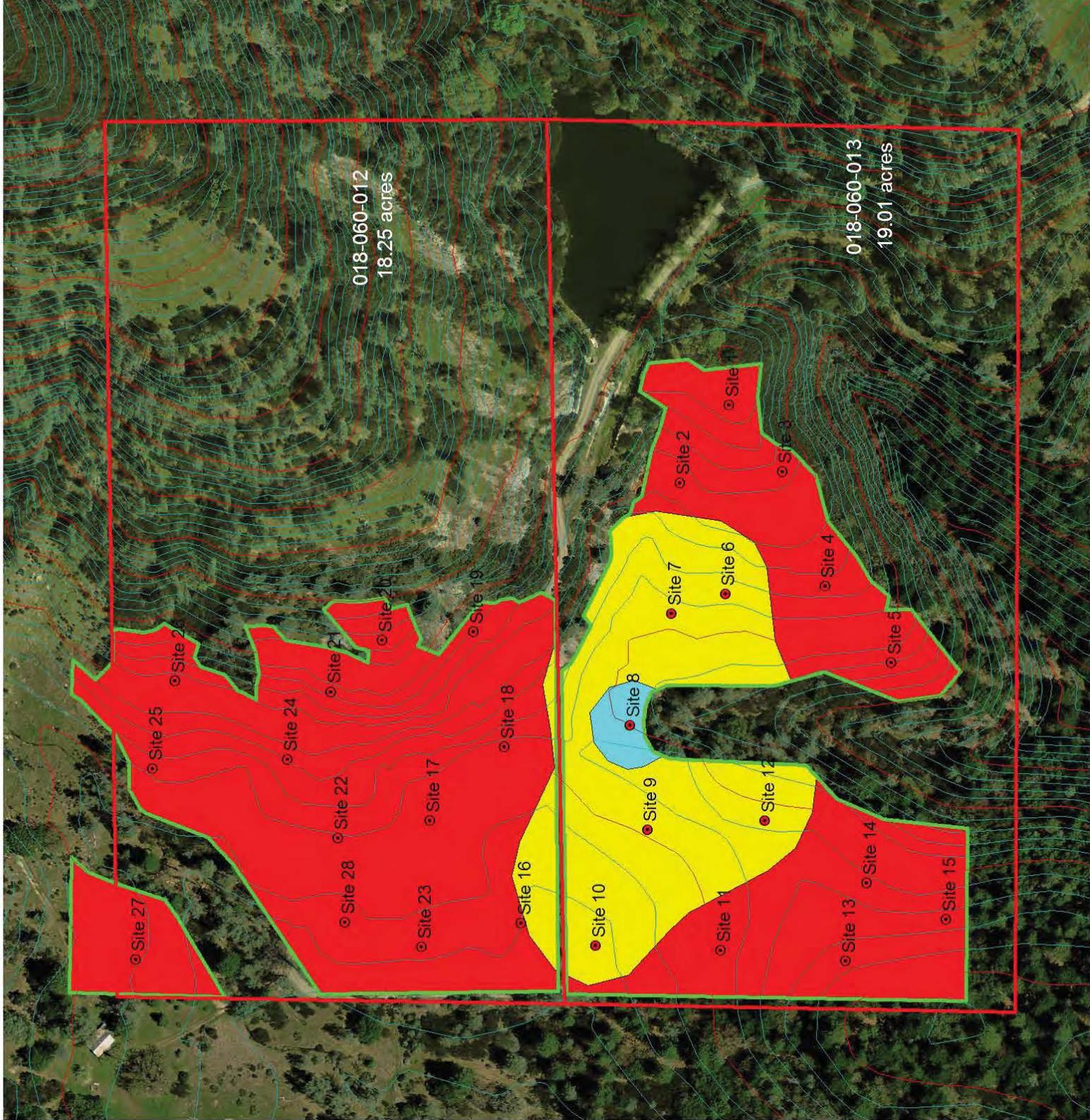


Soil Sites



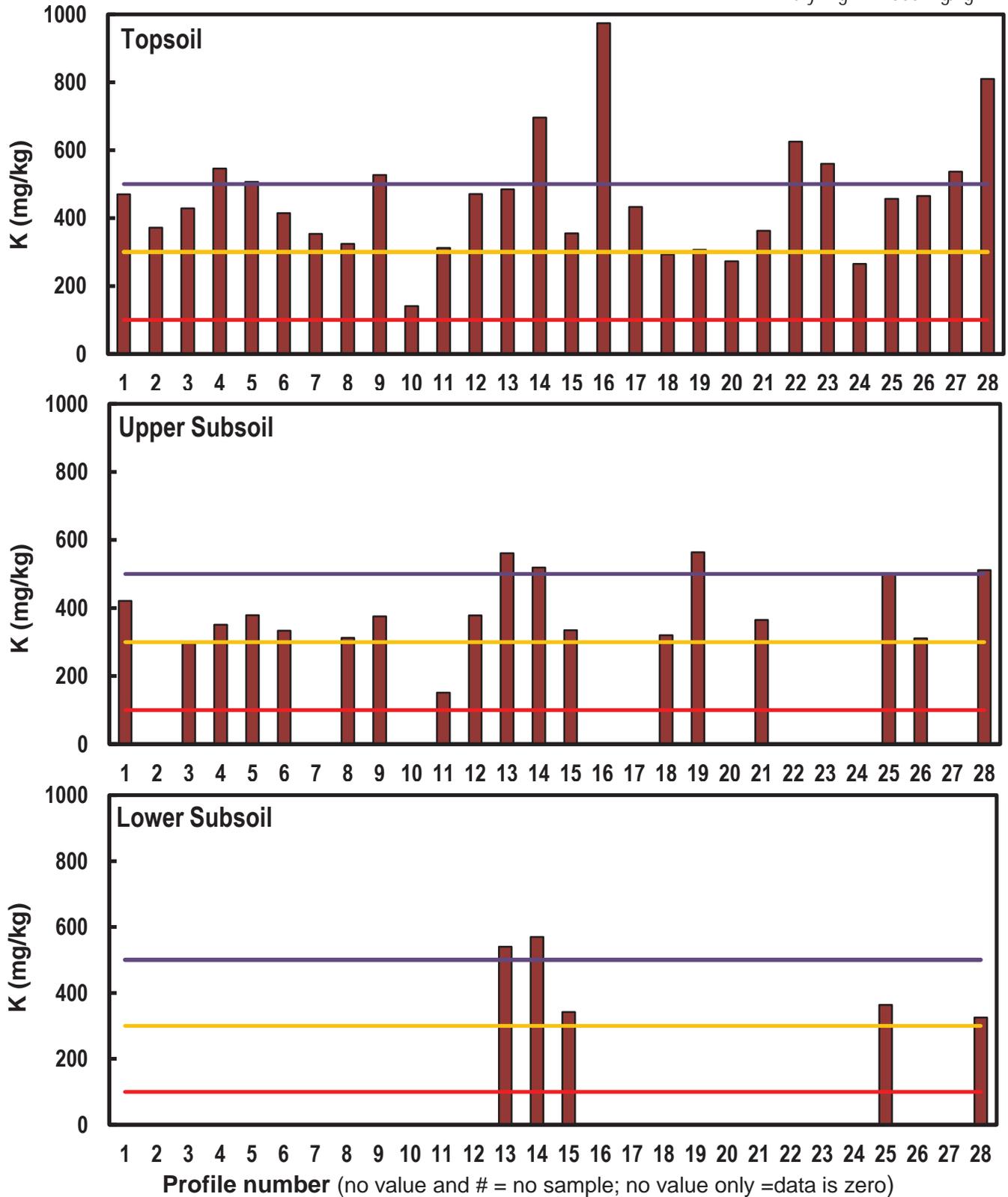
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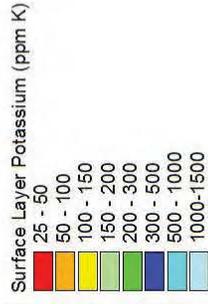


### Extractable Potassium

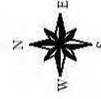
- K and Critical limits:
- Low K <100 mg/kg
- Adequate K 100-300 mg/kg
- High K 300-500 mg/kg
- Very High K >500 mg/kg



Michael Davis  
 Friesen Road Properties  
 Napa APN:  
 018-060-012  
 018-060-013

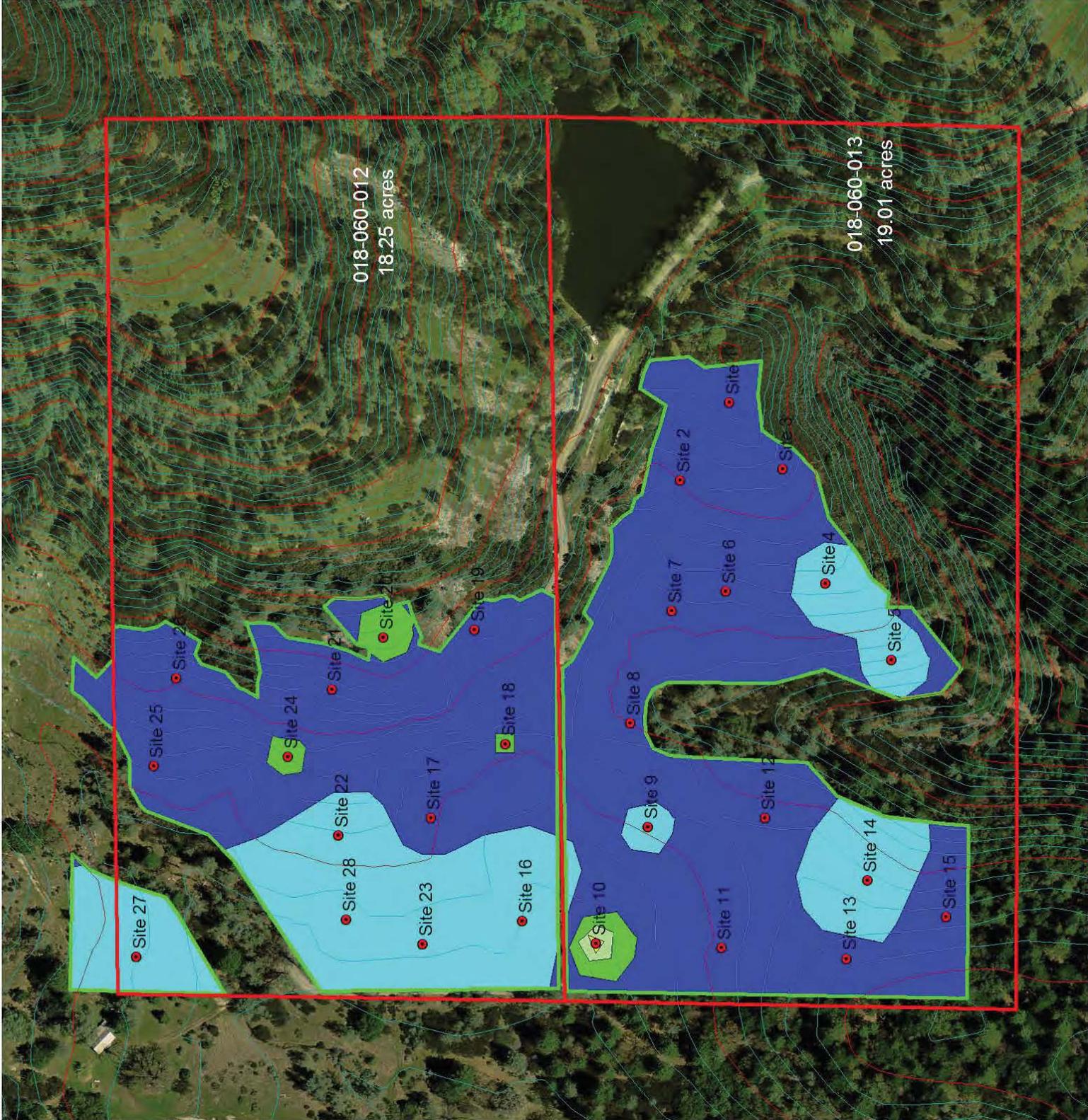


- Soil Sites
- ▭ Study Area (Napa Valley Vineyard Engineering)
- ▭ Property Lines
- Elevation Contours
- 5 ft. contours
- 25 ft. contours

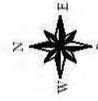
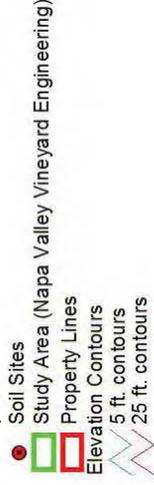
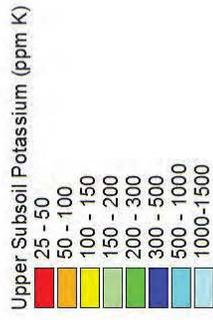


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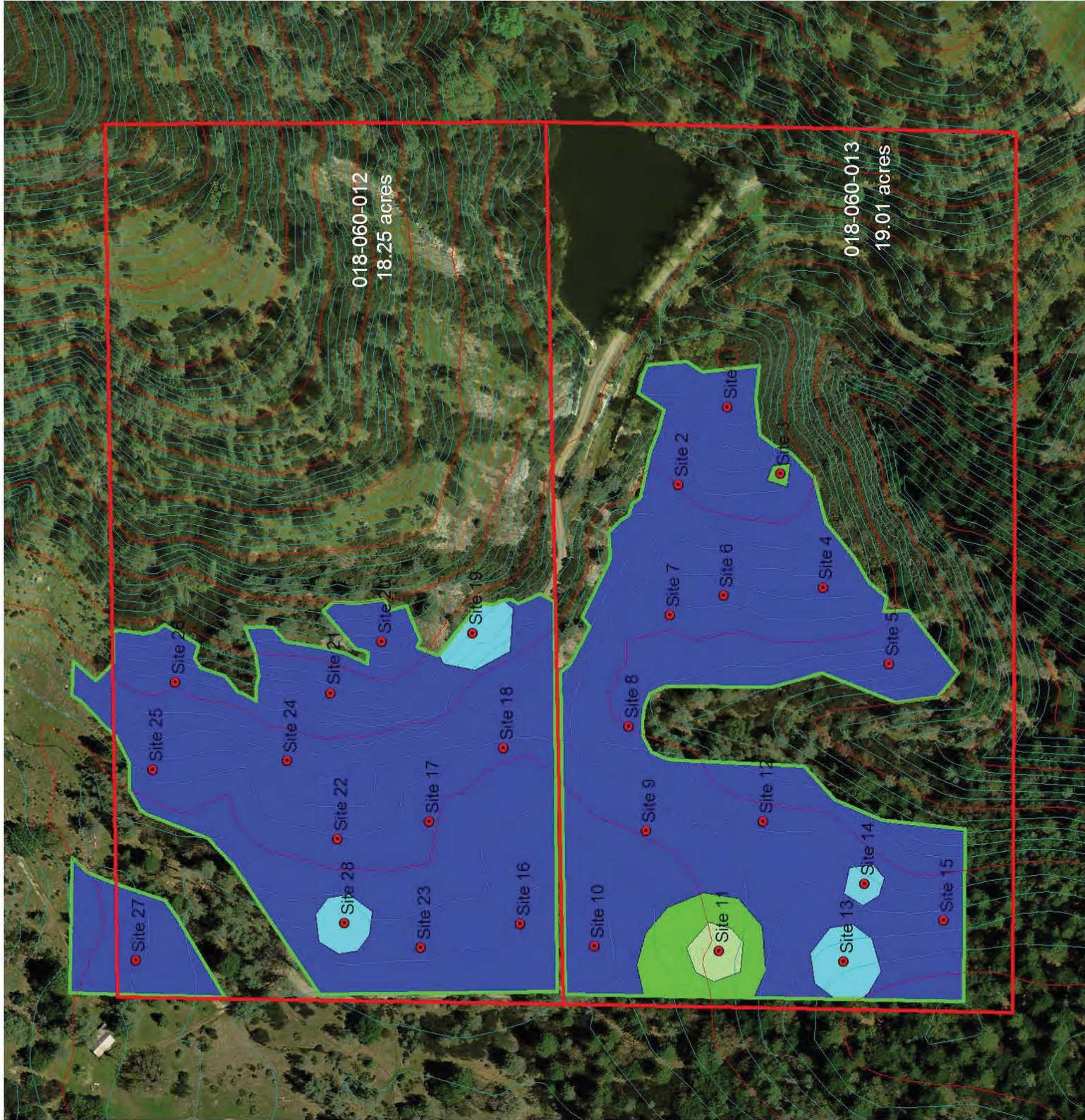


Michael Davis  
 Friesen Road Properties  
 Napa APN:  
 018-060-012  
 018-060-013



Aerial Photo: Napa County Ortho 2011  
 Project 12-178

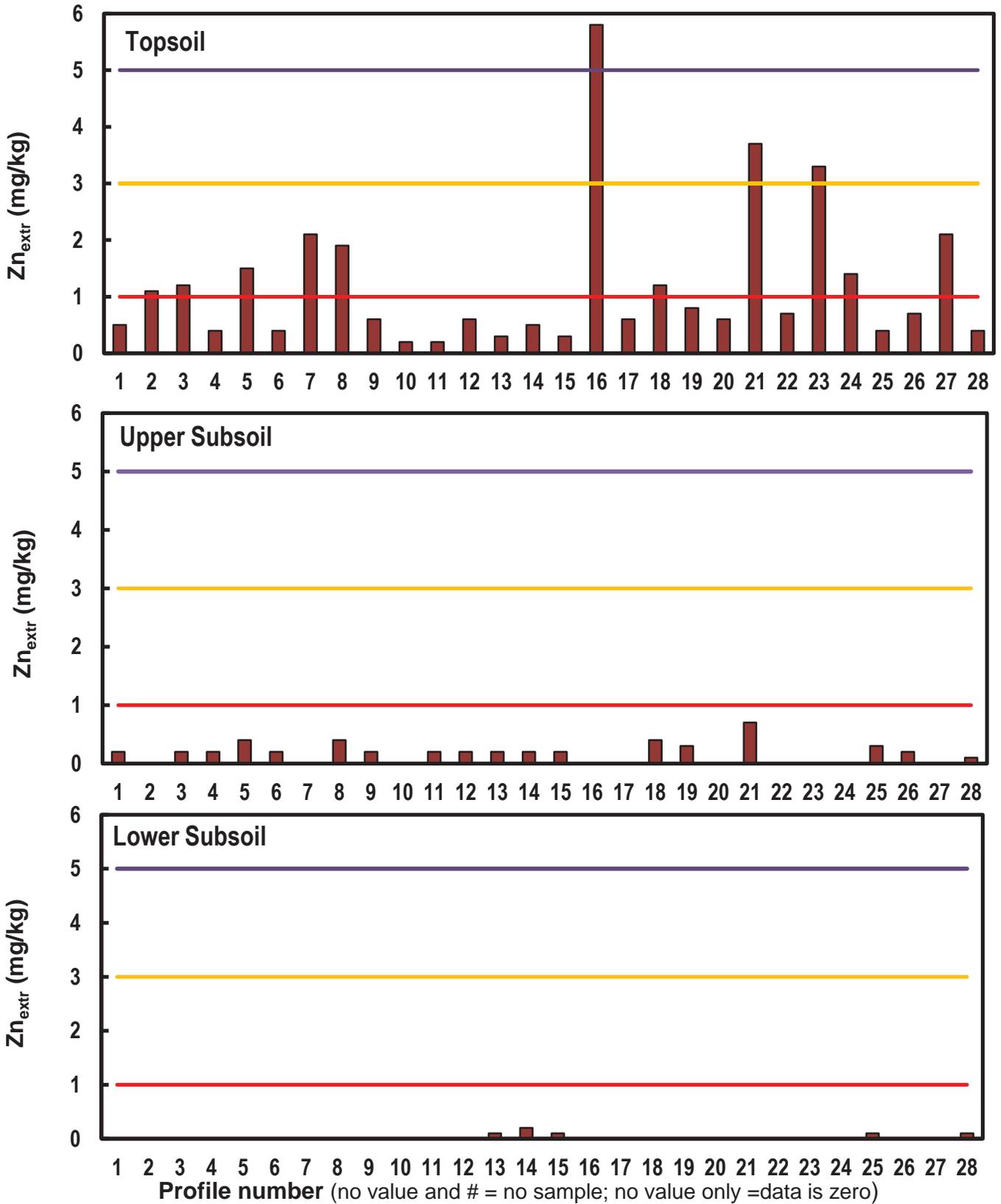
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 Phone / Fax: (707) 255-3176  
 www.VineyardSoil.com



### Extractable Zinc

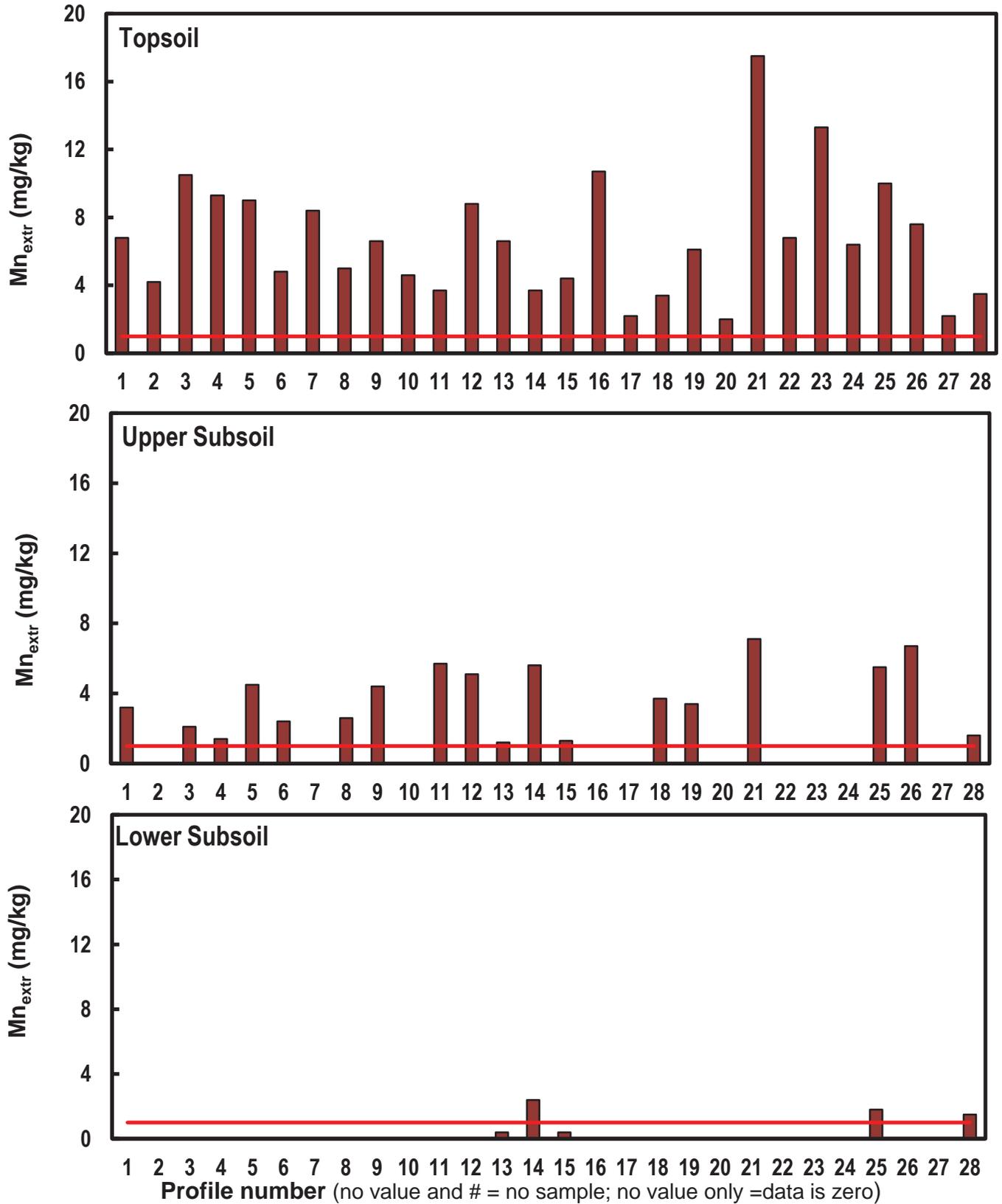
Zn and Critical limits:  
 Adequate Zn 1-3 mg/kg  
 Very High Zn >5 mg/L

Low Zn <1 mg/kg  
 High Zn 3-5 mg/kg



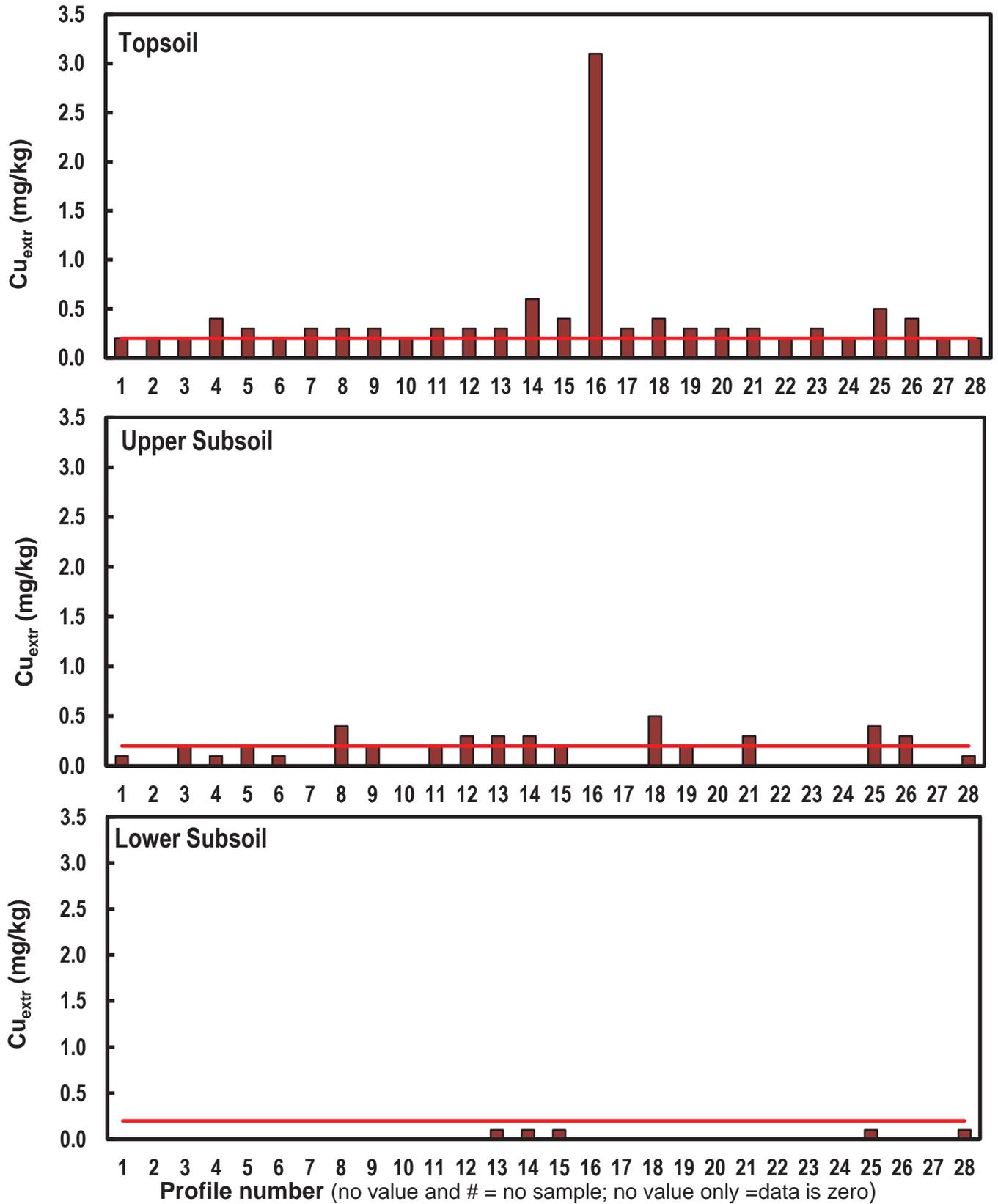
### Extractable Manganese

■ Mn and Critical limits:  
 — Low Mn <1.0 mg/kg  
 Upper limit unknown



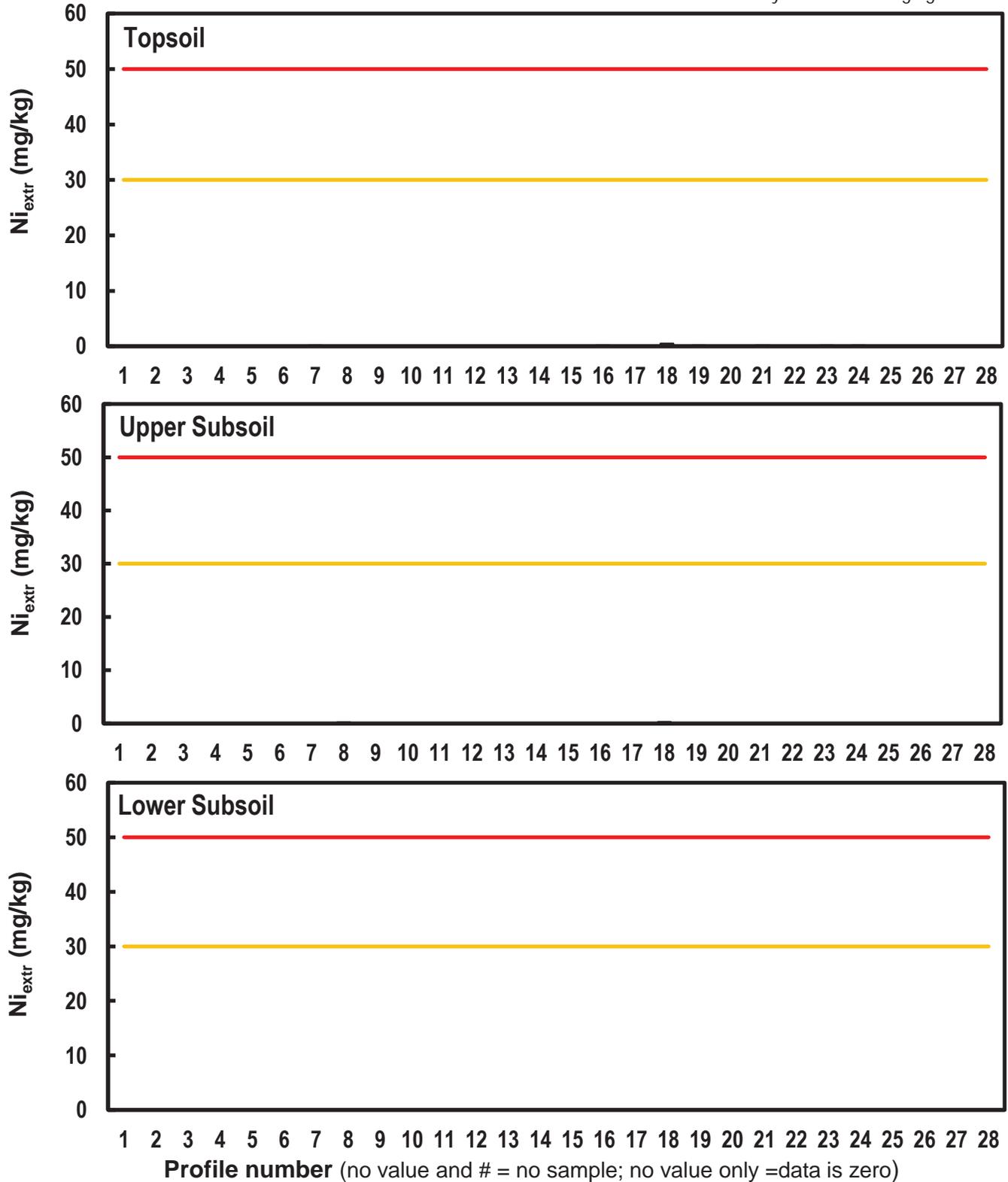
### Extractable Copper

■ Cu and Critical limits:  
— Low Cu <0.2 mg/kg  
 Upper limit unknown



### Extractable Nickel

- Ni and Critical limits:
- Non-toxic Ni < 30 mg/kg
- Toxic Ni 30-50 mg/kg
- Very Toxic Ni > 50 mg/kg

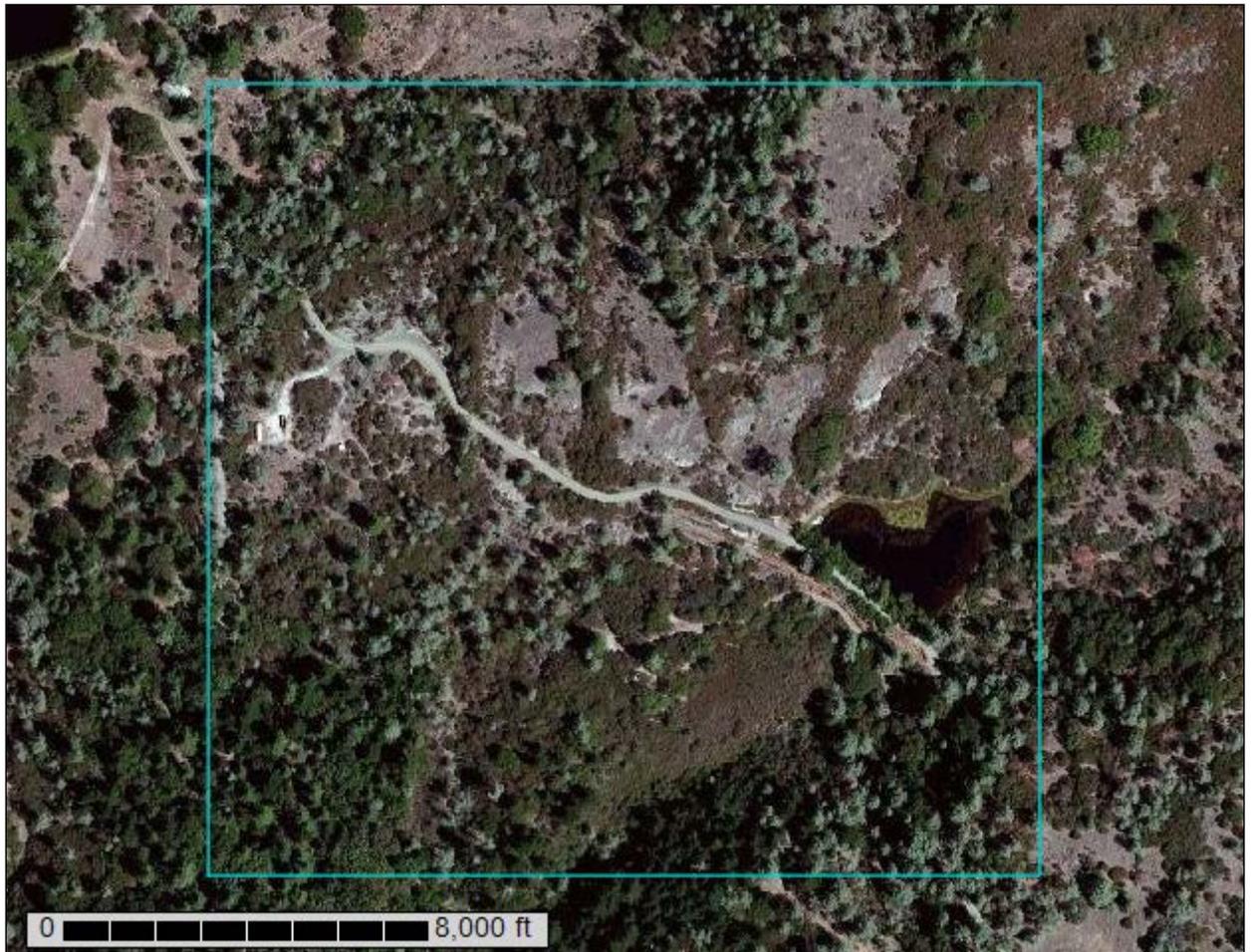


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## NRCS WEBSOIL SURVEY

# Custom Soil Resource Report for Napa County, California

**Davis Estates, Freisen Vineyard**



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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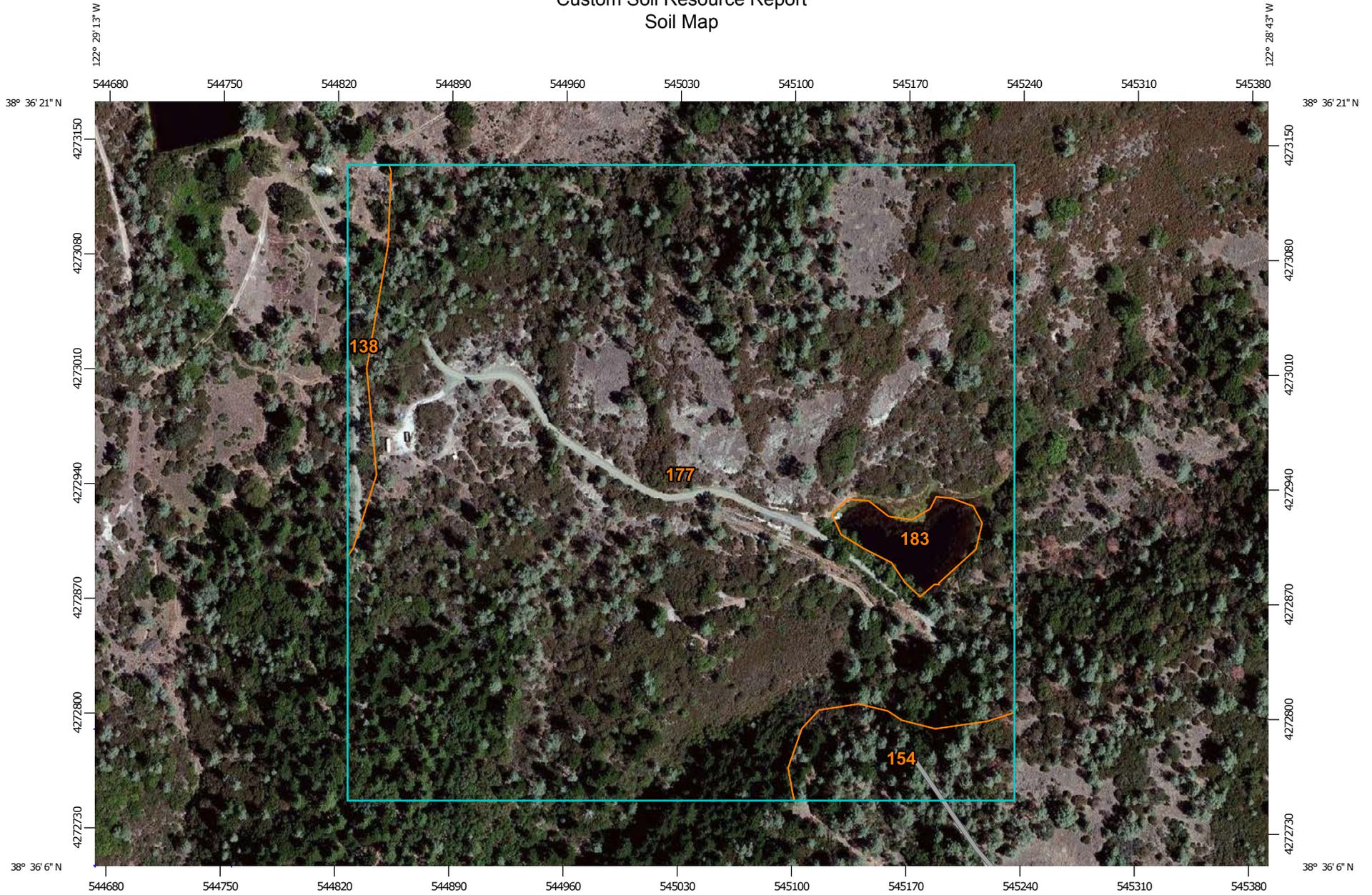
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# Soil Map

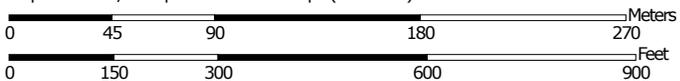
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Map Scale: 1:3,290 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Napa County, California  
 Survey Area Data: Version 5, Nov 25, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 2, 2010—Feb 17, 2012

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Napa County, California (CA055)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
138	Forward gravelly loam, 2 to 9 percent slopes	1.0	2.6%
154	Henneke gravelly loam, 30 to 75 percent slopes	1.7	4.3%
177	Rock outcrop-Kidd complex, 50 to 75 percent slopes	35.8	91.1%
183	Water	0.8	2.0%
<b>Totals for Area of Interest</b>		<b>39.3</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that

## Custom Soil Resource Report

have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Napa County, California

### 138—Forward gravelly loam, 2 to 9 percent slopes

#### Map Unit Setting

*Elevation:* 400 to 4,500 feet

*Mean annual precipitation:* 30 to 50 inches

*Mean annual air temperature:* 54 to 55 degrees F

*Frost-free period:* 200 to 230 days

#### Map Unit Composition

*Forward and similar soils:* 85 percent

#### Description of Forward

##### Setting

*Landform:* Hillslopes

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Parent material:* Residuum weathered from rhyolite

##### Properties and qualities

*Slope:* 2 to 9 percent

*Depth to restrictive feature:* 20 to 40 inches to paralithic bedrock

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 2.0 mmhos/cm)

*Available water capacity:* Low (about 6.0 inches)

##### Interpretive groups

*Farmland classification:* Not prime farmland

*Land capability classification (irrigated):* 4e

*Land capability (nonirrigated):* 4e

*Hydrologic Soil Group:* B

##### Typical profile

*0 to 4 inches:* Gravelly loam

*4 to 35 inches:* Loam, gravelly loam

*35 to 59 inches:* Weathered bedrock

### 154—Henneke gravelly loam, 30 to 75 percent slopes

#### Map Unit Setting

*Elevation:* 500 to 4,000 feet

*Mean annual precipitation:* 25 to 45 inches

## Custom Soil Resource Report

*Mean annual air temperature:* 59 to 63 degrees F  
*Frost-free period:* 220 to 260 days

### Map Unit Composition

*Henneke and similar soils:* 85 percent

### Description of Henneke

#### Setting

*Landform:* Hills  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Parent material:* Residuum weathered from serpentinite

#### Properties and qualities

*Slope:* 30 to 75 percent  
*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock  
*Drainage class:* Excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to moderately high  
(0.01 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 2.0 mmhos/cm)  
*Available water capacity:* Very low (about 2.2 inches)

#### Interpretive groups

*Farmland classification:* Not prime farmland  
*Land capability classification (irrigated):* 7e  
*Land capability (nonirrigated):* 7e  
*Hydrologic Soil Group:* D  
*Ecological site:* ROCKY SERPENTINE (R015XD128CA)

#### Typical profile

*0 to 7 inches:* Gravelly loam  
*7 to 15 inches:* Very gravelly clay loam  
*15 to 25 inches:* Unweathered bedrock

## 177—Rock outcrop-Kidd complex, 50 to 75 percent slopes

### Map Unit Setting

*Elevation:* 500 to 4,300 feet  
*Mean annual precipitation:* 30 to 60 inches  
*Mean annual air temperature:* 50 to 57 degrees F  
*Frost-free period:* 220 to 260 days

### Map Unit Composition

*Rock outcrop:* 70 percent  
*Kidd and similar soils:* 25 percent

## Description of Rock Outcrop

### Setting

*Landform:* Hills  
*Landform position (two-dimensional):* Shoulder  
*Landform position (three-dimensional):* Free face  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex

### Properties and qualities

*Slope:* 50 to 75 percent  
*Depth to restrictive feature:* 0 inches to lithic bedrock  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low (0.00 in/hr)

### Interpretive groups

*Farmland classification:* Not prime farmland  
*Land capability (nonirrigated):* 8

## Description of Kidd

### Setting

*Landform:* Hills  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave  
*Parent material:* Residuum weathered from rhyolite

### Properties and qualities

*Slope:* 50 to 75 percent  
*Depth to restrictive feature:* 14 to 18 inches to paralithic bedrock  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Low to high (0.01 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Maximum salinity:* Nonsaline (0.0 to 2.0 mmhos/cm)  
*Available water capacity:* Very low (about 2.1 inches)

### Interpretive groups

*Farmland classification:* Not prime farmland  
*Land capability classification (irrigated):* 7e  
*Land capability (nonirrigated):* 7e  
*Hydrologic Soil Group:* D

### Typical profile

*0 to 14 inches:* Loam  
*14 to 18 inches:* Unweathered bedrock

**183—Water**

**Map Unit Composition**

*Water:* 100 percent

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# ***APPENDIX N***

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## WATER DEMAND AND WATER AVAILABILITY ANALYSIS

DREW L. ASPEGREN, P.E.  
CIVIL ENGINEER

## DAVIS/BERCOVICH EROSION CONTROL PLAN FILE #P12-00373-ECPA

### WATER DEMAND AND WATER AVAILABILITY ANALYSIS January 14, 2014

#### **Water Demand**

It is proposed that the new vineyard will be irrigated from groundwater wells. A Phase I Water Availability Analysis, dated January 14, 2014, is attached and presents water demand for an ultimate buildout of 10.22 net vine acres. The following average annual water demand is:

$$(10.22 \text{ vines acres})(1556 \text{ vines/ac}) = 15,902 \text{ vines}$$
$$(15,902 \text{ vines})(60 \text{ gal/vine/yr})(325,851 \text{ gal/af}) = 2.93 \text{ afa(acre-feet per annum)}$$

Allowing .05 afa for other minor uses, total water use is expected to be 2.98 afa

#### **Water Availability**

The soils mapped for the subject property are Aiken loam, Forward loam, and Kidd loam, all of which are derived from the underlying volcanic parent material. It has been estimated that only about 9-13% of rainfall which falls on these volcanics can percolate into the underlying formation and appear in the deep aquifers (USGS Water Resources Investigation 77-82, Michael Johnson, 1977); the remaining 87-91% flows off site as direct runoff or is held in the topsoils to be evapotranspired by surface vegetation.

The two parcels total some 37.43 acres overlying these volcanic formations, and the average annual rainfall is 40" (Napa County Flood Control and Water Conservation District Isohyetal Rainfall Map, 1975). On average the property will receive  $\pm 125$  af of rainfall ( $37.43 \text{ ac} \times 40" = 124.8 \text{ af}$ ). Using a conservative estimate of 10% appearing as annual groundwater recharge, it is expected that the Davis/Bercovich properties would contribute about 12.5 af to the groundwater basin annually.

#### **Conclusion**

Average annual vineyard water demand is  $\pm 3$  afa, or about 24% of the subject properties' average annual groundwater recharge. Over the long term, it is expected that using groundwater to support the proposed project will not diminish the underlying aquifer.

1-14-2014

### Attachment D

### PHASE I WATER AVAILABILITY ANALYSIS

File #: P173-00373-007A Owner: Davis/Berovich Parcel #: 018-060-012,013

This form is intended to help those who must prepare a Phase I Water Availability Analysis. **The Department will not accept an analysis that is not on this form.**

**BACKGROUND:** A Phase I Water Availability Analysis is done in order to determine what changes in water use will occur on a property as a result of the project. Staff uses this information to determine whether the project may have a adverse effect on groundwater levels. If it may, additional information will be required. You will be advised if additional information is needed.

**PERSONS QUALIFIED TO PREPARE:** Any person that can provide the needed information

**PROCEDURE:**

**STEP 1:** Prepare and attach to this form an 8-1/2"x11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used shown

**STEP 2:** Determine the allowable groundwater use allotment for your parcel(s).

Total size of parcel(s)	<u>37.43</u> acre(s)
Multiply by parcel location factor	x <u>0.5</u> acre-foot per acre per year (see back)
Allowable groundwater allotment	= <u>18.72</u> acre-foot per year

**STEP 3:** Determine the estimated water use for all vineyards on your parcel(s) currently and after the planned conversion; actual water usage figures may be substituted for the current usage estimate (please indicate if this is done). Estimate future use for both the vineyard establishment period and thereafter

**Current Usage:**

Number of <u>planted</u> acres	<u>0</u> acres
Multiply by number of vines/acre	x _____ vines per acre
Multiply by gallons/vine/year	x _____ gallons of water per vine per year
Divide by 325,821 gallons/af	= <u>0</u> af of water per yr used for vineyard irrigation

**Future Usage:**

Number of <u>planted</u> acres	<u>10.22</u> acres
Multiply by number of vines/acre	x <u>1576</u> vines per acre (7'x4')
Multiply by gallons/vine/year	x <u>60</u> gallons of water per vine per year (long-term)
	_____ gallons of water per vine per year (establish)
Divide by <del>325,821</del> gallons/af	= <u>2.93</u> af of water per yr used (vineyard long-term)
	_____ af of water per yr used (vineyard establish)

**STEP 4:** Using the guidelines on the next page, actual water usage figures, and/or detailed water use projections, tabulate the existing and projected future water usage on the parcel(s) in acre-foot per year (af/yr) {1 af = 325,821 gallons}.

**Existing Usage:**

Residential	<u>0</u> af/yr
Farm Labor Dwelling	<u>0</u> af/yr
Winery	<u>0</u> af/yr
Commercial	<u>0</u> af/yr
Vineyard(long-term)	<u>0</u> af/yr

**Future Usage:**

Residential	<u>0.0</u> af/yr
Farm Labor Dwelling	<u>0.0</u> af/yr
Winery	<u>0.0</u> af/yr
Commercial	<u>0.0</u> af/yr
Vineyard(long-term)	<u>2.93</u> af/yr

1-14-2014

"	(establish)	_____	af/yr	"	(establish)	_____	af/yr
Other Agriculture		_____	af/yr	Other Agriculture		0.05	af/yr
Landscaping		_____	af/yr	Landscaping		_____	af/yr
Other Usage		_____	af/yr	Other Usage		_____	af/yr
TOTAL		_____	af/yr	TOTAL		2.98	af/yr

**STEP 5:** Attach all supporting information that may be significant to this analysis including but not limited to all water use calculations for the various uses listed

**Parcel Location Factors**

The allowable allotment of water is based on the location of your parcel. Valley floor areas include all locations on the floor of the Napa Valley and Carneros Basin except for groundwater deficient areas. Groundwater deficient areas are areas that have been determined by the Department of Public Works as having a history of problems with groundwater. All other areas are classified as Mountain Areas. Public Works can assist you in determining your classification.

**Parcel Location Factors**

Valley Floor	1.0 acre foot per acre per year
Mountain Areas	0.5 acre foot per acre per year
Groundwater Deficient Area (MST)	0.3 acre foot per acre per year

**Guidelines For Estimating Water Usage:**

**Residential:**

Single Family Residence	0.5 acre-foot per year
Farm Labor Dwelling	1.0 acre-foot per year (6 people)
Second Unit	0.4 acre-foot per year
Guest Cottage	0.1 acre-foot per year

**Winery:**

Process Water	2.15 acre-foot per 100,000 gal. of wine
Domestic and Landscaping	0.50 acre-foot per 100,000 gal. of wine

**Commercial:**

Office Space	0.01 acre-foot per employee per year
Warehouse	0.05 acre-foot per employee per year

**Agricultural:**

Vineyards	
Irrigation only	0.2 to 0.5 acre-foot per acre per year
Heat Protection	0.25 acre foot per acre per year
Frost Protection	0.25 acre foot per acre per year
Irrigated Pasture	4.0 acre-foot per acre per year
Orchards	4.0 acre-foot per acre per year
Livestock (sheep or cows)	0.01 acre-foot per acre per year

**Landscaping:**

Landscaping	1.5 acre-foot per acre per year
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# ***APPENDIX O***

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## **NORTHERN SPOTTED OWL REPORT**

## Forest Ecosystem Management, PLLC

PO Box 455; Potomac, MT 59823  
(406) 490-7427 \* cptown@blackfoot.net

April 12, 2015

Scott Butler, RPF  
Environmental Resource Management  
889 Hwy 20-26  
Ontario, OR 97914

RE: Davis Friesen Timber Conversion (New Plan)

Scott,

Attached you will find updated information regarding northern spotted owls (NSO) for the Davis Friesen Timber Conversion plan. The property is 40-acres with approximately 12.5 acres being converted from timberland to vineyard. The property is located in Section 25 T9N, R6W MDB&M in Napa County.

Included is NSO survey history (2013 – 2015) and a current Spotted Owl Database Report. Per our discussion, the database report is using a 1.3 mile assessment area due to hotter, drier conditions that occur outside the coast-line redwood zone. The closest known northern spotted owl territory is 1.6 miles from the project area.

You should have the following maps, and they are still accurate. If you need replacement copies, let me know and I can send them to you again.

- Northern Spotted Owl Territories within 1.3 miles of D. Friesen Vineyard Conversion (map dated November 2014).
- Northern Spotted Owl Survey Stations for Davis Friesen Vineyard Conversion (map dated July 2013).
- Northern Spotted Owl Habitat on D. Friesen Conversion Pre-Harvest – Aerial Photo (map dated July 2013).
- Northern Spotted Owl Habitat on D. Friesen Conversion Post Harvest – Topographical (map dated July 2013).
- Northern Spotted Owl Habitat Around D. Friesen Conversion – Aerial Photo (map dated July 2013).
- There are no Northern Spotted Owl Habitat Maps for Known Activity Centers as the closest known NSO is 1.6 miles from project area.

### **Northern Spotted Owl Habitat (as written in 23JULY13 Report)**

Pre-harvest, the property is primarily unsuitable NSO habitat, see aerial photo, due to insufficient overstory canopy cover. There is approximately ½ acre of forested habitat within the project area that would meet the definition of suitable NSO habitat set forth under USFWS guidelines, however, this is part of a small patch (11 acres) isolated in a landscape of unsuitable NSO habitat, see aerial photo. The property's vegetation

consists of primarily gray pine and black oak with a little bit of Douglas-fir, and brush land. The brush includes manzanita, coyote brush, interior live oak, and ceanothus.

The landscape surrounding the property is primarily unsuitable NSO habitat (vineyards, ponds, residential houses, and scrub-land). There are small forested patches (largest is 21 acres) that meet the definition of NSO habitat however, due to the patchiness within the landscape; they do not provide adequate habitat for a resident NSO. Although unlikely, the forested patches might be used by transient NSOs as temporary shelter as the owl searches for suitable habitat.

### **Northern Spotted Owl Surveys**

This is year #3 of surveys completed on this project. Much of the area is considered unsuitable NSO habitat, however, surveys were completed. Three survey stations were used along a private road that we had access. Much of the area surrounding the project area is inaccessible (gated roads, no trespassing signs, and private property), although our stations were able to survey areas within Bell Canyon. Three different surveyors (Scott Butler, Theodore Wooster, and Pamela Town) completed surveys.

### **Proposed Operations**

Timber harvest operations are converting the area to a new vineyard. The majority of the conversion area is unsuitable, with approximately ½ acre considered pre-harvest marginal northern spotted owl habitat.

### **Northern Spotted Owl No-Take Scenario:**

This project should be able to fall under Scenario 3. Scenario 3 includes the following:

- A. Suitable habitat within harvest units, and
- B. Protocol surveys are completed, and
  - a. No owls are detected within 1.3 miles of timber operations AND
  - b. No historic NSO activity centers within 1.3 miles of timber operations

### **Northern Spotted Owl Protection Measures**

- ◆ The majority of the project area and surrounding landscape is unsuitable habitat for northern spotted owls prior to the completion of this project.
- ◆ At this time, there are no known NSO activity centers within 1.3-miles of the project area, therefore, there are no seasonal or harvest restrictions.
- ◆ No helicopter operations are proposed.

Please feel free to contact me at (406) 490-7427 (cptown@blackfoot.net) if you have any questions.

Sincerely,

***Emailed to Scott Butler***

Pamela Town  
Consulting Wildlife Biologist

**Northern Spotted Owl Habitat Analysis**  
**Davis Friesen Vineyard Conversion**  
 Plan Portions of Sec 25 T9N, R6W MDB&M  
 Submitted 23JUL13 – No changes have been made

Northern Spotted Owl Habitat on Davis Friesen Vineyard Conversion (Pre & Post-Harvest)

<b>Description</b>	<b>Pre Harvest (Acres)</b>	<b>Post-Harvest (Acres)</b>
Nesting/Roosting NSO Habitat	0	0
Foraging NSO Habitat (Marginal)	0.5	0
Unsuitable NSO Habitat	12	12.5
<b>Total Conversion Acres</b>	<b>12.5</b>	<b>12.5</b>
<b>Total Property Acres</b>	<b>40</b>	<b>40</b>

**Northern Spotted Owl Monitoring**  
 For Known Territories within 1.3 Miles Davis Friesen Property

There are no known NSO territories within 1.3-miles of the project area. The closest known NSO territories are:

- NAP002 – approximately 1.6 miles
- NAP003 – approximately 2.0 miles
- NAP029 – approximately 2.9 miles

<u>Date</u>	<u>Weather</u>	<u>Station #</u>	<u>Survey Time</u>	<u>Owl Response or Notes</u>
	<b>2013 – Year #1</b>			
15MAR13	Cloudy & Calm	1	1925 – 1935	N/R (dogs)
	Survey #1	2	1944 - 1954	N/R
		3	2006 - 2016	N/R (WSOW)
25MAR13	Cloudy & Breezy	1	1900 – 1910	N/R
	Survey #2	2	1918 – 1928	N/R
		3	1938 - 1948	N/R
18APR13	Clear & Calm	Site Search	1900 – 1940	GHOW
	Survey #3	1	1948 – 1958	N/R
		2	2000 – 2010	N/R
		3	2015 - 2025	N/R
28APR13	Clear & Calm	1	1952 - 2014	N/R (dogs)
	Survey #4	2	2021 – 2031	N/R
		3	2036 - 2046	N/R (dogs)
7MAY13	Cloudy & Lt Breeze	1	2136 – 2146	N/R
	Survey #5	2	2154 – 2204	N/R
		3	2216 – 2226	N/R
27JUN13	Clear & Calm	1	2100 – 2110	N/R
	Survey #6	2	2113 – 2125	N/R
		3	2126 - 2136	N/R
	<b>2014 – Year #2</b>			
05MAR14	Cloudy & lt breeze	1	1930 – 1940	N/R (dogs)
	Survey #1	2	1950 – 2000	N/R (frogs)
		3	2007 - 2017	N/R (frogs)
14MAR14	Clear & Calm	1	1945 – 1955	N/R
	Survey #2	2	2003 – 2013	N/R (GHOW)
		3	2025 - 2035	N/R
07APR14	Ptly Cloudy & breeze	1	2145 – 2155	N/R
	Survey #3	2	2159 – 2209	N/R
		3	2214 - 2224	N/R
15APR14	Clear & Calm	1	2140 – 2150	N/R (frogs)
	Survey #4	2	2152 – 2202	N/R
		3	2205 - 2215	N/R
15MAY14	Clear & Calm	3	0100 – 0120	N/R
	Survey #5	2	0123 – 0134	N/R
		1	0136 - 0146	N/R (frogs)

02JUN14	Ptly Cloudy & lt breeze	1	0145 - 0155	N/R
	Survey #6	2	0206 – 0216	N/R (GHOW)
		3	0224 - 0234	N/R
	<b>Year #3 - 2015</b>			
01MAR15	Cloudy & lt wind	1	0350 – 0400	N/R
	Survey #1	2	0405 – 0415	N/R (GHOW)
		3	0420 - 0430	N/R
11MAR15	Ptly Cloudy & Calm	3	2130 – 2140	N/R
	Survey #2	2	2145 – 2155	N/R
		1	2158 - 2208	N/R (dogs)
18MAR15	Ptly Cloudy & lt wind	1	1926 – 1936	N/R
	Survey #3	2	1942 – 1954	N/R (SWOW)
		3	1956 - 2008	N/R

Owl Response: N/R from Northern Spotted Owls (all other owls identified)

### NSO Protocol Review

- Surveys completed by three different surveyors (Theodore Wooster, Scott Butler, & Pam Town).
- Survey Stations were the same used in all years.
- Protocol Followed: 2011 Protocol for Surveying Proposed Management Activity that may impact NSOs.
  - 2013 is Year 1 – 6 Surveys
  - 2014 is Year 2 – 6 Surveys
  - 2015 is Year 3 – 3 Surveys
- 10 – Minute Point Count Survey Used
- Tape or Digital Recording Used
- Barred Owls Detected: None
- Years Northern Spotted Owls were Detected: None
- Other Owl Species Detected: WSOW, SWOW, & GHOW
- Survey Stations ¼ to ½ mile apart: Yes
- Surveys Spread over Breeding Season: Yes
- 7 Days between Surveys: Yes
- Surveys completed between 01MAR – 31JUL: Yes
- Surveys Between Sunset and Sunrise: Yes
- Spot checks (year #3) Completed Prior to 15APR: Yes
- Daytime follow-up within 48 hours if NSO Detected: N/A

- Activity Center Survey (ACS) Completed: The closest known NSO is approximately 1.6 miles away; therefore, no ACS are required.
- Survey Coverage to 0.7 miles of Harvest Boundary: The area surrounding the project is private property (gated property) and no access is possible. In addition much of the area is unsuitable NSO habitat. Survey stations were placed along the ridge and were able to survey much of the Bell Canyon area.

Data Version Date:  
03/25/2015

Report Generation Date:  
4/12/2015

# Report #1 - Spotted Owl Sites Found

Known Spotted Owl sites having observations within the search area.



Meridian, Township, Range, Section (MTRS) searched:

M\_09N\_06W Sections(22,23,24,25,26,27,34,35,36);

M\_09N\_05W Sections(19,30,31);

<i>Masterowl</i>	<i>Subspecies</i>	<i>LatDD NAD83</i>	<i>LonDD NAD83</i>	<i>MTRS</i>	<i>AC Coordinate Source</i>
NAP0002	NORTHERN	38.606338	-122.450511	M 09N 05W 30	Contributor

Data Version Date:  
03/25/2015

Report Generation Date:  
4/12/2015

## Report #2 - Observations Reported List of observations reported, by site.



Meridian, Township, Range, Section (MTRS) searched:

M\_09N\_06W Sections(22,23,24,25,26,27,34,35,36);

M\_09N\_05W Sections(19,30,31);

Masterowl: NAP0002 Subspecies: NORTHERN

Type	Date	Time	#Adults	Age/Sex	Pair	Nest	#Young	Latitude DD NAD83	Longitude DD NAD83	MTRS	Coordinate Source
AC	1994-04-02	1410	2	UMUF	Y	Y		38.606338	-122.450511	M 09N 05W 30	Contributor
NEG	2000-04-12	2000	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2008-05-20	2224-2234	0					38.604224	-122.457803	M 09N 05W 30	Section centroid
NEG	1999-04-04	2040	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2004-02-18	1929	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2000-05-09	2200	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	1999-06-02	2032	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2005-03-11	2002	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2007-04-07	2213	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2004-05-23	2043	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2001-05-26	2028	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2006-05-18	2040	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2006-03-26	1836	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2003-06-06	2318	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	1998-03-03	1754	0					38.604292	-122.439088	M 09N 05W 29	Section centroid
NEG	1999-03-17	1859	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2004-02-08	2047	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2002-06-03	2121	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2000-04-12	1200	0					38.604223	-122.453135	M 09N 05W 30	Half-section centroid
NEG	2005-05-19	2036	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2000-04-25	2400	0					38.604223	-122.453135	M 09N 05W 30	Half-section centroid
NEG	2002-04-04	2059	0					38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2008-02-16	1959-2009	0					38.604224	-122.457803	M 09N 05W 30	Section centroid

NEG	2007-05-25	2201	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2001-01-01	1723	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2008-05-20	2211-2221	0				38.604224	-122.457803	M 09N 05W 30	Section centroid
NEG	2000-03-15	2100	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2004-05-08	2121	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2000-05-09	2400	0				38.604223	-122.453135	M 09N 05W 30	Half-section centroid
NEG	2006-02-12	2003	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2003-02-07	2103	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2005-04-02	2041	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2003-04-14	1902	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2008-05-20	2238-2248	0				38.604224	-122.457803	M 09N 05W 30	Section centroid
NEG	2000-04-25	2100	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2001-04-05	2116	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2007-02-17	1915	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2008-02-16	1932-1942	0				38.604224	-122.457803	M 09N 05W 30	Section centroid
NEG	2002-05-12	2400	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	1993-11-07	1853	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	1999-03-29	1827	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2000-03-16	1800	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	1990-03-10		0				38.604292	-122.439088	M 09N 05W 29	Section centroid
NEG	2000-03-16	1200	0				38.604223	-122.453135	M 09N 05W 30	Half-section centroid
NEG	2007-02-17	1953	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	1989-11-26		0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2002-05-21	2400	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
NEG	2008-02-16	1945-1955	0				38.604224	-122.457803	M 09N 05W 30	Section centroid
NEG	1992-08-26	1256	0				38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1996-04-28	1424	1	UM			38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1993-06-10	1956	2	UMUF	Y	1	38.606338	-122.450511	M 09N 05W 30	Contributor
POS	1993-03-07	0304	2	UMUF			38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1992-04-04	1209	2	UMUF	Y		38.600592	-122.453220	M 09N 05W 30	Quarter-section centroid
POS	1993-05-16	0810	1	UF		Y	38.604227	-122.457797	M 09N 05W 30	Section centroid

POS	1996-05-03	1905	1	UM			38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1992-02-09	1230	2	UMUF			38.600592	-122.453220	M 09N 05W 30	Quarter-section centroid
POS	1994-04-01	1937	2	UMUF	Y		38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1980		1	UU			38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1995-05-21		1	UU			38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1997-04-06	1350	1	UM			38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1996-03-03	1808	1	UM			38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1992-03-11	1637	2	UMUF			38.603461	-122.451911	M 09N 05W 30	Contributor
POS	1998-03-25	1927	1	UU			38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1994-05-30	1540	2	UMUF	Y		38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1997-05-26	1105	1	UU			38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1998-04-07	0848	1	UU			38.607864	-122.453049	M 09N 05W 30	Quarter-section centroid
POS	1993-04-04	1341	2	UMUF	Y	Y	38.606338	-122.450511	M 09N 05W 30	Contributor
POS	1960		1	UU			38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1992-07-26	1216	2	UMUF	Y		38.600592	-122.453220	M 09N 05W 30	Quarter-section centroid
POS	1992-05-10	1009	2	UMUF	Y		38.600592	-122.453220	M 09N 05W 30	Quarter-section centroid
POS	1995-04-30	1129	1	UM			38.604227	-122.457797	M 09N 05W 30	Section centroid
POS	1997-03-09	1827	1	UU			38.604227	-122.457797	M 09N 05W 30	Section centroid

## Forest Ecosystem Management, PLLC

PO Box 455; Potomac, MT 59823  
(406) 490-7427 \* cptown@blackfoot.net

November 24, 2014

Scott Butler, RPF  
Environmental Resource Management  
889 Hwy 20-26  
Ontario, OR 97914

RE: Davis Friesen Timber Conversion (New Plan)

Scott,

Attached you will find updated information regarding northern spotted owls (NSO) for the Davis Friesen Timber Conversion plan. The property is 40-acres with approximately 12.5 acres being converted from timberland to vineyard. The property is located in Section 25 T9N, R6W MDB&M in Napa County.

Included is NSO survey history, NSO territories within 1.3 miles of the project, and a current Spotted Owl Database Report run on November 24, 2014. Although there are redwoods in Napa County, I expanded the 0.7 mile assessment area out to 1.3 miles due to hotter, drier conditions that occur outside the coast-line redwood zone. The closest known northern spotted owl territory is 1.6 miles from the project area; therefore, no habitat maps for NSO territories are required.

On July 23, 2013 I provided you with maps of survey stations, pre/post-harvest NSO habitat within the project area and within 0.7 miles of the project boundary. These maps are still accurate and can be submitted with the timber plan.

### **Northern Spotted Owl Habitat (as written in 23JULY13 Report)**

Pre-harvest, the property is primarily unsuitable NSO habitat, see aerial photo, due to insufficient overstory canopy cover. There is approximately ½ acre of forested habitat within the project area that would meet the definition of suitable NSO habitat set forth under USFWS guidelines, however, this is part of a small patch (11 acres) isolated in a landscape of unsuitable NSO habitat, see aerial photo. The property's vegetation consists of primarily gray pine and black oak with a little bit of Douglas-fir, and brush land. The brush includes manzanita, coyote brush, interior live oak, and ceanothus.

The landscape surrounding the property is primarily unsuitable NSO habitat (vineyards, ponds, residential houses, and scrub-land). There are small forested patches (largest is 21 acres) that meet the definition of NSO habitat however, due to the patchiness within the landscape; they do not provide adequate habitat for a resident NSO. Although unlikely, the forested patches might be used by transient NSOs as temporary shelter as the owl searches for suitable habitat.

### **Northern Spotted Owl Surveys**

This is year #2 of surveys completed on this project. Much of the area is considered unsuitable NSO habitat, however, surveys were completed. Three survey stations were used along a private road that we had access. Much of the area surrounding the project area is inaccessible (gated roads, no trespassing signs, and private property), although our stations were able to survey areas within Bell Canyon. Three different surveyors (Scott Butler, Theodore Wooster, and Pamela Town) completed surveys in 2013 and 2014, with no northern spotted owls detected.

### **Proposed Operations**

Timber harvest operations are converting the area to a new vineyard. The majority of the conversion area is unsuitable, with approximately ½ acre considered pre-harvest marginal northern spotted owl habitat.

### **Northern Spotted Owl Protection Measures**

- ◆ The majority of the project area and surrounding landscape is unsuitable habitat for northern spotted owls prior to the completion of this project.
- ◆ At this time, there are no known NSO activity centers within 1.3-miles of the project area, therefore, there are no seasonal or harvest restrictions.
- ◆ No helicopter operations are proposed.

Please feel free to contact me at (406) 490-7427 (cptown@blackfoot.net) if you have any questions.

Sincerely,

***Emailed to Scott Butler 11/24/14***

Pamela Town  
Consulting Wildlife Biologist

**Northern Spotted Owl Habitat Analysis**  
**Davis Friesen Vineyard Conversion**  
 Plan Portions of Sec 25 T9N, R6W MDB&M  
 Submitted 23JUL13 – No changes have been made

Northern Spotted Owl Habitat on Davis Friesen Vineyard Conversion (Pre & Post-Harvest)

<u>Description</u>	<u>Pre Harvest (Acres)</u>	<u>Post-Harvest (Acres)</u>
Nesting/Roosting NSO Habitat	0	0
Foraging NSO Habitat (Marginal)	0.5	0
Unsuitable NSO Habitat	12	12.5
<b>Total Conversion Acres</b>	<b>12.5</b>	<b>12.5</b>
<b>Total Property Acres</b>	<b>40</b>	<b>40</b>

**Northern Spotted Owl Monitoring**

For Known Territories within 0.7 Miles Davis Friesen Property

There are no known NSO territories within 0.7-miles of the project area. The closest known NSO territories are:

- NAP002 – approximately 1.6 miles
- NAP003 – approximately 2.0 miles
- NAP029 – approximately 2.9 miles

Northern Spotted Owl History

<u>Date</u>	<u>Weather</u>	<u>Station #</u>	<u>Survey Time</u>	<u>Owl Response or Notes</u>
	<b>2013 – Year #1</b>			
15MAR13	Cloudy & Calm	1	1925 – 1935	N/R (dogs)
	Survey #1	2	1944 - 1954	N/R
		3	2006 - 2016	N/R (WSOW)
25MAR13	Cloudy & Breezy	1	1900 – 1910	N/R
	Survey #2	2	1918 – 1928	N/R
		3	1938 - 1948	N/R
18APR13	Clear & Calm	Site Search	1900 – 1940	GHOW
	Survey #3	1	1948 – 1958	N/R
		2	2000 – 2010	N/R
		3	2015 - 2025	N/R
28APR13	Clear & Calm	1	1952 - 2014	N/R (dogs)
	Survey #4	2	2021 – 2031	N/R
		3	2036 - 2046	N/R (dogs)
7MAY13	Cloudy & Lt Breeze	1	2136 – 2146	N/R
	Survey #5	2	2154 – 2204	N/R
		3	2216 – 2226	N/R
27JUN13	Clear & Calm	1	2100 – 2110	N/R
	Survey #6	2	2113 – 2125	N/R
		3	2126 - 2136	N/R
	<b>2014 – Year #2</b>			
05MAR14	Cloudy & lt breeze	1	1930 – 1940	N/R (dogs)
	Survey #1	2	1950 – 2000	N/R (frogs)
		3	2007 - 2017	N/R (frogs)
14MAR14	Clear & Calm	1	1945 – 1955	N/R
	Survey #2	2	2003 – 2013	N/R (GHOW)
		3	2025 - 2035	N/R
07APR14	Ptly Cloudy & breeze	1	2145 – 2155	N/R
	Survey #3	2	2159 – 2209	N/R
		3	2214 - 2224	N/R
15APR14	Clear & Calm	1	2140 – 2150	N/R (frogs)
	Survey #4	2	2152 – 2202	N/R
		3	2205 - 2215	N/R
15MAY14	Clear & Calm	3	0100 – 0120	N/R
	Survey #5	2	0123 – 0134	N/R
		1	0136 - 0146	N/R (frogs)
02JUN14	Ptly Cloudy & lt breeze	1	0145 - 0155	N/R

## Northern Spotted Owl History

	Survey #6	2	0206 – 0216	N/R (GHOW)
		3	0224 - 0234	N/R

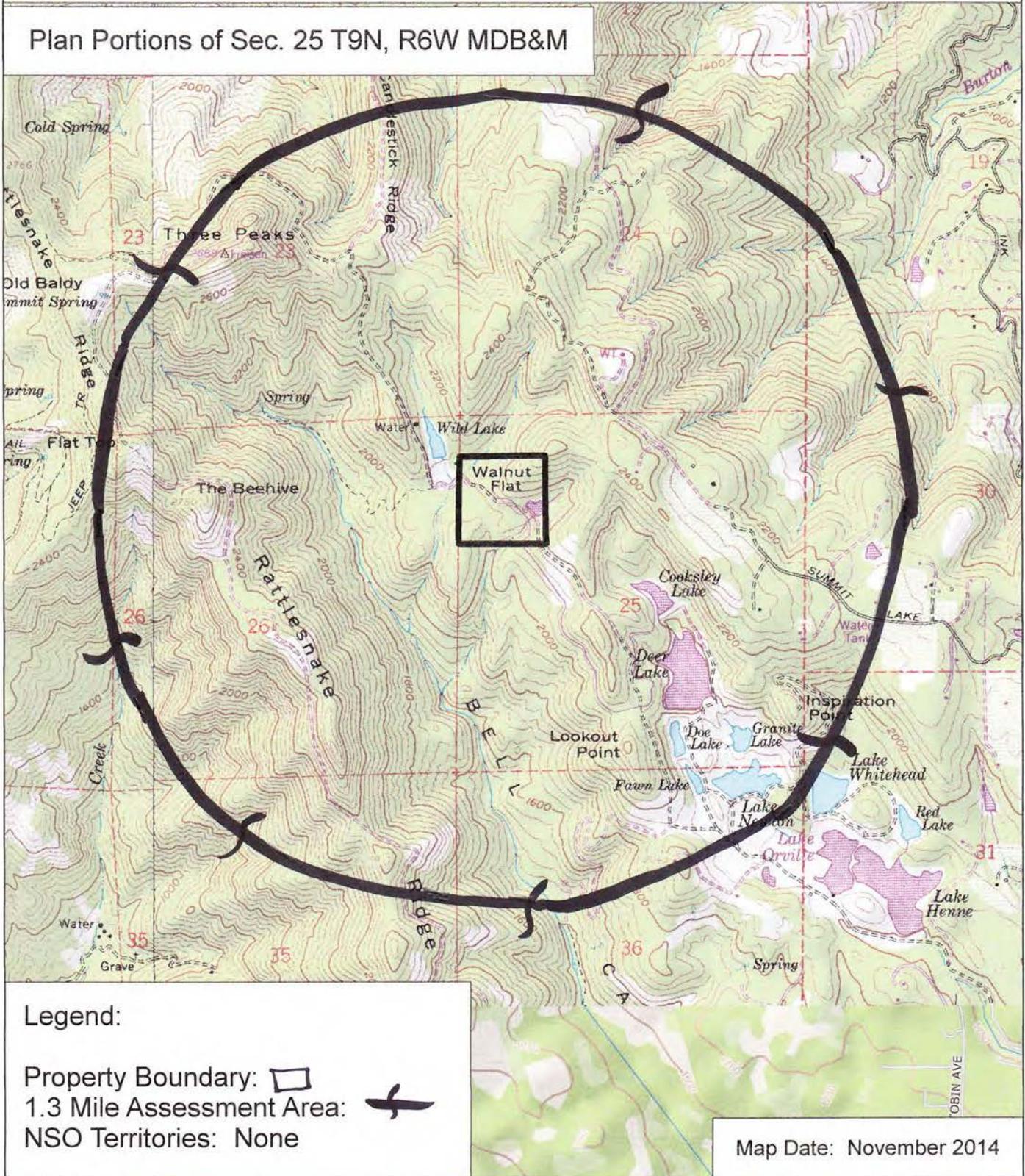
Owl Response: N/R from Northern Spotted Owls (all other owls identified)

### NSO Protocol Review

- Surveys completed by three different surveyors (Theodore Wooster, Scott Butler, & Pam Town).
- Survey Stations were the same used in both years.
- Protocol Followed: 2011 Protocol for Surveying Proposed Management Activity that may impact NSOs.
  - 2013 is Year 1 – 6 Surveys
  - 2014 is Year 2 – 6 Surveys
- 10 – Minute Point Count Survey Used
- Tape or Digital Recording Used
- Barred Owls Detected: None
- Years Northern Spotted Owls were Detected: None
- Other Owl Species Detected: WSOW & GHOW
- Survey Stations ¼ to ½ mile apart: Yes
- Surveys Spread over Breeding Season: Yes
- 7 Days between Surveys: Yes
- Surveys completed between 01MAR – 31JUL: Yes
- Surveys Between Sunset and Sunrise: Yes
- Daytime follow-up within 48 hours if NSO Detected: N/A
- Activity Center Survey (ACS) Completed: The closest known NSO is approximately 1.6 miles away; therefore, no ACS are required.
- Survey Coverage to 0.7 miles of Harvest Boundary: The area surrounding the project is private property (gated property) and no access is possible. In addition much of the area is unsuitable NSO habitat. Survey stations were placed along the ridge and were able to survey much of the Bell Canyon area.

# Northern Spotted Owl Territories within 1.3 Miles of D. Friesen Vineyard Conversion

Plan Portions of Sec. 25 T9N, R6W MDB&M



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www.delorme.com



D. Friesen

Data Version Date:  
11/03/2014

Report Generation Date:  
11/24/2014

**Report #1 - Spotted Owl Sites Found**  
Known Spotted Owl sites having observations within the search area.



Meridian, Township, Range, Section (MTRS) searched:

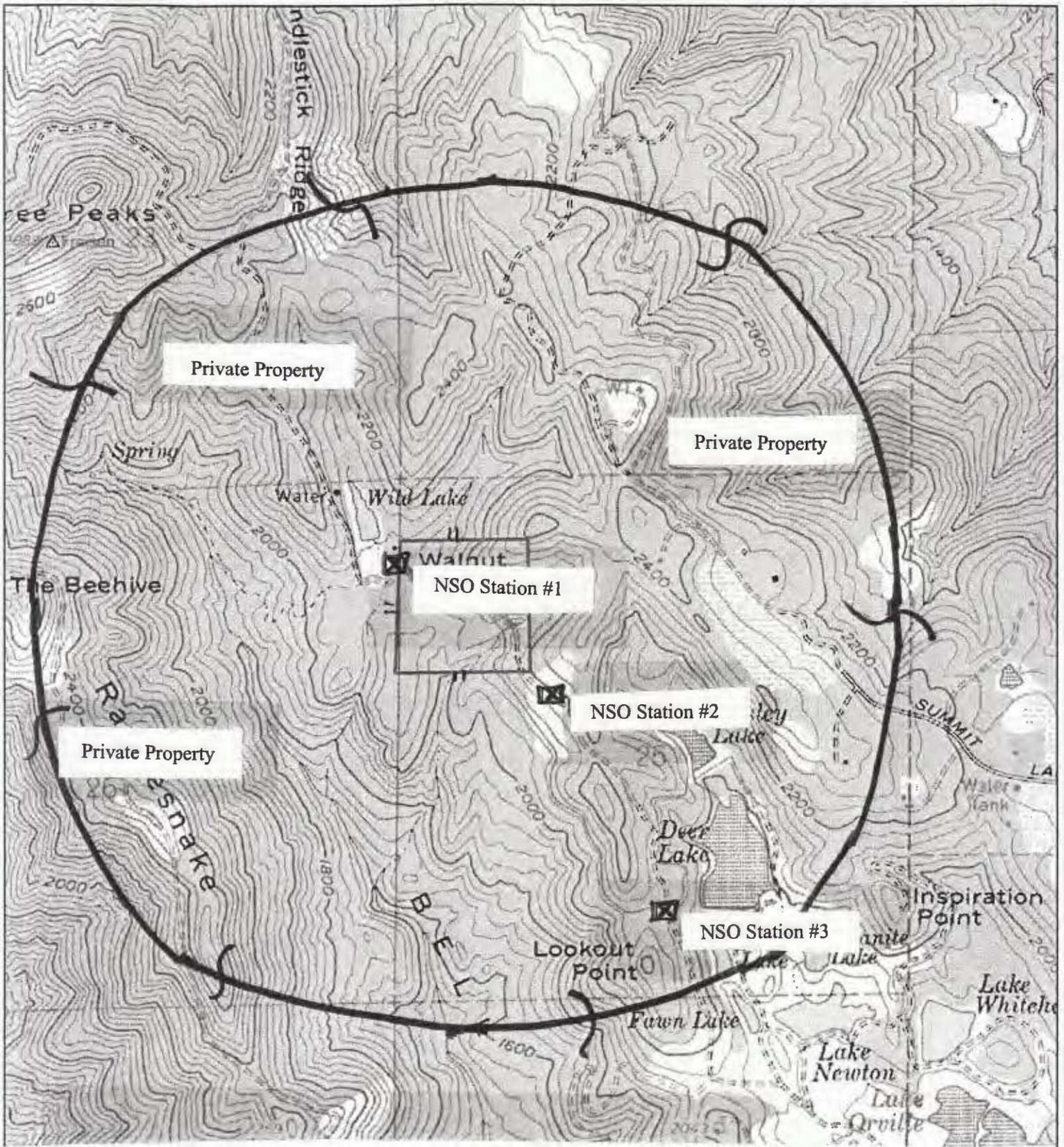
M\_09N\_06W Sections(13,14,15,22,23,24,25,26,27,34,35,36);

M\_09N\_05W Sections(18,19,30,31);

Masterowl	Subspecies	LatDD NAD83	LonDD NAD83	MTRS	AC Coordinate Source
NAP0002	NORTHERN	38.606338	-122.450511	M 09N 05W 30	Contributor
NAP0003	NORTHERN	38.634933	-122.486966	M 09N 06W 14	Contributor

NAP0002 = 1.6 Miles

NAP0003 = 2.06 Miles



**Northern Spotted Owl Survey Stations for  
Davis Friesen Vineyard Conversion**

Plan Portions of Sec. 25 T9N, R6W MDB&M  
1" - 1,333' St Helena Quad Map Date: July 2013

Legend



Property Boundary:   
NSO Territories: None Known

0.7 Mile Assessment Area:   
NSO Survey Stations: 

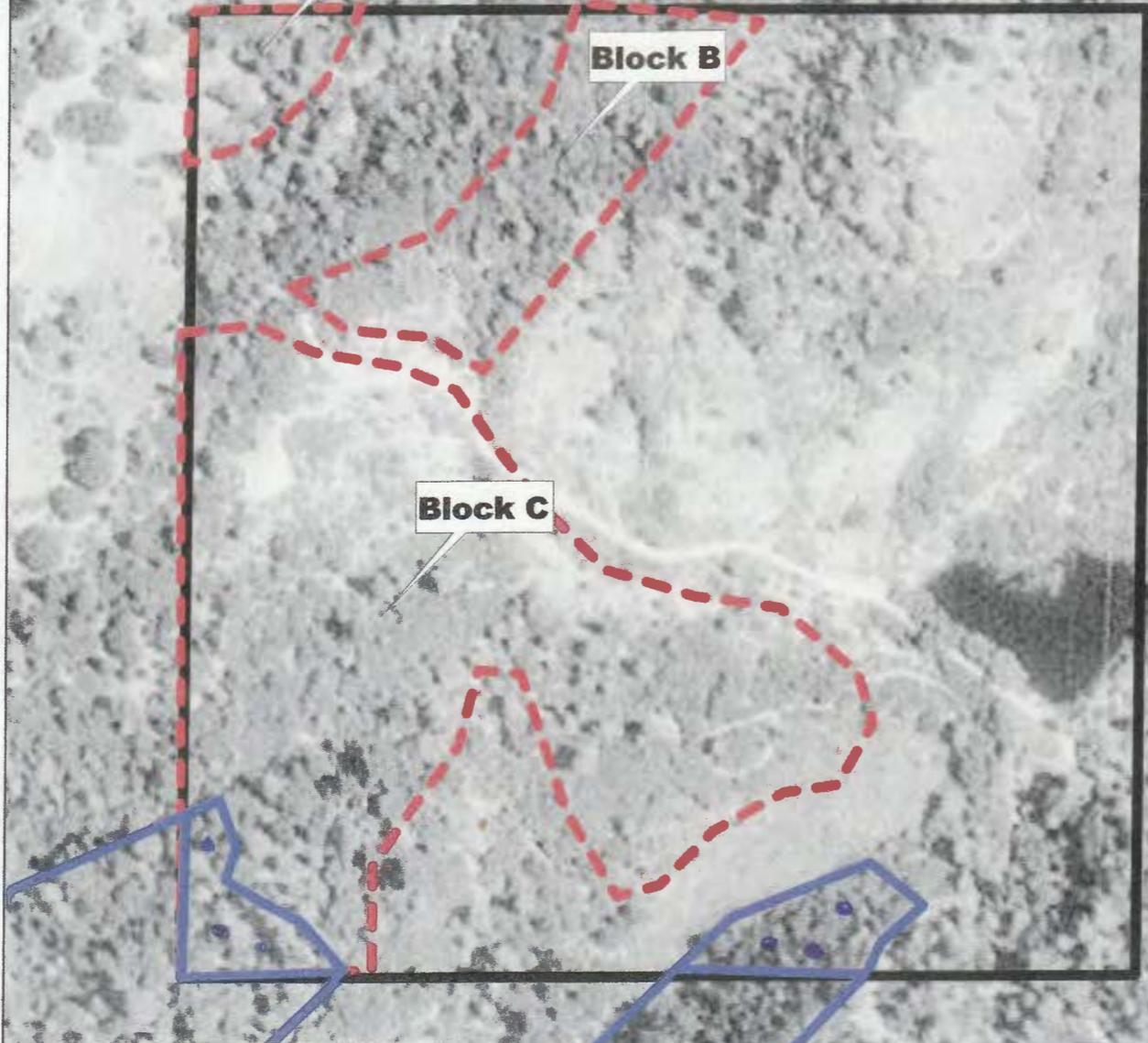
# Northern Spotted Owl Habitat on D. Friesen Conversion

Portions of Sec. 25 T9N, R6W MDB&M

**Block A**

**Block B**

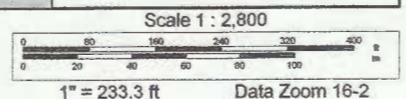
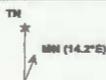
**Block C**



### Legend:

- Property Boundary: —
- Vineyard Boundary: - - -
- Forested Habitat: □
- Unsuitable Habitat: *Rest*
- NSO Territory: None

Map Date: July 2013



# Northern Spotted Owl Habitat on D. Friesen Conversion

Portions of Sec. 25 T9N, R6W MDB&M

Block A

Block B

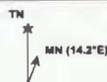
# Walnut Flat

Block C

### Legend:

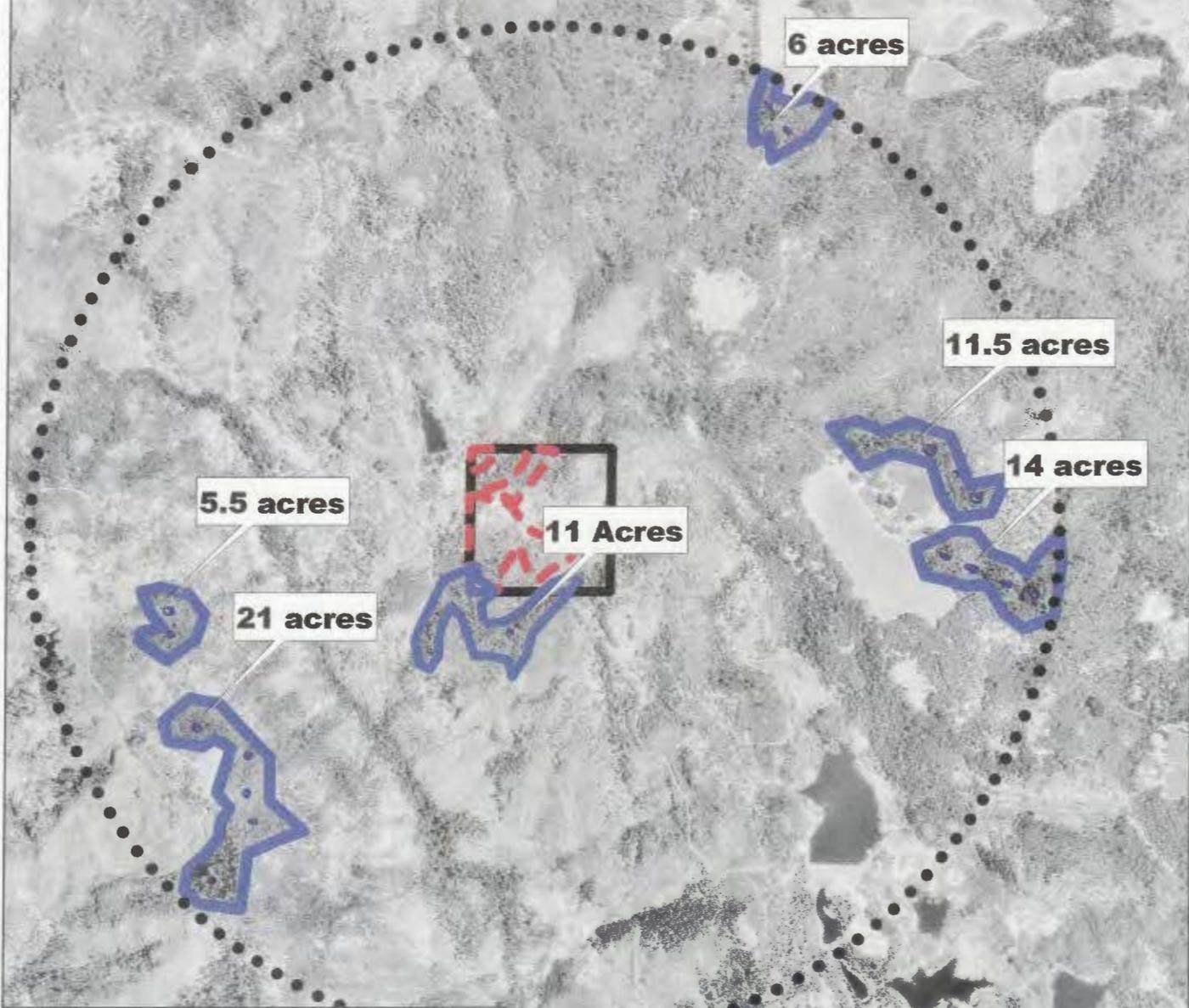
- Property Boundary: —
- Vineyard Boundary: |—|
- Forested Habitat: [▨]
- Unsuitable Habitat: Rest
- NSO Territory: None

Map Date: July 2013



# Northern Spotted Owl Habitat Around D. Friesen Conversion

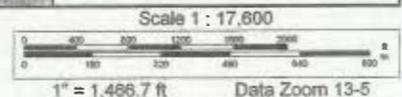
Portions of Sec. 25 T9N, R6W MDB&M



### Legend:

- Property Boundary: ———
- 0.7 Mile Assessment Area: ····
- Vineyard Boundary: - - - -
- Foraging Habitat: [Blue outline]
- Unsuitable Habitat: Remaining Area
- NSO Territory: None

Map Date: July 2013



**Pictures of the D. Friesen Timber Conversion  
Portions of 25 T9N, R6W MDB&M – NAPA County**



**Above is Block B Area**

**Below is the Block C Area**

