# PROPERTY MANAGEMENT PLAN
# EMERALD MOUNTAIN FARMS, INC.

## Project Location

**1850 Ogulin Canyon Road**
**Clearlake, CA 95422**

## Project Property

**Lake County APNs 010-053-03 & 010-011-01**

## Project Parcel

**Lake County APN 010-053-03**

## TABLE OF CONTENTS

# PROJECT DESCRIPTION

Emerald Mountain Farms, Inc. (EMF) is seeking a Major Use Permit from the County of Lake for a proposed Outdoor Commercial Cannabis Cultivation Operation at 1850 Ogulin Canyon Road near Clearlake, CA on Lake County APN 010-053-03 (Project Parcel). EMF's proposed cultivation operation would be composed of a 34,316 $ft^2$ outdoor cultivation/canopy area, a 15,000 $ft^2$ outdoor cultivation/canopy area, a 10,000 $ft^2$ outdoor cultivation/canopy area, a 6,862 $ft^2$ outdoor cultivation/canopy area, a 2,384 $ft^2$ outdoor cultivation/canopy area, a 120 $ft^2$ Pesticides and Agricultural Chemicals Storage Area (existing wooden shed), a 120 $ft^2$ Security Center (proposed wooden shed), and nine 5,000-gallon water storage tanks. The total cultivation area of the proposed cannabis cultivation operation (as defined in Chapter 21, Article 27 of the Lake County Code), including the combined cultivation/canopy areas and ancillary facilities would be 68,802 $ft^2$.

The 118-acre, Rural Lands-zoned, two parcel, Project Property (Lake County APNs 010-053-03 & 010-011-01) is located approximately 1.5 miles east of Clearlake, CA in eastern Lake County. The Project Parcel is accessed via Ogulin Canyon Road, a shared private gravel access road that connect to Highway 53 approximately 1.5 miles east of the Project Property. A metal gate across Ogulin Canyon Road controls access to the Project Property (main entrance). Existing improvements on the Project Parcel include a groundwater well, a man-made off stream water storage reservoir, a private residence, and a shop (metal building). The Project Parcel has been enrolled for coverage under the State Water Resource Control Board's Cannabis General Order since March 2nd, 2018 (WDID: 5S17CC400707).

The Project Parcel consists of a series of low hills bisected by Blackeye Canyon, with elevations ranging from 1,556 to 1,790 feet above mean sea level, and 10 and 40 percent slopes. The proposed cultivation operation would be located on a low ridge that divides the Burns Valley-Frontal Clear Lake watershed (HUC12) from the Grizzly Creek-North Fork Cache Creek watershed (HUC12). An unnamed intermittent Class II watercourse at the bottom of Blackeye Canyon flows from south to west through western half of the Project Parcel. Multiple ephemeral Class III watercourses form on the Project Property, and either flow south into Blackeye Canyon or north into Phipps Creek (offsite). There are two existing culverted ephemeral Class III watercourse crossings in the western half of the Project Parcel on Ogulin Canyon Road. All proposed project disturbance will occur more than 100 feet from all surface water bodies.

The proposed outdoor cannabis cultivation areas and associated facilities are/will be accessed via an existing private gravel access road off of Ogulin Canyon Road. 6-foot tall woven wire fences will be erected around the proposed cultivation area(s), and privacy screen/cloth will be installed on the fences where necessary to screen the cultivation areas from public view. The growing medium of the proposed outdoor cultivation/canopy areas will be an imported organic soilless growing medium (composed mostly of composted forest material) in aboveground fabric pots, with drip irrigation systems. All cannabis waste generated from the proposed cultivation operation will be composted on-site within a designated secure composting area, and composted cannabis waste will be incorporated into the soils of the cultivation areas each year as a soil amendment. Fertilizers/nutrients, pesticides, and petroleum products will be securely stored inside the proposed Pesticides and Agricultural Chemicals Storage Area (existing 120 $ft^2$ wooden shed). An existing

onsite groundwater well located at Latitude 38.980376° and Longitude -122.577846°, will serve as the water source for the proposed cultivation operation.

EMF is alos seeking to obtain a Type 13 Cannabis Distributor Transport Only, Self-Distribution license, so that they may transport raw cannabis material from their cultivation operation to licensed cannabis processing, distribution and manufacturing facilities throughout the State of California. EMF will utilize an unmarked, registered, and insured enclosed trailer to transport/distribute cannabis from their operation. The distribution trailer will only travel from the Project Property to the premises of licensed cannabis processing, manufacturing and distribution facilities, and back to the Project Property. The trailer will be locked and secured whenever it is not being loaded or unloaded, and it will never be left unattended while transporting cannabis. EMF will adhere to the reporting requirements of the California Cannabis Track-and-Trace system at all times, to record and report all cannabis transfers and movements.

## SITE PLANS AND MAPS

**Sheet 1 – Location Map**

**Sheet 2 – Surrounding Area Aerial**

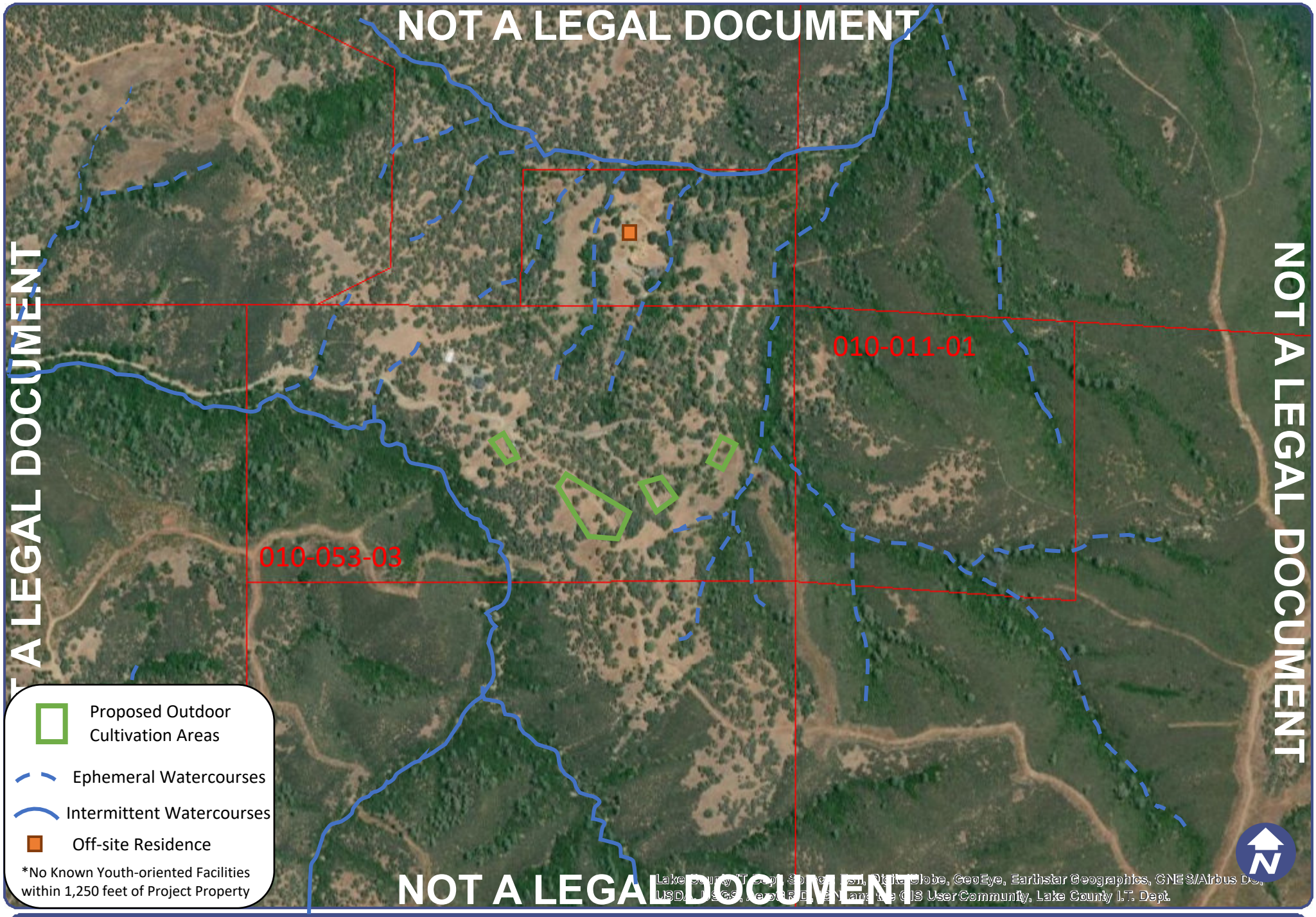
**Sheet 3 – Existing Conditions Site Plan**

**Sheet 4 – Proposed Conditions Site Plan**

**Sheet 5 – Cultivation Site Plan with Canopy**

**Sheet 6 – Security Site Plan**

**Sheet 7 – Erosion and Sediment Control Plan**


NOT A LEGAL DOCUMENT
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010-011-01
010-053-03
Proposed Outdoor Cultivation Areas
Ephemeral Watercourses
Intermittent Watercourses
Off-site Residence
*No Known Youth-oriented Facilities within 1,250 feet of Project Property
N
Lake County, CA
Emerald Mountain Farms
Web AppBuilder for ArcGIS
mi
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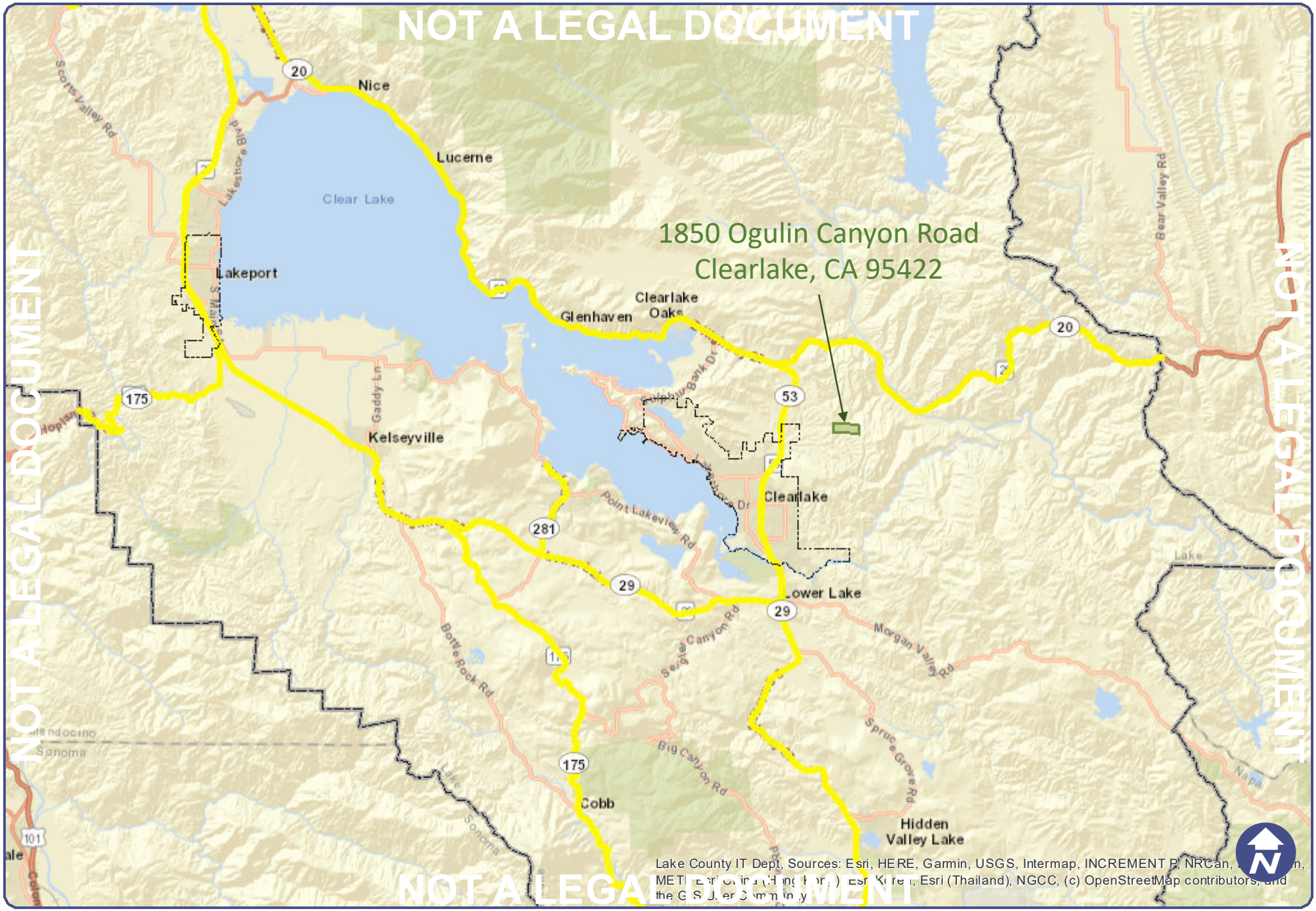
0.2
Print Date: 3/21/2020
All parcel boundaries are approximate. Discrepancies in acerage, shape and location are common. This map is not the legal survey document to be used in single site determinations. Consult your deed for a legal parcel description.










# Lake County, CA

**Emerald Mountain Farms**

Web AppBuilder for ArcGIS

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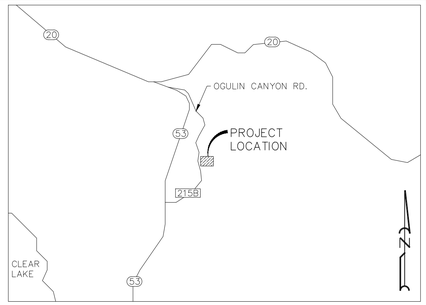
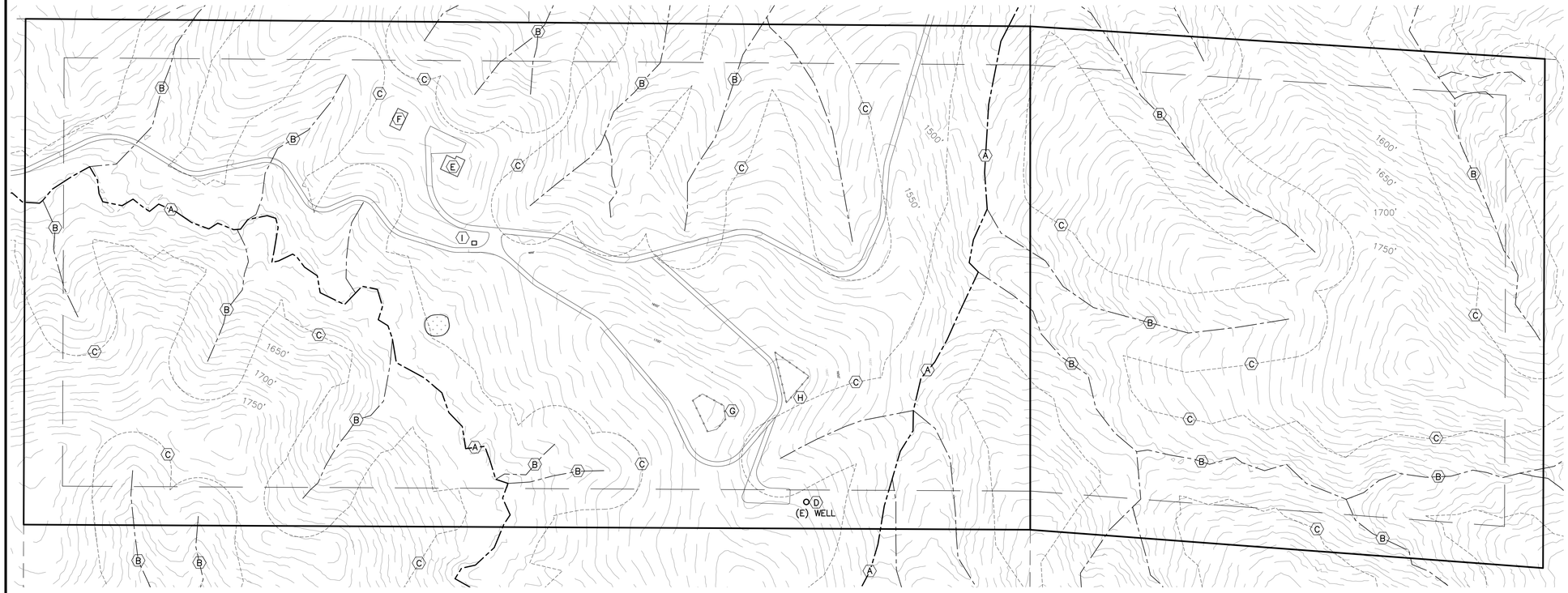
Print Date: 3/21/2020




VICINITY MAP
NO SCALE




**LEGEND:**

| | |
|---|---|
| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
| | EARTH |
| | FLOOD ZONE |
| | CREEK / SWALE |
| APN | ASSESSOR'S PARCEL NUMBER |
| APPROX | APPROXIMATELY |
| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |

**NOTES:**
1. CONTOUR INTERVAL IS 10'

(A) CLASS II INTERMITTENT WATERCOURSE
(B) CLASS III EPHEMERAL WATERCOURSE
(C) 100' SETBACK FROM WATERCOURSE
(D) (E) GROUNDWATER WELL
LAT: 38.980376°
LONG: -122.577846°
(E) (E) RESIDENCE
(F) (E) SHOP
(G) (E) 4,962 SF LEGACY CULTIVATION AREA
(H) (E) 4,900 SF LEGACY CULTIVATION AREA
(I) (E) 10'x12' 120SF WOODEN SHED

Revisions:
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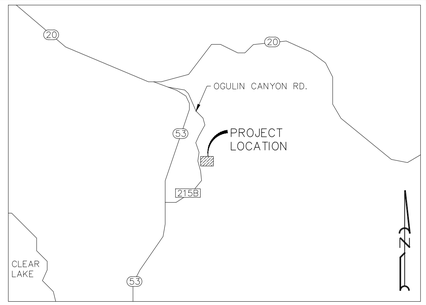
REALM ENGINEERING
CIVIL ENGINEERING, SURVEYING & PLANNING
1767 MARKET STREET SUITE c
REDDING, CA. 96001
530-526-7493

PLANS PREPARED UNDER THE SUPERVISION OF:

# EXISTING CONDITIONS SITE PLAN
## EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
18501 OGULIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
CADD FILE:
SHEET: 1

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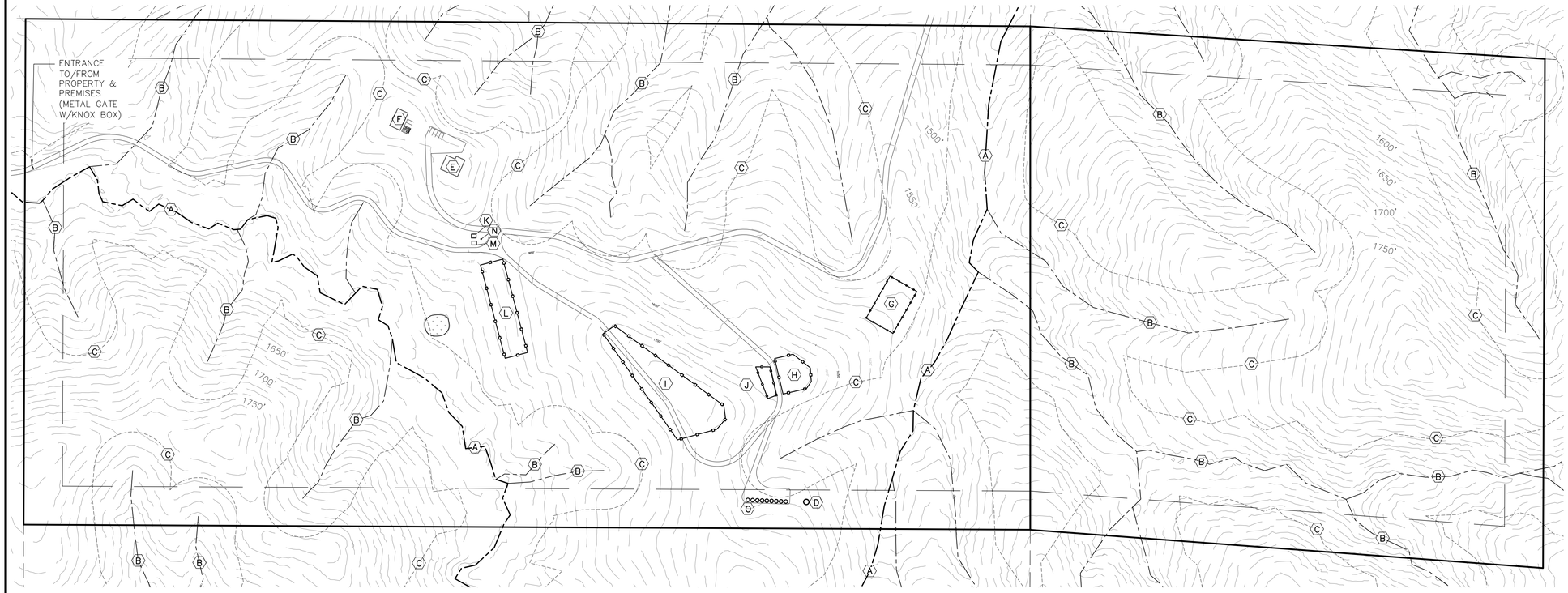


**LEGEND:**

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Ⓔ (E) RESIDENCE

Ⓕ (E) SHOP

Ⓖ (P) 10,000 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓗ (P) 6,862 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓘ (P) 34,316 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓙ (P) 2,384 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓚ (P) 10'x12' PESTICIDE & AGRICULTURAL CHEMICAL STORAGE AREA

Ⓛ (P) 15,000 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓜ (P) 10'x12' SECURITY CENTER

Ⓝ (P) DESIGNATED REFUSE AREA

Ⓞ (P) 9-5,000 GALLON WATER STORAGE TANKS

Revisions:
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530-526-7493

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# PROPOSED CONDITIONS SITE PLAN

EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
18501 OGULIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
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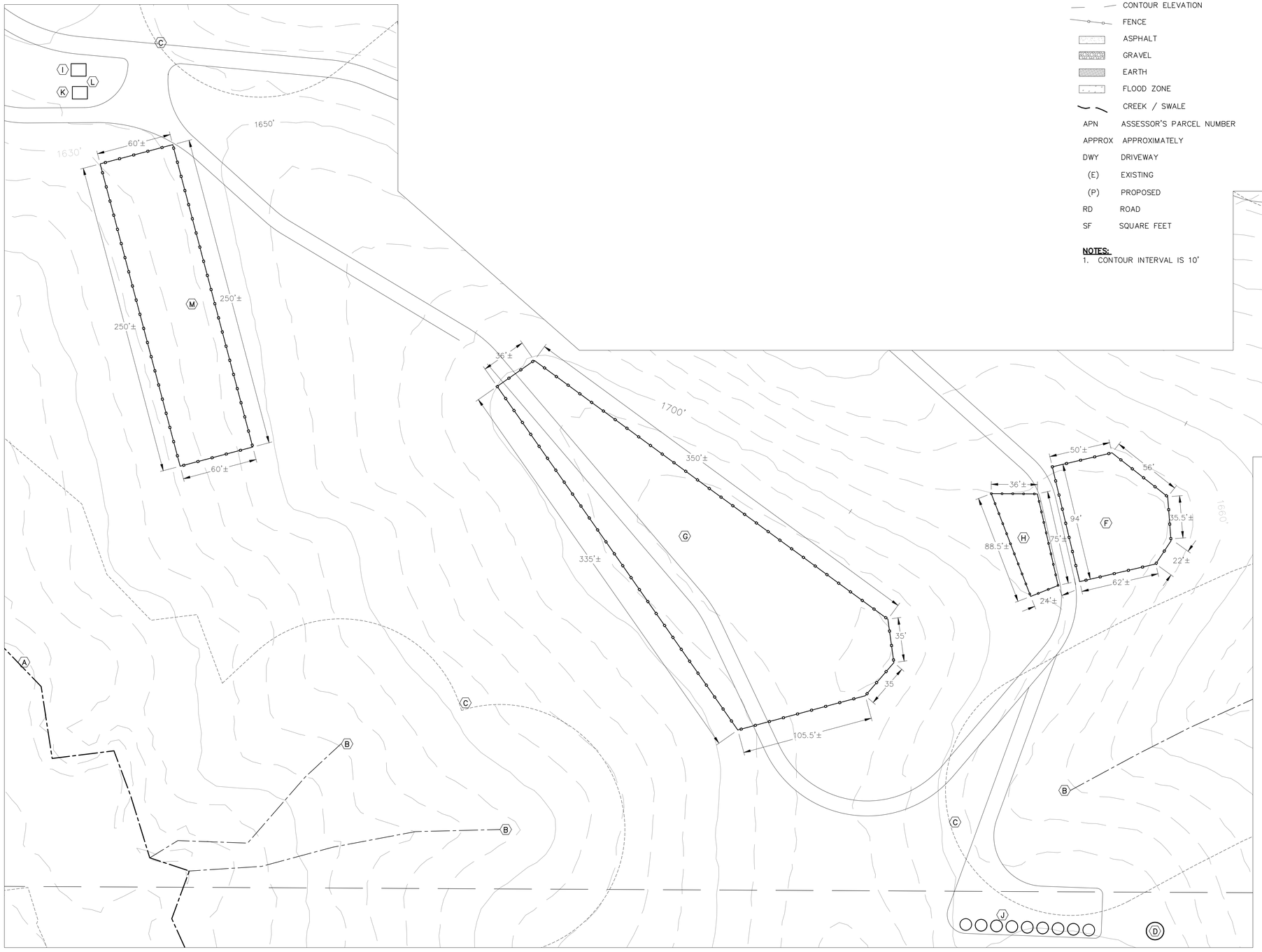
SHEET: 1

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| (E) | EXISTING |
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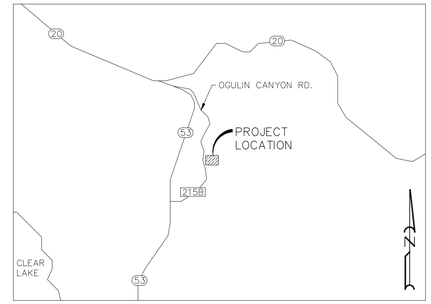


VICINITY MAP
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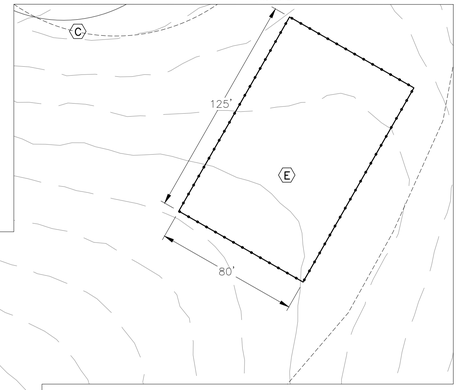


Ⓐ CLASS II INTERMITTENT WATERCOURSE

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PLANS PREPARED UNDER THE SUPERVISION OF:

# CULTIVATION SITE PLAN WITH CANOPY
## EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
1850 OGULIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
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## SECURITY AT GATE DETAIL:




**LEGEND:**

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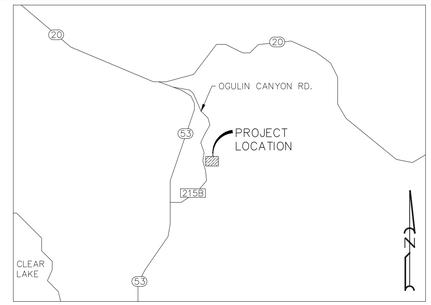
| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
| | EARTH |
| | WATERCOURSE / SWALE |
| | EXISTING POWER POLE |
| | (P) SECURITY LIGHTS |
| | (P) SECURITY CAMERAS |
| APN | ASSESSOR'S PARCEL NUMBER |
| APPROX | APPROXIMATELY |
| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |
| OH | OVER HEAD POWER LINES |

**NOTES:**
1. CONTOUR INTERVAL IS 5'

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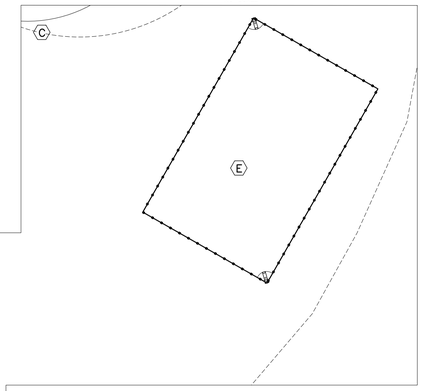


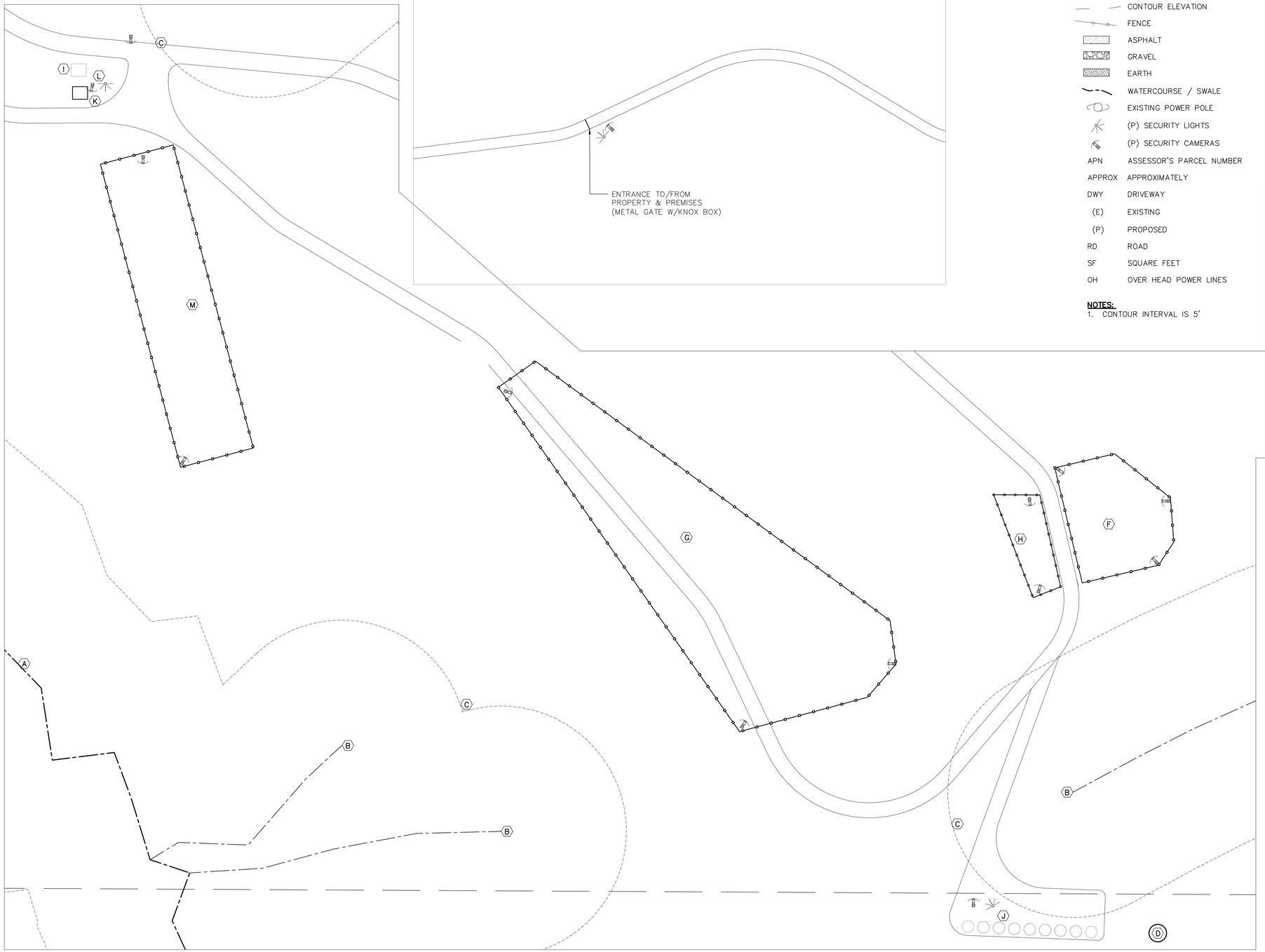


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# EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
18501 OGLIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY:
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DATE PLOTTED:
3/11/22

SCALE OF DRAWING:
SEE PLAN

JOB NUMBER:

CADD FILE:

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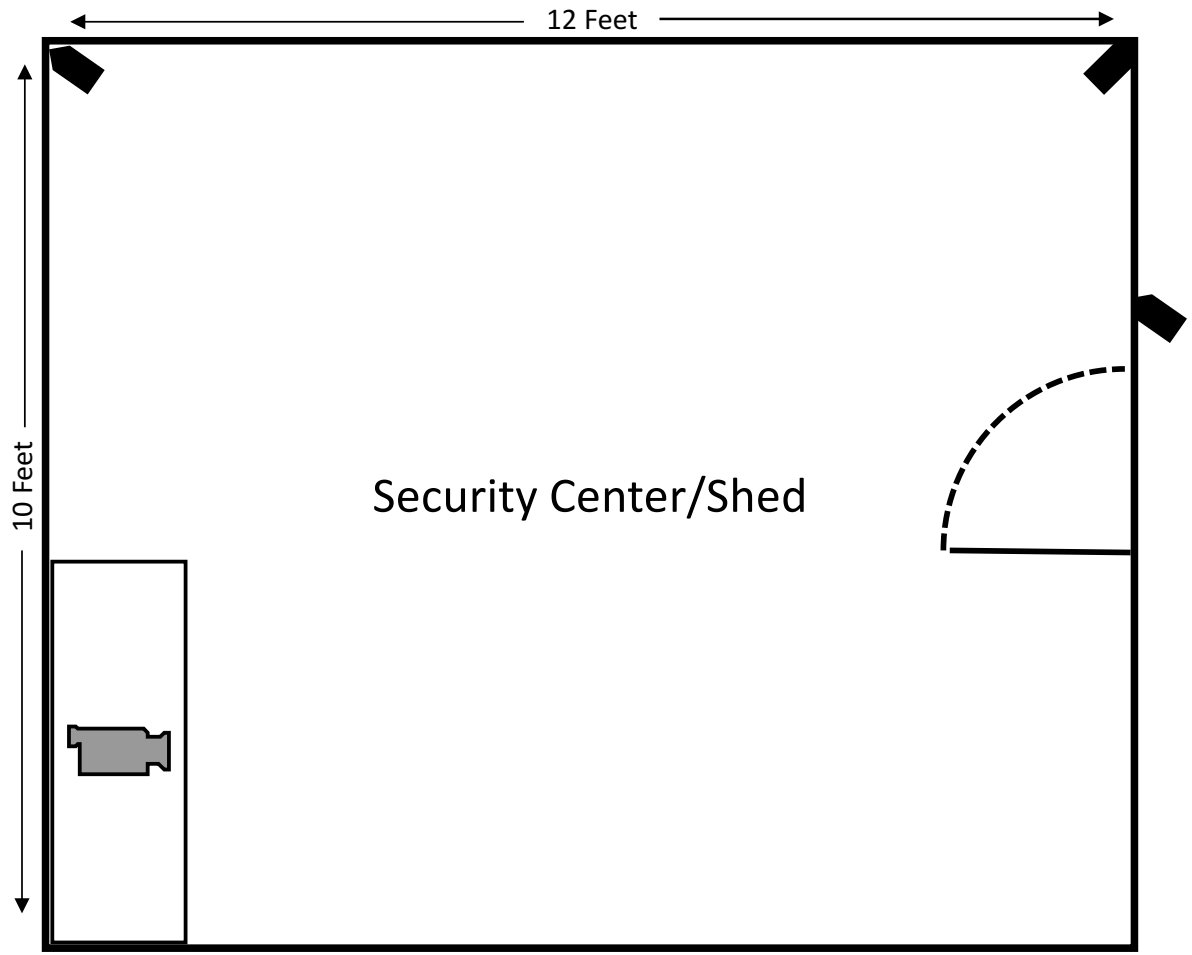
1

# Security Center/Shed
## (Proposed Wooden Shed)



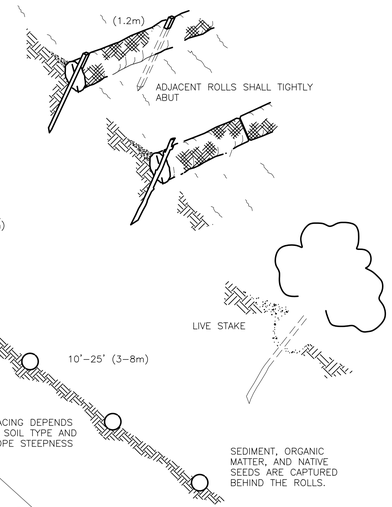

Video Surveillance Monitoring and Recording Station

Waterproof Surveillance Cameras with 1080p resolution and a 90° field of view.
(Arrow indicates direction of view)

**NOTES:**

1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"–5" (75–125mm) DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
2. STRAW ROLLS MUST BE PLACED ALONG SLOPE CONTOURS

# STRAW ROLL DETAILS

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- (L) (P) DESIGNATED REFUSE AREA
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**LEGEND:**

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| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
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| APN | ASSESSOR'S PARCEL NUMBER |
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| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |

**NOTES:**

1. CONTOUR INTERVAL IS 10'

**LEGEND**

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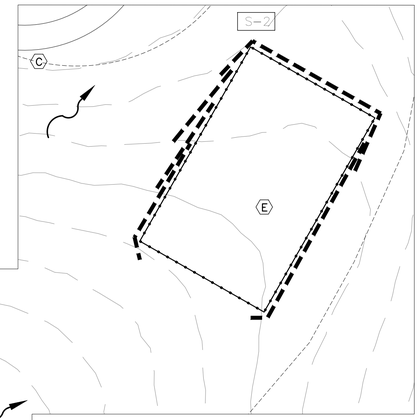


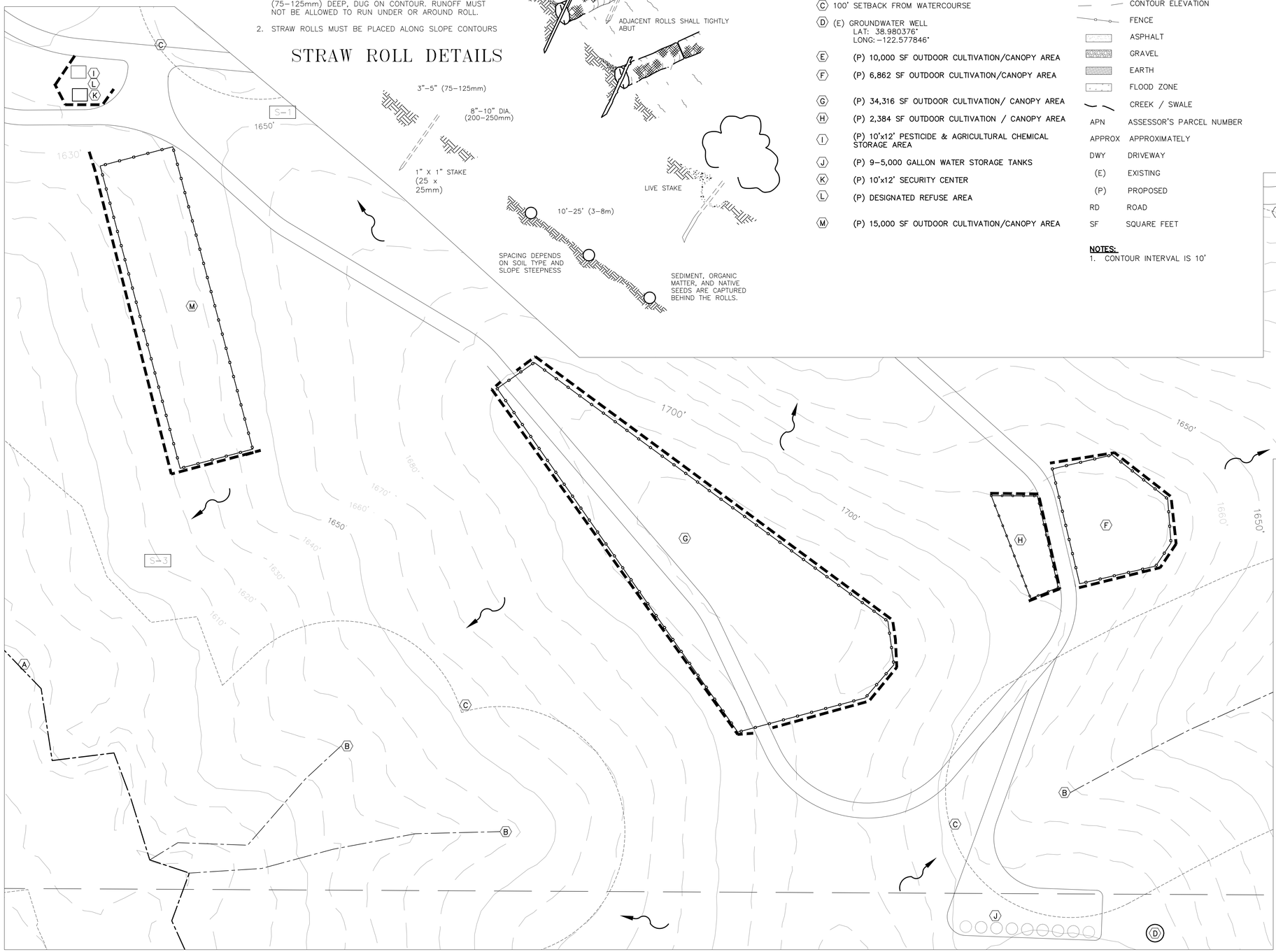


**EROSION & SEDIMENT CONTROL NOTES:**

1. CONTRACTOR IS TO IMPLEMENT BEST MANAGEMENT PRACTICES (BMPS) TO CONTROL EROSION CONTROL AND REDUCE THE OFF–SITE DISCHARGE OF SEDIMENT TO THE MAXIMUM EXTENT PRACTICABLE.
2. EROSION CONTROL BMPS SHALL BE IN PLACE AND MAINTAINED ALL YEAR ROUND.
3. HE CONTRACTOR SHALL FOLLOW THE GUIDELINES FROM THE "CALIFORNIA STORMWATER BMP HANDBOOK" FOR THE MEASURES SHOWN OR STATED ON THESE PLANS.
4. CONTRACTOR MUST ENSURE THAT THE CONSTRUCTION SITE IS PREPARED PRIOR TO THE ONSET OF ANY STORM.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED. CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE QUALIFIED SWPPP PRACTITIONER (QSP).
6. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO ANTICIPATED FIELD CONDITIONS. VARIATIONS MAY BE MADE TO THE PLAN IN THE FIELD SUBJECT TO THE APPROVAL OF OR AT THE DIRECTION OF A REPRESENTATIVE OF LAKE COUNTY.
7. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED BEFORE AND AFTER ALL STORMS TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.
8. CONTRACTOR SHALL MAINTAIN A LOG AT THE SITE OF ALL INSPECTIONS OR MAINTENANCE OF BMPS, AS WELL AS, ANY CORRECTIVE CHANGES TO THE BMPS OR EROSION AND SEDIMENT CONTROL PLAN.
9. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE PRIOR TO COMMENCEMENT OF GRADING. LOCATION OF THE ENTRANCE MAY BE ADJUSTED BY THE CONTRACTOR TO FACILITATE GRADING OPERATIONS. ALL CONSTRUCTION TRAFFIC ENTERING THE PAVED ROAD MUST CROSS THE STABILIZED CONSTRUCTION ENTRANCE.
10. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE SWEPT AT THE END OF EACH WORKING DAY OR AS NECESSARY.
11. ANY LOOSE GROUND FROM EXCAVATING GRADING OPERATIONS SHALL BE SECURED PRIOR TO ANY RAIN EVENT. STRAW OR TARP ALL DISTURBED OR EXCAVATED GROUND.
12. CONTRACTOR SHALL PLACE GRAVEL BAGS AROUND ALL NEW DRAINAGE STRUCTURE OPENINGS IMMEDIATELY AFTER THE STRUCTURE OPENING IS CONSTRUCTED. THESE GRAVEL BAGS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED.
13. AS A MINIMUM, ALL GRADED AREAS AND EXPOSED SOIL WITHIN THE PROJECT SHALL BE SEEDED PER THE REQUIREMENTS OF LAKE COUNTY.
14. DUST GENERATION MUST BE MINIMIZED AND A WATER TRUCK MUST BE AVAILABLE ON–SITE FOR ADEQUATE DUST CONTROL.

Revisions:
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CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
CADD FILE:
SHEET: 1

# SECTION – C

## AIR QUALITY MANAGEMENT PLAN

# Air Quality Management Plan

## Purpose and Overview

Emerald Mountain Farms, Inc. (EMF) is seeking a Major Use Permit from the County of Lake Community Development Department for a proposed Outdoor Commercial Cannabis Cultivation Operation at 1850 Ogulin Canyon Road near Clearlake, CA on Lake County APN 010-053-03 (Project Parcel), with A-Type 13 Distributor Transport Only, Self-Distribution. The proposed cultivation operation would be composed of a 34,316 $ft^2$ outdoor cultivation/canopy area, a 15,000 $ft^2$ outdoor cultivation/canopy area, a 10,000 $ft^2$ outdoor cultivation/canopy area, a 6,862 $ft^2$ outdoor cultivation/canopy area, a 2,384 $ft^2$ outdoor cultivation/canopy area, a 120 $ft^2$ Pesticides and Agricultural Chemicals Storage Area (existing wooden shed), a 120 $ft^2$ Security Center (proposed wooden shed), and nine 5,000-gallon water storage tanks. The proposed cultivation areas will be enclosed with 6-foot tall woven wire fences, covered with privacy screen/mesh where necessary to screen the cultivation/canopy areas from public view. The growing medium of the proposed outdoor cultivation/canopy areas will be an imported organic soilless growing medium (composed mostly of composted forest material) in aboveground fabric pots, with drip irrigation systems. All water for the proposed cultivation operation will come from the existing onsite groundwater well located at Latitude: 38.99555° and Longitude: -122.68973°.

This/EMF's Air Quality Management Plan (AQMP) is designed to promote the health, safety, welfare and environmental quality of the community, operational staff, and the Project Property. In-line with the directives of the Lake County Air Quality Management District, this AQMP includes measures to monitor and evaluate the performance of the plan, as well as ensure that all data and information is reported to Lake County and the proper local agencies. This AQMP identifies equipment and activities that may cause odor, contaminates, or other air quality hazards, and measures that operational staff will be required to follow to mitigate/minimize the amount of air pollution and particulates generated from the proposed cultivation operation. This AQMP also includes an Odor Response Program that establishes responsible parties and procedures for operational staff to follow in the event of an odor complaint.

## Equipment or Activities that May Cause the Issuance of Air Contaminants

The following sources are anticipated to be the most significant emitters of odor, air pollutants, and particles from the proposed cultivation operation. However, no single source or combined sources are anticipated to be harmful or detrimental to neighboring residences or the community of Lake County.

Gasoline and Diesel Powered Equipment: The proposed cultivation operation will generate small amounts of carbon dioxide from the operation of small gasoline engines (tillers, weed eaters, lawnmowers, etc…) and from vehicular traffic associated with staff commuting. The generation

of carbon dioxide is partially offset by the cultivation of plants, which remove carbon dioxide in the air for photosynthesis.

Fugitive Dust: The proposed cultivation operation may generate fugitive dust emissions through ground-disturbing activities, uncovered soil or compost piles, and vehicle or truck trips on unpaved roads. Fugitive dust will be controlled by applying gravel or crushed rock to the primary access roads and parking areas of the Project Property, by delaying ground disturbing activities until site conditions are not windy, by wetting soils with a mobile water tank and hose during ground disturbing activities, and by eliminating and/or covering soil stockpiles.

Odors: Cannabis cultivation can generate objectionable odors, particularly when the plants are mature/flowering in the cultivation area(s), or when being processed (drying, curing, trimming) after harvest. No significant odor impacts are anticipated from the proposed cultivation operation, due to the generous setbacks provided from public roads, property lines, and neighboring residences/outdoor activity areas.

## Odor Response Program

A Community Liaison/Emergency Contact will be made available to Lake County Officials/Staff and the Lake County Sheriff's Office at all times to address any needs or issues that may arise. The Community Liaison/Emergency Contact will be responsible for responding to odor complaints 24 hours a day, seven days a week, including holidays. EMF will provide the name, cell phone number, and email address of the Community Liaison/Emergency Contact to all interested County Departments, Law Enforcement Officials, and neighboring property owners and residents. EMF will encourage neighboring residents to contact the Community Liaison/Emergency Contact to resolve any operating problems before contacting County Officials/Staff.

When an odor complaint is received, the Community Liaison/Emergency Contact will immediately take action to determine the source of the odor for which the complaint was received, then mitigation measures will be immediately implemented to reduce/eliminate odors from emanating from the source. Depending on the source, mitigation measures include erecting windscreens and/or the installation of additional air pollution/odor control equipment.

### Community Liaison/Emergency Contact Information

The Community Liaison/Emergency Contact for EMF's proposed cultivation operation is Mr. Norman Grimm. Mr. Grimm's cell phone number is (214) 960-0906, and his email address is restaurantmiles@gmail.com. There is one residence within 1,000 feet of the Project Parcel, located at 2002 Ogulin Canyon Road. The owner and occupants of this residence have already received Mr. Grimm's contact information.

# SECTION – D

## PHASE I CULTURAL RESOURCES INVENTORY REPORT

# Phase I Cultural Resource Inventory Report For Emerald Mountain Farms Commercial Cannabis Permit APN No. 010-053-030-000, Lake County, California

Prepared for:
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January, 2018

USGS 7.5-Minute Series Lower Lake Quadrangle;
Township 13 North, Range 7 West, Section 13; ±80-acre study area
**Keywords**: Pomo, Clearlake, Lake County, Black Eye Canyon, Commercial Cannabis, Historic Refuse Scatter

## STATEMENT OF CONFIDENTIALITY

**This document is not for public distribution.** This report identifies the locations of cultural resource sites. Disclosure of this information to the public may be in violation of both federal and state laws. Applicable United States laws include, but may not be limited to, Section 304 of the National Historic Preservation Act (16 U.S.C. 470w-3), the Archaeological Resources Protection Act [16 U.S.C. Section 9(a) and Section 470(hh)], and Executive Order 13007. In California, such laws include, but may not be limited to, Government Code Section 6254.10. Site location information is confidential and is not for public disclosure.

Additionally, records maintained or in the possession of the Native American Heritage Commission (NAHC) or state and local agencies that are exempt from public disclosure include those that contain information on Native American graves, cemeteries, and sacred places, and include records obtained during consultation with Native Americans (California Government Code §6254(r) and §6254.10).

## LIMITATIONS STATEMENT

This report has been prepared based on certain key assumptions made by DZC Archaeology & CRM Consulting that substantially affect the conclusions and recommendations of this report. These assumptions, although thought to be reasonable and appropriate, may not prove to be true in the future. The conclusions and recommendations of DZC Archaeology & CRM Consulting are conditioned upon these assumptions.

These assumptions include confidential information provided by the Native American Heritage commission on October 30, by the Northwest Information Center on October 19, 2017, and by direct observation of site conditions and other information that is generally applicable as of January 10, 2018. The conclusions and recommendations herein are therefore applicable only to that timeframe. Information obtained from these sources in this timeframe is assumed to be correct and complete. DZC Archaeology & CRM Consulting will not assume any liability for findings or lack of findings based upon misrepresentation of information presented to the project team or for items not visible, made available, accessible, or present at the site at the time of the Project site survey.

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## Table of Abbreviated Terms

| | |
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| AB52 | Assembly Bill 52 Native Americans: California Environmental Quality Act |
| AMSL | Above Mean Sea Level |
| APE | Area of Potential Effects |
| APN | Assessor's Parcel Number |
| CCR | California Code of Regulations |
| CEQA | California Environmental Quality Act |
| CDFA | California Department of Food and Agriculture |
| CHRIS | California Historical Resources Information System |
| CRHR | California Register of Historic Resources |
| DZC | DZC Archaeology & Cultural Resource Management Consulting |
| ESL | Environmental Study Limits |
| NAHC | Native American Heritage Commission |
| NEPA | National Environmental Policy Act |
| NHPA | National Historic Preservation Act |
| NRHP | National Register of Historic Places |
| PRC | Public Resource Code |
| QTc | Cache Formation |
| THPO | Tribal Historic Preservation Officer |
| TCR | Tribal Cultural Resources |
| USGS | United States Geological Survey |

## SUMMARY OF FINDINGS

This report details the results of a cultural resources inventory of approximately 80-acres near the town of Clearlake in Lake County, California. DZC Archaeology & Cultural Resource Management Consulting was retained by Emerald Mountain Farms to conduct an archaeological survey in support of the marijuana cultivation permitting process in the County of Clearlake and the State of Californica Application to the State of California. The study area is located in Township 13 North, Range 7 W, Section 13, Mount Diablo Meridian, on the Lower lake 7.5-Minute USGS Quadrangle.

The field work portion of this survey was undertaken on October 10, 2017 and conducted by Dimitra Zalarvis-Chase, a Secretary of the Interior qualified archaeologist, and archaeological technicians Thomas Ross, Joanne Gallagher, Ronald Johnson, and Tommy Chase. Forty of the eighty acres of the parcel were intensively surveyed in transects of 20-meters or less. Impediments to ground visibility included thick grasses and steep slopes exceeding 40 degrees. One cultural resource, a historic refuse scatter, was observed and recorded on the property for which this survey was conducted.

Historic research was completed at the Northwest Information Center of the California Historic Resources Information System. The review indicated no recorded resources or previous surveys on the property. One cultural resource and two prior surveys were noted within the 0.5-mile environmental study limits search radius. The geo-archaeological research conducted for this survey indicates a low-to-moderate sensitivity for unknown prehistoric resources within the APE.

This cultural resources inventory is intended to satisfy the requirements of the Lake County General Plan – Open Space, Conservation, and Recreation Element, and the permitting requirements of the Medical and Adult-Use Cannabis Regulation & Safety Act. It was conducted at a level which also satisfies the requirements of the California Environmental Quality Act of 1970 and the National Environmental Policy Act of 1969, Section 106 of the National Historic Preservation Act of 1966 (all as amended).

The California Department of Food and Agriculture is the Lead Agency providing regulatory oversight for the permitting process. This report finds that there will be **No Effect** to historic, archaeological, or Tribal resources, as defined by California Environmental Quality Act, and a Finding of **No Impacts** to historic resources, as defined by National Environmental Policy Act, with the implementation of CULTURAL CONDITIONS as stipulated herein. It is best practice to avoid cultural resources whenever possible. Additional survey will be required if the project changes to include areas not previously surveyed.

# 1. INTRODUCTION

## 1.1 Project Description

The proposed project is for the permitting of an existing commercial cannabis operation comprising a single raised-bed cultivation areas. Dale Soditus, owner of Emerald Mountain Farm, contracted with DZC Archaeology and Cultural Resource Management Consulting (DZC) to conduct cultural resource studies in support of a Commercial Cannabis Permit Application to the State of California. Per stipulations in the Lake County General Plan and the Lake County Ordinance 2997, a cultural resource survey, in compliance with California Environmental Quality Act (CEQA) standards, was requested for this project by the property owner.

DZC is an environmental consulting firm with over 10 years of experience with projects throughout northern California. DZC conducts cultural resource studies in accordance with the Secretary of the Interior's (SOI) standards and in compliance with all applicable federal, state, and local codes, acts, regulations, and orders relating to cultural resources, where applicable. This cultural resources inventory report was prepared by Dimitra Zalarvis-Chase, a Registered Professional Archaeologist who meets the Department of the Interior's Professional Qualifications Standards in Prehistoric and Historic Archaeology, with contributions by Nathan Foust, M.A., and Thomas Ross B.A.

The existing cultivation operation at Emerald Mountain Farm comprises two graded terraces with raised-beds. The cannabis activity area is located at the southeastern quarter of the parcel. All grading and construction within the cannabis activity area had occurred prior to this survey.

## 1.2 Project Location

The project area is located near the city of Clearlake in Lake County, in Black Eye Canyon. It is situated four miles northeast of Clear Lake and two miles west of Cache Creek, between Quackenbush Mountain and Bally Peak. The City of Clearlake is situated along the shores of Clear Lake, approximately sixty miles east of the Pacific Ocean and approximately thirty miles west of the foothills of Sacramento Valley (Appendix A, Figure A-1: Study Vicinity). The APE is located at 1800 Black Eye Canyon Road in Clearlake, CA; Lake County Assessor's Parcel Number (APN) 010-053-030; Section 13, Township 13 North and Range 7 West, Mount Diablo Meridian, of the U.S. Geological Survey Lower Lake 7.5-Minute Series (1975) Quadrangle.

## 1.3 Delineation of the APE (APE) and Environmental Study Limits (ESL)

The entire subject parcel (APN 010-053-030) constitutes the APE; the ESL includes a 0.5-mile radius around the APE (Appendix A, Figure A-2. Project Location & Literature Search Radius). An APE varies depending on the potential impacts of the project, the type of environmental clearance (i.e.,

CEQA or NEPA), and the Lead Agency. The proposed commercial cannabis operation must meet CEQA requirements as the project requires a permit from the State of California. Thus, the APE and study limits encompasses enough area to satisfy the concerns of the agency.

The horizontal APE measures approximately 2600-feet (east-west) by 1300-feet (north-south). The vertical APE (i.e., associated with the engineering design of the project) is based upon the existing topography, site development history, preliminary project plans, and any potential visual impacts to any existing historic properties in the site vicinity. The vertical APE for this project is approximately 20-feet high.

It is highly desirable to conduct all surveys prior to ground disturbance. Due to the incipience of the permitting process, ground disturbance in the form of residential and cultivation development occurred on site prior to the archaeological survey.

# 2. REGULATORY SETTING

This section identifies state legislation, and local statutes, ordinances, and guidelines that govern the identification and treatment of cultural resources and analysis of project related effects to cultural resources. The Lead Agency and project activities are guided by these laws as project activities may affect cultural resources. This report is being prepared to comply with State and Federal considerations.

## 2.1 State

### 2.1.1 California Environmental Quality Act (CEQA)

The Lead Agency for this project is the California Department of Food and Agriculture (CDFA). CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources (Section 21084.1). If it can be demonstrated that a project will cause damage to resources Eligible for or Listed in the California Register of Historic Resources (CRHR), Tribal Cultural Resources (TCRs) and other resources on local County or Local lists, or those determined by the lead agency to be significant. The lead agency may require reasonable efforts be made to permit any or all of the resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2[a], [b], and [c]).

Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

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

A historical resource is a resource listed in, or determined to be eligible for listing, in the CRHR (Section 21084.1), a resource included in a local register of historical resources (Section 15064.5[a][2]), or any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (Section 15064.5[a][3]).

PRC Section 5024.1, Section 15064.5 of the CEQA Guidelines, and PRC Sections 21083.2 and 21084.1 were used as the basic guidelines for this cultural resources study. PRC Section 5024.1 requires an evaluation of historical resources to determine their eligibility for listing in the CRHR. The purpose of the register is to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources on the CRHR

were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, enumerated below.

According to PRC Section 5024.1(c) (1–4), a resource is considered historically significant if it (i) retains "substantial integrity," and (ii) meets at least one of the following criteria:

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 installation, or 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.

Impacts to significant cultural resources that affect the characteristics of any resource that qualify it for the National Register of Historic Places or adversely alter the significance of a resource listed on or eligible for listing in the CRHR are considered a significant effect on the environment. These impacts could result from "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines, Section 15064.5 [b] [1], 2000). Material impairment is defined as demolition or alteration "in an adverse manner [of] those characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the California Register…" (CEQA Guidelines Section 15064.5[b] [2] [A]).

### 2.1.2 Assembly Bill 52 (AB52) Native American Consultation & CEQA

In 2016, CEQA established a consultation process with all California Native American Tribes, including both federally and non-Federally recognized Tribes that are historically connected and culturally affiliated with the project location. This Bill established the Tribal Cultural Resources (TCR) classification and requires consideration of Tribal Cultural Values in determination of project impacts and mitigation, requires Tribal notice, and requires meaningful consultation.

In accordance with Public Resource Code (PRC) RC 21080.3.2(b), consultation ends when either both parties agree to mitigation measures, other agreements to avoid a significant effect on TCR's, or, when a party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.

### 2.1.3 The Medical and Adult-Use Cannabis Regulation & Safety Act (MAUCRSA)

In 2015, California enacted three bills—Assembly Bill 243 (Wood, Chapter 688 of the Statutes of 2015); Assembly Bill 266 (Bonta, Chapter 689 of the Statutes of 2015); and Senate Bill 643 (McGuire, Chapter 719 of the Statutes of 2015)—that collectively established a comprehensive state regulatory framework for the licensing and enforcement of cultivation, manufacturing, retail sale, transportation,

storage, delivery, and testing of medicinal cannabis in California. This regulatory scheme is known as the Medical Cannabis Regulation and Safety Act (MAUCRSA).

In November 2016, voters approved Proposition 64, the Adult Use of Marijuana Act (AUMA). Under Proposition 64, adults 21 years of age or older may legally grow, possess, and use cannabis for nonmedicinal purposes, with certain restrictions. In addition, beginning on January 1, 2018, AUMA makes it legal to sell and distribute cannabis through a regulated business.

In June 2017, California Governor Jerry Brown signed into law MAUCRSA, which creates one regulatory system for both medicinal and adult-use (recreational) cannabis. Under Section 26060 of the MAUCRSA Business and Professions Code, the CDFA was designated as the state agency responsible for issuing licenses to commercial cannabis cultivators and serve as the lead agency for purposes of the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) related to the licensing of cannabis cultivation in California.

Pursuant to Section 26066 of the MAUCRSA Business and Professions Code guidelines: annual license application requirements shall include evidence of exemption from, or compliance with, Division 13 of the Public Resources Code: California Environmental Quality Act (CEQA). The evidence provided shall be one of the following:

1. A copy of the applicant's license, permit, or other authorization from the local jurisdiction if the local jurisdiction has adopted an ordinance, rule, or regulation pursuant to Section 26055(h) of Business and Professions Code that requires discretionary review and approval of permits, licenses, or other authorizations to engage in commercial cannabis activity.
2. A copy of the Notice of Determination or Notice of Exemption and a copy of the CEQA document, or reference to where it can be located electronically, if the applicant does not wish to provide a copy of the license, permit, or other authorization provided by the local jurisdiction or if the local jurisdiction has not adopted an ordinance, rule, or regulation pursuant to Section 26055(h) of Business and Professions Code that requires discretionary review and approval of permits, licenses, or other authorizations to engage in commercial cannabis activity.
3. If an applicant does not have the evidence specified in the subsections above, or if the local jurisdiction did not prepare a CEQA document, the applicant will be responsible for the preparation of an environmental document in compliance with CEQA that can be approved or certified by the department, unless the department specifies otherwise.

This report is in support of compliance with MAUCRSA. CDFA will not issue licenses to applicants in local jurisdictions where cannabis cultivation is banned.

## 2.2 Lake County

### 2.2.1 Lake County General Plan

The Lake County General Plan was adopted in September 2008 and contains an Open Space, Conservation, and Recreation Element which outlines the county's intent to preserve and enhance their natural and cultural resources. Section 9.8 of the Open Space, Conservation, and Recreation Element, Cultural Resources, provides general guidance for the protection of cultural resources within the County with an outline of their goals.

- Support efforts to identify and evaluate cultural and historic resources and prepare a historical resource inventory.
- Protect resources with potential for placement on the National Register of Historic Places and/or inclusion in the California State Office of Historic Preservation.
- Support public and private efforts to preserve, rehabilitate and continue to use historic structures, sites, and districts.
- Implement plans to protect resources that are at risk for alteration or development and develop monitoring, mitigation, and construction standards, for the protection of cultural resources, prior to development.
- Support cultural and archaeological resource education programs.
- Coordinate with Native American tribes.
- Comply with CEQA standards with regards to inadvertent discovery of cultural resources or human remains.

**Implementation:**

**20.0** If preservation of cultural resources is not feasible, every effort shall be made to mitigate impacts, including relocation of structures, adaptive reuse, preservation of facades, and thorough documentation o archival records,

**21.0** In the event archaeological resources are discovered during site excavation, grading, or construction, work on the site will be suspended until significance of the features can be determined by a qualified archaeologist. If significant resources are determined to exist, the archaeologist shall make recommendations for protection or recovery of the resource.

**22.0** The county shall establish a cultural heritage zone within the zoning ordinance.

**23.0** The county shall contract with a qualified cultural resource coordinator for the development of review procedures and ordinances for the protection of cultural heritage recourses, including mechanisms for the protection of identified cultural sites from vandalism.

**24.0** The county shall develop an informational pamphlet pertaining to cultural resources for distribution to the public.

### 2.2.2 Ordinance 2997 Lake County

Article 72 of Ordinance 2997 states that the purpose and intent of the article is to implement state law by providing a means for regulating the cultivation of medical marijuana in a manner that is consistent with state law and which balances the needs of medical patients and their caregivers and promotes the health, safety, and welfare of the residents and businesses within the unincorporated territory of the County of Lake. Article 72 is intended to be consistent with Proposition 215 and Senate Bill 420, and towards that end, is not intended to prohibit persons from individually, collectively, or cooperatively exercising any right otherwise granted by state law. Rather, the intent and purpose of this Article is to establish reasonable regulations upon the way marijuana may be cultivated, including restrictions on the amount of marijuana that may be individually, collectively, or cooperatively cultivated in any location or premises, to protect the public health, safety, welfare and environment in Lake County,

Outdoor Cultivation Limits and Environmental Standards:

- Cultivation on vacant properties is prohibited.
- Outdoor cultivation, including cultivation within greenhouses or "hoop houses" is prohibited on any parcel that is located within a Community Growth Boundary as designated by the Lake County General Plan, and on any parcel, that is one (1) acre or smaller and located outside of any designated Community Growth Boundary.
- Outdoor cultivation by qualified patients and primary caregivers shall not exceed 6 mature or 12 immature plants on parcels larger than 1 acre.
- Outdoor cultivation shall not be conducted within 1,000 feet of any public or private elementary, middle or high school, developed park containing playground equipment, drug or alcohol rehabilitation facility, child care facility or nursery school, church or youth-oriented facility
- Outdoor cultivation, including any topsoil, pesticides, or fertilizers used for the cultivation of medical marijuana shall not be located within 100 feet of any spring, top of bank of any creek or seasonal stream, edge of lake, delineated wetland or vernal pool.
- Outdoor cultivation shall be completely screened from public view and the views
- Outdoor medical marijuana shall not be cultivated or otherwise placed within 75 feet of any property line or within 150 feet of any off-site residence, as measured from the edge of the fence of the cultivation area.
- If the premises is rented or leased, written approval shall be obtained from the property owner(s),
- A copy of a current and valid physician recommendation or state-issued medical marijuana identification card shall be displayed within the secure cultivation area, or on the exterior of the building used for indoor cultivation,
- Medical Marijuana cultivation shall not adversely affect the health or safety of nearby residents by creating dust, glare, heat, noise, odor, smoke, traffic, or other impacts, or be hazardous due to use or storage of fertilizers, pesticides or wastes.
- Outdoor cultivation by medical marijuana collectives, comprised of members who are all residents of Lake County, shall not exceed 48 mature plants or 72 immature plants.

# 3. ARCHAEOLOGICAL & ETHNOGRAPHIC BACKGROUND

The following sections provide context on the environment, archaeology, ethnography, and history of the APE and ESL.

## 3.1 Environmental Setting – Geography, Flora, and Fauna

### 3.1.1 Geography

Lake County lies within the eastern portion of the North Coast Range, the arbitrary geomorphic province which is bounded by San Francisco Bay to the south, the Sacramento Valley to the east, and the northwestern portion of coastal California to the west. The North Coast Range is formed by numerous rugged ridges and small intermontane valleys. The ridges in the region generally follow a north to northwestern trend.

Elevations in Lake County vary from approximately 1,300 feet above seas level (the elevation of Clear Lake) to approximately 7,000 feet above sea level at Snow Mountain. Overall, the northern half of the county lies at a higher elevation than the southern half. While the general trend is toward greater relief and higher elevations in the northern areas of the county, the mountain ridges of this complex rise 4,000 feet or more above the floor of the Sacramento Valley to the east.

Clear Lake is located approximately 60 miles east of the Pacific Ocean and 30 miles west of the Sacramento Valley foothills. Clear Lake is surrounded by fertile agricultural lowlands, the steep, rugged, pine-forest-covered Mendocino Mountains to the north and west, and the rolling, chaparral-covered ridges of the Mayacamas Mountains to the south and east. More specifically, the city of Clearlake lies at the foothills of Quakenbush Mountain and Perkins Creek Ridge, between the flats of Cache Creek and Burns Valley.

### 3.1.2 Geology

Within the North Coast Range, material from the Franciscan Geologic Complex is dominant. The complex is a highly deformed and metamorphosed set of marine sediments and volcanic rocks. Included in this grouping are greywacke, muddy sandstone, chert, and shale, along with greenstone and basalt, minor amounts of limestone and metamorphic (Alt and Hyndman 1975). The Franciscan Complex is separated from the correlative marine strata of the Great Valley Group to the east by the Coast Range Thrust Fault. Serpentine and igneous rocks lie in a zone between the two categories.

The Great Valley sequence marks the eastern limits of the Range and has been dated as contemporaneous with the Franciscan sediments. The Great Valley Group is comprised of interbedded marine mudstone, sandstone and conglomerate. It is similar to the Franciscan group but

without the deformation (Lander 1984:2). The Great Valley Sequence apparently rode intact above the Franciscan slabs which were forced against the edge of the continent, folding, crushing and shearing the rocks. The serpentine from the upper mantle was sliced and shifted along the fault between the Franciscan and Great Valley Sequence (Hildebrandt and Swenson 1982). The Franciscan Formation, which comprises most of the North Coast Range, is not known for its mineral wealth. Only mercury cinnabar, which occurs with serpentine, has been found in quantities sufficient for small-scale commercial mining.

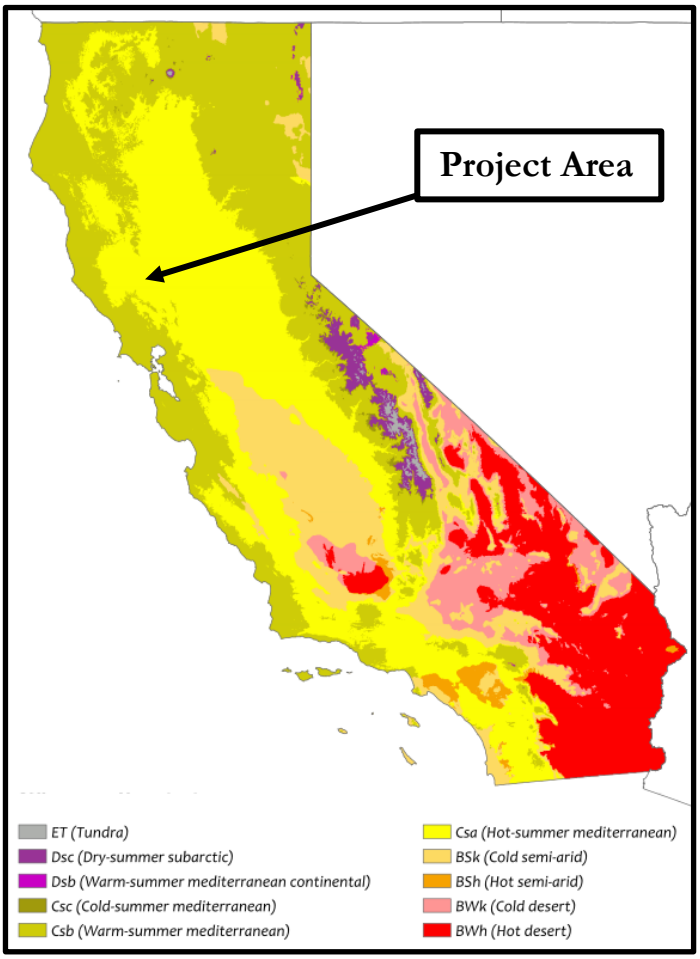


**Figure 1 Köppen Climate Types of California (courtesy of Peterson [2016])**

The major geologic influence affecting the immediate APE is volcanic activity which produced lava flows in the vicinity of Clear Lake. The highly recognizable geologic formation known as the Clear Lake Basin is a collapsed caldera that was formed when the magma chamber beneath the Clear Lake volcanic field began to empty. The eruptions began approximately 1.5 million years ago and ended around 60,000 years ago (DeGeorgey 2003: 8). The current geothermal activity in the Geysers area is the result of continued volcanic activity (Lander 1984).

Within the North Coast Range, from the coast to beyond the eastern ranges, material from the Franciscan Geologic Complex is dominant. The complex is a highly deformed and metamorphosed set of marine sediments and volcanic rocks. Included in this grouping are graywacke, muddy sandstone, chert, and shale, along with greenstone and basalt, minor amounts of limestone and metamorphic rocks (Alt & Hyndman 1975). The Franciscan Complex is separated from the correlative marine strata of the Great Valley Group to the east by the Coast Range Thrust Fault. Serpentine and igneous rocks lie in a zone between the two categories.

### 3.1.3 Climate

The climate of the inland mountains and valleys of Lake County are moist and humid in the wintertime and warm and dry in the summertime, with moderate year-round temperatures. The inland areas around Clear Lake are classified as a Hot-Summer Mediterranean climate in the Köppen Climate System (Köppen 1936). Average rainfall is 31.5-inches per year with accompanying temperatures remaining between 30° and 90° Fahrenheit, exhibiting hot summertime days and rain during winter storms, with very rare snowfall. (US Climate Data 2017). Rainfall occurs predominantly between October and April. The variation in rainfall from the eastern side of the county is considerably different from the western portion. The most abundant precipitation is in the Geysers area, where average annual precipitation is 60 to 80 inches. The lowest precipitation amounts are in the western side of the Sacramento Valley, where the average annual rainfall is only 10 to 20 inches (Donley et al. 1979).

### 3.1.4 Habitats

With 1,256 square miles of terrestrial land, Lake County is dominated by pine and oak forests on the ridgetops and foothills; chaparral and oak dominate the drains, valleys, and lowlands. Development of the lowlands in particular has created open grasslands, pastures, orchards, vineyards, and urban landscapes. Vineyards especially have been planted in the deep fertile soils which once supported productive and diverse natural habitats.

Lake County retains many abundant water sources, which result in a diversity of micro-habitats throughout the region. The principal perennial waterway is Cache Creek, located immediately south of the APE. Additional year-round water sources in the vicinity include the North Fork of Cache Creek to the northwest, Perkins Creek through the center of the APE, and multiple unnamed tributaries draining to Burns Valley at the northwest and Cache Creek to the south. Small seeps and springs provide additional localized water sources within the APE.

Although it is land-locked, Lake County contains 73-square miles of open water. Lacustrine habitats are common in Lake County, characterized as inland depressions or dammed riverine channels containing standing water (Cowardin 1979); these vary from small ponds, less than a hectare, to large areas covering several square miles. Clear Lake, the only large natural lake in the North Coast Range, is situated west of the APE and would have provided abundant and year-round lake and marsh resources in precontact and historic eras.

### 3.1.5 Flora

The vegetation of the southern and southeastern areas of Lake County contain species that are characteristic to specific habitats or pervasive in more than one area. The following section details plant species that have adapted to the oak-woodlands, chaparral, natural prairies, and agriculturally-modified grassy lowlands which abut the APE.

Characteristic species within the oak-woodland-dominated habitats include tan oak (*Notholithocarpus densiflorus*), madrone (*Arbutus menziesii*), California bay (*Umbellularia californica*), canyon maple (*Acer grandidentatum*), canyon live oak (*Quercus chrysolepsis*), California black oak (*Quercus kelloggii*), hazelnut (*Corylus sp.*), and buck brush, deer brush, and Parry's ceanothus (*Ceanothus sp.*) (Munz and Keck 1973:16).

The chaparral community is found on dry slopes and ridges in the Coast Range and is characterized by dense brush ranging in height from three to nine feet. Dominant constituents in the project area are chemise (*Adenostoma fasciculatum*), red-shank (*Adenostoma sparsifolium*), manzanita and ceanothus. Also found in this plant community are scrub oak, sumac and poison oak. Inclusions of the foothill woodland are common in canyons and other drainage areas. Fire occurs regularly in Chemise-Redshank Chaparral-dominated habitats and influences habitat structure. Mature Chemise is single layered, generally lacking well-developed herbaceous ground cover and overstory trees. Shrub canopies frequently overlap, producing a nearly impenetrable canopy of interwoven branches averaging 3.3 to 6.6 feet in height, but can reach 9.8 feet (Horton 1960, Cheatham and Haller 1975, Hanes 1977). Chemise growth rates declined and accumulation of dead material typically begins after 16 years, but this may occur in 20 to 25 year cycles in northern California (Sampson 1944). Mixed Chaparral generally occupies sites at higher elevations or on north-facing slopes. In northern California, Chaparral shrubs form the understory of many forested habitats like Blue oak, Coastal oak, and Ponderosa pine (Hanes 1977). Shrubs are important to many mammals as shade during hot weather, and useful in moderating temperature and wind velocity in the winter (Loveless 1967).

Introduced annual grasses are the dominant plant species of developed areas. These include wild oats, soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis*), wild barley (*Hordeum spontaneum*), and red fescue (*Festuca rubra*). Common forbs include broadleaf filaree (*Erodium brachycarpum*), redstem filaree (*Erodium cicutarium*), turkey mullein (*Croton setigerus*), tree clovers (*Melilotus albus*), bur clover (*Medicago sp.*), popcorn flower (*Plagiobothrys sp.*), and many others. California poppy (*Eschscholzia californica*), the State flower, is found in this habitat. Perennial grasses, found in moist, lightly grazed, or relic prairie areas, include purple needlegrass (*Nassella pulchra*) and Idaho fescue (*Festuca idahoensis*). Vernal pools, found in small depressions with a hardpan soil layer, support downingia (*Downingia sp.*), meadowfoam (*Limnanthes sp.*), and other species (Parker and Matyas 1981). Irrigated pastures are often a permanent agricultural habitat, established on soils not suitable for other crops and where an ample water supply is available. In northern California, ryegrasses (*Lolium sp.*), tall fescue (*Festuca arundinacea*), Dallisgrass (*Paspalum dilatatum*), Ladino clover (*Trifolium repens*), strawberry clover (*Trifolium fragiferum*), and other trefoils (*Trifolium sp.*) are preferred (George et al. 1980).

The understory in vineyards and orchards usually consist of bare soil (controlled by tillage and/or herbicides) or a cover crop of herbaceous plants. As while deciduous orchards are typically a single-species tree-dominated area. Deciduous orchards include trees, such as, almonds (*Prunus dulcis*), apples

(*Malus pumila*), apricots (*Prunus armeniaca*), cherries (*Prunus avium*), figs (*Ficus benjamina*), nectarines and peaches (*Prunus persica*), pears (*Pyrus genus*), pecans (*Carya illinoinensis*), pistachios (*Pistacia vera*), plums (*Prunus prunus*), pomegranates (*Punica granatum*), prunes (*Prunus domesticas*) and walnuts (*Juglandaceae*) (Sunset, 1972); most are located in valleys or foothills.

### 3.1.6 Fauna

The North Coast Range, with its complexity of environmental features, contains a rich diversity of habitats which support a wide variety of fauna (Hildebrant and Swenson 1982:20). The southern and southeastern chaparral grasslands, agricultural lowlands, and riparian areas provide habitats for as much of a variety of animals as for plants. It is important to note that while fishing was a key sustainable food-source for Native Americans living along the shores of Clear Lake, within the study area, the most important fish species of salmon and trout were probably not available in the eastern drainages (Baumhoff 1963; Chartkoff and Childress 1966).

Mammal within the APE include tule Elk (*Cervus canadensis nannodes),* black-tail deer (*Odocoileus hemionus*) gray squirrel (*Sciurus griseus*), California ground squirrel (*Otospermophilus beecheyi*), desert cottontail (*Sylvilagus audubonii*), coyote, black bear (*Ursus americanus*), raccoon, and mule deer (*Odocoileus hemionus*) (Martin et al. 1951). Grey foxes (*Urocyon cinereoargenteus*), coyotes (*Canis latrans*), raccoons (*Procyon lotor*), red-tailed hawks (*Buteo jamaicensis*), mountain lions (*Puma concolor*), and rattle snakes (*Cortalus genus*) are common predators or scavengers within the APE. Common avian species include northern flicker (*Odocoileus hemionus*), scrub jay (*Aphelocoma sp.*), America crow (*Corvus brachyrhynchos*), plain titmouse (*Baeolophus inornatus*), Brewer's blackbird (*Euphagus cyanocephalus*), house finch (*Haemorhous mexicanus*), band-tailed pigeon (*Patagioenas fasciata*), yellow-billed magpie (*Pica nuttalli*), western bluebird (*Sialia mexicana*), American robin (*Turdus migratorius*), varying thrush plants (*Turdidae*), northern mockingbird (*Mimus polyglottos*), cedar waxwing (*Bombycilla cedrorum*), yellow-rumped warbler (*Setophaga coronata*), black-headed grosbeak (*Pheucticus melanocephalus*), and Bullock's oriole (*Icterus bullockii*).

## 3.2 Archaeological Background

Archaeological patterns over time represent adaptive modes of technological skills (cultural items), economics (production, distribution, and consumption), trade networks, and social complexity (social status, wealth, mortuary, and ceremonial practices) (Fredrickson 1973: 118). Patterns vary in development and sequence over time, and over regions. The northwest coast offers a variety of ecosystems, from marine and estuarine to redwood forest and oak woodlands, each one rich in resources and requiring different adaptations for resource extraction. The Clear Lake region has a unique signature of obsidian sources. Using these obsidian resources, archaeologists are able to understand the age of the artifact, and other associates goods, and interpret exchange patterns to create a chronological sequence of typology and artifact patterns (Fredrickson 1984: 525-526).

Early studies for chronological sequences on the southern North Coast Ranges of California included frequent efforts by UC Davis, Sonoma State University, and Chico State University. Fredrickson (1984) and Moratto (1984) offer extensive overviews of the region and the chronological sequence is best summarized by Jones & Klar (2007).

### 3.2.1 Post Pattern (8000 B.C. – 6000 B.C.)

Studies from Paleoindian Period sites at the Borax Lake site, and possibly the Mosin site, place the earliest occupation period of the North Coast Range to be between 10, 000 and 6, 000 B.C. due to the presence of Post Pattern projectile points, which are only documented at these two locations. The presence of fluted projectile points in this pattern sequence implies that darts or atlatls were utilized, and the absence of evidence for milling could infer that the economic basis for the Post Pattern was generalized hunting in a lakeshore environment and a highly mobile society (Moratto 1984: 497; Greenway 1988: 60).

### 3.2.2 Borax Lake Pattern (6000 B.C. – 1000 B.C.)

The Borax Lake Site (CA-LAK-36) is the first published archaeological work that took place in the area. It was conducted by M. R. Harrington, who announced in 1942 that the artifacts of the site were similar in age to the Clovis points found across North America due to the fluted characteristics of the Borax Lake projectile points, making this location one of the earliest habitation sites of the Clear Lake area; possibly as old as 10, 000 B.C. However, a re-examination of the site conducted by Meighan and Haynes (1970) concluded that the likely earliest dates lie between 8000 and 6000 B.C. (White 1999: 9; Greenway 1988: 59)

Regionally, the Borax Lake Pattern has been uncovered in the mountains of Mendocino County, Santa Rosa Plain, and most prominently in the Clear Lake Basin where assemblages are reflected by flaked stone only (i.e. wide-stemmed points, ovoid flake tools, and bladelet flakes) ( Jones & Klar 2007: 89). Artifact assemblages comprised hand-stones, milling slabs, and large wide-stemmed spear points made of locally available obsidian.

The Borax Lake Aspect (6000 B.C. – 3000 B.C.) of the Borax Lake Pattern has been linked to Pre-Proto-Pomoan people who likely introduced wide-stem projectile points and millingstones when they migrated into the southern North Coast Range (Whistler 1980). The additional use of a bowl mortar with the millingstone is an indication of the Mendocino Aspect of the Borax Lake Pattern found between 3, 000 and 1, 000 B.C. in the Eel River subregion. The migration of Pomoan people into the Russian River Valley, from the Clear Lake basin, during the Middle Archaic Period, likely introduced the Mendocino Aspect to this subregion (Moratto 1984: 499, 510).

### 3.2.3 Berkeley Pattern (1000 B.C. – 500 A.D.)

The contracting-stemmed and square stemmed projectile points of the Berkeley Patter, alongside frequent use of pestles and some of the earliest evidence of intense acorn processing signify this time

period as one of more sedentary living, exemplified by more formalized burials. These assemblages also contain elaborate Excelsior points, many fishing implements made from obsidian and bone, baked clay pottery, and heavy use of mortar and pestles ( Jones & Klar 2007: 90, 92).

The Houx Aspect of the Berkeley Pattern consisted of lanceolate projectile points, contracting-stem projectile points, and bowl mortar and pestle. This aspect replaced Mendocino Aspect artifacts in the Russian River Valley by the time of the Upper Archaic Period (3000 – 1000 B.C.) and remained in use until around 500 A.D. (Moratto 1984: 499). Fredrickson (1973) and Moratto (1984) described the Houx aspect as an intermediary pattern bridging the Borax Lake patterns with the Berkeley Patterns, and containing elements from both styles. Fredrickson also proposes that the presence of this sequence at sites to the southeast of Clear Lake mark the entry of the Lake Miwok people into the area.

### 3.2.4 Augustine Pattern (500 A.D. – c. 1850 A.D.)

Fredrickson (1973) describes the Augustine Pattern as part of a widespread culture in Central California distinguished by their efforts towards intensive fishing, hunting and gathering (particularly acorns), and densely populated and stratified societies. The latter is inferred by the elaborate ceremonial and grave goods attributed to wealthier members of society. Bennyhoff (1986) further alludes that the transition between the Berkeley and Augustine Patterns marks the transition between the Middle and Late Emergent Period due to the use of highly specified traits: simple harpoon tips, collared smoking pipes, grave burning, the bow and arrow, and spindle whorls.

Whistler (1977) thought that the Augustine Pattern was spread by southward-moving Wintuan peoples who also brought traditions such as clam-shell disk bead use as currency and Gunther barbed projectile points. Though aspects of this culture can also be attributed to sedentary settlement, growing societal complexity, and extensive trading as much as being spread by invasive peoples (Moratto 1984: 212-213). This archaeological pattern is characterized by rattlesnake corner-notches projectile points in southern Mendocino/northern Sonoma mountain valleys and elaborate ceremonial ornaments made from magnesite, bone, and clam-shell disks in the Sacramento Valley and San Joaquin delta (Jones & Klar 2007: 94).

The Clear Lake aspect of the Augustine Pattern is the most recent and included use of slab mortars and basket hoppers, corner-notched arrow points, and clam-shell disk and magnesite beads. These cultural features were contemporaneous with the Shasta Aspect of the Augustine Period located to the north and belonging to the Athabascan and Yukian peoples, but Clear Lake Aspect artifacts are distinctly Pomoan in nature (Moratto 1984: 496, 523). These assemblages ushered in the use of bow and arrow, which replaced the atlatl, and the hopper mortar slab, which replaced the bowl mortar, for both cultural areas. The main difference between the two aspects are the favored use of barbed projectile points in the north and corner-notched points in the south (Greenway 1988: 62).

## 3.3 Ethnographic Background

The project area lies within the ethnographic territory of the Pomo (Figure 2). Ethnographic accounts of the Pomo are primarily derived from Barrett (1908) and Kroeber (1925).

### 3.3.1 Linguistics

The Pomo belong to the family of Californian Hokan speakers, which is among the oldest of western North American languages (Jones & Klar 2007). Oswalt (1964) suggests that the Clear Lake as the proto-Pomo homeland with subsequent dispersion to the northeast and west. The eastern and southern Pomo split from each other 2000 or more years ago; the western Pomo appear to have split from the rest around 1500 years ago. Whistler (1988) proposes that proto-Pomo was spoken in the Clear Lake Basin as early as 5, 000 years ago, and that "pre-proto-Pomo" can be traced back to the arrival of the early Borax Lake Pattern at Clear Lake around 7, 000 years ago. The expansion of the Pomo into the Russian River drainage correlates with the movement of Borax Lake Pattern into that area around 4, 000 years ago (Moratto 1984: 510).

### 3.3.2 Settlement Patterns

The Pomo inhabited three different regions and three different types of environments: the coast, the Russian River Valley, and the lake region (Figure 3). On the coast, a narrow strip of foothills between the shoreline and the often extreme cliff faces provide habitable areas at the mouths of streams emptying in the pacific, where fishing was bountiful. Dense bands of giant coast redwood forest extend inland for miles and were not utilized by the Pomo, with the exception of deer hunting and acorn processing. The open ridges and sunny prairies were the location of permanent settlements on the coast. The Pomo heartland was the Russian River Valley. This valley provides numerous springs and groves of oak, conifer, and manzanita. More than a third of all Pomo communities were along this

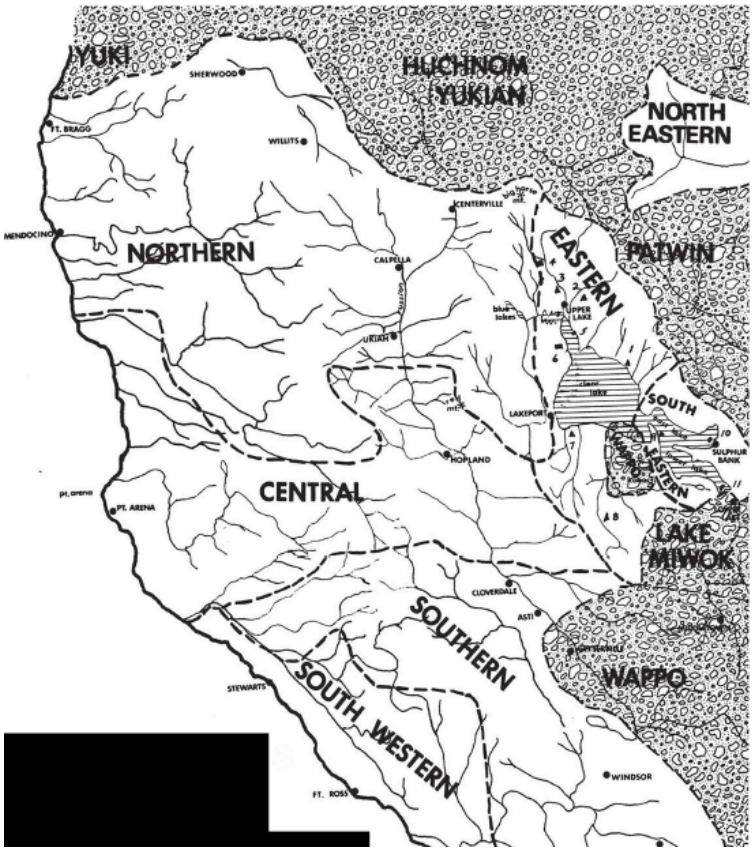


**Figure 2 Map showing the territory range of the Pomo and their neighbors; from McLendon 1977: pp. i**

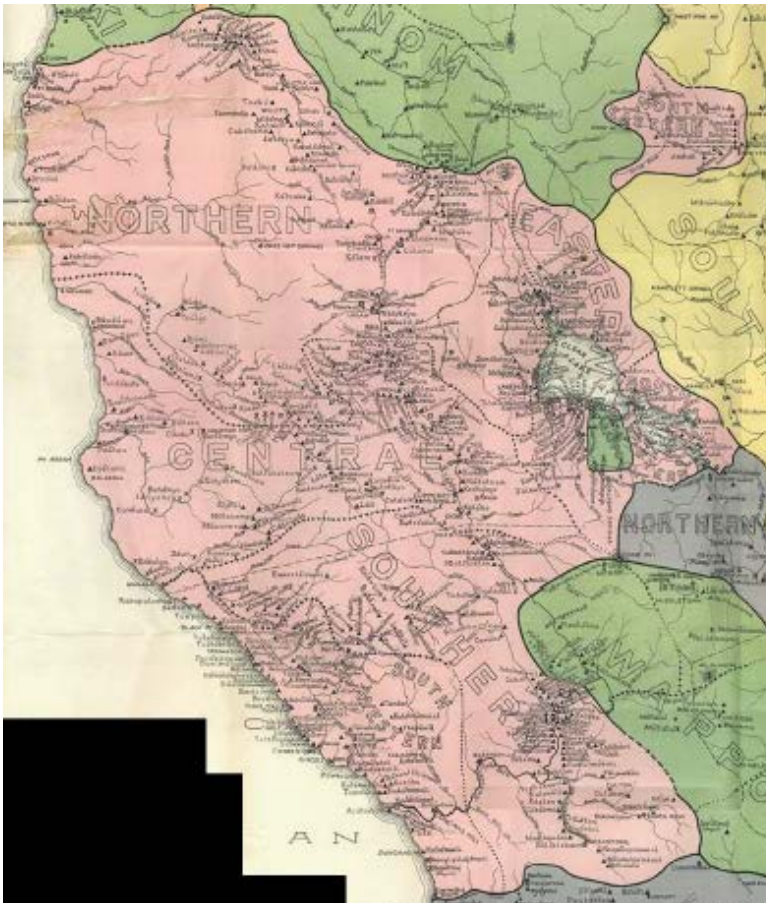


**Figure 3 Map showing the relationship of Pomo villages; from Barrett 1908: pp. 333**

river. Settlements around Clear Lake were predominantly along stream banks that had close access to the lake but were not directly on the shoreline except in the areas around Lower Lake where the surrounding foothills were more mineralized and less inhabitable (Barrett 1908: 121-123; Kroeber 1925: 125-226). The Pomo territory was bordered by the Coast Yuki, Huchnom, and Yuki to the north, Wintun to the northeast, Hill Patwin to the east, Lake Miwok and Wappo to the southeast, Coast Miwok to the south, and the Pacific Ocean to the west. Excepting the Wintun, all of their other neighboring tribes are much smaller bodies than the Pomo. (Kroeber 1925: 222). The Pomo were estimated to number approximately 8, 000 individuals, roughly one-thousand people for each of the seven divisions of the tribe (Kroeber 1925: 237); Kroeber reports that the 1910 United States census recorded 1, 200 members left. It should be noted that while the tribe is divided by its multiple dialects, they do not conform to the regional divisions of the tribe. The northern dialect extends over all three regions. The central dialect are present on the coast, in the redwood belt, and in the valley. The southwestern dialect is only found in the coastal redwood forest. The eastern and southeastern dialects are wholly within the lake region (Barrett 1908: 124).

### 3.3.3 Village Life

William Hildebrandt describes Pomo habitation patterns as such:

> "Although the tribelet was also the primary sociopolitical unit, some of the centralized villages were larger than was typical elsewhere in the North Coast Ranges. Moreover, they did not use the common

> settlement system of fall-winter aggregation in multifamily villages, followed by population dispersals in the spring and summer. Instead, cyprinid fish runs (e.g., suckers, hitch) into the feeder streams of Clear Lake during spring and early summer not only held the local people in their villages for an extended period of time, but also brought in people from adjoining areas who established temporary camps to participate in the harvest" (Jones & Klar 2007).

While Loeb (1926: 234) described the less centralized village sites as follows:

> "The villages were rather definitely fixed and it appears that there was very little shifting of location and no strong nomadic tendency. The historic sites were for the most part occupied as far back as tradition will take us. The villages were usually scattered along a creek course with varying distances of a hundred yards or more between houses."

The Pomo's houses varied due to the climate differences in their respective regions. On the coastline and in the forest, homes were built of slabs of redwood bark leaned together to shape a cone approximately 10 to 15 feet wide; each dwelling seemed to have been occupied by a single household. The Russian River Valley Pomo built their homes with wooden frames and thatched roofs, often rectangular or L-shaped. It's likely that this type of home was built for multiple families and rarely lasted more than the winter season. The Clear Lake Pomo built similar framework structures but elliptical in shape (McLendon 1977: 8). In the summer seasons, all tribelets were content with simple bush shelters were used in temporary use areas (Kroeber 1925: 240-241). Sweat lodges and dance houses were styled in the same way, though sweat lodges were typically 15 to 20 foot diameter earth-covered structures, dance houses were 40 to 60 feet in diameter; sweat lodges were primarily where the men spent their spare time and slept, and living houses were for women, children, cooking, eating, and storing property (Kroeber 1925; Loeb 1926: 158).

### 3.3.4 Family

A Pomo man was not allowed to marry his cousin or his niece. Moreover, the practice of marrying a brother's widow was not common, nor was marrying the sister of a deceased or infertile wife. The Pomo did not practice polygamy, and a second marriage only followed a divorce or a death of a spouse (Gifford 1926: 319, 324). Sometimes newlyweds would go to live with the wife's parents before living elsewhere. Men constitute the nucleus of the family and households often contained family of specific relation to the man, such as one or both parents, or the man's mother's brother or the man's sister's son (Gifford 1926).

### 3.3.5 Trade

Pomo of Shanel and Sedam, and the Huchnom of Ukulaiano'm in Potter Valley, used each other's territory freely. The northeastern Pomo were welcome on Little Stony Creek of their Wintun neighbors, just as Coast Yuki and Kato insisted on no boundary. Even though these connections seem communal, the Pomo clearly defined their rights to property and territory, but often waived them in times of abundance and for the sake of trade and peaceful cohabitation (Kroeber 1925: 229).

The Eastern Pomo currency consisted of shell discs of the large clam Saxidomus nuttalii, which is particularly abundant at Bodega Bay, Sonoma County. Every man manufactured the discs, but some were able to devote more time to the occupation than others. Unlike other people who had to obtain the shells through trade with intervening groups, the eastern Pomo walked to Bodega Bay for the shells. The Miwok at Bodega Bay neither charged for the clams nor objected to the Pomo using sticks to dig them. The mollusks were eaten at the camp and only the shells brought home (Gifford 1926: 377).

Individuals seldom went for the shells for fear of trouble with the peoples along the long route. The Coast Miwok of Bodega bay sold the shells to the Russian River people, who in turn sold them to the Wappo of the Middletown region, then they to the Lake Miwok of Coyote Valley, and the Lake Miwok sold them to the Southeastern Pomo (Gifford 1926: 378).

Cylinders of magnesite were also utilized as money. The Cigom people either went themselves for the raw material or bought it from the Southeastern Pomo. These latter people charged clam-shell beads for rough ores, each as big as one's fist. Such lumps were treated by burying in the earth under a fire in order to break and to color them. In cooling, the raw material cracked and was then ready for shaping. (Gifford 1926: 378).

Elliott (2011: 4-5) described trails between main village centers and trails leading to further away peoples to have been the result of issues with accessibility to resources such as fishing and trapping on the creeks and lakeshores of the Clear Lake basin, father food and seeds in the valleys, and collecting obsidian from Borax Lake. Elliott also detailed the type of relationship that required Southeastern Pomo and Hill Patwin tribes to coordinate inter-regional trade and travel efforts between tribal boundaries:

> "These routes often follow similar paths as the inter-tribelet trails while in the territories of the Upper Cache Creek Patwin…these trails guaranteed that a flow of cultural exchange occurred between the North Coastal region and the Central Valley and Delta regions. These particular Hill Patwin tribelets were in the center of this exchange. Influences moving either way would have happened through this area."

### 3.3.5 Basketry

The Pomo are regarded as the only people in California to employ lattice twining in their basketry (Kroeber 1925: 244). Kroeber (1909: 233) detailed some of the materials used for production:

> "The woof materials are four: the root of a sedge, *Carex*, the bark of the redbud, *Cercis*, the root of the bulrush, *Scirpus*, and the root of the digger-pine. Of these the sedge is the most important, furnishing, as willow does for the warp, woof of both coiled and twined baskets. The redbud furnishes red patterns and is employed chiefly in twined weaves. The bulrush root, after being dyed, provides patterns in black and is used almost entirely in coiling. Digger-pine root fibers are employed principally for the woof of coarse twined baskets."

While other Californian tribes either use coiling and never twining, or twining and never coiling, the Pomo employ both and manufacture basketry in a very artistic manner as opposed to a methodical pattern with utilitarian purpose (Kroeber 1925: 245). Men were often tasked with the labor of creating twine and more utilitarian models such as traps, cradles, work baskets, balsas, and building materials while women were more freely permitted to explore the artistic nuances of decoration and style (Kroeber 1925: 246; Gifford 1926: 319). The baskets remained monochromatic, however, only ever featuring red or black as colors. Feather baskets on the other hand were elements of far greater variation in color. The Pomo perfected the art of decorating baskets with feathers and shells. Southern Wintun and coast Miwok were known to use feathers, but never covered entire baskets. Quail plumes were often woven into the twines of the basket and created patterns of two or more colors (Kroeber 1909: 237; 1925: 245).

### 3.3.6 Spirituality and Religion

The Pomo's religion focused on a system of shamanism, ceremonies, and dances. The eastern Pomo believed the Earth was flat and floated in the water and arched over by a cloudless sky. The creator, *Marumuda*, and the first man, *Kuksu*, were both a part of the creation of the world. There are six spirits for each direction, north, south, east, west, earth, and sky. Northern Pomo shared this same belief in spirits. Coast Pomo, however, only had spirits for the cardinal directions. All Pomo people had a gods, spirits, or monsters for various natural things such as water, plants, mountains, hummingbirds, boars, or thunder, and feared thunder as a bad omen (Loeb 1926: 300-304).

Several different types of shaman served different purposes. Of the revered shaman, many served healing purposes. The sucking doctor got his power by dream or vision and has the ability to suck out blood, four times in one day, from a patient, and can heal them. The outfit doctor typically, learned from an older shaman, usually his father, father's brother, mother's father, mother's brother, or other relative. The outfit doctor employed a medicine bundle, containing various objects which he spread out near the sick person, and also treated the sick by singing. He sang for four days and four nights, then rested for a period, and if necessary, resumed his singing for another four day period. Rattlesnake doctors would use medicine and songs to heal bites. Villagers were ordered to not smoke tobacco until the treatment was over (Gifford 1926: 330). The bear shaman – or bear doctor – falls into a class of malignant shamanism, and regards a man who can dawn a bear skin and magical shells to enhance his abilities to hunt and kill humans, not even sparing follow villagers. An interesting note for the Pomo's believe is that, unlike the Yuki or Maidu who share bear shaman beliefs, the bear animal plays no part in the acquisition of magical powers, merely ownership of the bearskin and magic learned from another human (Barrett 1917a: 462-464; Kroeber 1925: 259).

Central to the Pomo religion were group ceremonies that are uniquely absent of both any sort of fixed ceremonial season or sequence of ceremonies or any order of priesthood or secret society that controls the manners of ceremonies (Barrett 1917b: 398) Most of the dances done at ceremonies were practiced

by any member of the group, while a handful of dances were reserved for men and members of secret societies. Dance paraphernalia for men and women often consisted of feather skirts, head nets, and feathered forehead bands, however men often dressed more elaborately (Barrett 1917b: 432). Eastern Pomo readily classify their dances as either ancient *hindil* dances or recent *maru* (Patwin boli) dances. Of the *maru* traditions, the *kayabuta* – "big-head" – dance adorns a large feather headdress similar to some *hindil* dances. The *maru* dances are said to have been introduced by the Patwin. Among the Southeastern Pomo, the ancient dances are called *hindil xe*. The dances of the ghost dance cycle are called *aupgo xe*, from *aupgo*, the name of the "big head" dance. Tribelets differed on when dances could be performed, some placing no restrictions on the season for which a ceremony should be held (Gifford 1926: 347-349)

### 3.3.7 Politics

The political formation for the Pomo is the same as for the Yuki. A village community comprised several settlements, but with one principal village in which a chief that was recognized by all members of the group resided. Within the territory claimed by the community, all members of the group were permitted to hunt, fish, or gather plant food without limitations of private ownership as among other northwestern tribes (Kroeber 1925: 229).

Chieftainship appears to have been one of the few professions that is hereditary, however, the role also requires specific virtuous character traits that, if not found in the son, can be passed on to someone more qualified. This type of election was supported by a sense of communal decision. Positions such as honorary chiefs or chiefesses are found in some tribelets of the Pomo, awarding to men who are wealthy or have a prowess in hunting, or to women who are popular and good-hearted, or a proficient cook. It must be said, however, that a true leadership position was desired for a man that was not too poor, nor too wealthy, to execute the duties expected of them (Gifford 1926: 334).

The Pomo leaders tended to exercise a power of social conditioning, serving as models for virtuous behavior and excellent oration. Their role in the community focused largely on setting an example for abiding by the rules of the society and punishing offending individuals so as to spare them from the more harsher punishments wrought by supernatural forces. Their duties as chiefs included organizing all community activities such as food-gathering, trade feasts, and scheduling ceremonies. Often the chief exercised no few authoritarian powers and had to use his speaking skills to negotiate between members of the community (McLendon 1977: 28).

In all Pomo villages, a chief oversaw multiple communal homes, whom the members pledged allegiance to and often several chiefs lived in the same village. In Eastern Pomo, one of them may be elected as a chief of the entire village, though sometimes this made them no more powerful than the other chiefs. In the Southeastern Pomo, there were a number of chiefs of equal rank and no apparent "big" chief as had been observed by Gifford in the Northern Pomo (Gifford 1926: 336, 339).

### 3.3.8 War

A common belief of the cause of sickness was by poisoning from strangers, and this often justified the cause to go to war. Though the Pomo tribes were more inclined to peaceful relations, villages of differing dialects did attack one another in disputes over territory and resources and employed a war chief, who functioned only in times of war, and led war parties to attack enemy villages (Kroeber 1925: 235; Gifford 1926: 342). This position was not a formally recognized occupation in society as the Pomo did not maintain warlike lifestyles, and in fitting with their code of morals, the position was filled by a "good bad man." The war chief would gather young fighters with the attraction of adventure and glory, and set out to attack and kill members of a nearby tribe, often resulting in a payment for peace by the aggressing village's chief, and not resulting in continued attacks (Loeb 1926: 203).

Pomo warriors would paint around their mouths and cheeks with charcoal and wear headdresses of down feathers. Warriors used thrusting spears, slings, and bow and arrows. No armor was worn as it was considered cowardice. Battles were usually conducted by long lines, a single man wide, standing approximately 30 yards from one another and exchanging arrow fire, which children of the opposing tribe were allowed among the ranks to collect arrows and return them to their owners to be used again. Sometimes war dances were conducted before battle, and sometimes afterwards. Warriors fought as individuals and normally endeavored to dodge or agitate their combatant in front of them. Battles rarely resulted in loss of life and were ceased by the first draw of blood. North Pomo warriors collected scalps as trophies of war and items for future war dances. Coastal, Clear Lake, and Eastern Pomo denied having the customs of war dancing or scalping, it is likely influenced by Yuki tribes to the north (Loeb 1926: 203).

Kroeber (1925: 236) details multiple skirmishes as having occurred between varying Pomo communities. The Kuhla-napo - Habe-napo conflict in the Clear Lake region seemed to have tied in allegiances with Kamdot and Lile-ek, as they were in support of one side, though it is not known which. The Komli of north Ukiah Valley fought the Yokaia-pomo of the south Ukiah Valley. This conflict seemed to arise from hunting and fishing rights owed to the Yokaia-pomo, who had allowed the Northern Pomo to settle in the village of Komli and utilize the northern end of the valley. The Northern Pomo, however, declare that the northern valley had always been their territory, and that the fighting began when a Northern Pomo shaman was accused of poisoning a man in one of the central villages.

Kroeber also describes conflicts between the Northeastern Pomo communities, who controlled a renowned salt deposit, and other tribes during the Salt Wars. Conflict broke out between the Potter Valley people, who had regularly come into the territory to present gifts for the opportunity to mine salt, when a group of them were caught attempting to steal from the Northeastern Pomo, and were killed. Another incident was described where a party of Clear Lake Pomo who had a habit of travelling to the area were betrayed and killed in a dance house by members of the Northeastern Pomo tribes.

## 3.4 Historical Background

### 3.4.1 Early Exploration and Settlement

In Slocum, Bowden & Co.'s work *The History of Napa and Lake Counties*, the authors claim that the first Europeans to set foot in Lake County were either Russian trappers, working for the Russo-American Fur Company, or a band of hunters and fur-trappers travelling south from Oregon.

In 1811 the Russo-American Fur Company established a post at Bodega, and a few years later at Fort Ross, in Sonoma County. They extended their fur hunting operations and encountered the Sanel Rancheria, who likely informed them about their relatives, the Hoolanapos, who lived more inland along the west side of Clear Lake (Slocum, Bowden & Co. 1881: 48).

A conflicting account of first contact comes from a group of fur traders who, rather than taking the well-travelled route through the Sacramento Valley, instead, decided to trek to Fort Ross to sell their pelts to the Russians. Not realizing the fort was closed in 1841, they ended up wintering in a valley near what is now known as Lower Lake (ibid.: 47). Apple et al. (1986) refutes the conflicting account stating that Ewing Young, an American fur trader, travelled from the Sacramento Valley to Clear Lake via Cache Creek in 1832, followed the same way by John Work, the following year (Hoover et al. 1966 and McCarthy et al. 1982 in Apple et al. 1986: 50).

In 1836, in an effort to explore the Clear Lake area and understand its' denizens, the Mexican government endorsed an expedition spearheaded by Salvador Vallejo and Ramon Corrillo. The results of this mission appear to have met with success as many of the Pomo people would thereafter work with the Mexican government. Vallejo subsequently applied for a grant of sixteen leagues of land, known as the Lup-Yomi Grant, for himself and his brother, Antonio (Slocum, Bowden & Co. 1881: 41-44).

The Lup-Yomi Grant, dated September 5, 1844, encompassed the entirety of Clear Lake and large swathes of land surrounding its shores. Verifying this claim took several years. While settlers in Lake County continued to migrate in, and raise the value of land upon which they might have been squatters, the Supreme Court finally decided in 1866 that the validity of this land grant could not be proven. Thus, the land was ceded to the United States government, surveyed and sold to settlers (ibid.).

It is also noted that Jacob Leese began stock-raising in Coyote and Locunoma Valleys in 1830, and was a contemporary of the early Vallejo rancho (Callaghan 1978 in Apple et al. 1986: 50). Regardless of the Lup-Yomi Grant status, Vallejo was the Commandant of the government forces in that region and took possession of several valleys to the south and north of Clear Lake, eventually moving cattle into the area. Ten Indian vaqueros constructed a crude ranch in Big Valley, near present-day Kelseyville, under the command of Major Juarez Domo (Slocum, Bowden & Co. 1881: 49). As the

rancho grew, Vallejo had to take military actions against local tribes as punishment for cattle deaths, first in Big Valley in 1836 and then at Clear Lake in 1843; those not killed in the massacres became forced laborers in his wheat fields near Sonoma (Callaghan 1978 in Apple et al. 1986: 50).

Eventually, 800 heads of cattle were sold to Charles Stone and Andrew Kelsey, who took over and expanded the rancho. Stone and Kelsey used native Pomo men – who had become accustomed to payment for their labor with the Spaniards – as slave labor. Stone and Kelsey were ultimately murdered for kidnapping a chief's wife, resulting in the genocidal action of Captain Nathaniel Lyon and the Bloody Island Massacre (Slocum, Bowden & Co. 1881: 49; Apple et al. 1986: 50).

The Gold Rush quickly brought settlers through and to the area. Lower Lake was first settled in 1848, and Clear Lake in 1853. The influx of European, American, and Chinese workers provided a good market for the agricultural products of the county (McCarthy et al. 1982; Hoover et al. 1966; and Johnson 1978a in Apple et al. 1986).

Lake County was formed May, 20, 1861, comprising portions of land formerly mapped as parts of Napa, Mendocino, and Colusa counties. Lakeport was named the county seat and a courthouse built in 1861 (Slocum, Bowden & Co. 1881: 73-74; Lake County 2017). A legislative battle commenced in the 1860s to determine if Lakeport or Lower Lake should hold the county seat. In 1867, the county courthouse in Lakeport mysteriously caught fire and was widely believed to be the act of arson. After another vote, the prospects for Lower Lake were looking in the city's favor when it won the county seat. But a fourth and final vote in 1870 secured the county seat for Lakeport and was not legally contested again (Slocum, Bowden & Co. 1881: 73-74).

The settlement of Clear Lake flourished around agriculture, mineral resources, and a health resort fad. The combination of the exhaustion of mineral resources, the construction of the Ukiah-Tahoe Highway which bypassed Clearlake area, and a failed effort to construct a railroad from Hopland to Lakeporte induced the boom towns to whither. And although the 1906 earthquake did not severely damage any of the infrastructure in Lake County, it did slow or seal many of the hot springs, further slowing tourism from San Francisco for many years (Paleno 2016: 350, 364-371; Apple et al. 1986: 52; Lake County 2017). Lakeside resorts enjoyed a resurgence in the 1920s as automobile access, mining and agriculture increased, slowly restoring the economy of the small towns (Apple et al. 1986: 52).

### 3.4.2 Orchards and Vineyards

The first pears in the county were planted in the 1880s by Louis Henderson, whose orchard is still in production today. The first commercial orchard, however, was planted by Thomas Porteus around the same time in Big Valley. Other farmers followed suit and by the 1920s the county boasted 700 acres of pear orchards. In that same decade, the California Packing Company established its yard in Kelseyville and became one of the largest dried fruit packers in the world. Pear production, especially

around the Kelseyville area, bolstered the economy of the county in the post WWI years. Kelseyville is known as the "Pear Capitol of the World" today (Lake County 2017).

Early settlers in the 1850s also began planting vineyards, which flourished in Lake County's Mediterranean microclimates and soil rich in volcanic ash. By the late 19th century production in wine was climbing and in 1893 Charles M. Hammond won best exhibit for dry white and red wines at the World Exposition in Chicago. Hammond's wine, produced at his Lake County vineyard, cemented Lake County's reputation for producing world-renowned wines. By 1909, Lake County had nearly 600 acres of vineyards. Prohibition reduced viticulture production for many decades until a reemergence of wine growing in the 1980s (Lake County 2017).

### 3.4.3 Mining

The California Borax Company was created when Dr. J. A. Veatch prospected at Borax Lake in 1856, but intensive work did not commence at the site until the 1860s. Two portable coffer-dams were constructed along with a steam apparatus, but efforts ultimately failed to make the mine profitable and it was abandoned (Slocum, Bowden & Co. 1881: 155-156). The Sulphur Bank Quicksilver Mining Company grew out of the California Borax Company, changing its name in December of 1875 (ibid.: 132). The mine extracted cinnabar, a composition of sulphur and mercury, and smelted the ore.

The 150-acre Sulphur Bank Mercury Mine site was mined for sulfur from 1865 to 1871, but mercury ore was also mined intermittently by underground methods from 1873 to 1905. The site was open pit mined from 1915 to 1957. The name of East Lake was given to the mining village which supported the Sulphur Bank Mine. In the late 19th century, the town boasted the Sulphur Bank Quicksilver Mining Company, a hotel, a store, several private residences, a physician, a post, and an express office. The village was connected to Lakeport by boat, and to Lower Lake, Middletown and Calistoga by a tri-weekly stage coach which also carried the mail (Slocum, Bowden & Co.: 146-147).

Once one of the largest producers of mercury in California, Sulphur Bank has been inactive since 1957 (EPA 2017). By the late 1970s, the state Department of Fish and Game was testing for pesticides in Clear Lake fish and detected alarming levels of mercury. The main culprit eventually was shown to be the Sulphur Bank mine, which now ranks as one of three mercury mines among California's ninety-seven Superfund sites (Mason 2017).

### 3.4.4 History of Clearlake and Surrounding Communities

Lower Lake, originally named Grantsville, sits at the crossroads leading to Napa, Lakeport, Sacramento, and Long Valley (Crabtree 2017). The first house was built by E. Mitchell in 1858 (Slocum, Bowen & Co.: 141; Carpenter & Millberry 1914: 132). By the mid-1860s, the town boasted a saloon, hotel, and blacksmith shop. It was made the county seat in 1867. By the 1880s, Lower Lake was a village of 450 people. The town had four stores, a pharmacy, three blacksmiths, three saloons, two wagon shops, a livery, a hotel, a restaurant, a brewery, a lawyer's office, two doctor's offices and

several mills. Stage lines extended from East Lake to Calistoga and from Lower Lake to Woodland (ibid.: 141). After the completion of the transcontinental railroad in 1869, mineral springs in Lake, Colusa, and Napa Counties attracted many more health-seeking patrons, especially with ease of stage coach access from San Francisco (Slocum, Bowden & Co. 1881: 141; Apple et al. 1986: 51). Lower Lake contained many of the large health resorts located in Lake County. Some of the most popular resorts were Harbin Springs, Anderson Springs, Adams Springs, Howard Springs, and Siegler Springs (Slocum, Bowden & Co. 1881: 149-154). Lower Lake eventually became the major supplier of goods and services for the south end of the county. Although the town of Lower Lake continues today, the City of Clearlake, adjacent to the APE, has become the commercial center of the south end of the lake (Crabtree 2017).

Clearlake Park was originally known as "Jack's Landing". Established by Jack Barff, it was used as a landing for barges hauling wood to the Sulphur Bank mines (Feltman 1993: 74; Crabtree 2017). In 1922 the Clearlake Park subdivision was opened, increasing the population increased establishing the Clearlake post in May, 1923. Originally located in the Robberts grocery store and run by William J. Roberts, the post found its own building in July 1937 and was renamed Clearlake Park (Crabtree 2017).

In 1923, Mr. Penn Philips developed a subdivision near Lower Lake named Clearlake Highlands (Feltman 1993: 71), adjacent to the APE. When the Post Office Department was petitioned for a post office, nine names were submitted. Clearlake Highlands was the first choice of the residents, but the Post Office Department wanted a name without "lake" in it because of so many others with "lake" in the county. The ninth name on the list, Knocti, was selected by the Post Office Department, and the office was opened July 1925. It operated under the name of until November 1925, when the residents were able to have the name changed to Clearlake Highlands (Feltman 1993: 72; Crabtree 2017).

In July 1981 the area including Clearlake Highlands, Cache Creek, Burns Valley and part of Clearlake Park was incorporated into the city of Clearlake, making it the largest city in the county (Feltman 1993: 72; Crabtree 2017).

# 4. LITERATURE REVIEW

To obtain historic background information, archival research included an examination of multiple sources concerning known archaeological sites, historic properties, and historic activities within and/or adjacent to the APE. Repositories and agencies consulted included the following:

- The California Historic Resource Information Center (CHRIS) at California State University, Sonoma
- The Native American Heritage Commission (NAHC)
- The Lake County Museum
- The Lake County Public Library
- Dale Soditus, the current land owner

## 4.1 NWIC Record Search Results

A Record Search was conducted at the California Historic Resources Information Center (CHRIS) at Sonoma State University on October 19, 2017. The search included a half-mile radius around the APE for previously recorded archaeological sites and previous surveys (Appendix A, Figure A-2. Record Search Request Map).

The following resources were consulted at the NWIC:

- National Register of Historic Places (NRHP
- California Register of Historic Resources (CRHR)
- California Historical Landmarks
- California Points of Historical Interest
- California Bridge Inventory
- General Land Office maps
- Historic Topographic maps
- Historic Aerial Photos

### 4.1.1 Previously Recorded Cultural Resources within the APE and ESL

The record and literature search revealed no previously recorded cultural resources within the APE, and one within the ESL.

**Table 1 Previous Recorded Resources within the Half-Mile search radius**

| Resource Number | Resource Title | Date Reported & By Whom |
|---|---|---|
| P-17-001702 | GWN-AFC-68 Lithic Scatter | R. Apple, M. Kelly, M. Tinkle 1985 |

### 4.1.2 Prior Cultural Resource Studies within the APE and ESL

The record and literature search revealed one previous archaeological reports within the APE and one previous reports nor within the ESL.

**Table 2 Previous Reports within the ESL**

| Report Number | Report Title | Date Reported & By Whom | Within APE |
|---|---|---|---|
| S-008729 | Geothermal Public Power Line Project, Vol. 2, Cultural and Paleontological Resources, Technical Report: Appendix C and D | Apple et al. 1986 | Yes |
| S-025036 | Cultural Resource Reconnaissance of 2, 142 Acres Near Clearlake, Lake County, California (James Ranch) | Flaherty, J. M. 2001 | No |

Report S-008729 was a cultural resource investigation initiated by the California Energy Commission, in support of the Geysers Geothermal Public Power Line Project, owned by the Sacramento Municipal Utility District, the Northern California Power Agency, the City of Santa Clara, and the Modesto Irrigation District. The study area encompassed a large stretch of land from southern Lake County to Sacramento, to Colusa. Dozens of cultural resources were identified and recorded, one of which was located within the half-mile ESL (P-17-001702).

Report S-025036 was a cultural resources reconnaissance initiated by the County of Lake in support of a proposed subdivision for land development. The 2, 142-acre survey area borders T13N, R7W Section 13, placing a portion within the ESL but not the APE. P-17-001702 was successfully located and updated, no new resources within the ESL were uncovered.

### 4.1.3 National and State Registers

Review of the NRHP, the CRHR, the CHRIS, and California Historical Landmarks did not identify any listed resources within the ESL.

## 4.2 Summary of Native American Coordination

Pursuant to the revised implementing regulations of the NHPA found at 36 Code of Federal Regulations (CFR) 800.4(a) (4), NAHC was contacted by DZC Consulting to request a review of their Sacred Lands Files. A Request for a Sacred Lands Search e-mail was sent by DZC Consulting to the NAHC on October 23, 2017.

The NAHC responded on October 30, 2017, stating that the Sacred Lands File search was negative and provided a list of individuals to be contacted regarding the project. Email notifications were sent to all parties on the NAHC list.

In accordance with Pub. Resources Code § 21080.3.1, subd. (b), DZC Consulting contacted persons on the designated contact list maintained by the NAHC for SB 18 consultation. Email or hard-copy notifications were sent to all parties on the NAHC list on November 2, 2017.

As of January 15, 2018, one response had been received from Stephanie Reyes, THPO, Middletown Rancheria, indicating that the tribe did not have information regarding the project area.

As of January 15, 2018, no response had been received from Agustin Garcia, Chairperson, Elem Indian Colony Pomo Tribe; and Jose Simon III, Chairperson, Middletown Rancheria.

Formal government-to-government Consultation is the purview of the Lead Agency, the CDFA. All correspondence regarding Native American coordination conducted by DZC Archaeology and CRM Consulting is included in Appendix B.

## 4.3 Parcel Specific History

### 4.3.1 Parcel Specific Historic Maps and Aerial Photographs

DZC reviewed the following historical maps of Lake County and the study area.

The S. H. Rice Official Map of Lake County (1892) does not detail a landowner for the parcels within the APE, indicating the land had not yet been legally claimed within the GLO system. The D. F. McIntire Official Map of Lake County, California (1911) indicates that "Mrs. B. Bynon" owned property within the APE, as well as outside of the APE by 1911. A road running west-east through the APE is depicted on both maps as a road connecting Lower Lake with the north Fork of Cache Creek.

DZC also reviewed the United States Geologic Survey (USGS) topographic maps of the area dated 1945, 1947, 1961, 1962, 1966, 1969, 1971, 1978, 1987, and 1993 (NETR 1945-1993). No structures are noted within the APE on any of the USGS maps. The current road alignment is visible on all USGS maps and appears to remain consistent. The he home on the adjacent parcel to the north is present as well. The access road to the cultivation area is present on the 1961 USGS map, proceeded southward out of the APE. The USGS map from 1993 depicts an additional road that correlates with the current alignment of the residential driveway. No structures are noted in the Ape at this time. Beginning in 1961, the USGS maps differentiate between dense vegetation and open grasslands. The APE is noted as densely vegetated on the western and eastern portions, while a corridor of sparse vegetation and clearings dominated the central portion. From 1961 to 1993, the maps make no

indication that the APE experienced a major logging operation or fire that would warrant a categorization change for the vegetation.

DZC also examined aerial photos, dated from 1993, 2005, 2009, 2010, and 2012 (NETR 1993-2012). The APE comprises approximately one-third sparsely vegetated grasslands in the center and two-thirds densely vegetated chaparral in the west and east portions. From 1993 to 2005, the roads appear to have widened and all current structures are present. Two small structures present 2005 were removed by 201. No cultivation activity is apparent in any aerial photo.

### 4.3.2 Parcel Ownership and Development

The F. C. McIntire Official Map of Lake County (1911) attributes partial ownership of the APE to "Mrs. B. Bynon", and was a portion of her overall property which totaled 200 acres. While the eastern 40 acres was owned by Mrs. Bynon, the western 40 acres of the APE remained unclaimed.

The Bynon Family property is indicated on the F. C. McIntire Official Map of Lake County (1911), noted in the SE ¼ of the NW ¼ of Section 13. The maps attributes ownership of 200 acres to "Mrs. B. Bynon", of which 40 acres are within the APE. United States Census Records from 1910 list a Benjamin and Susan Bynon; Benjamin was born in Ohio in 1871 and held a job as a shift boss at a gold mine and was. Susan was born to Nathaniel E. and Mary A. Herndon in California in 1882 (United States Census 1900) and married Benjamin sometime in the 1900s. A serial patent for the property was issued to both Benjamin J. and Susan C. Bynon in 1911. On the McIntire Map (1911), several parcels adjacent to Mrs. Bynons' property are owned by "Mrs. M. A. Herndon," Susan's mother.

Black Eye Canyon was named for Black Eye Herndon who was in so many fights so often that he usually had a black eye all the time. He lived on a ranch near the summit of Black Eye Road which led through the canyon (Mauldin 1981: 343). Black Eye Road is likely the present-day Ogulin Canyon Road which runs through the APE. West of the APE, the road crosses through the canyon and upslope to a summit. DZC was unable to determine if there was a familial relationship between Susan Herndon-Bynon and Black-Eye Herndon. As the adjacent property belonged to Susans mother it is possible, but unverified, that Black-Eye and Susan were siblings. Mary A. Herndon. A structure is depicted in this parcel, north of the APE, as far back as the 1945 USGS topo map (NETR 1945-1993), located near the summit, and at the road where it terminates. Without examination of the neighboring parcel, it cannot be said for certain if this is the home of Black Eye Herndon, but it is a strong contender.

Both the Rice and McIntire maps depict only one consistent road alignment through the APE. This road is not named on any of the historic maps, and current satellite imagery (Google Earth 2017) shows that the maintained road terminates just outside of the APE. However, LIDAR imagery (BLM 2017) reveals an unmaintained road continuing northeasterly approximately 1.5 miles out of the APE,

into Phipps Canyon and along the south bank of Phipps Creek (though crossing the creek several times), and connecting to Hwy 20. This road swale correlates with oral history provided by property owner Dale Soditus, who informed DZC that there used to be a stage stop along this road and that a spring on his property fed water into a carp pond located in the parcel to the north of the APE. The carp were supposedly fed to travelers on the route. DZC did identify the carp pond and its associated water appurtenances during survey; the pond is on the adjacent parcel and the appurtenances are within the APE. This particular pond is small (5m x 10m), and could not be identified in historical literature, but it was not an uncommon practice in Lake County. Swartz & Webber operated a large carp farm about three miles northwest of Middletown and disposed of roughly 150, 000 carp each year; Anderson Springs constructed a carp pond; and several ponds existed at the old Boggs mill site between Glenbrook and Kelseyville at one point. These operations were significantly larger pisciculture, one pond being one acre in size (Slocum, Bowden & Co. 1881: 155).

Mr. Soditus also informed DZC of a previous mining claim held by Coggins Mining & Mineral Company and a former tenant, by the name of Carl Bateman, who bought the land in 1952 and operated a hog farm on the property. Mr. Soditus purchased the property from Mr. Bateman in 1997. The Coggins Company held numerous claims in Shasta County and in Oregon, but no information was attainable regarding the Coggins operations in Lake County at this location.

Historical documents regarding the development of the subject area are included in Appendix C.

## 4.4 Geoarchaeological Research

To assess the potential for buried archaeological sites within the proposed project components, this assessment takes into account factors that either encouraged or discouraged human use or occupation of certain landforms (e.g., geomorphic setting and distance to water), combined with those that affected the subsequent preservation (i.e., erosion or burial) of those landforms. It is well-known, for instance, that prehistoric archaeological sites in California are most often found on relatively level landforms near natural water sources (e.g., springs, streams, rivers, or estuaries), which is often where two or more environmental zones (ecotones) are present. Landforms with this combination of variables are frequently found at or near the contact between a floodplain and a higher and older geomorphic surface, such as an alluvial fan or stream terrace (Hanson 2004: 5).

In general, most Pleistocene-age landforms have little potential for harboring buried archaeological resources, as they developed before the first evidence of human migration into North America (ca. 13, 000 years BP). However, Pleistocene surfaces buried below younger Holocene deposits do have a potential for containing archaeological deposits. Holocene alluvial deposits may contain buried soils (paleosols) that represent periods of landform stability before renewed deposition. The identification of paleosols within Holocene-age landforms is of particular interest because they represent formerly stable surfaces that have a potential for preserving archaeological deposits.

Given the above criteria, it is therefore possible to forecast the burial sensitivity by looking at the intersection of existing geomorphic, stratigraphic, and soils spatial variables, as well as any behavioral variables that may forecast human occupation. Consequently, the following describes the project site in terms of these variables and generates a Buried Deposit Forecast on the basis of the intersection between these variables. In addition, the current site conditions and the levels of previous disturbance are taken into account to determine the likelihood of encountering intact buried deposits given the expected depths of proposed excavation. This is not an analysis of whether a particular area was attractive for human activity, but whether the conditions are favorable for buried archaeological deposits.

### 4.4.1 Greater Geomorphology

The APE is situated in the Coastal Range geomorphic province in northwestern California. The province is characterized by northwest oriented ranges and valleys with an uplifted, terraced, and wave-cut coastline (Wagner 2002). The underlying lithography is composed of Mesozoic and Cenozoic sedimentary strata, overlain by the irregular and knobby Franciscan Complex (Wagner 2002). The deep sea formation process of the Franciscan Complex, coupled with intense subduction pressure from the continental plate, has revealed a variety of lithic material over the region surface including basalt, chert, schist, limestone, sandstone, shale, and greywacke (Bailey et al 1964). The area is seismically active.

Extensive geomorphological and geoarchaeological studies have been undertaken in areas surrounding the APE, specifically the Cache Creek Archaeological District, but lands within the APE remain largely understudied by academic researchers. Meyer (1994) provides a synthesis for previous geological studies conducted in the Cache Creek area and identifies hills, benches, alluvial/colluvial fans on benches, and terraces as the four landforms associated with archaeological sites. Gaines (2008) adds to the understanding of terrace formation and the development of soil along Cache Creek by analyzing the four major geologic sequences in the area and evaluating the tectonic influences on the local geology. A geoarchaeological model for site location within fluvial and alluvial deposits in Cache Creek was developed by DeGeorgey (2003).

Hills and benches of the Cache Creek area are composed of Phipps Series soils, an Alfisol that exhibits a well-developed argillic horizon of translocated clay (Smith and Broderson 1989 in Meyer 1994). For alluvial and colluvial fan deposits, Bally-Phipps Complex is the most associated soil type, an Alfisol that exhibits a well-developed B horizon of translocated clay (ibid.). Secondary terraces consist of course-textured alluvium composed of poorly sorted, sub-angular to sub-rounded boulders, cobbles, and gravels that are capped by a thick layer of sandy to silty loam; the soil type that is closely associated with secondary terraces is the Talmage Series, a Millisol (ibid.). Primary terraces consist of very course-textured alluvium composed of sub-angular to sub-rounded boulders and cobbles and poorly sorted gravels, capped by a thin layer of sandy loam; the most associated soil type being Xerofluvents-

Riverwash Complex, identified as an Entisol (ibid.). Meyer concludes that archaeological resources are not associated with current river channels and primary terraces due to constant or seasonal flooding and the young age of some primary terraces located in the Cache Creek Valley, but archaeological resources are most encountered in secondary terraces.

Gaines (2008) summarizes the stratigraphic setting of the area, identifying the Cache Formation, Franciscan Assemblage, Great Valley Sequence, and Coast Range Ophiolite as the four major stratigraphic formations in the area. The Cache Formation is described as a tectonically-strained and northwest-plunging anticline. The Franciscan Assemblage is described as a collection of continental shelf sediments that have been subducted under the North American Plate and sheared under the high pressure environment before being uplifted to the surface. The Great Valley Sequence is described as a series of Jurassic to early Cretacious rocks thought to have been subducted under the north American Plate and slid over the deformed Franciscan Assemblage, generally keeping the stratigraphy in place (ibid.: 13-17). Gaines attributes that soil development at Buck Island and in Wilson Valley – both in the Cache Creek corridor – took place systematically as elevation and age increased, and concluded that terrace uplift due to the various faults underlying the area is occurring at about 1.1 mm/yr. and partially explains the size and spacing of river terraces (ibid.: 85).

A geoarchaeological model for site location within fluvial and alluvial deposits in Cache Creek was developed by DeGeorgey (2003). His research found that, with regard to obsidian hydration, surface artifacts tend to vary more in hydration value than do subsurface deposits, therefore surface hydration may be a poor indicator of assemblage age. DeGeorgey also determined that terrace elevations correlate with obsidian hydration values; sites on progressively higher landforms tend to have greater hydration values (ibid.: 99-100). Alluvial sequence begins with the aggregation of sediments from the Cache Basin and the subsequent down-cutting of the Cache Creek during the Late Pleistocene has resulted in the formation of a fill terrace (ibid.: 103). Some terraces within Cache Creek have remained stable for thousands of years while others are underlain by loose assemblages and are vulnerable to erosion and landslide; this is likely the fate of many secondary and tertiary river terraces that should be in the valley (ibid.: 106).

### 4.4.2 APE Specific Geomorphology

A review of the bedrock and surficial geology of the direct APE and the ESL, as noted on the Santa Rosa Sheet of the Geologic Atlas of California (Wagner & Bortugno 1982, Figure 4) revealed that the property is underlain entirely by Cache Formation (QTc) which is composed of poorly sorted rounded gravel, sand, and silt (Rymer 1978 in Meyer 1994).

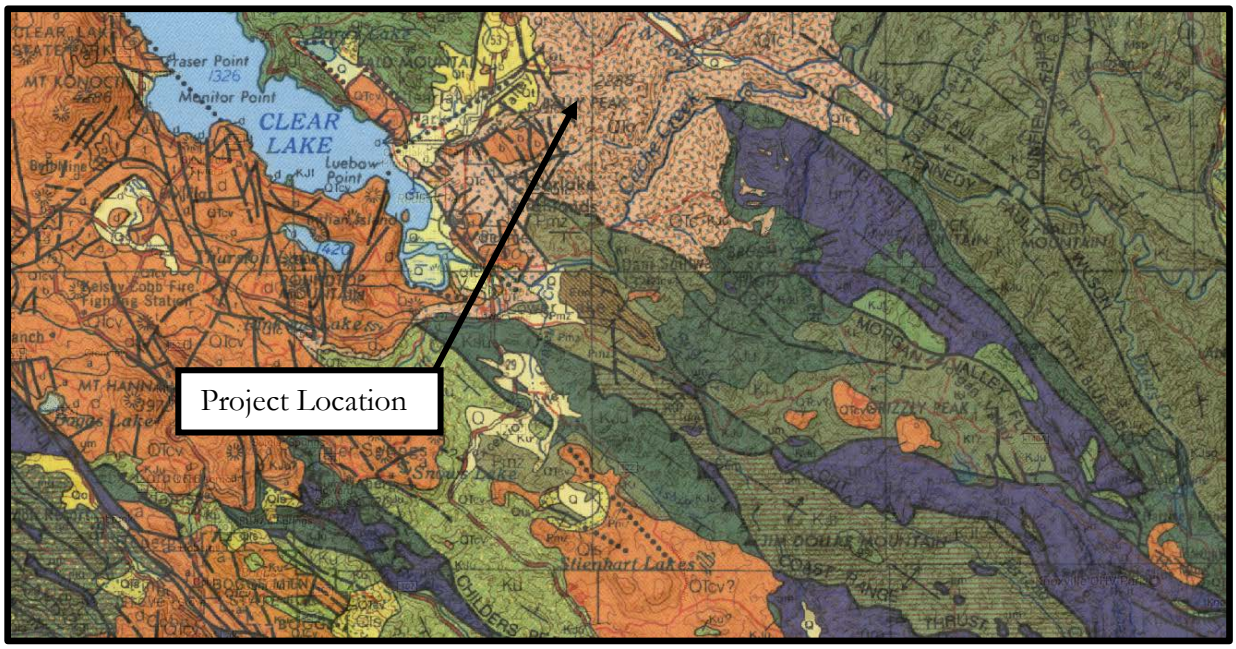


**Figure 4 The project vicinity as seen on the California Geologic Survey's Geologic Atlas of California: Map No. 2A, Santa Rosa Sheet (Wagner & Bortugno 1982). Not to scale.**

### 4.4.2 Black Eye Canyon & APE Geographic Context

The APE is situated over Black Eye Canyon which is oriented west-east on the northern portion and northwest-southeast in the southern portion. Black Eye Canyon is located between two ridge ringers of Perkins Creek Ridge, upslope from Ogulin Canyon and Burns Valley. Local influences include several unnamed tributaries to Burns Valley. Average elevation is 1600 feet Above Mean Sea Level (AMSL). Numerous ridge fingers rise to the south from the canyon, joining the major southwest-northeast trending ridge system of Perkins Creek Ridge. Relief within the canyon terraces are abrupt. The localized result features small creek terraces carved into a mountain back slope.

### 4.4.3 APE Stratigraphic Context

A review of the Soil Survey Geographic Database Soil Series for Lake County, California (CA033) revealed that the APE consists predominantly of Bally-Phipps-Haploxeralfs association (30-75% slopes), Sleeper variant Sleeper loams (30-50% slopes), and Skyhigh-Asbill complex (15-50% slopes). Bally-Phipps-Haploxeralfs association constitutes approximately 46%, Sleeper variant Sleeper loams constitute 34%, and Skyhigh-Asbill complex constitutes 14% of the underlying soil associations/complexes within the APE.

Bally-Phipps-Haploxeralfs association exhibits 35% Bally, 20% Phipps, 20% Haploxeralfs, and 20% other minor component soil as the dominant soil type. The Bally soil type, is typically located on 30-

50% slopes. This component is found on hills and backslopes. The parent material consists of alluvium. Depth to a restrictive layer is greater than 80 inches and this class is well drained, exhibiting a very high run-off rate. Water movement in the most restrictive layer is moderately low to moderately high, with water available to a depth exceeding 80 inches. A typical soil profile for this soil type reads 0-10 inches: gravelly sandy clay loam; 10 to 18 inches: very gravelly sandy clay loam; 18 to 37 inches: very gravelly sandy clay; and 37 to 65 inches: very gravelly sandy clay loam

Sleeper variant Sleeper loams exhibiting 80% Sleeper and Sleeper variant soils are the dominant soil type. The Sleeper soil type, is typically located on 30-50% slopes. This component is found on hills and backslopes. The parent material consists of residuum weather from sedimentary rock. Depth to a restrictive layer is 75 to 79 inches and this class is well drained, exhibiting a very high run-off rate. Water movement in the most restrictive layer is moderately low to moderately high, with water available to a depth exceeding 80 inches. A typical soil profile for this soil type reads 0-12 inches: loam; 12 to 37 inches: clay loam; 37 to 56 inches: clay; 56 to 75 inches: clay loam; and 75 to 79 inches: weathered bedrock.

Skyhigh-Asbill complex exhibits 50% Skyhigh soils, 30% Asbill soils, and 20% other minor component soil as the dominant soil type. The Skyhigh soil type, is typically located on 15-50% slopes. This component is found on hills and backslopes. The parent material consists of residuum weather from sandstone and shale. Depth to a restrictive layer is 38 to 42 inches and this class is well drained, exhibiting a very high run-off rate. Water movement in the most restrictive layer is moderately low to moderately high, with water available to a depth exceeding 80 inches. A typical soil profile for this soil type reads 0-2 inches: loam; 2 to 8 inches: clay loam; 8 to 38 inches: clay; and 38 to 48 inches: unweathered bedrock.

### 4.4.4 ESL Specific Hydrology

According to the USGS 7.5-minute Topographic Map, Lower Lake (1975a), the anticipated groundwater flow within the APE is northwest through Blackeye Canyon and into Burns Valley on the western half of the APE (USGS 1975b), while some areas of the eastern half drain northeast into Phipps Creek and through Phipps Canyon, eventually joining the North Fork of Cache Creek. Federal Emergency Management Agency national flood hazard maps do not indicate the APE to be within the path of a 100-year flood event, but does indicate that the eastern half of the APE is an area of minimal flood hazard and the western half is an undetermined flood hazard area (FEMA 2005).

## 4.5 Sensitivity

The results of archival research, the Sacred Lands Search, previous surveys adjacent to and within the study area, and the environmental context all contribute to an assessment of the sensitivity level for a given project area.

Within the APE, no previously recorded resources were uncovered in documentation, as well as no previous archaeological surveys conducted. Within the ESL, one previously recorded resource was uncovered in documentation, as well as two previous archaeological surveys that were conducted. In total, one cultural resource was uncovered within the half-mile radius of the APE as a result of these investigations. The APE was determined to not overlay any known Traditional Cultural Property. The probability of observing surficial cultural resources within the APE is LOW.

Historical documents note that the APE was purchased from the United States government for homesteading or agricultural purposes. Aerial photographs allowed DZC to determine that residential development within the APE was nonexistent in the mid- and late-1900s, and current use of the land began in the early 21st century. The probability of uncovering historical cultural resources within the APE based on known habitation periods and recent bulldozing activity is LOW-TO-MODERATE depending on elevation, steepness of slope, and access to water.

A synthesis of the geologic and hydrologic context of the APE has determined that the project area is underlain entirely by Cache Formation consisting of poorly-sorted rounded gravel, sand, and silt. Ground and surface water move out of the APE in a northeasterly and northwesterly direction. The dominant soil association within the APE was determined to be consistent for hills and backslopes subject to moderate wind and water erosion. Based on the geomorphological and topographic characteristics of the project area, the results of the records and literature search, the age of the soils mapped in the area, and the level of historic disturbance, the project area is considered to have a LOW-TO-MODERATE potential for buried historic and prehistoric resources.

# 5. FIELD METHODS & RESULTS

## 5.1 Archaeological Survey Methods

An archaeological survey of the entire APE was conducted on October 8, 2017 by Dimitra Zalarvis-Chase M.A., R.P.A., and archaeological technicians Thomas Ross B.A., Joanne Gallagher B.A., Clare Burns B.A., Ronald Johnson B.A., and Tommy Chase, all of DZC Archaeology and CRM Consulting. Survey was conducted at transects of no more than 20 meters (Appendix A, Figure A-3. Archaeology Survey Results). This threshold provided complete coverage over 40-acres of the 80-acre APE.

Ground visibility was fair throughout the APE due to thick grasses, but horizontal visibility was good due to thin understory and short grasses. Spoils remaining at the surface from burrowing animals were also inspected. No formal subsurface testing was conducted. Photos of the property and associated buildings are included in Appendix D.

## 5.2 Archaeological Survey Results

One cultural resource (EMF-01) was observed within the APE as a result of this survey.

### EMF-01 Black Eye Road

This is a multi-component site consisting of a stage route, a modified spring, a concrete fish pond, introduced fruit trees, metal piping that once connected the spring and pond, and a single horse-shoe. The main feature is the historic road (stage route) connecting Ogulin Canyon to the North Fork of Cache Creek. The remaining constituents are situated on a north-facing mountain back slope, above Phipps Creek Canyon, on a northwest-southeast trending ridge finger of Bally Peak and Perkins Creek Ridge. Vegetation is predominantly live oak with grass understory. The site ranges in slope due to its dispersed extent.

There has been light development of the historic road which serves as a driveway for the subject parcel and neighbor to the north. The current trajectory of the road appears to terminate outside of the project boundary, at the neighboring parcel to the north. But the continuance to Phipps Creek and Hwy 20 is still apparent on LIDAR imagery. This road segment has not been confirmed through pedestrian survey as it was outside of the scope of the current project. The current road within the APE appears to maintain the historical alignment. The neighboring house, to the north, may be the location of the old stage stop.

## 5.3 Built Environment

The following table details the prior ground disturbance within the APE including depths, dimensions, or locations associated with the project.

**Table 3 Prior Ground Disturbance in the APE**

| Existing Structural Features | Depth, Length, and/or Location of Installation |
|---|---|
| **Residential** | One residence is located in the northwestern quarter of the parcel, approximately 60-feet x 200-feet. Depth of ground disturbance is estimated to be 3-feet. |
| **Garage** | One 2-car garage located on the summit of the mountain directly northwest of the residence. Approximately 30-feet x 100-feet. Depth of ground disturbance is estimated to be less than 18-inches. |
| **Horse Paddock** | Located directly downslope and south of the residence. Approximately 15-feet x 30-feet structure with a 60-foot x 20-foot fenced pasture. Depth of ground disturbance is estimated to be less than 18-inches. |
| **Retention Pond** | One retention pond, approximately 50-feet in diameter, is located in the southwestern quarter of the APE. Depth of ground disturbance is estimated between 5 and 10 feet. |
| **Cultivation Areas** | Two graded terraces of approximately 4000-square-feet each are located in the southeastern quarter of the APE. All beds in the area are raised and ground disturbance is estimated to be less than 18-inches. |
| **Roads** | A graded and graveled road runs west-east through the center of the APE and intersects with the driveway to the residential area and an access road to the cultivation areas. Road corridors are estimated to be approximately 10 feet wide with less than 6-inches of ground disturbance. |
| **Misc. Terraces** | Two cut benches are present near the horse paddock. One is utilized for equipment storage. Depth of ground disturbance is estimated to be less than 12-inches |

All of the structures within the APE are composed using modern materials. The architectural features are not unique and none of the structures are considered historic or significant. As such they will receive no further consideration with regard to this cultural resource analysis.

# 6. RECOMMENDATIONS & CONCLUSIONS

Discussion here is provided to convey direction supporting resource protection within the APE. Resource protection measures and management recommendations are listed in this section.

## 6.1 CEQA - Finding of No Effect

CEQA aims to "develop and maintain a high-quality environment now and in the future, and take all action to protect, rehabilitate, and enhance the environmental quality of the state (PRC § 21001). The built environment, historical and tribal cultural resources are part of the environment and as such, a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect of the environment. California Code of Regulations (CCR) 15064.5 (b) defines substantial adverse change and material impairment to a historic resources as the following:

> (1) Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired.
>
> (2) The significance of an historical resource is materially impaired when a project:
>
> (A) Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources; or
>
> (B) Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or
>
> (C) Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register of Historical Resources as determined by a lead agency for purposes of CEQA.

One cultural resource (P-12-000367) present within the APE. With the implementation of the Cultural Conditions (**CUL#**) in Section 6.4, there will be **No Effect** or changes to any cultural, tribal, or historic resources from this project.

## 6.2 Compliance with the Lake County Ordinance 2997

Ordinance 2997 does not stipulate a restriction on cannabis cultivation with regards to the presence or absence of cultural resources. A cultural resource (EMF-01, is present within the APE.

Section 72.5(e) of Ordinance 2997 requires a 100-foot setback of cannabis cultivation from any spring. A modified spring is present within EMF-01 and is more than 100-feet from the cannabis operation.

This investigation finds that there are no impacts to cultural resources from the current cannabis operation and that the subject parcel is in compliance with Section 72.5(e) of the ordinance.

## 6.3 Native American Consultation

As a result of initiating a Sacred Land File Search request with the NAHC, DZC consulting has contacted persons listed in the NAHC response letter to seek out those who may have knowledge of, or concerns for, cultural resources within the project area that are recorded or unlisted. Subsequently, DZC coordinated with the Middletown Rancheria to request a review of, and concurrence with, the information and conclusions contained within this report.

The outreach conducted by DZC Consulting may be considered Native American coordination. Coordination seeks to solicit information, build partnerships, and identify if and when formal Consultation is needed. Coordination does not substitute for Native American Consultation as defined by California SB 18 and AB 52, which requires government-to-government communications between tribal entities and the Lead Agency. As the Lead Agency, it is the responsibility of the County of Humboldt to formally engage in Consultation with the APE affiliated cultural groups.

Therefore, the affiliated THPOs and/or Tribal Representatives reserve the right to review this report, comment on the project, and engage in further consultation with the Lead Agency.

## 6.4 Project Recommendations

DZC Archaeology & CRM Consulting recommends the project proceed with the following Cultural Conditions (**CUL-#**), which should be included on all project plans and the Conditional Use Permit:

1) **CUL-1**
   Ground disturbance related to cannabis cultivation is prohibited within the archaeology site boundary as mapped on the California Department of Parks and Recreation 523 Primary Form filed for this site (Appendix E).

2) **CUL-2**
   Cannabis cultivation is prohibited within the archaeology site boundary as mapped on the California Department of Parks and Recreation 523 Primary Form filed for this site (Appendix E).

The Primary Record for this site is on file with the California Historic Resource Information. A copy has also been issued to the land owner.

The following advisements are given with regard to development elsewhere in the APE.

1. It is best practice to avoid cultural resources whenever possible. In cases of inadvertent (unplanned) discovery of cultural resources or human remains, the following procedures are required:
    a. If buried cultural materials are encountered during construction, it is required that work stop in that area until a qualified archaeologist can evaluate the nature and significance of the find [CCR 15064.5(f)].
    b. A qualified archaeologist local to the project may be reached at:

DZC Archaeological & Cultural Resource Management Consulting
(707)-599-9842

2. If human remains are encountered during future construction, it is required that work stop immediately in that area and notification be made to the Humboldt County Coroner (CCR 15064.5(e)(1)(A); HSC Sec.7050.5).
    a. Contact information for the Chief Deputy Coroner office at the time of this report:

Lake County Coroner
Address: 1220 Martin St, Lakeport, CA 95453
Phone: (707) 262-4215

    b. If the coroner determines the remains to Native American, the Coroner shall contact the NAHC within 24 hours and collaboratively determine the Most Likely Descendant (CCR 15064.5(e)(1)(B)

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# SECTION – E

## BIOLOGICAL RESOURCES ASSESSMENT

# BIOLOGICAL RESOURCES ASSESSMENT

## 1850 OGULIN CANYON ROAD [APN 010-053-03]
## LAKE COUNTY, CALIFORNIA

**PREPARED FOR:**

Emerald Mountain Farms
1850 Ogulin Canyon Road
Clearlake, California 95422

**PREPARED BY:**

Pinecrest Environmental Consulting Inc.
5627 Telegraph Ave. Suite 420
Oakland, California 94609
(510) 881-3039

PROJECT № LAK003

Pinecrest Environmental Consulting
www.pinecrestenvironmental.org

REVISED JUNE 24, 2021

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# 1.0 INTRODUCTION

## 1.1 PURPOSE

The purpose of this reconnaissance-level Biological Resources Assessment (BRA) is to evaluate the existence of special-status species (SSS) and/or habitats, as well as assess the potential for SSS listed in Appendix A to occur on or near the site of commercial cultivation activities, pursuant to applicable regulations from County of Lake and the State of California. This BRA also analyzes the potential for jurisdictional wetlands and other waters of the U.S. to exist onsite, and classifies landforms that may potentially convey sediment to waters of the U.S. including dry creeks, washes, swales, gullys, and other erosional features. Also included is a set of Best Management Practices (BMPs) that are adapted from a variety of sources including State Water Resources Control Board *Cannabis* General Order No. WQ 2017-0023-DWQ and other state and local ordinances.

## 1.2 PROJECT SUMMARY

The proposed project involves permitting of commercial *Cannabis* cultivation on the parcel located at 1850 Ogulin Canyon Road in unincorporated Lake County near the City of Clearlake (Figure 1). The proposed outdoor cultivation areas (Figures 9 & 10) are located on the top of a ridge to the east of California Highway 53 (Figure 1). The parcel contains a single occupied residence and is accessed via graded dirt and gravel road that branches to the northeast off of Ogulin Canyon Road, and is in good condition (Figure 6). There are several small Class III watercourses and two unnamed Class II watercourses that drain the site (Figure 11). In addition there are several roadside drainage culverts (Figures 7 & 8) and a small stock pond (Figure 13). The project as designed should have no impact on sensitive species or habitats if the measures described in Appendix D and in the "*Blue Oak Woodland Habitat Conservation & Replacement Plan*" prepared for the project are implemented to the greatest extent practicable.

## 1.3 LOCATION

### 1.3.1 Site Overview

The project site is located at 1850 Ogulin Canyon Road in unincorporated Lake County, 2.7 miles northeast of the City of Clearlake, 18 miles east of the City of Lakeport, and 26 miles west of the City of Williams (Figure 1). The parcel is located in Sections 12 & 13, Township 13 North, Range 7 West, on the USGS Lower Lake 7.5 minute quadrangle (Figure 2). The approximate latitude and longitude of the centroid of the parcel is 38.982 and -122.580. The parcel is designated Assessor's Parcel Number (APN) 010-053-03, measures 78.0 acres in size, is zoned Rural Lands (RL), and is under the jurisdiction of the Central Valley (Region 5) Regional Water Quality Control Board (RWQCB), and the North-Central Region (District 2) of the California Department of Fish & Wildlife (CDFW).

### 1.3.2 Federal Critical Habitat

Federal Critical Habitat (FCH) is designated by the U.S. Fish & Wildlife Service (USFWS) and provides special protections for habitats considered important for long-term population persistence of endangered or threatened species. There is no FCH onsite for any animal or plant species. The nearest FCH is located 7.3 miles south of the project parcel for Slender Orcutt grass (*Orcuttia tenuis*) near Little High Valley. There is also FCH for Slender Orcutt grass 11.4 miles to the southwest associated with Bogg's Lake. The next nearest species with designated FCH is for Northern spotted owl (*Strix occidentalis*; NSO) located 13.7 miles southwest of the project parcel near Cobb Mountain. The next nearest FCH is for Steelhead trout (*Oncorhynchus mykiss*) located 15.8 miles southwest of the parcel in Big Sulphur Creek. There is no other FCH within 15 miles of the project parcel.

### 1.3.3 CNDDB Occurrences

Special-status species (SSS) are those species that receive special protections under either local, State, or Federal law and include both State and Federally Endangered and Threatened species of animals and plants, as well as candidate listing species and other species or populations of special concern for which additional information is required. The California Natural Diversity Database (CNDDB) provides information on most known SSS occurrences in the State of California. A description of the habitat requirements and likelihood of occurrence of potential SSS on the project parcel based the CNDDB database, published scientific literature, and the expertise of PEC staff, is provided in Appendix A, with all SSS known from a 5 mile radius around the project parcel highlighted. Additionally, map-based representation of all of the SSS within a 5 mile radius around the project site is provided in Appendix B.

#### *Special-Status Animals*

There are no known occurrences of special-status animal species from the project parcel. The nearest known occurrence of special-status animal species is Foothill Yellow-Legged Frog (*Rana boylii*; FYLF), located 2.2 miles east of the parcel near Perkins Creek (Appendix C). The next nearest known occurrence of special-status animal species is Pallid bat (*Antrozous pallidus*) located 2.2 miles east of the parcel near Perkins Creek. The next nearest known occurrence of special-status animal species is Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) located 3.1 miles southwest of the parcel near the City of Clearlake. The next nearest known occurrence of special-status animal species is Red-bellied newt (*Taricha rivularis*) located 3.0 miles south of the project parcel in Dry Creek. The next nearest known occurrence of special-status animal species is Brownish dubiraphian riffle beetle (*Dubiraphia brunnescens*) located 3.8 miles west of the parcel in Clear Lake. Also located 3.8 miles west of the parcel in Clear Lake are Clear Lake hitch (*Lavinia exilicauda chi*) and Sacramento perch (*Archoplites interruptus*). The next nearest known occurrence of special-status animal species is Borax Lake cuckoo wasp (*Hedychridium milleri*) located 4.3 miles west of the project parcel in Borax Lake. The next nearest known occurrence of special-status animal species is Golden eagle (*Aquila chrysaetos*) located 4.3 miles south of the project parcel near Cache Creek. The next nearest known occurrence of special-status animal species is Osprey (*Pandion haliaetus*) located 4.2 miles northwest

of the project parcel near Clearlake Oaks. The next nearest known occurrence of special-status animal species is Townsend's big-eared bat (*Corynorhinus townsendii*) located 4.2 miles northwest of the project parcel near Clearlake Oaks. The next nearest known occurrence of special-status animal species is Prairie falcon (*Falco mexicanus*) located 4.3 miles east of the project parcel somewhere within the Wilbur Springs USGS 7.5 minute quadrangle. There are no other special-status animal species known from within 5 miles of the project site.

***Special-Status Plants***

There is are no known occurrences of special-status plant species from within the project parcel. The nearest known occurrence of special-status plant species is an occurrence of Colusa Layia (*Layia septentrionalis*) located 0.8 miles southwest of the project parcel near Quackenbush Mountain (Appendix C). The next nearest known occurrence of special-status plant species is Bent-flowered fiddleneck (*Amsinckia lunaris*) located 1.2 miles west of the parcel near CA-53. The next nearest known occurrence of special-status plant species is Eel-grass pondweed (*Potamogeton zosteriformis*) located as close as 1.2 miles west of the parcel near the City of Clearlake. The next nearest known occurrence of special-status plant species is Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*) located 1.4 miles west of the parcel near CA-53. The next nearest known occurrence of special-status plant species is Jepson's milk vetch (*Astragalus rattanii* var. *jepsonianus*) located 2.6 miles east of the parcel near Perkins Creek Ridge. The next nearest known occurrence of special-status plant species is Brandegee's eriastrum (*Eriastrum brandegeeae*) located 3.4 miles west of the parcel near Borax Lake. The next nearest known occurrence of special-status plant species is Adobe Lily (*Fritillaria pluriflora*) located 3.6 miles east of the project parcel near The Peninsula. There are no other known occurrences within 4 miles of the project parcel (Appendix C).

### 1.3.4 Landforms & Water Features

The parcel consists of a series of low hills bisected by Blackeye Canyon (Figure 1). The maximum elevation of the parcels is 1,790 feet above sea level in the southwest corner of the parcel, and the minimum elevation is 1,556 feet above sea level near the northwest corner of the property where the seasonal Class II drainage exits the parcel (Figure 2). Slopes range from 10% to 40%, as measured by Suunto PM5 handheld clinometer.

There are several unnamed ephemeral Class III watercourses that flow towards an unnamed seasonal Class II watercourses that flows west through Blackeye Canyon (Figure 3). There is also an unnamed seasonal Class II watercourse with several Class III spurs that exists in the far northeast corner of the parcel and drains towards the northeast. Two culverts convey water beneath the access roads onsite (Figures 7 & 8) and are both in good condition and have rock protection installed up and downstream. There is additionally one stock pond that exists south of the main road (Figure 13) that does not appear to have a channelized inlet source. There are no areas onsite that appear to be potential wetlands.

Precipitation mostly infiltrates locally due to the lack of a significant upslope watershed (Figure 2). During large storm events water may flow overland primarily as unconsolidated sheet flow into the series of ephemeral Class III watercourses. All water onsite eventually drains towards the center of the property into Blackeye Canyon, which flows west for 1.9 miles before entering the Burns Valley,

which flows west for another 2.5 miles through orchards and rural residential developments before emptying into Clear Lake near Konocti Street (Figure 1). From the Cache Creek Dam, Cache Creek flows west for approximately 70 miles before entering the Yolo Bypass near Woodland, which flows south and then west for approximately 65 miles before emptying into Suisun Bay and the Pacific Ocean.

### 1.3.5 Existing Structures

The driveway that passes through Blackeye Canyon is known as Ogulin Canyon Road and is in good condition, packed dirt and gravel (Figure 6). Access is controlled by a locking metal automatic entry gate equipped with emergency lock access box. The road is in good condition and exhibits rock protection in numerous locations. Culverts are well built and maintained free of debris and appear to be adequately sized. There is one occupied single family residence onsite that is located approximately 0.3 miles past the entrance to the parcel. An existing 1,500 gallon septic system exits downhill from the main residence to the southeast. The proposed cultivation areas are located approximately 0.15 miles further to the east on the top of the main ridge (Figure 9) in an area of annual grassland and blue oak trees. There is a solar powered well located near the residence and water is pumped into a series of HDPE water storage tanks located at the top of the ridge near the proposed cultivation areas. The cultivation areas are surrounded by chain link fencing with visibility screening. There is a vehicle garage and outbuilding onsite but no other permanent structures.

### 1.3.6 Regional Land Uses

Land uses in the vicinity of the project parcel are primarily rural residences, light industrial manufacturing, vehicle and property storage units, and grazing land. Further to the west is higher proportion of orchards and residential developments, becoming increasingly developed until reaching the City of Clearlake. To the east the terrain becomes steeper and more undeveloped and is primarily grazing land and chaparral wildland. To the north and south are primarily blue oak dominated chaparral wildland. No portions of the parcel have burned in the previous 10 years.

## 1.4 METHODS

### 1.4.1 Records Search & Literature Review

Based on a review of the literature and relevant databases, we compiled a list of special-status plant and animal species that are known to occur within Lake County, or that occupy habitats that are known to be present on or near the project site (Appendix A). Sources of information referenced include the California Department of Fish & Wildlife (CDFW) *California Natural Diversity Database* (CNDDB 2019), U.S. Fish and Wildlife Service Environmental Conservation Online System (USFWS 2019), the California Native Plants Society (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (CNPS 2018), the CDFW *Habitat Relationships System* (HRS), and the knowledge of PEC staff familiar with the species and habitats of Lake County.

Additional information on sensitive habitats including wetlands was obtained from the USFWS National Wetlands Inventory (NWI 2019), and the County of Lake Geographic Information System Portal (Lake Co. 2019). Plant species included here are state or federal endangered or threatened species, and/or considered rare by CDFW, and/or are recognized as special-status species (SSS) by CNPS or CDFW. Animal species included here are designated as State or Federally Endangered or Threatened, and/or CDFW species of special concern (SSC), and/or CDFW fully protected species (FPS). In addition, nests of most native bird species, regardless of their regulatory status, are protected from take or harassment under the U.S. Migratory Bird Treaty Act (MBTA) and relevant sections of the California Fish & Wildlife Code.

### 1.4.2 Field Surveys

A wildlife and botanical survey was conducted at the site on July 19, 2019 by Dr. Christopher DiVittorio of PEC. A second protocol-level botanical survey was performed on April 30, 2021 by Dr. Christopher DiVittorio and Dr. Zoya Akulova of PEC. During the first survey the weather was typical for this time of year, the sky was clear, air temperature was 90.6 degF, relative humidity was 36%, and wind was from the west at 1-2 mph. For the second survey temperature and relative humidity was not recorded but the weather was clear and sunny and temperature was normal for the time of year. All measurements were made using Kestrel 3000 handheld weather station. No rain fell in the preceding two weeks from the first survey (NWS 2019), although late rains during 2019 prolonged the growing season, thus all most the vegetation was identifiable including many early-season plants, and many perennial and annual plant species were still flowering. For the second survey, the rain year was short however several inches of rain fell the preceding month and many species were flowering. Starting with the portion of the property closest to the proposed cultivation area, the entire project site was surveyed on foot by PEC biologist Dr. Christopher T. DiVittorio, recording the location and identity of all plant and animal species encountered. Plant voucher specimens were taken of any species that were not identifiable in the field, and that were not likely to be special-status. The vast majority of species were identifiable at the time of the survey, although some had to be identified based on vegetative parts. Photographs and voucher specimens were taken of any plants that were identified solely based on vegetative characters.

The field survey was conducted by dividing the outdoor portions of the parcel into zones and cataloging all of the species found in each zone. Each zone was surveyed by walking in parallel lines until the whole zone was covered. Notes were also taken in each zone documenting the general site characteristics and current land uses, as well as any surface erosional features that may require remediation. Botanical specimens were taken back to the laboratory for identification if identification was not possible in the field. If species were not flowering at the time of the survey and morphological characteristics indicated that the species may be special-status, notes were made for a follow-up visit. Birds and nests were identified by call and with binoculars. Vocalizations, scat, tracks, feathers, burrows, nests, and molts were used for identification of animals present onsite. Any onsite aquatic habitats were observed for a minimum of ten minutes without movement in order to observe animals that may hide when approached.

# 2.0 RESULTS

## 2.1 NATURAL COMMUNITIES IN THE EVALUATION AREA

Using field surveys, a review of published literature, and the knowledge of PEC staff, all of the natural communities present on and around the project site were assessed. Regionally, the dominant vegetation type is *Chamise* chaparral and mixed Blue oak woodland, with annual grasslands on hilltops, and a greater proportion of hardwoods at the bottoms of canyons (Figure 4). The parcel was not burned at any point during the last 10 years, although much of the surrounding region was burned during the Rocky/Jerusalem Fires in 2015. Regionally there are abundant serpentine outcrops although there are no serpentine outcrops or soils known from the project parcel as described in greater detail in §2.5, below.

## 2.2 NATURAL COMMUNITIES WITHIN THE PROJECT SITE

Overall, the parcel consists of approximately 70% Blue oak woodland, 20% *Chamise* chaparral, and 10% annual grassland and developed area (Figure 5). The bottom of Blackeye Canyon contains a slightly higher proportion of hardwood and riparian species and so is treated separately, below. The grassland and chaparral habitats are continuous with the oak woodland habitat and the entirety of the parcel is more or less homogenous in community composition. The specific community descriptions below are organized based on the zones that were surveyed, and the floristic results presented in Appendix B.

A full list of all species observed at both 2019 and 2021 surveys is provided in Appendix B. Below is a list of the dominant species observed at both time points.

### 2.2.1 Blue Oak Woodland

The vast majority of the parcel can be described as Blue oak woodland dominated by Blue oak (*Quercus douglasii*) to 24" diameter-at-breast-height (DBH) but averaging 10-12" DBH. Other subdominant tree species include Gray pine (*Pinus sabiniana*) to 20" DBH, Ponderosa pine (*Pinus ponderosa*) to 16" DBH, Black oak (*Quercus kelloggii*) to 10" DBH, and Madrone to (*Arbutus menziesii*) to 12" DBH. Native subdominant species include hoary manzanita (*Arctostaphylos canescens*), toyon (*Heteromeles arbutifolia*), poison oak (*Toxicodendron diversilobium*), Yerba Santa (*Eriodictyon californicum*), mountain mahogany (*Cercocarpus betuloides*), deer brush (*Ceanothus integerrimus*), common yarrow (*Achillea millefolium*), soap plant (*Chlorogalum pomeridianum*), large fruited lomatium (*Lomatium macrocarpum*), common tarweed (*Centromadia pungens*), gumweed (*Madia gracilis*), Needleleaf navarretia (*Navarretia intertexta*), imbricate phacelia (*Phacelia imbricata*), whisker-brush (*Leptosiphon ciliatus*), naked buckwheat (*Eriogonum nudum*), twining brodiaea (*Dichelostemma volubile*), blue dicks (*Dichelostemma capitatum*), harvest brodiaea

(*Brodiaea elegans*), blue eyed grass (*Sisyrinchium bellum*), Douglas' iris (*Iris douglasii*), Pacific sanicle (*Sanicula crassicaulis*), California fuchsia (*Epilobium canum*), squirreltail grass (*Elymus elymoides*), blue wildrye (*Elymus glaucus*), California western flax (*Hesperolinon californicum*), woolly leaved sunflower (*Eriophyllum lanatum*), babystars (*Leptosiphon bicolor*), and golden fairy lantern (*Calochortus amabilis*).

Nonnative species dominate the grassland portions of the site and include ripgut brome (*Bromus diandrus*), foxtail chess (*Hordeum murinum*), dogstail grass (*Cynosurus echinatus*), hairgrass (*Aira caryophyllea*), wild oats (*Avena barbata*), soft chess (*Bromus hordeaceous*), Zorro fescue (*Festuca myuros*), Medusahead (*Elymus caput-medusae*), little rattlesnake grass (*Briza minor*), nit grass (*Gastridium phleoides*), Italian thistle (*Carduus pycnocephalus*), black mustard (*Brassica nigra*), wild geranium (*Geranium molle*), chickweed (*Stellaria media*), big heron bill (*Erodium botrys*), English plantain (*Plantago lanceolata*), field parsley (*Torilis arvensis*), Klamathweed (*Hypericum perforatum*), smooth cat's ear (*Hypochaeris glabra*), prickly lettuce (*Lactuca serriola*), bull thistle (*Cirsium vulgare*), rose clover (*Trifolium hirtum*), pineapple weed (*Matricaria discoidea*), sheep sorrel (*Rumex acetocella*), hairy vetch (*Vicia villosa*), red brome (*Bromus madritensis*), yellow star thistle (*Centaurea solstitialis*), woolly mullein (*Verbascum thapsus*), and turkey mullein (*Croton setiger*).

### 2.2.2 Chamise Chaparral

Approximately one half of the parcel can be described as mixed *Chamise* chaparral dominated by chamise (*Adenostoma fasiculatum*), toyon (*Heteromeles arbutifolia*), poison oak (*Toxicodendron diversilobium*), Yerba Santa (*Eriodictyon californicum*), hoary manzanita (*Arctostaphylos canescens*), deer brush (*Ceanothus integerrimus*), buck brush (*Ceanothus cuneatus*), mountain mahogany (*Cercocarpus betuloides*), Western redbud (*Cercis occidentalis*), Hollyleaf redberry (*Rhamnus ilicifolia*), and California coffeeberry (*Frangula californica*). Subdominants include Western buttercup (*Ranunculus occidentalis*), blue eyed grass (*Sisyrinchium bellum*), small tarweed (*Madia exigua*), bird's foot trefoil (*Acmispon americanus*), blue dicks (*Dichelostemma capitatum*), common tarweed (*Centromadia pungens*), annual Vulpia (*Festuca microstachys*), harvest brodiaea (*Brodiaea elegans*), purple needlegrass (*Stipa pulchra*), annual lupine (*Lupinus bicolor*), ladies' tobacco (*Gnaphalium californicum*), common fiddleneck (*Amsinckia intermedia*), hayfield tarweed (*Hemizonia congesta*), woolly leaved sunflower (*Eriophyllum lanatum*), gumweed (*Grindelia camporum*), purple navarretia (*Navarretia pubescens*), California yellow mariposa lily (*Calochortus luteus*), and babystars (*Leptosiphon bicolor*).

### 2.2.3 Riparian Woodland

All of the watercourses onsite are ephemeral and do not exhibit substantial riparian vegetation. Despite this, the vegetation in the bottom of Blackeye Canyon exhibit somewhat elevated proportions of hardwoods and hydrophilic herbaceous species compared with the rest of the parcel and so are treated separately here. Approximately 10% of the parcel can be described as riparian corridor. Species unique to this habitat include Oregon oak (*Quercus garryana*), Bigleaf maple (*Acer macrophyllum*), American mistletoe (*Phoradendron leucarpum*), Himalayan blackberry (*Rubus armeniacus*), coyote brush (*Baccharis pilularis*), buck brush (*Ceanothus cuneatus*), Western redbud

(*Cercis occidentalis*), Hollyleaf redberry (*Rhamnus ilicifolia*), bracken fern (*Pteridium aquilinum*), blue miner's lettuce (*Claytonia perfoliata*), common bedstraw (*Galium aparine*), willow herb (*Epilobium brachycarpum*), California rose (*Rosa californica*), and golden fairy lantern (*Calochortus amabilis*).

## 2.3 WILDLIFE

Numerous wildlife species were observed both directly and indirectly onsite at the time of the survey including black-tailed jackrabbit (*Lepus californicus*), mule deer (*Odocoileus hemionus*), California ground squirrel (*Otospermophilus beecheyi*), Western gray squirrel (*Sciurus griseus*), Western yellow-bellied racer (*Coluber constrictor mormon*), Western fence lizard (*Sceloporous occidentalis*), Western scrub jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), acorn woodpecker (*Melanerpes formicivorus*), California quail (*Callipepla californica*), common crow (*Corvus brachyrhynchos*), turkey vulture (*Cathartes aura*), dark-eyed junco (*Junco hyemalis*), and an unknown bumblebee species (*Bombus* spp.).

## 2.4 WETLANDS & STREAMS

Streams and watercourses onsite were classified according to the three-tier method used by the California Department of Forestry & Fire Protection (CALFIRE 2017) and included as a reference in Appendix E. Jurisdictional streamcourses are mapped in Figure 3. According to these criteria, there are two unnamed ephemeral Class II watercourses onsite. The main drainage flows through Blackeye Canyon and drains a series of smaller Class III watercourses that flow through the steep chaparral hillslope in the south portion of the parcel (Figure 11). A second Class II drainage flows north in the far northeast portion of the parcel. Several drainage culverts exist onsite (Figure 3). The culvert designated "A" is a corrugated metal approximately 12" diameter pipe with rock protection (Figure 7), and the culvert designated "B" is an approximately 10" HDPE ditch relief culvert also with rock protection (Figure 8). The culverts appear to be functioning properly and do not exhibit evidence of overtopping.

The stock pond is not likely to be jurisdictional due to the lack of a defined inlet stream, and it is our recommendation that this feature is not an instream reservoir and instead collects subsurface flow locally. The stock pond is small and measures approximately 0.06 surface acres and has an outlet composed of a 24" corrugated metal pipe that is buried into the earthen fill dam and spills out into an area of intact vegetation to the west. There was no streamchannel observed associated with the outfall and it does not appear that the outfall spills every year.

Potential wetlands onsite were assessed based on the likelihood to satisfy the three-tier wetland delineation criteria used by the Army Corps of Engineers *Wetland Delineation Manual* (ACOE 1987). There are no locations onsite that appear to satisfy the ACOE criteria for wetlands, although a protocol-level wetland delineation was not performed. The vegetation surrounding the ephemeral channels and stock pond is not different than the upland grassland vegetation. There were no locations onsite that exhibited hydrophytic vegetation sufficient to qualify as jurisdictional wetland.

## 2.5 SOILS & LOCAL GEOMORPHOLOGY

The parent materials are typical of inner Coast Range mountains of the Lake County subtype, with highly dissected valleys cut into soft Franciscan sediments, with abundant volcanic extrusive and intrusive formations (USGS 1985). Local formations in the central portion of the site including the residence are mapped as well drained Skyhigh-Asbill complex (#208), 15% to 50% slopes, with lesser proportions of Sleeper (10%), and unnamed (10%) soils. This complex exhibits 0% of hydric soils and minimum bedrock depth of 38". The eastern portion of the site including the cultivation areas are mapped as well drained Sleeper variant-Sleeper loams (#215), 30% to 50% slopes, with lesser proportions of Millsholm (10%), and Skyhigh (5%) soils. Parent materials are sedimentary. The typical proportion of hydric soils is 0%, and the area is classified as not prime farmland. There are no serpentine or other ultramafic rock types onsite and no serpentine derived soils. There are no alkalai or vernal pool soil types onsite.

# 3.0 SUMMARY & CONCLUSIONS

No special-status plant species were observed during the surveys performed at the site in July 2019 or April 2021. No impacts are predicted for any of the State or Federal special-status plant species in Appendix A based on the lack of special-status species observed onsite. The nearest occurrence of special-status plants are Colusa Layia and Adobe Lily within one mile of the project parcel, however neither of these species were observed onsite. There are furthermore no vernal pools, wetlands, or serpentine outcrops that would possess a high likelihood of containing special-status plant species. There are, however, some impacts to oak savannah habitat due to removal of approximately 38 blue oak trees of various diameters, and this community does contain a high proportion of native species. To offset for these impacts, a Blue Oak Woodland Habitat Conservation and Replacement Plan was prepared in order to offset the impacts of removing these trees. As long as this Plan is implemented, and the BMPs in Appendix D are implemented to the greatest extent practicable, there should be no net impacts to special-status plant species or their habitats.

No special-status animal species were observed during the surveys performed at the site in July 2019 or April 2021. No impacts are predicted for any State or Federal special-status animal species in Appendix A as long as appropriate setbacks are observed from the pond, and watercourses as shown in Figure 3. The nearest occurrence of special-status amphibian is Foothill yellow-legged frog (FYLF) located more than 2 miles from the project parcel, and there is little suitable breeding habitat nearby, thus we have no specific avoidance measures for FYLF aside from the general cultivation BMPs described in Appendix D.

No impacts are predicted for sediment discharge to watercourses or wetlands due to the lack of actively eroding features onsite, and the presence of dense vegetation between the potential activity areas and any downstream watercourses. There are several small Class II/III drainages onsite, however these are largely inaccessible due to dense chaparral vegetation and there are no pathways for sediment to reach them from the cultivation areas. Culverts are adequately protected and are free from obstructions. Roadways are in excellent condition and have properly formed crowns and inboard ditches and no remediation is recommended at this time. Additional erosion control measures described in Appendix D should be implemented during the course of construction wherever bare ground is visible, and we encourage the use of native vegetation from locally sourced genotypes along road cuts and anywhere soil stabilization is required in the future.

# 4.0 REGULATORY FRAMEWORK

## 4.1 FEDERAL ENDANGERED SPECIES ACT

The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over federally-listed threatened and endangered species under the federal Endangered Species Act (FESA). The USFWS also maintains a list of 'proposed' species and candidate species that are not legally protected under the FESA, but are often included in their review of a project as they may become listed in the near future. The FESA protects listed animal species from harm or "take" which is broadly defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Take can also include habitat modification or degradation that results in death or injury to a listed species. An activity can be defined as a "take" even if it is unintentional or accidental. Listed plant species are provided less protection than listed wildlife species. Listed plant species are legally protected from take under FESA if they occur on federal lands. Pursuant to the requirements of the FESA, a federal agency reviewing a proposed project within its jurisdiction must determine whether any federally-listed threatened or endangered species (plants and animals) may be present in the project area and determine whether the proposed project may affect such species. Any activities that could result in the take of a federally-listed species will require formal consultation with the USFWS.

## 4.2 CALIFORNIA ENDANGERED SPECIES ACT

The California Endangered Species Act (CESA) protects any plant or animal listed or proposed for listing as rare (plants only), threatened, or endangered. In accordance with the CESA, the California Department of Fish and Wildlife (CDFW) has jurisdiction over state-listed species (California Fish and Wildlife Code 2070). Take of state-listed species requires a permit from CDFW, which is granted only under strictly limited circumstances. Additionally, the CDFW maintains lists of "species of special concern" that are defined as animal species that appear to be vulnerable to extinction because of declining populations, limited ranges, and/or continuing threats. Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any state-listed or proposed endangered or threatened species may be present in the project area and determine whether the proposed project may result in a significant impact on such species.

## 4.3 CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 15380(b) of the California Environmental Quality Act (CEQA) Guidelines 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 definitions in FESA and CESA and the section of the California Fish and Wildlife 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 a species that has not yet been listed by either the USFWS or CDFW. Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts, if it finds that the species meets the criteria of a threatened or endangered species.

## 4.4 CLEAN WATER ACT

Under Section 404 of the federal Clean Water Act, the U.S. Army Corps of Engineers (Corps) is responsible for regulating the discharge of fill material into waters of the United States. Waters of the U.S. and their lateral limits are defined in 33 CFR Part 328.3 (a) and include streams that are tributary to navigable waters and their adjacent wetlands. Wetlands that are not adjacent to waters of the U.S. are termed "isolated wetlands" and, depending on the circumstances, may also be subject to Corps jurisdiction. In general, a Corps permit must be obtained before placing fill in wetlands or other waters of the U.S. The type of permit depends on the acreage involved and the purpose of the proposed fill. Minor amounts of fill are sometimes covered by Nationwide Permits, which were established to streamline the permit process for projects with "minimal" impacts on wetlands or other waters of the U.S. An Individual Permit is required for projects that result in more than a minimal impact on jurisdictional areas. The Individual Permit process requires evidence that fill of jurisdictional areas has been minimized to the extent "practicable" and provides an opportunity for public review of the project.

## 4.5 CALIFORNIA WATER QUALITY REGULATORY PROGRAMS

Pursuant to Section 401 of the federal Clean Water Act and the state's Porter-Cologne Act, projects that are regulated by the Corps must obtain water quality certification from the Regional Water Quality Control Board (RWQCB). This certification ensures that the project will uphold state water quality standards. The RWQCB sometimes asserts jurisdiction over wetlands that the Corps does not (e.g. certain isolated wetlands) and may impose mitigation requirements even if the Corps does not. The CDFW also exerts jurisdiction over the bed and banks of watercourses and water bodies according to provisions of Section 1601to1603 of the Fish and Wildlife Code. The Fish and Wildlife Code requires a Stream Alteration Agreement for the fill or removal of material within the bed and banks of a watercourse or water body.

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# FIGURE 1: REGIONAL LOCATION

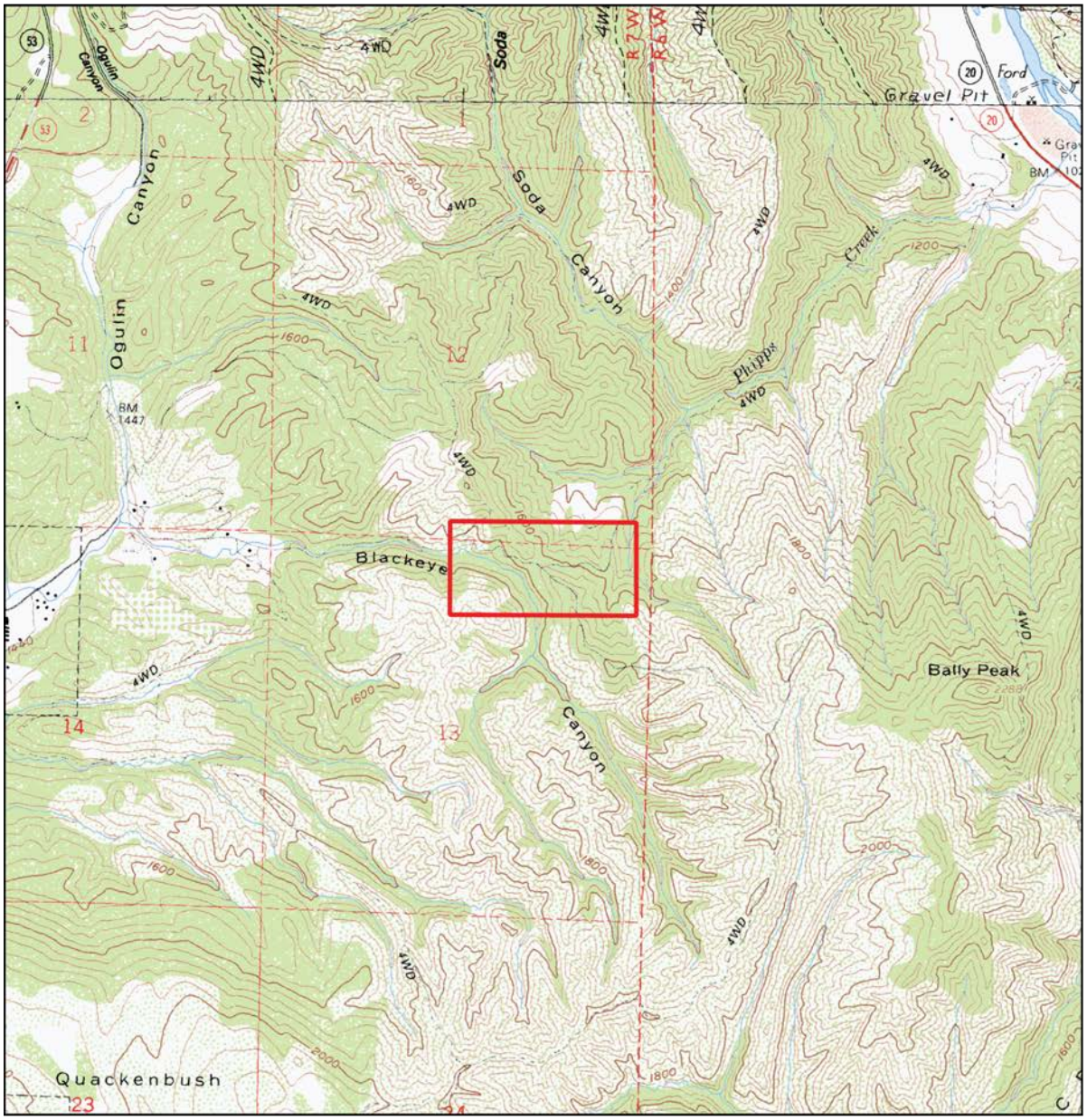



FIGURE I

Pinecrest Environmental Consulting

N

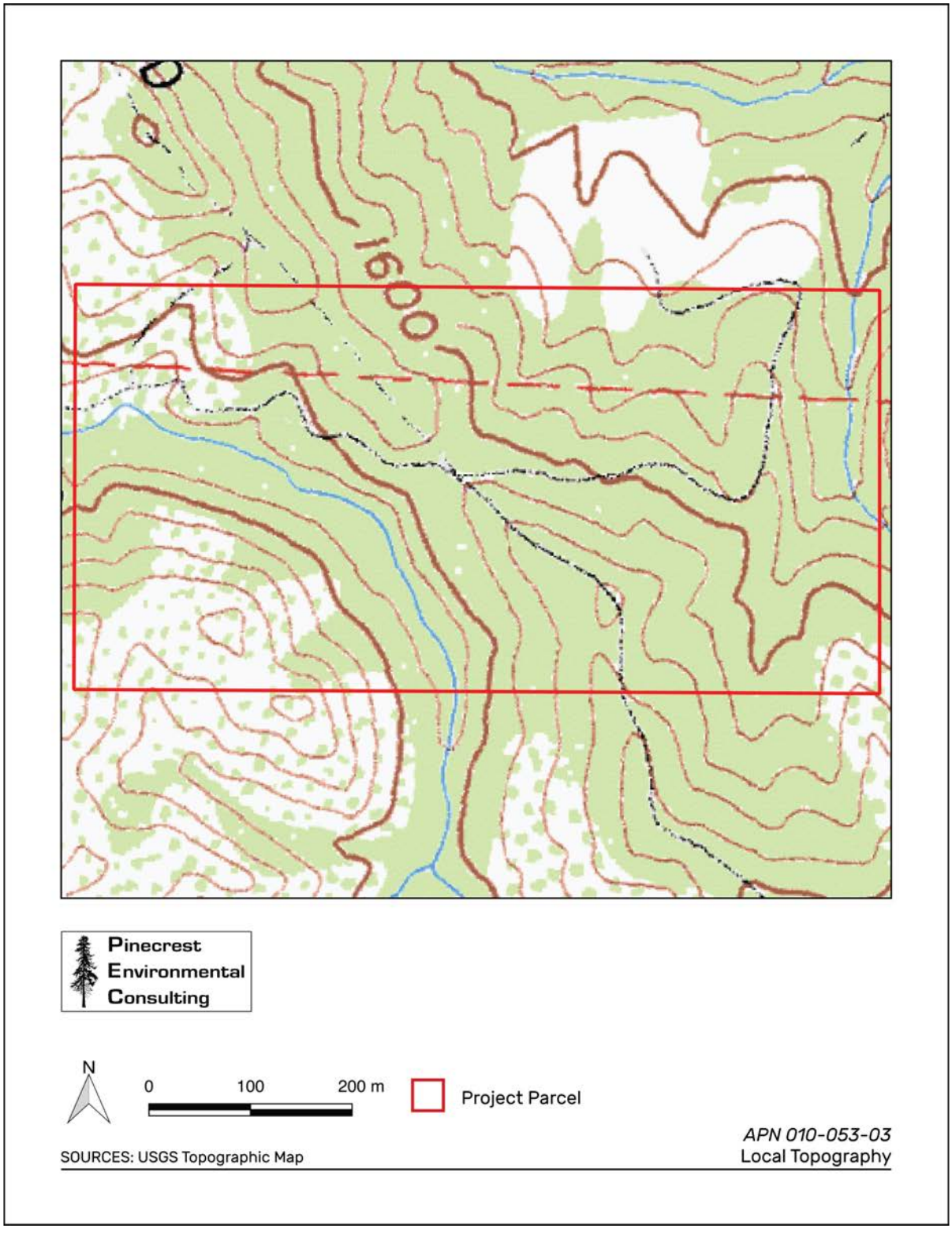
0 500 1000 m

Project Parcel

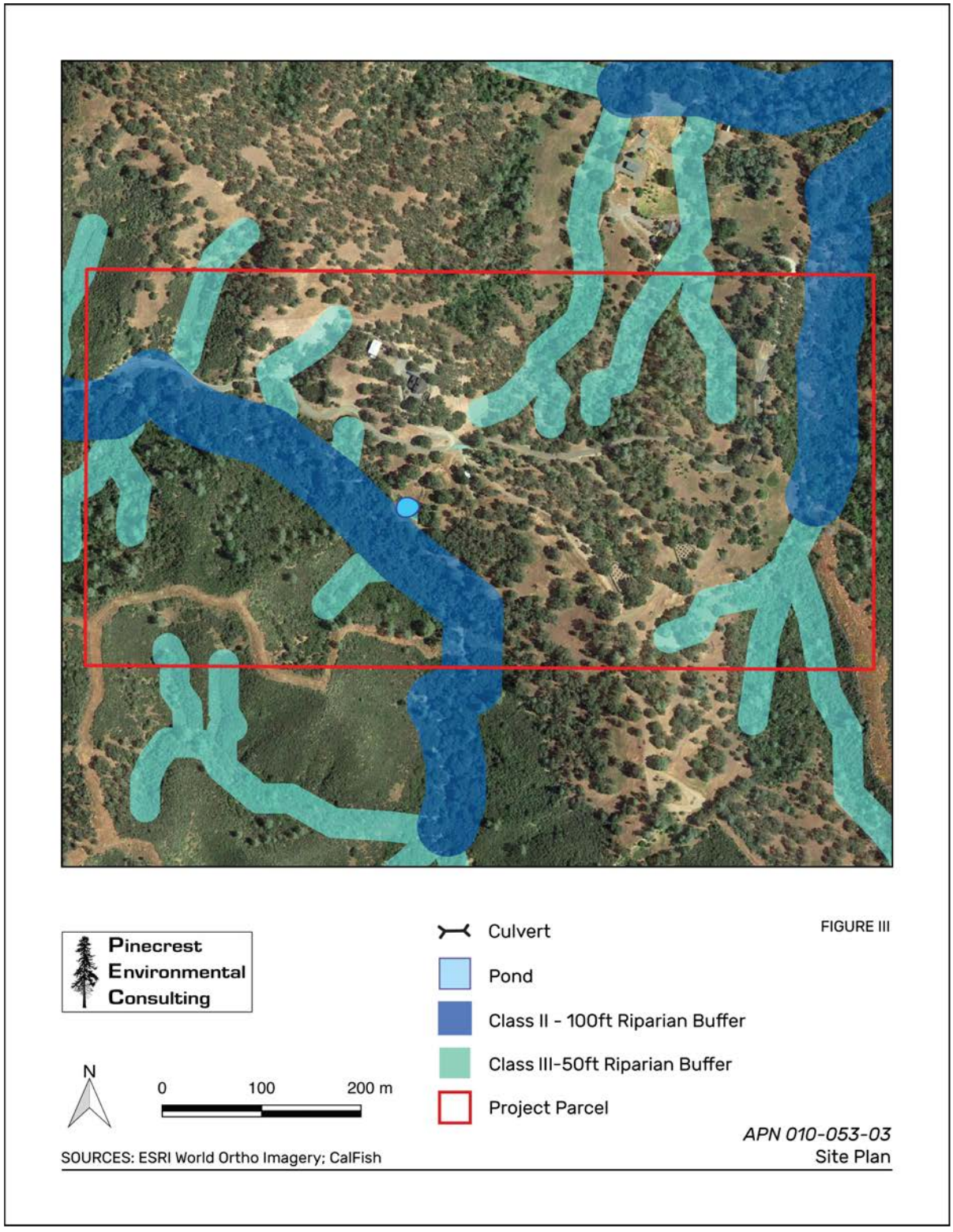
SOURCES: USGS Topographic Map

*APN 010-053-03*
Regional Topography

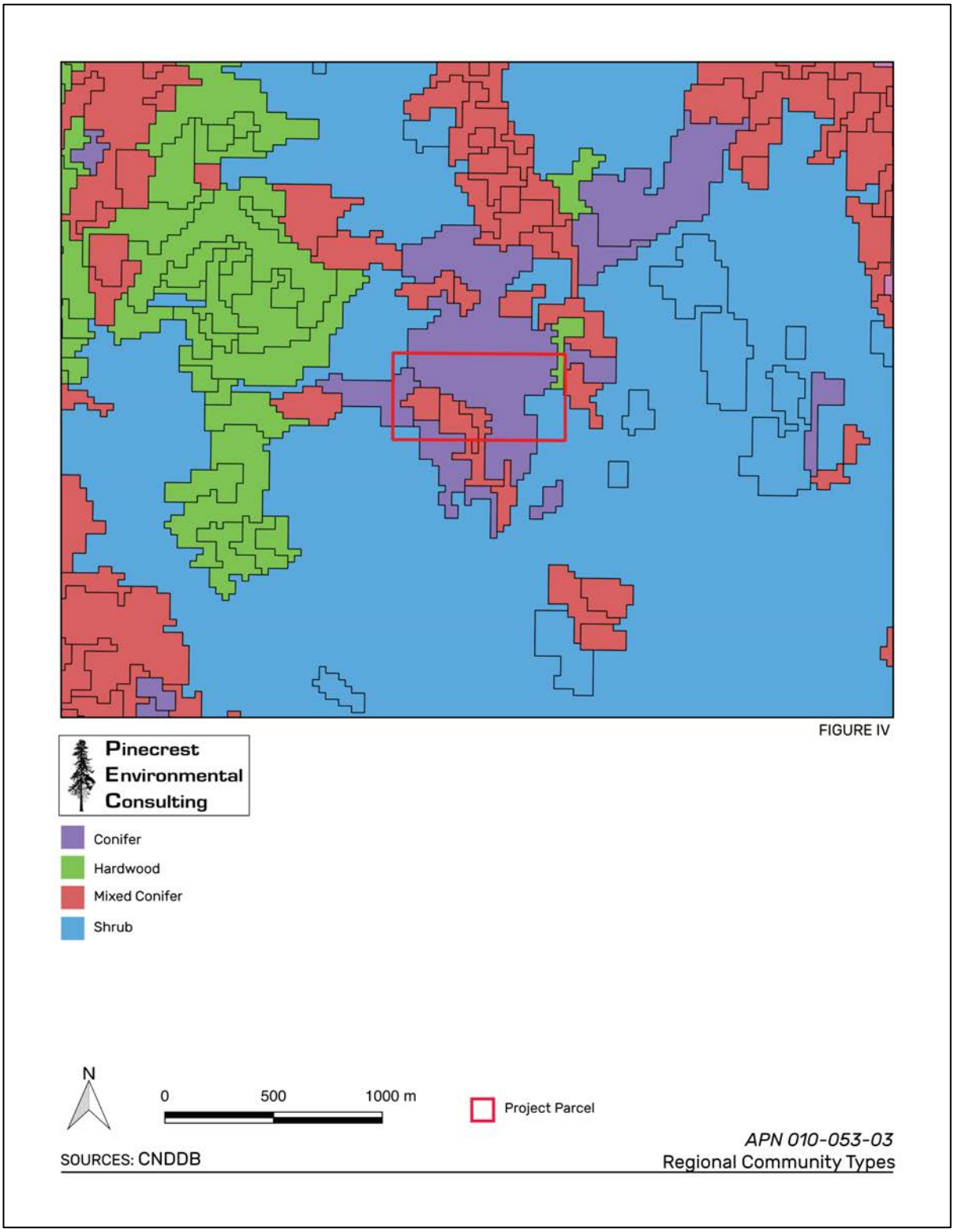
## FIGURE 2: 40 FOOT CONTOURS



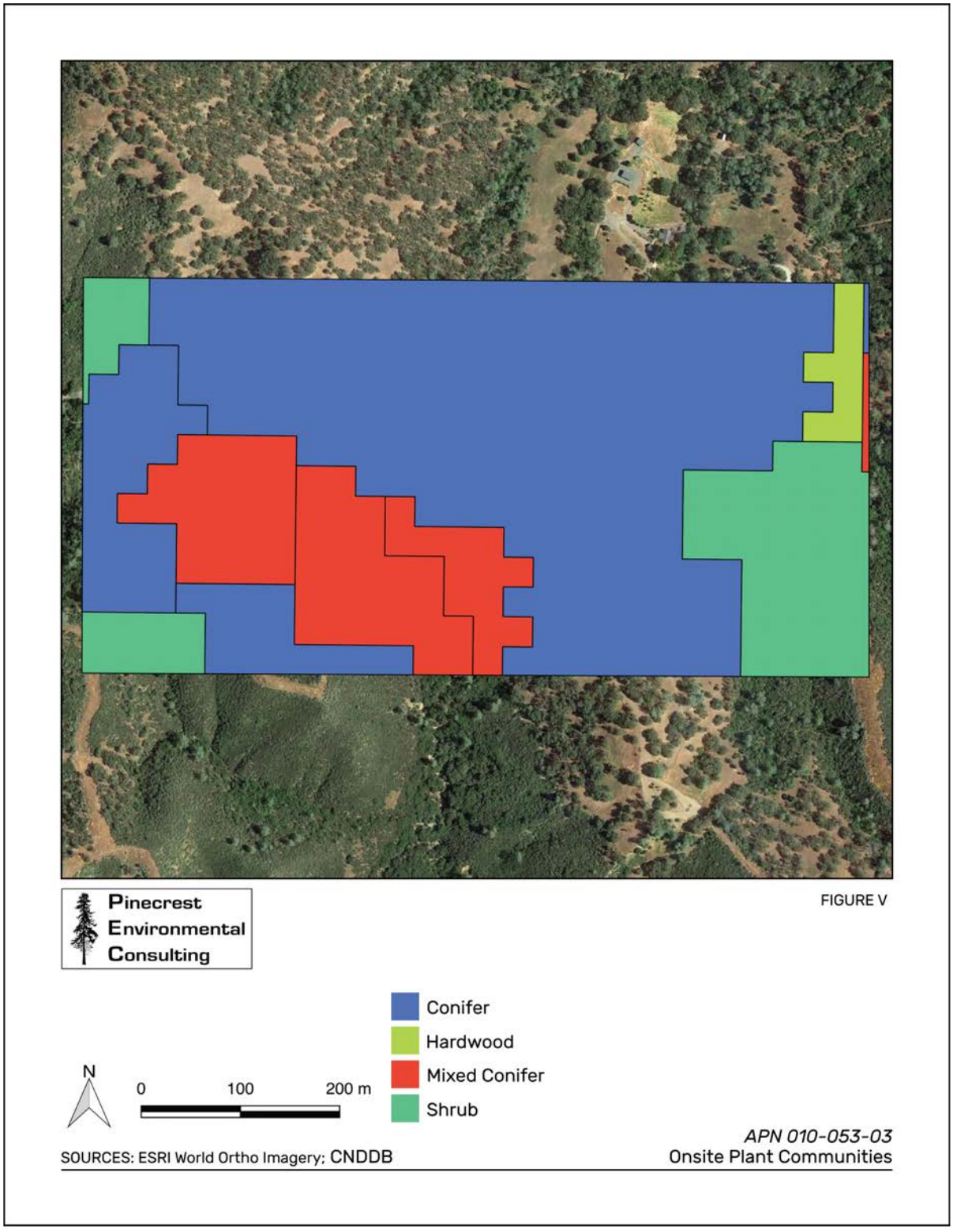
# FIGURE 3: WATER FEATURES



# FIGURE 4: REGIONAL COMMUNITY TYPES



# FIGURE 5: ONSITE PLANT COMMUNITIES



# FIGURE 6: PHOTOGRAPH OF ACCESS ROAD

Pinecrest Environmental Consulting

(510) 881-3039 info@pinecrestenvironmental.org
5627 Telegraph Ave, Ste. 420 | Oakland, CA 94609
105 Morris St, Suite 184 | Sebastopol, CA 95472

*APN 010-053-03*

SOURCES: Pinecrest Environmental

1850 Ogulin Canyon Road, Clearlake, CA 95422

# FIGURE 7: PHOTOGRAPH OF CULVERT 'A'

Pinecrest Environmental Consulting

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105 Morris St, Suite 184 | Sebastopol, CA 95472

*APN 010-053-03*

SOURCES: Pinecrest Environmental

1850 Ogulin Canyon Road, Clearlake, CA 95422

## FIGURE 8: PHOTOGRAPH OF CULVERT 'B'

Pinecrest Environmental Consulting

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105 Morris St, Suite 184 | Sebastopol, CA 95472

*APN 010-053-03*

SOURCES: Pinecrest Environmental

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## FIGURE 9: PHOTOGRAPH OF CULTIVATION AREA 'A'

Pinecrest Environmental Consulting

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5627 Telegraph Ave, Ste. 420 | Oakland, CA 94609
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*APN 010-053-03*

SOURCES: Pinecrest Environmental

1850 Ogulin Canyon Road, Clearlake, CA 95422

## FIGURE 10: PHOTOGRAPH OF CULTIVATION AREA 'B'

Pinecrest Environmental Consulting

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5627 Telegraph Ave, Ste. 420 | Oakland, CA 94609
105 Morris St, Suite 184 | Sebastopol, CA 95472

*APN 010-053-03*

SOURCES: Pinecrest Environmental

1850 Ogulin Canyon Road, Clearlake, CA 95422

## FIGURE 11: PHOTOGRAPH OF MIXED OAK WOODLAND

Pinecrest Environmental Consulting

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5627 Telegraph Ave, Ste. 420 | Oakland, CA 94609
105 Morris St, Suite 184 | Sebastopol, CA 95472

*APN 010-053-03*

SOURCES: Pinecrest Environmental

1850 Ogulin Canyon Road, Clearlake, CA 95422

## FIGURE 12: PHOTOGRAPH OF CLASS III WATERCOURSE

Pinecrest Environmental Consulting

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5627 Telegraph Ave, Ste. 420 | Oakland, CA 94609
105 Morris St, Suite 184 | Sebastopol, CA 95472

*APN 010-053-03*

SOURCES: Pinecrest Environmental

1850 Ogulin Canyon Road, Clearlake, CA 95422

# FIGURE 13: PHOTOGRAPH OF STOCK POND

Pinecrest Environmental Consulting

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*APN 010-053-03*

SOURCES: Pinecrest Environmental

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# APPENDIX A: SPECIAL-STATUS SPECIES CONSIDERED

The following is a list of special-status plant and animal species generated based on knowledge of the species and habitats of Lake County by PEC staff, from various State and Federal databases, and from the California Natural Diversity Database (CNDDB). CNDDB occurrences within 5 miles of the project site are shown in bold.

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| PLANTS | | | |
| **Adobe lily (*Fritillaria pluriflora*)** | **—/—/1B.2** | **Valley grasslands, foothill woodland** | **Medium: Some grassland habitat exists onsite. Nearest known occurrence is 3.8 miles east of the parcel near The Peninsula.** |
| Alkalai milk-vetch (*Astragalus tener* var. *tener*) | —/—/1B.2 | Valley grasslands, alkali sinks | None: No suitable alkalai habitat exists onsite. |
| Anthony peak lupine (*Lupinus antoninus*) | —/—/1B.2 | Montane forest | None: No suitable montane habitat exists onsite. |
| Baker's manzanita (*Arctostaphylos bakeri* ssp. *bakeri*) | —/—/1B.1 | Serpentine chaparral | None: No serpentine habitat exists onsite. |
| Baker's meadowfoam (*Limnanthes bakeri*) | —/ST/1B.1 | Vernal pools, freshwater wetland | None: No suitable wetland habitat exists onsite. |
| **Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)** | **—/—/1B.1** | **Vernal pools** | **Very Low: No vernal pool habitat exists onsite. Nearest known occurrence is 1.3 miles southwest of the parcel along CA-53.** |
| Beaked tracyina (*Tracyina rostrata*) | —/—/1B.2 | Valley grassland, foothill woodland | Low: Some grassland habitat exists onsite. |
| **Bent flowered fiddleneck (*Amsinckia lunaris*)** | **—/—/1B.2** | **Valley grassland, foothill woodland** | **Medium: Some suitable grassland habitat exists onsite. Nearest known occurrence is 1.1 miles west of the parcel along CA-53.** |
| Big scale balsamroot (*Balsamorhiza macrolepis*) | —/—/1B.2 | Valley grassland, foothill woodland | Low: Some grassland habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Bogg's Lake hedge-hyssop (*Gratiola heterosepala*) | —/—/1B.2 | Vernal pools, lake margins | Low: No suitable wetland habitat exists onsite. |
| Bolander's horkelia (*Horkelia bolanderi*) | —/—/1B.2 | Yellow pine forest, grassland | Low: No suitable forest habitat exists onsite. |
| **Brandegee's eriastrum (*Eriastrum brandegeeae*)** | **—/—/1B.1** | **Clearings in chaparral** | **Low: No suitable chaparral habitat exists onsite. Nearest known occurrence is 3.3 miles west of the parcel near Borax Lake.** |
| Bristly sedge (*Carex comosa*) | —/—/2B.1 | Freshwater marsh, riparian | Very Low: No suitable wetland habitat exists onsite. |
| Brownish beaked-rush (*Rhynchospora capitellata*) | —/—/2B.2 | Freshwater marsh, riparian | Very Low: No suitable wetland habitat exists onsite. |
| Burke's goldfields (*Lasthenia burkei*) | FE/SE/1B.1 | Vernal pools | Very Low: No suitable vernal pool habitat exists onsite. |
| California alkalai grass (*Puccinellia simplex*) | —/—/1B.2 | Alkalai sink | None: No alkalai wetland habitat exists onsite. |
| California beaked-rush (*Rhynchospora californica*) | —/—/1B.1 | Freshwater wetlands | None: No suitable wetland habitat exists onsite. |
| California satintail (*Imperata brevifolia*) | —/—/2B.1 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Calistoga ceanothus (*Ceanothus divergens*) | —/—/1B.2 | Chaparral | Very Low: No chaparral habitat exists onsite. |
| Cascade downingia (*Downingia willamettensis*) | —/—/2B.2 | Vernal pool | None: No vernal pool habitat exists onsite. |
| Clara Hunt's milk vetch (*Astragalus claranus*) | —/—/1B.1 | Chaparral, grassland | Very Low: No chaparral habitat exists onsite. |
| Cobb Mountain lupine (*Lupinus sericatus*) | —/—/1B.2 | Chaparral, pine forest | Very Low: No chaparral habitat exists onsite. |
| **Colusa layia (*Layia septentrionalis*)** | **—/—/1B.2** | **Chaparral, valley grassland** | **Medium: Some suitable grassland habitat exists onsite. Nearest known occurrence is 0.8 miles southwest of the parcel near Quackenbush Mountain.** |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*) | —/—/1B.2 | Grassland, coastal scrub | Low: Some grassland habitat exists onsite. |
| Deep scarred cryptantha (*Cryptantha excavata*) | —/—/1B.1 | Foothill woodland | Low: Some grassland habitat exists onsite. |
| Dimorphic snapdragon (*Antirrhinum subcordatum*) | —/—/4.3 | Serpentine chaparral | None: No serpentine habitat exists onsite. |
| Drymaria-like western flax (*Hesperolinon drymarioides*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine outcrop habitat exists onsite. |
| Dwarf downingia (*Downingia pusilla*) | —/—/2B.2 | Vernal pools, freshwater wetland | None: No vernal pool habitat exists onsite. |
| Dwarf soaproot (*Chlorogalum pomeridianum* var. *minus*) | —/—/1B.2 | Serpentine chaparral | None: No serpentine chaparral habitat exists onsite. |
| **Eel-grass pondweed (*Potamogeton zosteriformis*)** | **—/—/2B.2** | **Freshwater lakes, ponds** | **Low: Some poor quality pond habitat exists onsite. Nearest known occurrence is indistinct locality as close as 1.1 miles west of the parcel near Clear Lake.** |
| **Few-flowered navarretia (*Navarretia leucocephala* ssp. *pauciflora*)** | **FE/ST/1B.1** | **Vernal pools** | **Very Low: No suitable vernal pool habitat exists onsite. Nearest known occurrence is 4.1 miles south of the parcel near Lower Lake.** |
| Franciscan onion (*Allium peninsulare* var. *franciscanum*) | —/—/1B.2 | Grassland | Very Low: Some grassland habitat exists onsite. |
| Freed's jewelflower (*Streptanthus brachiatus* ssp. *hoffmanii*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine outcrop habitat exists onsite. |
| Geysers panicum (*Panicum acuminatum* var. *thermale*) | —/—/1B.2 | Chaparral, wetlands | Very Low: No chaparral seep habitat exists onsite. |
| Glandular western flax (*Hesperolinon adenophyllum*) | —/—/1B.2 | Chaparral | Low: No suitable chaparral habitat exists onsite. |
| Grassleaf water plantain (*Alisma gramineum*) | —/—/2B.2 | Wetland, riparian | Low: No suitable wetland habitat exists onsite. |
| Green jewelflower (*Streptanthus hesperidis*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine outcrop habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Greene's narrow-leaved daisy (*Erigeron greenei*) | —/—/1B.2 | Serpentine grassland | None: No serpentine habitat exists onsite. |
| **Hall's harmonia (*Harmonia hallii*)** | **—/—/1B.2** | **Chaparral, grassland** | **Medium: Some grassland habitat exists onsite. Nearest known occurrence is 4.1 miles south of the parcel near Lower Lake.** |
| Hoffman's bristly jewelflower (*Streptanthus glandulosus* spp. *hoffmanii*) | —/—/1B.3 | Chaparral, foothill woodland | Very Low: No suitable chaparral habitat exists onsite. |
| Holly-leaved ceanothus (*Ceanothus purpureus*) | —/—/1B.2 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Hospital Canyon larkspur (*Delphinium californicum* ssp. *interius*) | —/—/1B.2 | Foothill woodland | Low: Some woodland habitat exists onsite. |
| Indian Valley brodiaea (*Brodiaea rosea*) | —/SE/3.1 | Serpentine chaparral | Very Low: No serpentine habitat exists onsite. |
| Jepson's coyote thistle (*Eryngium jepsonii*) | —/—/4.2 | Wetlands and vernal pools | None: No vernal pool habitat exists onsite. |
| Jepson's leptosiphon (*Leptosiphon jepsonii*) | —/—/1B.2 | Chaparral, serpentine grassland | None: No serpentine chaparral habitat exists onsite. |
| **Jepson's milk-vetch (*Astragalus rattanii* var. *jepsonianus*)** | **—/—/1B.2** | **Chaparral, serpentine grassland** | **Low: No suitable chaparral habitat exists onsite. Nearest known occurrence is 2.7 miles east of the parcel near Perkins Creek Ridge.** |
| Kenwood marsh checkerbloom (*Sidalcea oregana* ssp. *valida*) | FE/SE/1B.1 | Freshwater wetlands | None: No suitable wetland habitat exists onsite. |
| **Konocti manzanita (*Arctostaphylos manzanita* ssp. *elegans*)** | **—/—/1B.3** | **Chaparral, foothill woodland** | **Low: No suitable chaparral habitat exists onsite. Nearest known occurrence is 4.2 miles west of the parcel near Sulphur Bank Ridge.** |
| Kruckeberg's jewelflower (*Streptanthus morrisonii* ssp. *kruckebergii*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine outcrop habitat exists onsite. |
| Lake County stonecrop (*Sedella leiocarpa*) | —/—/1B.1 | Rock outcrops | Very Low: No rock outcrop habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Lake County western flax (*Hesperolinon didymocarpum*) | —/SE/1B.2 | Serpentine grasslands | None: No suitable serpentine habitat exists onsite. |
| Legenere (*Legenere limosa*) | —/—/1B.1 | Vernal pool, freshwater wetland | None: No suitable vernal pool habitat exists onsite. |
| Loch Lomond button-celery (*Eryngium constancei*) | FE/SE/1B.1 | Vernal pool, freshwater wetland | None: No suitable vernal pool habitat exists onsite. |
| Many-flowered navarretia (*Navarretia leucocephala* spp. *plieantha*) | FE/SE/1B.2 | Vernal pools | Very Low: No vernal pool habitat exists onsite. |
| Marsh checkerbloom (*Sidalcea oregana* ssp. *hydrophila*) | —/—/1B.2 | Freshwater wetland, riparian | Low: No suitable riparian habitat exists onsite. |
| Mayacamas popcornflower (*Plagiobothrys lithocaryus*) | —/—/A1 | Foothill woodland, valley grassland | Very Low: Presumed extinct. Last observed in 1884 near present-day Lakeport. |
| Milo Baker's lupine (*Lupinus milo-bakeri*) | —/—/1B.1 | Foothill woodland | None: No suitable woodland habitat exists onsite. |
| Morrison's jewelflower (*Streptanthus morrisonii* ssp. *morrisonii*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine outcrop habitat exists onsite. |
| Mt. St. Helena morning-glory (*Calystegia collina* ssp. *oxyphylla*) | —/—/4.2 | Serpentine chaparral | None: No serpentine habitat exists onsite. |
| Napa bluecurls (*Trichostema ruygtii*) | —/—/1B.2 | Chaparral, grassland | Low: Some grassland habitat exists onsite. |
| Napa checkerbloom (*Sidalcea hickmanii* ssp. *napensis*) | —/—/1B.1 | Chaparral | Low: Some woodland habitat exists onsite. |
| Napa false indigo (*Amorpha californica* var. *napensis*) | —/—/1B.2 | Forest, woodland | Very Low: Some woodland habitat exists onsite. |
| Narrow-anthered brodiaea (*Brodiaea leptandra*) | —/—/1B.2 | Foothill woodland, grassland | Very Low: Some grassland habitat exists onsite. |
| North Coast semaphore grass (*Pleuropogon hooverianus*) | —/—/1B.1 | Freshwater wetland, vernal pools | None: No suitable vernal pool habitat exists onsite. |
| Northern California black walnut (*Juglans hindsii*) | —/—/1B.1 | Riparian | Low: No suitable riparian habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Northern meadow sedge (*Carex praticola*) | —/—/2B.2 | Freshwater wetlands | None: No suitable wetland habitat exists onsite. |
| Nuttall's ribbon-leaved pondweed (*Potamogeton epihydrus*) | —/—/2B.2 | Ponds and lakes | Very Low: Some poor quality pond habitat exists onsite. |
| Oregon polemonium (*Polemonium carneum*) | —/—/2B.2 | Coastal scrub, yellow pine forest | None: No suitable habitat exists onsite. |
| Oval-leaved viburnum (*Viburnum ellipticum*) | —/—/2B.3 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| **Pappose tarplant (*Centromadia parryi* ssp. *parryi*)** | **—/—/1B.2** | **Grassland, wetland** | **Medium: Some grassland habitat exists onsite. Nearest known occurrence is 4.8 miles east of the parcel near Grizzly Creek.** |
| Pennell's bird's beak (*Cordylanthus tenuis* ssp. *capillaris*) | FE/SR/1B.2 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*) | —/—/1B.2 | Grassland, chaparral | Very Low: Parasitic plant, typical host plants not known from the property. |
| Pink creamsacs (*Castilleja rubicundula* var. *rubicundula*) | —/—/1B.2 | Grasslands | Low: Some grassland habitat exists onsite. |
| Porter's navarretia (*Navarretia paradoxinota*) | —/—/1B.3 | Grasslands, wetlands | Low: Some grassland habitat exists onsite. |
| Raiche's manzanita (*Arctostaphylos stanfordiana* ssp. *raichei*) | —/—/1B.1 | Serpentine chaparral | None: No serpentine chaparral habitat exists onsite. |
| Rincon Ridge ceanothus (*Ceanothus confusus*) | —/—/1B.1 | Chaparral, foothill grassland | Very Low: No suitable chaparral habitat exists onsite. |
| Rincon Ridge manzanita (*Arctostaphylos stanfordiana* ssp. *decumbens*) | —/—/1B.1 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Round-leaved filaree (*California macrophylla*) | —/—/1B.2 | Foothill grassland | Low: Some grassland habitat exists onsite. |
| Saline clover (*Trifolium hydrophilum*) | —/—/1B.2 | Wetland, riparian | None: No suitable wetland habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| San Joaquin spearscale (*Extriplex joaquinana*) | —/—/1B.2 | Shadscale scrub, valley grassland | None: No alkalai scrub habitat exists. |
| Santa Rosa horkelia (*Horkelia tenuiloba*) | —/—/1B.2 | Chaparral | Low: No suitable chaparral habitat exists onsite. |
| Sebastopol meadowfoam (*Limnanthes vinculans*) | FE/SE/1B.1 | Freshwater wetland, vernal pools | None: No suitable vernal pool habitat exists onsite. |
| Serpentine cryptantha (*Cryptantha dissita*) | —/—/1B.2 | Serpentine chaparral | Very Low: No serpentine habitat exists onsite. |
| Serpentine daisy (*Erigeron serpentinus*) | —/—/1B.3 | Serpentine chaparral | None: No serpentine chaparral habitat exists onsite. |
| Sharsmith's western flax (*Hesperolinon sharsmithiae*) | —/—/1B.2 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Shining navarretia (*Navarretia nigelliformis* ssp. *radians*) | —/—/1B.2 | Vernal pools | Very Low: No suitable vernal pool habitat exists onsite. |
| Slender Orcutt grass (*Orcuttia tenuis*) | FT/SE/1B.1 | Grassland, freshwater wetlands | Very Low: No suitable wet meadow habitat exists onsite. |
| Small-flowered calycadenia (*Calycadenia micrantha*) | —/—/1B.2 | Foothill grassland | Medium: Some suitable grassland habitat onsite. |
| Small groundcone (*Kopsiopsis hookeri*) | —/—/2B.3 | Redwood forest | None: No suitable forest habitat exists onsite. |
| Snow Mountain buckwheat (*Eriogonum nervulosum*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine outcrop habitat exists onsite. |
| Socrates Mine jewelflower (*Streptanthus brachiatus* ssp. *brachiatus*) | —/—/1B.2 | Serpentine outcrops | None: No serpentine habitat exists onsite. |
| Sonoma beardtongue (*Penstemon newberryi* var. *sonomensis*) | —/—/1B.3 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Sonoma ceanothus (*Ceanothus sonomensis*) | —/—/1B.2 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Thin-lobed horkelia (*Horkelia tenuiloba*) | —/—/1B.2 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Three-fingered morning glory (*Calystegia collina* ssp. *tridactylosa*) | —/—/1B.2 | Serpentine grassland | Very Low: No serpentine habitat exists onsite. |
| Tracy's eriastrum (*Eriastrum tracyi*) | —/SR/3.2 | Chaparral | Low: No suitable chaparral habitat exists onsite. |
| Two-carpellate Western flax (*Hesperolinon bicarpellatum*) | —/—/1B.2 | Chaparral | Low: No suitable chaparral habitat exists onsite. |
| Vine Hill ceanothus (*Ceanothus foliosus* var. *vineatus*) | —/—/1B.1 | Chaparral | Very Low: No suitable chaparral habitat exists onsite. |
| Vine Hill manzanita (*Arctostaphylos densiflora*) | —/SE/1B.1 | Chaparral | Very Low: Some chaparral habitat exists onsite. |
| **Watershield (*Brasenia schreberi*)** | **—/—/2B.3** | **Pond, wetland** | **Low: Some poor quality pond habitat exists onsite. Nearest known occurrence is 4.2 miles west of the parcel near Sulphur Bank Ridge.** |
| White beaked-rush (*Rhynchospora alba*) | —/—/2B.2 | Wetlands, freshwater marsh | None: No suitable wetland habitat exists onsite. |
| White flowered rein orchid (*Piperia candida*) | —/—/1B.2 | Yellow pine forest | None: No suitable forest habitat exists onsite. |
| Wolly meadowfoam (*Limnanthes floccosa* ssp. *floccosa*) | —/—/4.2 | Vernal pools | None: No vernal pool habitat exists onsite. |
| MOSSES, LICHENS & LIVERWORTS | | | |
| Angel's hair lichen (*Ramalina thrausta*) | —/—/2B.1 | Old growth conifer and hardwood forests | None: No suitable forest habitat exists onsite. |
| Coastal triquetrella (*Triquetrella californica*) | —/—/1B.2 | Forest, woodland | Very Low: Some woodland habitat exists onsite. |
| Elongate copper moss (*Mielichhoferia elongata*) | —/—/4.3 | Forest, woodland | Very Low: Some woodland habitat exists onsite. |
| Methuselah's beard lichen (*Dolichousnea longissima*) | —/—/4.2 | Old growth conifer and hardwood forests | None: No suitable forest habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Slender silver moss (*Anomobryum julaceum*) | —/—/4.2 | Rocky substrates in forests, riparian | Very Low: No suitable riparian habitat exists onsite. |
| Torren's grimmia (*Grimmia torenii*) | —/—/1B.3 | Forest, woodland | Very Low: Some woodland habitat exists onsite. |
| FISH | | | |
| Chinook Salmon Coastal California DPS (*Oncorhynchus kisutch*) | FT/SE/— | Freshwater streams, open ocean and estuaries | None: No suitable streams exist onsite. |
| Clear Lake Drainage Resident Rainbow trout (*Oncorhynchus mykiss*) | FE/SE/— | Freshwater streams, open ocean and estuaries | None: No suitable habitat exists in the project area. |
| **Clear Lake hitch (*Lavinia exilicauda chi*)** | **FE/SE/—** | **Freshwater lakes and streams** | **None: No suitable habitat exists in the project area. Nearest known occurrence is 3.6 miles west of the parcel in Clear Lake.** |
| Coho Salmon Central California Coast ESU (*Oncorhynchus kisutch*) | FE/SE/— | Freshwater streams, open ocean and estuaries | None: No suitable streams exist onsite. |
| **Sacramento perch (*Archoplites interruptus*)** | **—/SSC/—** | **Low gradient sloughs and lakes** | **None: No suitable habitat exists in the project area. Nearest known occurrence is 3.6 miles west of the parcel in Clear Lake.** |
| Sacramento splittail (*Pogonichthys macrolepidotus*) | —/SSC/— | Low gradient freshwater streams | None: No suitable streams exist onsite. |
| Steelhead Central California Coast DPS (*Oncorhynchus mykiss irideus*) | FT/—/— | Freshwater streams, open ocean and estuaries | None: No suitable streams exist onsite. |
| Steelhead Northern California DPS (*Oncorhynchus mykiss irideus*) | FT/—/— | Freshwater streams, open ocean and estuaries | None: No suitable streams exist onsite. |
| AMPHIBIANS & REPTILES | | | |
| California giant salamander (*Dicamptodon ensatus*) | —/SSC/— | Wetlands and riparian areas | Very Low: No suitable wetland habitat exists onsite. Species is not known from the region. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| California red-legged frog (*Rana draytonii*) | FT/SSC/— | Vernal pools, seasonal pools, stock ponds, and associated grasslands | Very Low: Some poor quality habitat exists onsite for breeding. Some estivation habitat exists onsite. |
| California tiger salamander (*Ambystoma californiense*) | FT/SSC/— | Ponds, streams, drainages, and associated uplands | Very Low: Some poor quality habitat exists onsite for breeding. Some estivation habitat exists onsite. |
| **Foothill yellow-legged frog (*Rana boylii*)** | **—/SSC/—** | **Wetlands, riparian, streams and ponds** | **Low: Some poor quality breeding and estivation habitat exists onsite. Nearest known occurrence is 2.3 miles east of the parcel near Perkins Creek.** |
| **Red bellied newt (*Taricha rivularis*)** | **—/SSC/—** | **Woodland streams, riparian corridors** | **Low: No suitable stream habitat exists onsite. Nearest known occurrence is 3.0 miles south of the parcel near Dry Creek.** |
| Western pond turtle (*Emys marmorata*) | —/SSC/— | Slow-moving creeks, streams, ponds, rivers, ditches. | None: No suitable pond habitat exists onsite. |
| INVERTEBRATES | | | |
| Behren's silverspot butterfly (*Speyeria zerene behrensii*) | FE/SSC/— | Coastal prairie | None: Requires blue violet to reproduce; none onsite. |
| **Borax Lake cuckoo wasp (*Hedychridium milleri*)** | **—/SSC/—** | **Lakes and streams** | **None: No suitable lake or stream habitat exists onsite. Nearest known occurrence is 4.1 miles west of the parcel in Borax Lake.** |
| **Brownish dubiraphian riffle beetle (*Dubiraphia brunnescens*)** | **—/SSC/—** | **Freshwater lakes and streams** | **None: No suitable stream habitat exists onsite. Nearest known occurrence is 3.6 miles west of the parcel in Clear Lake.** |
| California brackishwater snail (*Tryonia imitator*) | —/SSC/— | Brackish wetlands | None: No suitable wetland habitat exists onsite. |
| California floater (*Anodonta californiensis*) | —/SSC/— | Freshwater ponds, streams | None: No suitable stream habitat exists onsite. |
| California freshwater shrimp (*Syncaris pacifica*) | FE/SE/— | Freshwater ponds | None: No suitable pond habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| California linderiella (*Linderiella occidentalis*) | —/SSC/— | Vernal pools | None: No vernal pool habitat exists onsite. |
| Clear Lake pyrg (*Pyrgulopsis ventricosa*) | —/SSC/— | Freshwater streams | None: No suitable stream habitat exists onsite. |
| Crotch bumble bee (*Bombus crotchii*) | —/SSC/— | Grassland, chaparral | Medium: Some grassland habitat exists onsite. |
| Leech's skyline diving beetle (*Hydroporus leechi*) | —/SSC/— | Freshwater ponds | Very Low: No suitable natural pond habitat exists onsite. |
| Myrtle silverspot butterfly (*Speyeria zerene myrtleae*) | FE/SSC/— | Coastal prairie, chaparral | None: Requires western dog violet for reproduction; none onsite. |
| Monarch butterfly California overwintering Population #1 (*Danaus plexippus*) | —/SSC/— | Large trees required for roosting. | Low: Some suitable trees for roosting onsite. |
| Obscure bumble bee (*Bombus caliginosus*) | —/SSC/— | Grassland, foothill woodland, chaparral | Medium: Some grassland habitat exists onsite. |
| Opler's longhorn moth (*Adela oplerella*) | —/SSC/— | Usually associated with *Platystemon* (creamcups) | None: No suitable host plants onsite. |
| Oregon floater (*Anodonta oregonensis*) | —/SSC/— | Large freshwater streams | None: No suitable stream habitat exists onsite. |
| Ricksecker's water scavenger beetle (*Hydrochara ricksecker*i) | —/SSC/— | Freshwater lakes and ponds | Very Low: No suitable natural pond habitat exists onsite. |
| Sonoma zerene fritillary (*Speyeria zerene sonomensis*) | —/SSC/— | Grasslands and meadows with *Viola* plants | None: Requires *Viola* for reproduction; none onsite. |
| Western bumblebee (*Bombus occidentalis*) | —/SSC/— | Grassland | Medium: Some grassland habitat exists onsite. |
| Wilbur Springs minute moss beetle (*Ochthebius recticulus*) | —/SSC/— | Shorelines of hot springs | Very Low: No suitable hot spring habitat exists onsite. |
| Wilbur Springs shorebug (*Saldula usingeri*) | —/SSC/— | Ponds | Very Low: No suitable natural pond habitat exists onsite. |
| Wilbur Springs shore fly (*Paracoenia calida*) | —/SSC/— | Hot sulphur springs | None: No suitable hot spring habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Vernal pool andrenid bee (*Andrena blennospermatis*) | —/SSC/— | Upland areas near vernal pools | Very Low: No suitable vernal pool habitat exists onsite although some grassland habitat exists. |
| BIRDS | | | |
| American perigrine falcon (*Falco peregrinus anatum*) | —/SSC/— | Forages in open grasslands, nests in trees | Medium: Some suitable nesting and foraging habitat exists. |
| Bank swallow (*Riparia riparia*) | FE/SE/— | Typically found near lakes and streams | None: No suitable stream habitat exists onsite. |
| Bald eagle (*Haliaeetus leucocephalus*) | —/SSC/— | Forages over open lakes and streams | Very Low: No suitable foraging or nesting habitat exists onsite. |
| Bell's sage sparrow (*Artemisiospiza belli belli*) | —/SSC/— | Cliff faces near water | Medium: Some suitable woodland habitat exists onsite. |
| Black swift (*Cypseloides niger*) | —/SSC/— | Cliff faces near water | None: No suitable stream habitat exists onsite. |
| Burrowing owl (*Athene cunicularia*) | —/SSC/— | Grasslands with ground squirrel burrows | Low: Some suitable grassland habitat exists onsite. |
| California black rail (*Laterallus jamaicensis coturniculus*) | FE/SE/— | Coastal salt marshes and mudflats | None: No suitable salt marsh habitat exists onsite. |
| California horned lark (*Eremophila alpestris actia*) | —/SSC/— | Herbaceous vegetation, chaparral | Low: Some suitable foraging and nesting habitat exists onsite. |
| Cooper's hawk (*Accipiter cooperii*) | —/WL/— | Forages over open grassland. | Low: Some suitable foraging and nesting habitat exists onsite. |
| Ferruginous hawk (*Buteo regalis*) | —/SSC/— | Forages over open grassland. Nests in old-growth trees. | Low: Some suitable foraging and nesting habitat exists onsite. |
| **Golden eagle (*Aquila chrysaetos*)** | **—/SSC/—** | **Forages over open grassland. Nests in old-growth trees.** | **Medium: Some suitable foraging habitat. Some suitable nesting habitat. Nearest known occurrence is 4.1 miles south of the parcel near Cache Creek.** |
| Grasshopper sparrow (*Ammodramus savannarum*) | —/SSC/— | Forages over open grassland. | Low: Some suitable foraging and nesting habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Great blue heron (*Ardea herodias*) | —/SSC/— | Nests in trees, forages in wetlands and grasslands | Very Low: No suitable foraging or nesting habitat exists onsite. |
| Great egret (*Ardea alba*) | —/SSC/— | Nests in trees, forages in wetlands and grasslands | Very Low: No suitable foraging or nesting habitat exists onsite. |
| Marbled murrelet (*Brachyramphus marmoratus*) | FT/SE/— | Old growth coniferous forest | None: No suitable forest habitat exists onsite. |
| Northern goshawk (*Accipiter gentilis*) | —/SSC/— | Coniferous forest | None: No suitable forest habitat exists onsite. |
| **Osprey (*Pandion haliaetus*)** | **—/WL/—** | **Areas with fish** | **Very Low: No suitable foraging habitat onsite. Some poor quality nesting habitat onsite. Nearest known occurrence is 4.1 miles northwest of the parcel near Clearlake Oaks.** |
| **Prairie falcon (*Falco mexicanus*)** | **—/SSC/—** | **Forages over grasslands** | **Medium: Some suitable nesting and foraging habitat exists onsite. Nearest known occurrence is an indistinct locality as close as 4.5 miles east of the parcel in the USGS Wilbur Springs 7.5 minute quad.** |
| Purple martin (*Progne subis*) | FE/SE/— | Insectivorous, nests in cavities | Medium: Some suitable nesting habitat onsite. Some suitable foraging habitat onsite. |
| Ridgway's rail (*Rallus obsoletus obsoletus*) | FE/SE/— | Mudflats and tidal sloughs | None: No suitable tidal habitat exists onsite. |
| Salt marsh common yellowthroat (*Geothlypis trichas sinuosa*) | —/SSC/— | Forages in grasslands and nests in dense freshwater marshes | Very Low: No suitable nesting habitat exists. Some suitable foraging habitat. |
| Sharp-shinned hawk (*Accipiter striatus*) | —/SSC/— | Forest and woodland | Very Low: Some suitable nesting and foraging habitat exists onsite. |
| Tricolored blackbird (*Agelaius tricolor*) | —/SSC/— | Forages in grasslands and nests in freshwater marshes | Low: Some suitable nesting and foraging habitat exists onsite. |
| **Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)** | **—/SE/—** | **Woodland, riparian** | **Medium: Some suitable nesting and foraging habitat exists onsite. Nearest known occurrence is 2.9 miles southwest of the parcel near City of Clearlake.** |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| White-tailed kite (*Elanus leucurus*) | —/CFP/— | Prefers to nest in marshes next to deciduous forests. | Low: Some suitable nesting and foraging habitat exists onsite. |
| Yellow breasted chat (*Icteria virens*) | —/SSC/— | Dense shrubby growth, grasslands | Low: Some suitable grassland habitat exists onsite. |
| Yellow rail (*Coturnicops noveboracensis*) | —/SSC/— | Breeds in marshes, forages in wet meadows | None: No suitable marsh habitat exists onsite. |
| Yellow warbler (*Coturnicops noveboracensis*) | —/SSC/— | Riparian, shrubland, farmland | Low: Some suitable scrub habitat exists onsite. |
| MAMMALS | | | |
| American badger (*Taxidea taxus*) | —/SSC/— | Open grassland habitats with plenty of prey | Low: Some suitable den habitat exists onsite. |
| Big free-tailed bat (*Nyctinomops macrotis*) | —/SSC/— | Forages over open areas, roots in trees or caves | None: Some suitable foraging habitat. Few suitable roosts in project area. |
| Fisher (*Pekania pennanti*) | —/SSC/— | Forages and breeds primarily in forests | Very Low: No suitable forest habitat exists onsite. |
| Fringed myotis (*Myotis thysanodes*) | —/SSC/— | Roosts in caves or buildings and forages in open habitats | Very Low: Some suitable foraging habitat. Few suitable roosts in project area. |
| Hoary bat (*Lasiurus cinereus*) | —/SSC/— | Forages over open areas, roots in trees or caves at high altitude | Very Low: Foraging limited to high altitudes. Few suitable roosts in the project area. |
| Long-eared myotis (*Myotis evotis*) | —/SSC/— | Roosts in caves or buildings and forages in open habitats | Low: Some suitable foraging habitat. Few suitable roosts in project area. |
| Long-legged myotis (*Myotis volans*) | —/SSC/— | Roosts in caves or buildings and forages in open habitats | Very Low: Some foraging habitat. Few suitable roosts in project area. |
| North American porcupine (*Erethizon dorsatum*) | —/SSC/— | Require rocky areas or trees for dens, abundant open space for foraging | Very Low: Some suitable foraging and den habitat exists onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| **Pallid bat (*Antrozous pallidus*)** | **—/SSC/—** | **Common in open dry habitats with rocky areas for roosting** | **Medium: Some foraging habitat exists. Few suitable roosts in the project area. Nearest known occurrence is 2.3 miles east of the parcel near Perkins Creek.** |
| Silver haired bat (*Lasionycteris noctivagans*) | —/SSC/— | Nocturnal, migratory, solitary, roosts in tree cavities | Medium: Some suitable trees exist for roosting. Some foraging habitat exists. |
| Sonoma tree vole (*Arborimus pomo*) | —/SSC/— | Old growth Douglas fir canopies | None: No suitable forest habitat exists onsite. |
| **Townsend's big-eared bat (*Corynorhinus townsendii*)** | **—/SSC/—** | **Hibernate in mines or caves, roost in man made structures and caves** | **Medium: Few man-made structures exist suitable for roosting. Some habitat for foraging. Nearest known occurrence is 4.1 miles northwest of the parcel near Clearlake Oaks.** |
| Western red bat (*Lasiurus blossevillii*) | —/SSC/— | Forages over open areas, roots in trees or caves | Very Low: Little suitable roosting habitat. Some suitable foraging habitat. |
| Yuma myotis (*Myotis yumanensis*) | —/SSC/— | Forages over open areas, roots in trees or caves | Very Low: No suitable nesting habitat exists onsite. Some suitable foraging habitat exists onsite. |
| HABITATS | | | |
| Coastal & Valley Freshwater Marsh (CVFM) | — | — | None: No marsh habitat exists onsite. |
| Northern Hardpan Vernal Pool (NHVP) | — | — | None: No hardpan vernal pool habitat exists onsite. |
| Northern Vernal Pool (NVP) | — | — | None: No vernal pool habitat exists onsite. |
| Sycamore Alluvial Woodland (SAW) | — | — | None: No woodland habitat exists onsite. |
| Valley Needlegrass Grassland (VNG) | — | — | Low: Some grassland habitat exists onsite. |
| Valley Oak Woodland (VOW) | — | — | None: No valley oaks exist onsite. |

| Taxon | Status[1] Fed/State/CNPS | Habitat | Potential to Occur Within the Project Area |
|---|---|---|---|
| Valley Sink Scrub (VSS) | — | — | None: No sink habitat exists onsite. |

[1] Status:

Federal
FE = Federally Endangered Species
FT = Federally Threatened Species

State
SE = State Endangered Species
ST = State Threatened Species
SSC = California Species of Special Concern
CFP = California Fully Protected Species

CNPS (applies to plants only)
List 1B = plants considered rare, threatened, or endangered in California and elsewhere
List 2B = plants rare, threatened or endangered in California, but more common elsewhere
List 3 = plant is likely rare but more information is required
List 4 = plants of limited distribution

[2] USFWS

# APPENDIX B: PLANT SPECIES ENCOUNTERED

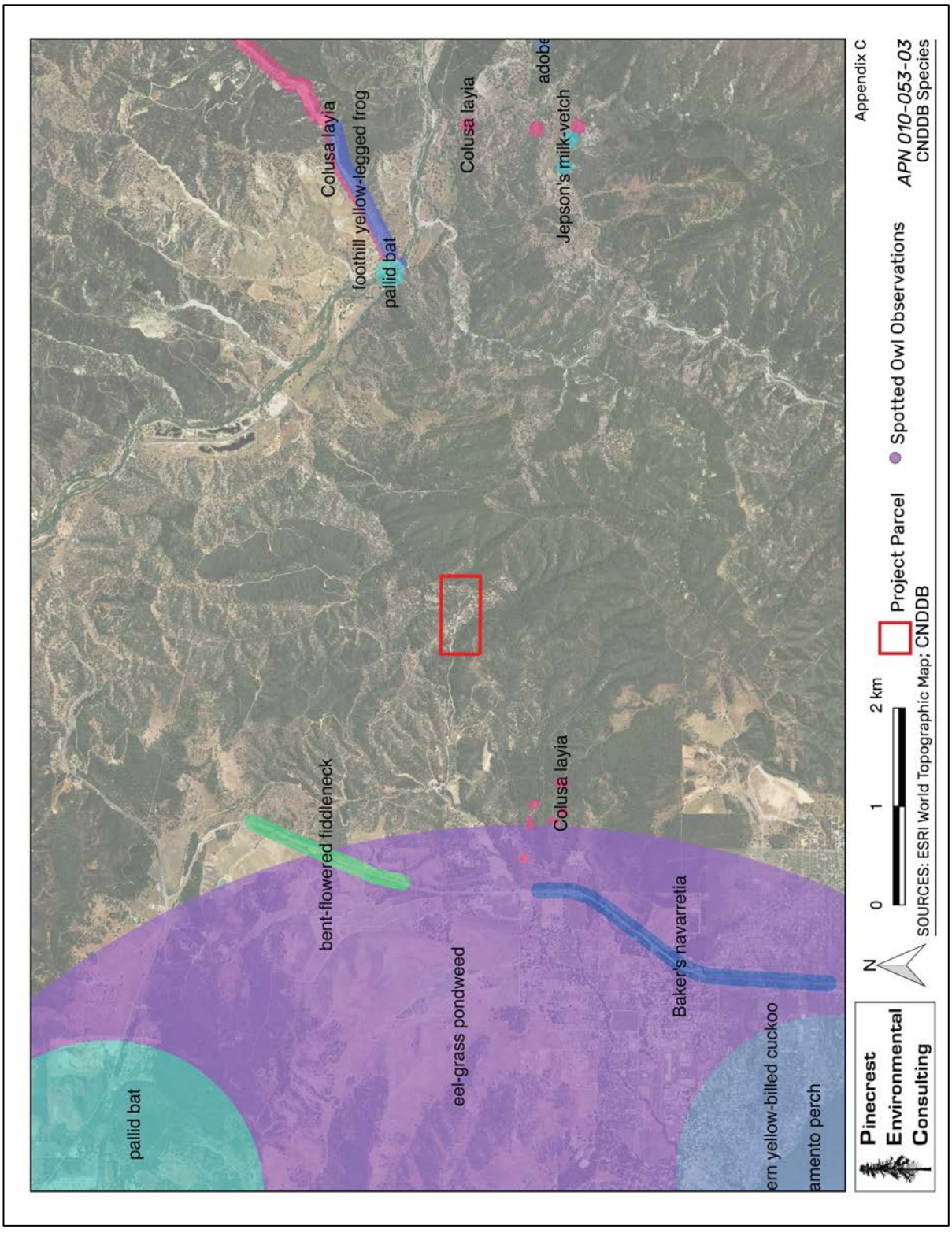
This list contains a list of all of the plants and animals observed onsite within the study area during site visits on July 2019 and April 2021. Any special-status species (SSS) are denoted in bold with an asterisk. No SSS species were directly observed at the time of the surveys.

| **Scientific name** | **Common name** | **Native** |
|---|---|---|
| *Acer macrophyllum* | Big-leaf maple | yes |
| *Achillea millefolium* | Yarrow | yes |
| *Achyrachaena mollis* | Blow-wives | yes |
| *Acmispon americanus* | Bird's foot trefoil | yes |
| *Adenostoma fasciculatum* | Chamise | yes |
| *Aira caryophyllea* | Hairgrass | no |
| *Allium amplectens* | Narrowleaf onion | yes |
| *Amsinckia menziesii* | Menzies' fiddleneck | yes |
| *Ancistrocarphus filagineus* | Woolly fishhooks | yes |
| *Arctostaphylos canescens* | Hoary manzanita | yes |
| *Arctostaphylos manzanita* | Green-leaved manzanita | yes |
| *Athysanus pusillus* | Dwarf athysanus | yes |
| *Avena fatua* | Wild oats | no |
| *Baccharis pilularis* | Coyote brush | yes |
| *Brassica nigra* | Mustard | no |
| *Briza minor* | Little rattlesnake grass | no |
| *Brodiaea elegans* | Harvest brodiaea | yes |
| *Bromus diandrus* | Ripgut brome | no |
| *Bromus hordeaceus* | Soft chess | no |
| *Bromus madritensis* | Madrid brome | no |
| *Calochortus amabilis* | Golden fairy lantern | yes |
| *Calochortus luteus* | Yellow mariposa lily | yes |
| *Capsella bursa-pastoris* | Shepherd's purse | no |
| *Cardamine oligosperma* | Bitter cress | yes |
| *Carduus pycnocephalus* | Italian thistle | no |
| *Ceanothus cuneatus* var. *cuneatus* | Buckbush | yes |
| *Ceanothus integerrimus* | Deerbrush | yes |
| *Centaurea solstitialis* | Yellow star thistle | no |
| *Centromadia pungens* | Common tarweed | yes |
| *Cercis occidentalis* | Red-bud | yes |
| *Cercocarpus betuloides* | Mountain mahogany | yes |
| *Chlorogalum pomeridianum* | Soap plant | yes |
| *Clarkia purpurea* ssp. *quadrivulnera* | Purple clarkia | yes |
| *Cirsium vulgare* | Bull thistle | no |
| *Claytonia perfoliata* | Red maids | yes |
| *Collinsia sparsiflora* | Few flowered collinsia | yes |
| *Collinsia heterophylla* | Purple Chinese houses | yes |
| *Convolvulus arvensis* | Field bindweed | no |
| *Croton setiger* | Turkey mullein | yes |

| | | |
|---|---|---|
| *Cynosurus echinatus* | Dogstail grass | no |
| *Dichelostemma capitatum* | Blue dicks | yes |
| *Dichelostemma volubile* | Twining brodiaea | yes |
| *Draba verna* | Spring whitlow grass | no |
| *Eleocharis macrostachya* | Spike rush | yes |
| *Elymus caput-medusae* | Medusa head | no |
| *Elymus glaucus* | California wild rye | yes |
| *Epilobium brachycarpum* | Narrowleaf willowherb | yes |
| *Erigeron canadensis* | Canadian horseweed | yes |
| *Eriodictyon californicum* | Yerba Santa | yes |
| *Eriogonum nudum* | Naked stem buckwheat | yes |
| *Eriophyllum lanatum* | Woolly sunflower | yes |
| *Erodium cicutarium* | Redstem filaree | no |
| *Erodium moschatum* | White-stem filaree | no |
| *Festuca bromoides* | Brome fescue | no |
| *Festuca microstachys* | Small fescue | yes |
| *Ficus carica* | Fig tree | no |
| *Galium aparine* | Common bedstraw | yes |
| *Galium parisiense* | Wall bedstraw | no |
| *Galium porrigens* | Climbing bedstraw | yes |
| *Geranium molle* | Woodland geranium | no |
| *Gilia tricolor* | Bird's eyes | yes |
| *Grindelia camporum* | Gumweed | yes |
| *Hemizonia congesta* | Hayfield tarweed | yes |
| *Hesperolinon californicum* | California western flax | yes |
| *Heteromeles arbutifolia* | Toyon | yes |
| *Hordeum murinum* ssp. *leporinum* | Lepor barley | no |
| *Hyacinthus* sp. | Hyacinth | no |
| *Hypericum perforatum* | St. John's Wort | no |
| *Hypochaeris glabra* | Smooth cat's tongue | no |
| *Iris douglasii* | Douglas' iris | yes |
| *Lactuca serriola* | Prickly lettuce | no |
| *Lasthenia californica* | California goldfields | yes |
| *Lepidium nitidum* | Shining peppergrass | yes |
| *Leptosiphon bicolor* | True babystars | yes |
| *Leptosiphon ciliatus* | Whiskerbrush | yes |
| *Lomatium macrocarpum* | Bigfruit lomatium | yes |
| *Lomatium utriculatum* | Hog fennel | yes |
| *Lupinus bicolor* | Miniature lupine | yes |
| *Madia exigua* | Small tarweed | yes |
| *Madia gracilis* | Gumweed | yes |
| *Malva parviflora* | Cheeseweed mallow | no |
| *Marah fabaceus* | Manroot | yes |
| *Matricaria discoidea* | Pineapple weed | no |
| *Medicago lupulina* | Black medic | no |
| *Medicago polymorpha* | California burclover | no |
| *Melilotus indicus* | Annual yellow sweetclover | no |
| *Micropus californicus* | Q-tips | yes |
| *Microsteris gracilis* | Slender flox | yes |
| *Narcissus* sp. | Narcissus | no |
| *Navarretia intertexta* | Interwoven navarretia | yes |

| | | |
|---|---|---|
| *Navarretia pubescens* | Purple navarretia | yes |
| *Pectocarya pusilla* | Little combseed | yes |
| *Phacelia imbricata* | Imbricate phacelia | yes |
| *Phoradendron leucarpum* ssp. *tomentosum* | Mistletoe | yes |
| *Pinus sabiniana* | Gray pine | yes |
| *Plagiobothrys bracteatus* | Bracted allocarya | yes |
| *Plantago erecta* | Hill plantain | yes |
| *Poa infirma* | Weak blue grass | no |
| *Poa bulbosa* | Bulbous bluegrass | no |
| *Pogogyne serpylloides* | Thyme-leaf mesa mint | yes |
| *Polygonum aviculare* | Knotweed | no |
| *Pteridium aquilinum* | Bracken fern | yes |
| *Quercus chrysolepis* | Canyon live oak | yes |
| *Quercus douglasii* | Blue oak | yes |
| *Quercus kelloggii* | Black oak | yes |
| *Rhus aromatica* | Fragrant sumac | yes |
| *Rosa californica* | California rose | no |
| *Rubus armeniacus* | Himalayan blackberry | no |
| *Rhamnus ilicifolia* | Evergreen buckthorn | yes |
| *Rumex crispus* | Curly dock | no |
| *Sanicula crassicaulis* | Gamble weed | yes |
| *Sanicula bipinnata* | Poison sanicle | yes |
| *Scandix pecten-veneris* | Shepherd's needle | no |
| *Senecio vulgaris* | Common groundsel | no |
| *Sidalcea diploscypha* | Fringed checkerbloom | yes |
| *Sisyrinchium bellum* | Blue-eyed grass | yes |
| *Spergularia rubra* | Red sand spurry | no |
| *Stellaria media* | Chickweed | no |
| *Stipa pulchra* | Purple needlegrass | yes |
| *Torilis arvensis* | Spreading hedge-parsley | no |
| *Toxicodendron diversilobium* | Poison oak | yes |
| *Trifolium bifidum* | Notchleaf clover | yes |
| *Trifolium glomeratum* | Clustered clover | no |
| *Trifolium hirtum* | Rose clover | no |
| *Triteleia laxa* | Ithuriel's spear | yes |
| *Uropappus lindleyi* | Silver puffs | yes |
| *Urtica urens* | Annual nettle | no |
| *Verbascum thapsus* | Woolly mullein | no |
| *Vicia sativa* | Common vetch | no |
| *Wyethia* sp. | Mule ears | yes |

# APPENDIX C: CNDDB OCCURRENCES MAP



# APPENDIX D: CANNABIS CULTIVATION BEST MANAGEMENT PRACTICES

Best management practices (BMPs) are designed to prevent, minimize, and control the discharge of waste and pollutants associated with site operations and maintenance for the aforementioned project. Many of these BMPs are considered enforceable conditions under State Water Resources Control Board *Cannabis* General Order No. WQ 2017-0023-DWQ.

## D.1 CANNABIS CULTIVATION

- Pesticide and fertilizer storage facilities shall be located outside of the riparian corridor setbacks for structures.
- Pesticide and fertilizer storage facilities shall not be located within 100 feet of a wellhead, or within 50 feet of identified wetlands.
- Pesticide and fertilizer storage facilities shall be adequate to protect pesticide and fertilizer containers from the weather.
- Store all bags and boxes of pesticides and fertilizers off the ground on pallets or shelves.
- If the structure does not have an impermeable floor, store all liquid pesticides and fertilizers on shelves capable of containing spills or provide appropriate secondary containment.
- Routinely check for leaks and spills.
- Have spill cleanup kit onsite to be able to respond to any leaks or spills.
- Inspect planting stock for pests and diseases prior to planting.
- Avoid planting stock with pests and disease and notify the supplier of the planting stock of the infestation.
- Comply with all pesticide laws and regulations as enforced by the California Department of Pesticide Regulation and County Agricultural Commissioner.
- For pesticides with the signal word CAUTION that have listed food uses, comply with all pesticide label directions as they pertain to personal protective equipment, application method, and rate, environmental hazards, longest reentry intervals and greenhouse and indoor use directions.
- For all other pesticides, use must comply with all label requirements including site and crop restrictions.
- Prior to the use of any registered pesticide on *Cannabis*, Operator Identification Number should be obtained from the County Agricultural Commissioner if required.
- Submit monthly pesticide use reports to the County Agricultural Commissioner if required.

- Prior to applying fertilizers, evaluate irrigation water, soils, growth media, and plant tissue to optimize plant growth and avoid over fertilization.
- Apply fertilizers at label rates and no higher.
- Do not apply fertilizers in a way that will result in runoff that may contaminate ground or surface water or escape via airborne drift or fugitive dust.
- Observe riparian corridor setbacks for agricultural cultivation as applicable. These shall be maintained as "no touch" areas and demarcated with appropriate flagging.
- The removal of vegetation is prohibited within riparian setback areas.
- No equipment, vehicles, or other materials shall be stored in the riparian setback areas.
- Composting areas shall not be located in the riparian setback areas.
- Irrigation must be conducted in a manner that does not result in runoff from the cultivated area.
- Any water tanks or storage facilities must obtain permits from the local City or County planning department where required.
- The use of membrane based water bladders is prohibited.
- If using an irrigation system, inspect for and repair leaks prior to planting each year and continuously during the season.
- Irrigation systems shall be equipped with a backflow prevention devices and shutoff valves.
- Recycle or properly dispose of all plastic bags, containers, and irrigation materials.
- Properly dispose of green waste in a manner that does not discharge pollutants to a watercourse. This may be accomplished by composting, chipping, and/or shredding.
- The method of green waste disposal must be documented.
- Used growth medium (soil and other organic medium) shall be handled to minimize or prevent discharge of soil and residual nutrients and chemicals to watercourses. Proper disposal could include incorporating into garden beds, spreading on a stable surface and re-vegetating, storage in watertight dumpsters, or covering with tarps or plastic sheeting prior to proper disposal.
- The method of disposal of growth medium must be documented.
- Compost piles are to be located outside of riparian setbacks for agricultural cultivation and in a manner that will not discharge pollutants to a watercourse.
- If necessary, construct a berm or install fiber roll around compost area to prevent runoff or use straw wattles around perimeter.
- Cover compost piles with tarp or impermeable surface prior to fall rains and continuously throughout the rainy season.
- Leave a vegetative barrier along the property boundary and interior watercourses to act as a pollutant filter.
- Avoid soil disturbance between November 1 and April 15 and during times of active precipitation.

- All exposed and disturbed soil must be covered with a minimum of 2 inches of mulch, such as straw, bark, wood chips, etc., by November 15. Alternatively, establish a thick cover crop over disturbed areas composed of native species.
- Erosion control materials shall be available on site at all times in the form of straw, mulch, wattles, silt fencing, erosion control fabrics, sand bags, or other materials adequate to cover areas of disturbed soil or incipient erosion events.
- In the event of a forecast storm event likely to produce runoff, apply mulch, wattles, or other erosion prevention measures to the disturbed areas prior to rain event.
- Any grading or drainage conducted as part of site preparation shall have permits from local County or City agencies if required.

## D.2 EROSION & SEDIMENT CONTROL

- Erosion control and sediment detention devices and materials shall be incorporated into the cleanup/restoration work design and installed prior to the end of project work and before the beginning of the rainy season or any predicted rain events.
- Any continuing, approved project work conducted after October 15 shall have erosion control measures completed and up-to-date.
- All erosion control measures shall be inspected daily during severe rain events.
- Erosion control materials shall be, at minimum, stored on-site at all times during approved project work between May 1 and October 15.
- Approved project work within the 5-year flood plain shall not begin until all temporary erosion controls (straw bales or silt fences that are effectively keyed-in) are installed downslope of cleanup/restoration activities.
- Native species appropriate to the local habitat shall be used for all revegetation purposes. Non-invasive, non-persistent grass species (e.g., barley grass) may be used for their temporary erosion control benefits to stabilize disturbed slopes and prevent exposure of disturbed soils to rainfall.
- Upon work completion, all exposed soil present in and around the cleanup/restoration sites shall be stabilized within 7 days.
- The disturbed area will be minimized at all times to only that which is essential for the completion of the project.
- Provide temporary cover over disturbed areas that are not currently being worked on.
- Heavy equipment shall not be used in flowing water.
- Use of heavy equipment shall be avoided or minimized in a channel bottom with rocky or cobbled substrate.
- Heavy equipment shall not introduce chemicals or foreign sediment to the channel (e.g., remove mud from tracks or cover channel work area with plastic sheeting prior to heavy equipment entry).
- When heavy equipment is used, any woody debris and stream bank or streambed vegetation

disturbed shall be replaced to a pre-project density with native species appropriate to the site.

- When possible, existing ingress or egress points shall be used or work shall be performed remotely from the top of the creek banks.
- Divert runoff away from unprotected slopes or loose soils using a combination of mats, geotextiles, silt fencing, wattling, check dams, sediment basins, vegetated buffers, or rock armor.
- Deploy appropriate erosion control measures such as silt fencing or straw wattles around all temporary exposed piles or soil or surface disturbances.
- All temporary exposed piles or soil or surface disturbances shall have tarping and sand bags or other stabilization materials deployed in order to prevent discharge of sediments in the event of a rain or wind event.
- Geotechnical fabric shall be deployed on all exposed dirt surfaces with a slope of greater than 15% and staked in place during ground disturbing activities, and silt fencing deployed on slopes of greater than 15% where appropriate.
- Sand bags, straw bales, or other devices shall be placed at appropriate locations near and alongside the roadsides and swales in anticipation of large storm events.
- Bioswales and cultivation areas including parking areas shall be maintained free of trash including empty soil and pesticide or fertilizer containers.
- Locations of sediment sources shall be identified during rain events and mitigated where appropriate.
- Protect ditch inlets and outlets from erosion using rock armor.
- Silt fencing shall be installed downstream of rock piles, stockpiles, and temporary soils storage areas.
- Desilting or retention basins shall be installed if the capacity of the natural percolation exceeds the inputs during routine storm events.
- Sediment traps shall be used on all exposed driveway surfaces where natural vegetation is not able to be established.
- Exposed unvegetated surfaces will be graveled where appropriate.
- Rock placed for slope protection shall be the minimum necessary to avoid erosion, and shall be part of a design that provides for native plant revegetation and minimizes bank armoring.
- Soil exposed as a result of project work, soil above rock riprap, and interstitial spaces between rocks shall be revegetated with native vegetation by live planting, seed casting, or hydroseeding prior to the rainy season of the year work is completed.
- Avoidance of earthwork on steep slopes and minimization of cut/fill volumes, combined with proper compaction, shall occur to ensure the area is resilient to issues associated with seismic events and mass wasting. If cracks are observed, or new construction is anticipated, consultation with a qualified professional is recommended.
- Culvert fill slopes shall be constructed at a 2:1 slope or shall be armored with rock.

- If it is necessary to conduct work in or near a live stream, the work space shall be isolated to avoid project activities in flowing water.
- Any spoils associated with site maintenance shall be placed in a stable location where it cannot enter a watercourse.
- Sidecasting shall be minimized and shall be avoided on unstable areas or where it has the potential to enter a watercourse.
- Entrance to the project site shall be maintained in a condition that will prevent tracking or flowing of sediment into the public right-of-way.
- All sediment spilled, dropped, washed, or tracked onto the public right-of-ways shall be removed immediately.
- When necessary, wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-ways.
- When wheel washing is required, it shall be done in an area stabilized with crushed stone that drains into a sediment trap fitted with appropriate erosion control measures.
- To control surface water runoff in and around cultivation areas use fiber rolls or wattling and stake appropriately and perpendicular to the flow path.
- Cover crops should be utilized on all exposed slopes that are not able to be protected by other means.
- Cover crops should be native species as described in the associated biological resources report.
- Rip compacted soils prior to placing spoils to prevent the potential for ponding under the spoils that could result in spoil site failure and subsequent sedimentation.
- Compact and contour stored spoils to mimic the natural slope contours and drainage patterns to reduce the potential for fill saturation and failure.
- Ensure that spoil materials are free of woody debris, and not placed on top of brush, logs or trees.
- Inspect all roads and culverts regularly for blockages.

## D.3 WATER USE & POLLUTION

- Ensure that all appropriate water rights permits are filed with the State Water Resources Control Board.
- Notify the California Department of Fish and Wildlife by submitting a Lake and Streambed Alteration (LSA) notification package if the proposed activities involve substantial diversion from or alteration of the bed or bank of a stream or other waterbody.
- Ensure that all water storage features are permitted from the Department of Water Rights if necessary.
- All refueling and pesticide and chemical storage and transfer shall occur greater than 100 feet away from any swales, creeks, or natural areas.

- All refueling and pesticide and chemical storage and transfer shall occur on top of an impermeable metal or other fabric mat that is no less than 2 inches high on all sides and capable of completely containing any spillage.
- Concrete truck and other vehicles shall not be washed out in natural areas or directly onto soil and shall be washed out into a metal or other impermeable basin and disposed of properly such that no water is discharged to the soil.
- All waste shall be kept in plastic drums with tight fitting lids so that water is not able to make contact with the contents and potentially leach to the environment.
- All pesticide sprays shall occur on windless nights for outdoor facilities.
- Chemical or fertilizer wastes shall never be disposed of into swales or creeks and shall be contained inside closed-roof facilities and designated with appropriate labeling until it is possible to dispose of properly.
- Septic leach fields and graywater mulch fields shall be maintained free of large vegetation and not used for aboveground storage that may impact their proper functioning.
- Chemical contamination (fuel, grease, oil, hydraulic fluid, solvents, etc.) of water and soils is prohibited during routine equipment operation and maintenance.
- The use or storage of petroleum-powered equipment shall be accomplished in a manner that prevents the potential release of petroleum materials into waters of the state (Fish and Game Code 5650).
- Schedule excavation and grading activities for dry weather periods.
- Designate a contained area for equipment storage, short-term maintenance, and refueling. Ensure it is located at least 50 feet from waterbodies.
- Inspect vehicles for leaks and repair immediately.
- Clean up leaks, drips and other spills immediately to avoid soil or groundwater contamination.
- Conduct major vehicle maintenance and washing offsite.
- Ensure that all spent fluids including motor oil, radiator coolant, or other fluids and used vehicle batteries are collected, stored, and recycled as hazardous waste offsite.
- Ensure that all construction debris is taken to appropriate landfills and all sediment disposed of in upland areas or offsite, beyond the 100-year floodplain.
- Use dry cleanup methods (e.g., absorbent materials, cat litter, and/or rags) whenever possible. If necessary for dust control, use only a minimal amount of water.
- Sweep up spilled dry materials immediately.
- Separate organic material (e.g., roots, stumps) from the dirt fill and store separately. Place this material in long-term, upland storage sites, as it cannot be used for fill.
- Spoils shall not be placed or stored in locations where soils are wet or unstable, or where slope stability could be adversely affected.
- Do not locate spoil piles in or immediately adjacent to wetlands and watercourses.

- Store spoil piles in a manner (e.g. cover pile with plastic tarps and surround base of pile with straw wattle) or location that would not result in any runoff from the spoil pile ending up in wetlands and watercourses.
- Keep temporary disposal sites out of wetlands, adjacent riparian corridors, and ordinary high water areas as well as high risk zones, such as 100-year floodplain and unstable slopes.
- Conduct operations on a size and scale that considers available water sources and other water use and users in the planning watershed.
- Implement water conservation measures such as rainwater catchment systems, drip irrigation, mulching, or irrigation water recycling where possible.
- Hauled water utilized for irrigation shall be documented via receipt or similar, and show the date, name, and license plate of the water hauler, and the quantity of water purchased.
- If using a water storage tank, do not locate the tank in a flood plain or next to equipment that generates heat. Locate the tank so it is easy to install, access, and maintain.
- Vertical tanks should be installed according to manufacturer's specifications and placed on firm, compacted soil that is free of rocks/sharp objects and capable of bearing the weight of the tank and its maximum contents.
- Install float valves on tanks to prevent them from overflowing.
- Place proper lining or sealing in ponds to prevent water loss.

## D.4 ROAD MAINTENANCE & GENERAL CONSTRUCTION

- Always limit work to the appropriate work date windows considering wet weather, migratory bird and other biological and environmental constrains that may be placed on the project.
- Proper design and location of roads and other features is critical to ensuring that a road or other feature be adequately drained and is best accomplished through consultation with a qualified professional.
- Placement of temporary access roads, staging areas, and other facilities shall avoid or minimize disturbance to habitat.
- If inspection identifies surface rills or ruts, then surfacing and drainage likely needs maintenance. Consultation should be made with a licensed professional to design appropriate erosion control strategies.
- Design of roads should allow for sheet flow of water and use water bars and rolling dips to break up slope length.
- Vehicle speed shall be kept to a maximum of 10 mph while onsite to minimize dust generation.
- All unvegetated and unpaved roadways and vehicle turnarounds shall be graveled to a depth of not less than 1" in order to prevent dust and sediment entrainment.

- Applicant will use geotechnical fabric or similar materials on exposed slopes, and distribute weed-free straw mulch wherever possible on exposed surfaces on the perimeter of all graded roads and graveled areas.
- Roads and the berms alongside all roads shall be maintained free of headcuts, gullies, stutter bumps, and other erosion features capable of discharging sediment to adjacent grassland areas.
- Roads will be graveled with clean rock whenever required to prevent dust and sediment erosion during the wet season.
- Whenever possible, road maintenance activities shall be performed from May 1 to October 15.
- Work performed outside of this window should take extra precautions for winter weather erosion control prevention beyond that which is described in this Plan.
- A 48 hour advance forecast for rain shall trigger a temporary cessation of work, and all soils piles will need to be covered and secured with sandbags or other materials.
- Placement of temporary access roads, staging areas, and other facilities shall avoid or minimize disturbance to habitat.
- Whenever feasible, finished grades shall not exceed 1.5:1 side slopes. In circumstances where final grades cannot achieve 1.5:1 slope, additional erosion control or stabilization methods shall be applied as appropriate for the project location.
- Spoils and excavated material not used during project activities shall be removed and placed outside of 100-year floodplains.
- Upon completion of grading, slope protection of all disturbed sites shall be provided prior to the rainy season through a combination of permanent vegetative treatment, mulching, geotextiles, and/or rock, or equivalent.
- Position vehicles and other apparatus so as to not block emergency vehicle access.
- After construction is complete, all storm drain systems and culverts shall be inspected and cleared of accumulated sediment and debris.
- Sediment barriers including wattles and silt fencing should be checked for sediment accumulation following each significant rainfall and sediment removed or the feature replaced as needed.
- Road drainage shall be discharged to a stable location away from a watercourse.
- Use sediment control devices, such as check dams, sand/gravel bag barriers, and other acceptable techniques, when it is neither practical nor environmentally sound to disperse ditch water immediately before the ditch reaches a stream.
- Within areas with potential to discharge to a watercourse (i.e. within riparian areas of at least 200 feet of a stream) road surface drainage shall be filtered through vegetation, slash, or other appropriate material or settled into a depression with an outlet with adequate drainage.

## D.5 SWALE & VEGETATION MANAGEMENT

- The work area shall be restored to pre-project work condition or better.
- Any stream bank area left barren of vegetation as a result of cleanup/restoration activities shall be stabilized by seeding, replanting, or other means with native trees, shrubs, and/or grasses appropriate to the site prior to the rainy season in the year work was conducted.
- Ensure that vegetated swales are properly formed, allow moderate velocity water passage without causing sediment entrainment, and are otherwise functioning properly.
- Create and expand vegetated bioswales where necessary, should additional construction or road maintenance be required, in order to maintain flow without scour.
- All bioswales and other drainage features requiring revegetation will be seeded with native vegetation and lawns and hedgerows maintained in good health and watered in dry years.
- Vegetation including grasses shall be mowed as necessary to create fire breaks and to prevent the accumulation of fuels that would be able to sustain a ground fire.
- All vegetation shall be surveyed on foot once a year by staff and new outbreaks of any invasive weeds identified by the California Invasive Plant Council as noxious or invasive to be removed by the owner or qualified landscaping professionals.
- Channels and swales that show evidence of overland flow and scour (e.g. bare of vegetation) shall be seeded with native grasses such as *Stipa pulchra*, *Hordeum brachyantherum*, *Elymus glaucus*, and *Bromus carinatus*, and kept vegetated at all times.
- If shrubs and non-woody riparian vegetation are disturbed, they shall be replaced with similar native species appropriate to the site.
- Disturbance to native shrubs, woody perennials or tree removal on the streambank or in the stream channel shall be avoided or minimized.
- If riparian trees over six inches dbh (diameter at breast height) are to be removed, they shall be replaced by native species appropriate to the site at a 3:1 ratio.
- Where physical constraints in the project area prevent replanting at a 3:1 ratio and canopy cover is sufficient for habitat needs, replanting may occur at a lesser replacement ratio.
- Vegetation planting for slope protection purposes shall be timed to require as little irrigation as possible for ensuring establishment by the commencement of the rainy season.
- The spread or introduction of exotic plant species shall be avoided to the maximum extent possible by avoiding areas with established native vegetation during cleanup/restoration activities, restoring disturbed areas with appropriate native species, and post-project monitoring and control of exotic species.
- Removal of invasive exotic species after construction activities is strongly recommended. Mechanical removal (hand tools, weed whacking, hand pulling) of exotics shall be done in preparation for establishment of native plantings.
- Where permanent soil stabilization is required a locally-appropriate mix of native grass species shall be used such as a mix containing *Nassella pulchra*, *Hordeum brachyantherum*, *Elymus glaucus*, and *Bromus carinatus* or as described in the site's Biological Resources Assessment.

- Entire cultivation site shall be seeded and maintained as a permanent non-tilled cover crop during non-usage times. Straw mulch shall be used where native seeding is not practicable.
- Use mulches (e.g. wood chips or bark) in cultivation areas that do not have ground cover to prevent erosion and minimize evaporative loss.
- Mulch shall be applied at a rate of 4000 lbs / acre and seeding shall be applied to achieve 70% cover in the first year or approximately 200 lbs / acre.
- Annual inspections for the purpose of assessing the survival and growth of revegetated areas and the presence of exposed soil shall be conducted for three years following project work.
- Dischargers and/or their consultant(s) or third party representative(s) shall note the presence of native/non-native vegetation and extent of exposed soil, and take photographs during each inspection.
- Dischargers and/or their consultant(s) or third party representative(s) shall provide the location of each work site, pre- and post-project work photos, diagram of all areas revegetated and the planting methods and plants used, and an assessment of the success of the revegetation program in the annual monitoring report as required under relevant state and local water board regulations.

## D.6 IRRIGATION & CULTIVATION MANAGEMENT

- Cultivation-related waste shall be stored in a place where it will not enter a stream.
- Soil bags and other garbage shall be collected, contained, and disposed of at an appropriate facility, including for recycling where available.
- Pots shall be collected and stored where they will not enter a waterway or create a nuisance.
- Plant waste and other compostable materials be stored (or composted, as applicable) at locations where they will not enter or be blown into surface waters, and in a manner that ensures that residues and pollutants within those materials do not migrate or leach into surface water or groundwaters.
- Imported soil for cultivation purposes shall be minimized. In the event that containers (e.g. grow bags or grow pots) are used for cultivation, reuse of soil shall be maximized to the extent feasible.
- Spent growth medium (i.e. soil and other organic medium) shall be handled to minimize discharge of soil and residual nutrients and chemicals to watercourses. Proper handling of spent soil could include incorporating into garden beds, spreading on a stable surface and revegetation, storage in watertight dumpsters, covering with tarps or plastic sheeting prior to proper disposal.
- Trash containers of sufficient size and number shall be provided and properly serviced to contain the solid waste generated by the project.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.

- Use lined bins or dumpsters to reduce leaking of liquid waste. Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash. Consider using refuse containers that are bear-proof and/or secure from wildlife.
- Refuse shall be removed from the site on a frequency that does not result in nuisance conditions, transported in a manner that they remain contained during transport, and the contents shall be disposed of properly at a proper disposal facility.
- Ensure that human waste disposal systems do not pose a threat to surface or ground water quality or create a nuisance. Onsite treatment systems should follow applicable County ordinances for human waste disposal requirements, consistent with the applicable tier under the State Water Resources Control Board Onsite Waste Treatment System Policy.
- Install buffer strips, bioswales, or vegetation downslope of cultivation areas to filter runoff of chemicals from irrigation.
- Irrigate at rates to avoid or minimize runoff.
- Regularly inspect and repair leaks in mains and laterals, in irrigation connections, or at the ends of drip tape and feeder lines.
- Design irrigation system to include redundancy (i.e., safety valves) in the event that leaks occur, so that waste of water is prevented and minimized.
- Recapture and reuse irrigation runoff (tailwater) where possible, through passive (gravity-fed) or active (pumped) means.
- Construct retention basins for tailwater infiltration; percolation medium may be used to reduce pollutant concentration in infiltrated water. Constructed treatment wetlands may also be effective at reducing nutrient loads in water.
- Ensure that drainage and/or infiltration areas are located away from unstable or potentially unstable features.
- Regularly replace worn, outdated or inefficient irrigation system components and equipment.
- Leave a vegetative barrier along the property boundary and interior watercourses to act as a pollutant filter.
- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Evaluate irrigation water, soils, growth media, and plant tissue to optimize plant growth and avoid over-fertilization.
- All chemicals shall be stored in a manner, method, and location that ensures that there is no threat of discharge to waters of the State.
- Products shall be labeled properly and applied according to the label.
- Use integrated pest management strategies that apply pesticides only to the area of need, only when there is an economic benefit to the grower, and at times when runoff losses are least likely.
- Periodically calibrate pesticide application equipment.

- Use anti-backflow devices on water supply hoses, and other mixing/loading practices designed to reduce the risk of runoff and spills.
- Petroleum products shall be stored with a secondary containment system such as a pan or a tub
- Throughout the rainy season, any temporary containment facility shall have a permanent cover and side-wind protection, or be covered during non-working days and prior to and during rain events.
- Materials shall be stored in their original containers and the original product labels shall be maintained in place in a legible condition. Damaged or otherwise illegible labels shall be replaced immediately.
- Bagged and boxed materials shall be stored on pallets and shall not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials shall be covered during non-working days and prior to rain events.
- Have proper chemical and fertilizer storage instructions posted at all times in an open and conspicuous location.
- Prepare and keep a spill prevention and cleanup plan onsite when dealing with any hazardous materials.
- Keep ample supply of appropriate spill clean-up material near storage areas.
- Plant cover crops to boost soil fertility, improve soil texture, and protect from storm caused sediment runoff.

# APPENDIX E: STREAM CLASSIFICATION CRITERIA

The following stream classification criteria were copied form the California Department of Forestry & Fire Protection *Forest Practice Rules* (CALFIRE 2017) and is widely used by many state and local agencies. Most state and local jurisdictions require setbacks of 50, 100, and 150 feet from Class III, II, and I streams, respectively, although greater setbacks may be required in some jurisdictions.

**Watercourse** – a natural or artificial channel through which water flows.

- Perennial watercourse (Class I*):
  1. In the absence of diversions, water is flowing for more than nine months during a typical year,
  2. Fish always or seasonally present onsite or includes habitat to sustain fish migration and spawning, and/or
  3. Spring: an area where there is concentrated discharge of ground water that flows at the ground surface. A spring may flow any part of the year. For the purpose of this Policy, a spring does not have a defined bed and banks.
- Intermittent watercourse (Class II*):
  1. In the absence of diversions, water is flowing for three to nine months during a typical year,
  2. Provides aquatic habitat for non-fish aquatic species,
  3. Fish always or seasonally present within 1,000 feet downstream, and/or
  4. Water is flowing less than three months during a typical year and the stream supports riparian vegetation.
- Ephemeral watercourse (Class III*): In the absence of diversion, water is flowing less than three months during a typical year and the stream does not support riparian vegetation or aquatic life. Ephemeral watercourses typically have water flowing for a short duration after precipitation events or snowmelt and show evidence of being capable of sediment transport.
- Other watercourses (Class IV*): Class IV watercourses do not support native aquatic species and are man-made, provide established domestic, agricultural, hydroelectric supply, or other beneficial use.

*Except where more restrictive, stream class designations are equivalent to the Forest Practice Rules Water Course and Lake Protection Zone definitions (California Code of Regulations, title 14, Chapter 4. Forest Practice Rules, Subchapters 4, 5, and 6 Forest District Rules, Article 6 Water Course and Lake Protection).

# SECTION – F

## GROUNDS MANAGEMENT PLAN

# Grounds

## Purpose and Overview

Emerald Mountain Farms, Inc. (EMF) is seeking a Major Use Permit from the County of Lake Community Development Department for a proposed Outdoor Commercial Cannabis Cultivation Operation at 1850 Ogulin Canyon Road near Clearlake, CA on Lake County APN 010-053-03 (Project Parcel), with A-Type 13 Distributor Transport Only, Self-Distribution. The proposed cultivation operation would be composed of a 34,316 $ft^2$ outdoor cultivation/canopy area, a 15,000 $ft^2$ outdoor cultivation/canopy area, a 10,000 $ft^2$ outdoor cultivation/canopy area, a 6,862 $ft^2$ outdoor cultivation/canopy area, a 2,384 $ft^2$ outdoor cultivation/canopy area, a 120 $ft^2$ Pesticides and Agricultural Chemicals Storage Area (existing wooden shed), a 120 $ft^2$ Security Center (proposed wooden shed), and nine 5,000-gallon water storage tanks. The proposed cultivation areas will be enclosed with 6-foot tall woven wire fences, covered with privacy screen/mesh where necessary to screen the cultivation/canopy areas from public view. The growing medium of the proposed outdoor cultivation/canopy areas will be an imported organic soilless growing medium (composed mostly of composted forest material) in aboveground fabric pots, with drip irrigation systems. All water for the proposed cultivation operation will come from the existing onsite groundwater well located at Latitude: 38.99555° and Longitude: -122.68973°.

This/EMF's Grounds Management Plan is intended to ensure that the Project Property is well maintained in order to protect the public health, safety and welfare, as well as the natural environment of Lake County. This Grounds Management Plan outlines how EMF will properly store agricultural chemicals and equipment, manage solid waste, maintain roads and defensible space, and prevent the attraction, harborage, and proliferation of pests and diseases due to unsanitary conditions.

## Chemicals Storage and Effluent

Chemicals stored and used at/by EMF's cultivation operation include fertilizers/nutrients, pesticides, and petroleum products (Agricultural Chemicals). All fertilizers/nutrients and pesticides, when not in use, will be stored in their manufacturer's original containers/packaging, undercover, and at least 100 feet from surface water bodies, inside the secure Pesticides & Agricultural Chemicals Storage Areas (proposed metal shipping container). Petroleum products will also be stored under cover, in State of California-approved containers with secondary containment, and separate from pesticides and fertilizers within the secure Pesticides and Agricultural Chemicals Storage Area. Spill containment and cleanup equipment will be maintained within the secure Pesticides and Agricultural Chemicals Storage Area. No effluent is expected to be produced by the proposed cultivation operation.

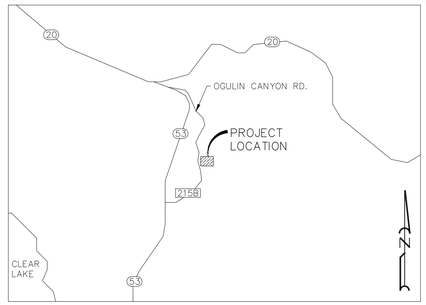
## Solid Waste Management

The types of solid waste that will be generated from the proposed cultivation operation include gardening materials and wastes (such as used plastic seedling pots and spent plastic fertilizer/pesticide bags and bottles) and general litter from staff/personnel. All solid waste will be stored in bins with secure fitting lids, located directly adjacent to the proposed cultivation areas. At no time will the bins be filled to a point that their lids cannot fit securely. Solid waste from the bins will be deposited into a trailer ("dump trailer"), and hauled away by EMF staff to a Lake County Integrated Waste Management facility, at least every seven (7) days/weekly. The Eastlake Landfill is the closest Lake County Integrated Waste Management facilities to the project site. Most, if not all, of the solid waste generated by EMF's proposed cultivation operation can and will be deposited at this facility.

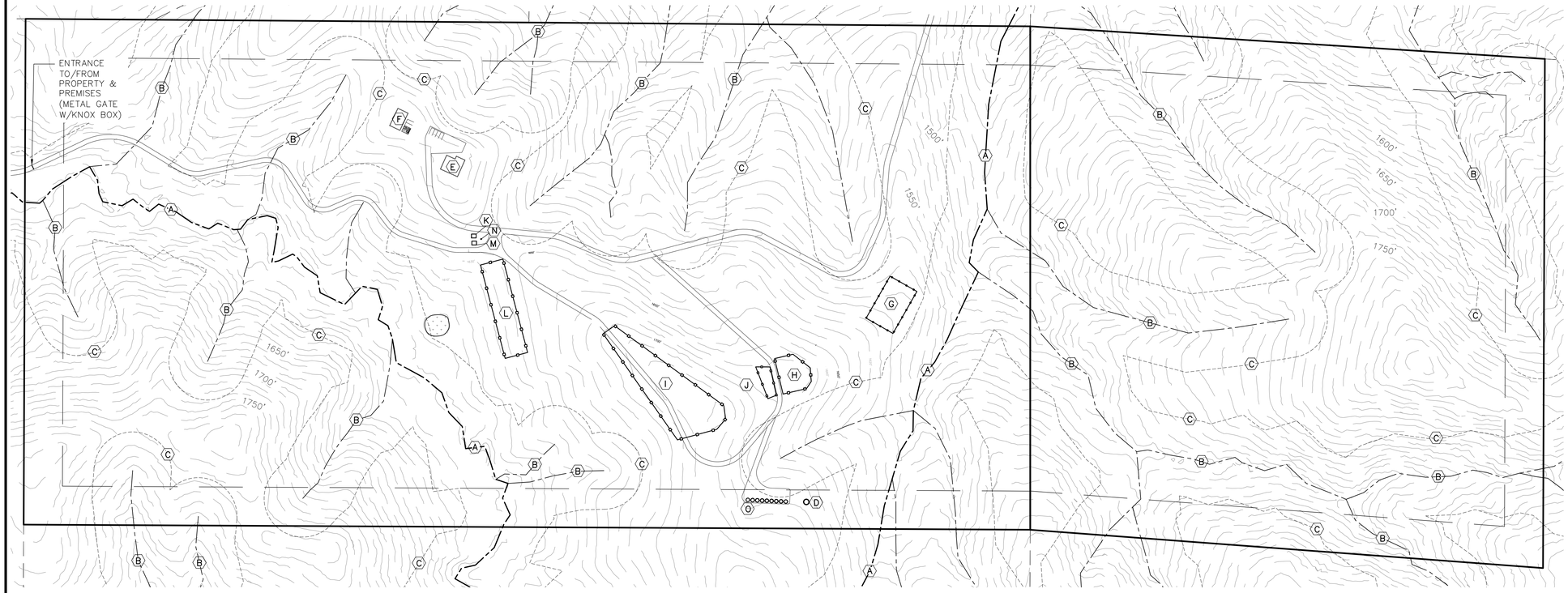
## Site Maintenance

When not in use, all equipment will be stored in its proper designated area upon completion of the task for which the equipment was needed. Any refuse created during the work day will be placed in the proper waste disposal receptacle at the end of each shift, or at a minimum upon completion of the task assigned. Any refuse which poses a risk for contamination or personal injury will be disposed of immediately. 100 feet of defensible space will be established and maintained around the proposed cultivation operation for fire protection and to ensure safe and sanitary working conditions. Areas of defensible space will be mowed and trimmed regularly around the cultivation operation to provide for visibility and security monitoring.

Access roads and parking areas are/will be graveled to prevent the generation of fugitive dust, and vegetative ground cover will be preserved throughout the entire site to filter and infiltrate stormwater runoff from the access roads, parking areas, and the proposed cultivation operation. Portable restroom facilities will be regularly serviced and made available for use whenever staff are onsite.




VICINITY MAP
NO SCALE




**LEGEND:**

| | |
|---|---|
| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
| | EARTH |
| | FLOOD ZONE |
| | CREEK / SWALE |
| APN | ASSESSOR'S PARCEL NUMBER |
| APPROX | APPROXIMATELY |
| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |

**NOTES:**
1. CONTOUR INTERVAL IS 10'

Ⓐ CLASS II INTERMITTENT WATERCOURSE

Ⓑ CLASS III EPHEMERAL WATERCOURSE

Ⓒ 100' SETBACK FROM WATERCOURSE

Ⓓ (E) GROUNDWATER WELL
LAT: 38.980376°
LONG: -122.577846°

Ⓔ (E) RESIDENCE

Ⓕ (E) SHOP

Ⓖ (P) 10,000 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓗ (P) 6,862 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓘ (P) 34,316 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓙ (P) 2,384 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓚ (P) 10'x12' PESTICIDE & AGRICULTURAL CHEMICAL STORAGE AREA

Ⓛ (P) 15,000 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓜ (P) 10'x12' SECURITY CENTER

Ⓝ (P) DESIGNATED REFUSE AREA

Ⓞ (P) 9-5,000 GALLON WATER STORAGE TANKS

Revisions:
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REALM ENGINEERING
CIVIL ENGINEERING, SURVEYING & PLANNING
1767 MARKET STREET SUITE c
REDDING, CA. 96001
530-526-7493

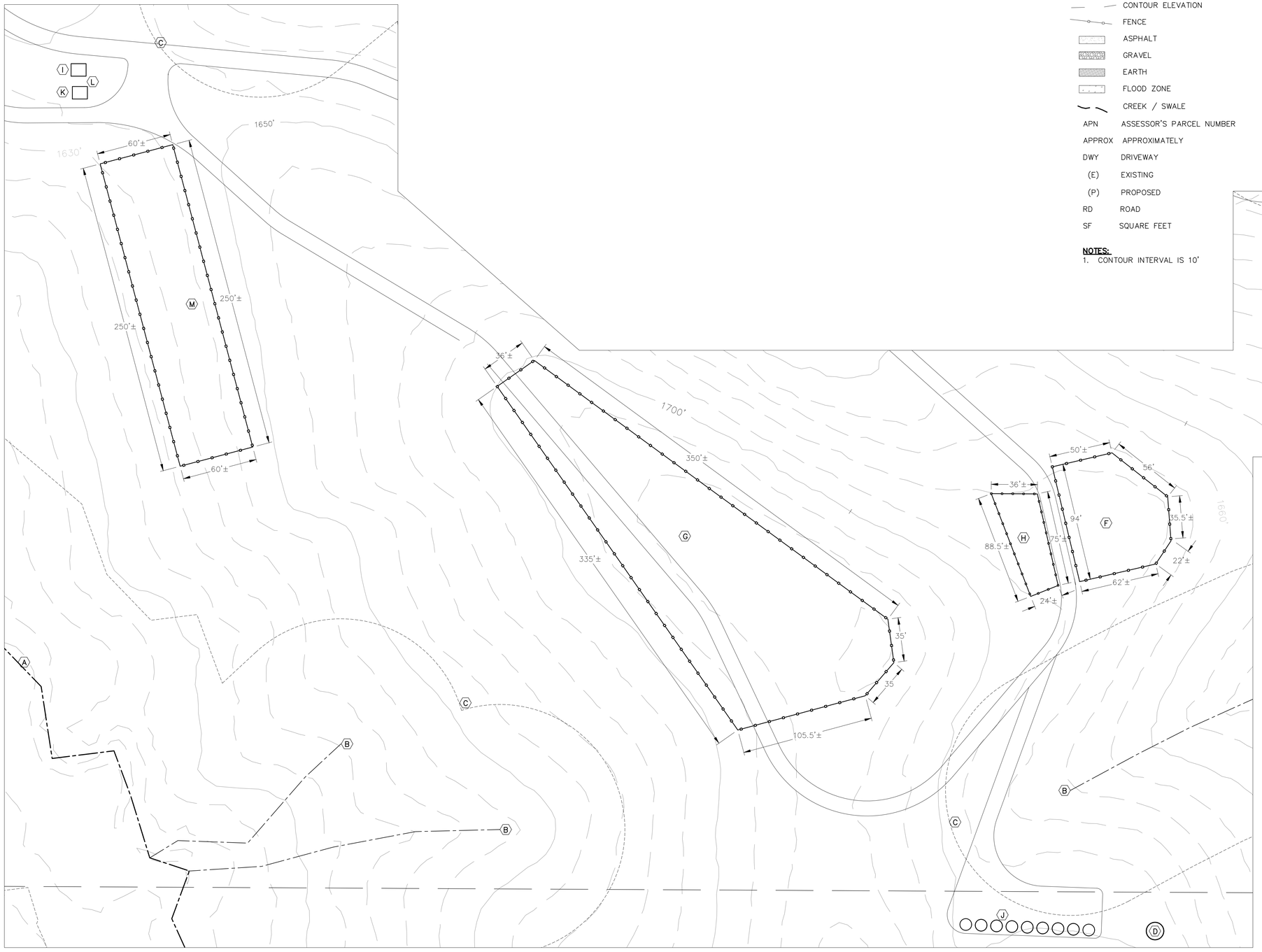
PLANS PREPARED UNDER THE SUPERVISION OF:

# PROPOSED CONDITIONS SITE PLAN

EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
18501 OGULIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
CADD FILE:
SHEET: 1




**LEGEND:**

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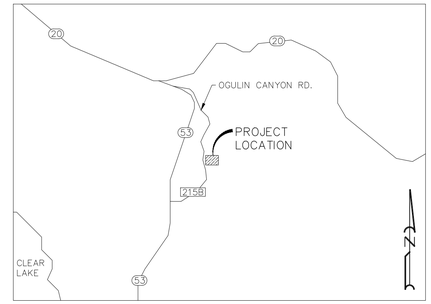
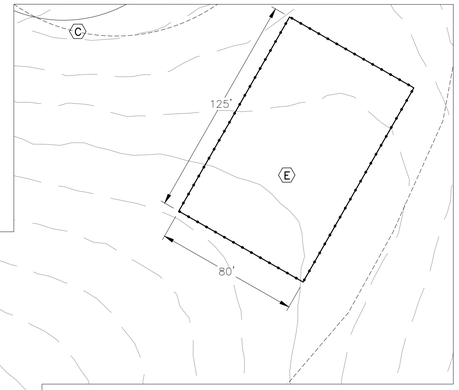
| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
| | EARTH |
| | FLOOD ZONE |
| | CREEK / SWALE |
| APN | ASSESSOR'S PARCEL NUMBER |
| APPROX | APPROXIMATELY |
| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |

**NOTES:**
1. CONTOUR INTERVAL IS 10'




VICINITY MAP
NO SCALE




Ⓐ CLASS II INTERMITTENT WATERCOURSE

Ⓑ CLASS III EPHEMERAL WATERCOURSE

Ⓒ 100' SETBACK FROM WATERCOURSE

Ⓓ (E) GROUNDWATER WELL
LAT: 38.980376°
LONG: -122.577846°

Ⓔ (P) 10,000 SF OUTDOOR CULTIVATION/CANOPY AREA

Ⓕ (P) 6,862 SF OUTDOOR CULTIVATION/CANOPY AREA

Ⓖ (P) 34,316 SF OUTDOOR CULTIVATION/ CANOPY AREA

Ⓗ (P) 2,384 SF OUTDOOR CULTIVATION / CANOPY AREA

Ⓘ (P) 10'x12' PESTICIDE & AGRICULTURAL CHEMICAL STORAGE AREA

Ⓙ (P) 9-5,000 GALLON WATER STORAGE TANKS

Ⓚ (P) 10'x12' SECURITY CENTER

Ⓛ (P) DESIGNATED REFUSE AREA

Ⓜ (P) 15,000 SF OUTDOOR CULTIVATION/CANOPY AREA

Revisions:
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REALM ENGINEERING
CIVIL ENGINEERING, SURVEYING & PLANNING
1767 MARKET STREET SUITE c
REDDING, CA. 96001
530-526-7493

PLANS PREPARED UNDER THE SUPERVISION OF:

# CULTIVATION SITE PLAN WITH CANOPY
## EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
1850 OGULIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
CADD FILE:
SHEET: 1

# SECTION – G

## SECURITY MANAGEMENT PLAN

# Security Management Plan

## Purpose and Overview

Emerald Mountain Farms, Inc. (EMF) is seeking a Major Use Permit from the County of Lake Community Development Department for a proposed Outdoor Commercial Cannabis Cultivation Operation at 1850 Ogulin Canyon Road near Clearlake, CA on Lake County APN 010-053-03 (Project Parcel), with A-Type 13 Distributor Transport Only, Self-Distribution. The proposed cultivation operation would be composed of a 34,316 $ft^2$ outdoor cultivation/canopy area, a 15,000 $ft^2$ outdoor cultivation/canopy area, a 10,000 $ft^2$ outdoor cultivation/canopy area, a 6,862 $ft^2$ outdoor cultivation/canopy area, a 2,384 $ft^2$ outdoor cultivation/canopy area, a 120 $ft^2$ Pesticides and Agricultural Chemicals Storage Area (existing wooden shed), a 120 $ft^2$ Security Center (proposed wooden shed), and nine 5,000-gallon water storage tanks. The proposed cultivation areas will be enclosed with 6-foot tall woven wire fences, covered with privacy screen/mesh where necessary to screen the cultivation/canopy areas from public view. The growing medium of the proposed outdoor cultivation/canopy areas will be an imported organic soilless growing medium (composed mostly of composted forest material) in aboveground fabric pots, with drip irrigation systems. All water for the proposed cultivation operation will come from the existing onsite groundwater well located at Latitude: 38.99555° and Longitude: -122.68973°.

The purpose of this/EMF's Security Management Plan (SMP) is to minimize criminal activity, provide for safe and secure working environments, protect private property and prevent damage to the environment. This SMP includes a description of the security measures that are/will be implemented at the existing/proposed cultivation operation to prevent unauthorized access and theft or diversion of cannabis, a description of the proposed video surveillance system, and protocols that EMF will follow to ensure overall site security. This SMP is also designed to be compliant with the Emergency Regulations for Cannabis Cultivation, authored by CDFA's CalCannabis Licensing programs, as well as the regulations established by the California Department of Public Health for state-licensed cannabis businesses.

## Secured Entry and Access

The Project Parcel is accessed via Ogulin Canyon Road, a shared private gravel road that connects to Highway 53 approximately 1.5 miles west of the Project Property. A metal gate across Ogulin Canyon Road controls access to the Project Property (main entrance). This gate will be closed and locked outside of core operating/business hours (8am to 6pm) and whenever EMF personnel are not present onsite.

6-foot woven galvanized wire fences will be erected around the proposed cultivation areas. Privacy screen/cloth will be installed on the fences where necessary to screen the cultivation area from public view. Posts will be set into the ground at not more than 10-foot intervals, and terminal posts will be set into concrete footings. Secured entry and access to the cultivation areas will be controlled via locking gates that will be locked whenever EMF personnel are not present. All gates

will be secured with heavy duty chains and commercial grade padlocks. Only approved EMF managerial staff will be able to unlock the gates of the proposed cultivation operation.

100 feet of defensible space (vegetation management) will be established and maintained around the proposed cultivation operation for fire protection and to provide for visibility and security monitoring. Motion-sensing alarms will be installed on the private gravel access roads of the Project Parcel, to alert personnel when someone/something has entered onto the premises. Motion-sensing security lights will be installed on all external corners of the proposed cultivation area(s), and at the main entrance to the Project Parcel. All lighting will be fully shielded, downward casting and will not spill over onto other properties or the night sky.

Personnel will be instructed to notify EMF managerial staff immediately if/when suspicious activity is detected. EMF's managerial staff will investigate the suspicious activity for potential threats, issues, or concerns. EMF's managerial staff will contact the Lake County Sheriff's Office immediately if/when a threat is detected.

When a visitor arrives at the proposed cultivation operation via the main entrance during core operating/business hours, they will be immediately greeted by a member of EMF's managerial staff. The staff member will verify the visitor's identification and appropriate documentation/ credentials. They will then be assigned an escort to show the visitor to the appropriate area(s), in accordance to their approved itinerary. No visitors will ever be left unattended.

## Video Surveillance

EMF will use a color capable closed-circuit television (CCTV) system with a minimum camera resolution of 1080p at a minimum of 30 frames per second to record activity in all sensitive areas. All cameras will equipped with motion sensing technology to activate the cameras when motion is detected, and all cameras (exterior and interior) will be waterproof. The CCTV system will feed into a Monitoring and Recording Station inside the Security Center (proposed wooden building), where video from the CCTV system will be digitally recorded. Video recordings will display the current date and time, and all recordings will be kept a minimum of 90 days, and 7 years for any corresponding reported incidents caught on tape. Video management software of the Monitoring and Recording Station will be capable of supporting remote access, and will be equipped with a failure notification system that immediately notifies EMF's managerial staff of any interruptions or failures. All sensitive areas covered by EMF's video surveillance system will have adequate lighting to illuminate the camera's field of vision.

Proposed camera placements can be found on the accompanying Security Site Plan and Security Center Building Layout. Areas that will be covered by the CCTV system include:

- Interior and exterior of all entryways/exits to the proposed cultivation areas;
- Perimeter of the proposed cultivation areas;
- The interior and exterior of the entryway/exit to the Security Center.

## Diversion/Theft Prevention

All EMF personnel will be required to undergo a criminal background check with the Lake County Sheriff prior to beginning work. Visitors and personnel will be required to sign-in and sign-out each day and record the areas in which they worked and the tasks they were assigned. Personnel will be required to store personal items (except for food, water, and drinks) in their vehicles throughout their shift.

EMF will adhere to the inventory tracking and recording requirements of the California Cannabis Track-and-Trace (CCTT) system. All personnel will be trained in the requirements of the CCTT system, and all cannabis transfers/movement will be reported through the CCTT system. A member of EMF's managerial staff will be EMF's designated track-and-trace system administrator. The track-and-trace system administrator will supervise all tasks with high potential for diversion/theft and will document which personnel took part in the task(s). In the event of any diversion/theft, law enforcement and the appropriate licensing authority will be notified within 24 hours of discovery.

## Community Liaison and Emergency Contact

A Community Liaison/Emergency Contact will be made available to Lake County Officials/Staff and the Lake County Sheriff's Office at all times to address any needs or issues that may arise. EMF will provide the name, cell phone number, and email address of the Community Liaison/Emergency Contact to all interested County Departments, Law Enforcement Officials, and neighboring property owners and residents. EMF will encourage neighboring residents to contact the Community Liaison/Emergency Contact to resolve any problems before contacting County Officials. When a complaint is received, the Community Liaison/Emergency Contact will document the complainant and the reason for the complaint, then take action to resolve the issue (see the Odor Response Program in the Air Quality section of this Property Management Plan for odor related complaints/issues). A tally and summary of complaints/issues will be provided in EMF's annual Performance Review Report.

## Community Liaison/Emergency Contact Information

The Community Liaison/Emergency Contact for EMF's proposed cultivation operation is Mr. Norman Grimm. Mr. Grimm's cell phone number is (214) 960-0906, and his email address is restaurantmiles@gmail.com.

## SECURITY AT GATE DETAIL:




**LEGEND:**

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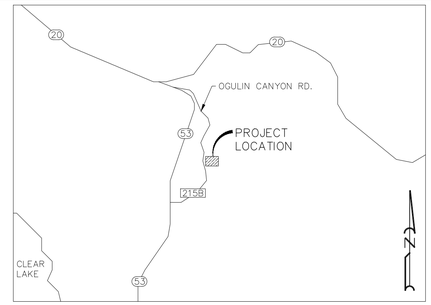
|---|---|
| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
| | EARTH |
| | WATERCOURSE / SWALE |
| | EXISTING POWER POLE |
| | (P) SECURITY LIGHTS |
| | (P) SECURITY CAMERAS |
| APN | ASSESSOR'S PARCEL NUMBER |
| APPROX | APPROXIMATELY |
| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |
| OH | OVER HEAD POWER LINES |

**NOTES:**
1. CONTOUR INTERVAL IS 5'




VICINITY MAP
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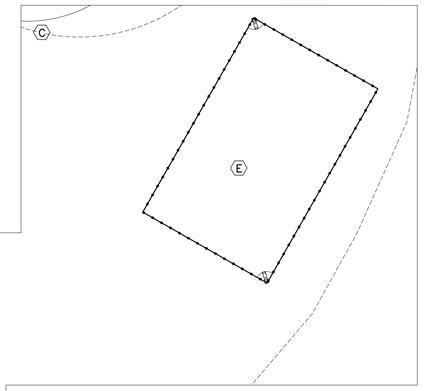


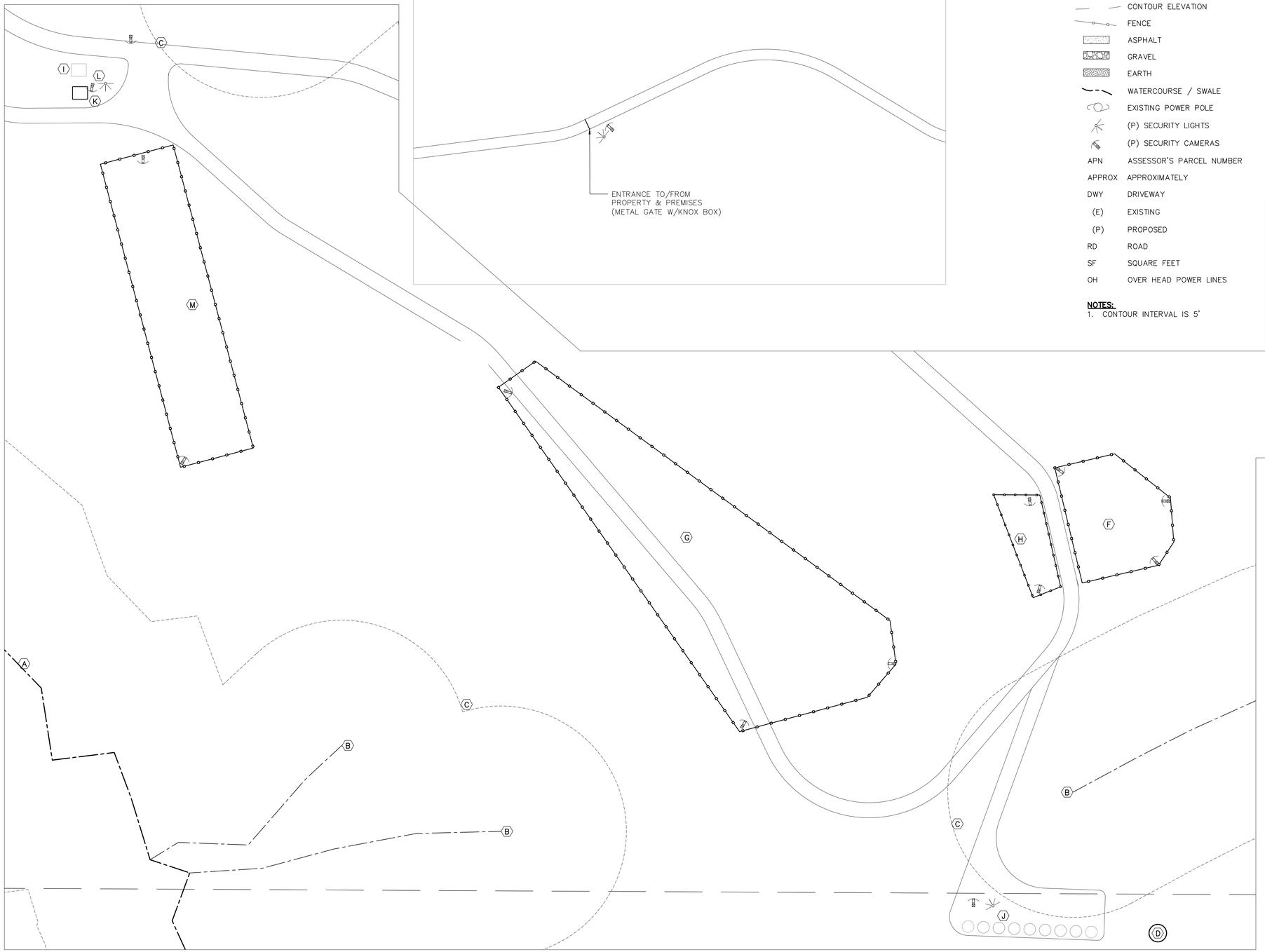


Ⓐ CLASS II INTERMITTENT WATERCOURSE

Ⓑ CLASS III EPHEMERAL WATERCOURSE

Ⓒ 100' SETBACK FROM WATERCOURSE

Ⓓ (E) GROUNDWATER WELL
LAT: 38.980376°
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Ⓚ (P) 10'x12' SECURITY CENTER

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Revisions:
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REALM ENGINEERING
CIVIL ENGINEERING, SURVEYING & PLANNING
1767 MARKET STREET SUITE c
REDDING, CA. 96001
530-526-7493

PLANS PREPARED UNDER THE SUPERVISION OF:

# EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
18501 OGLIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY:
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DATE PLOTTED:
3/11/22

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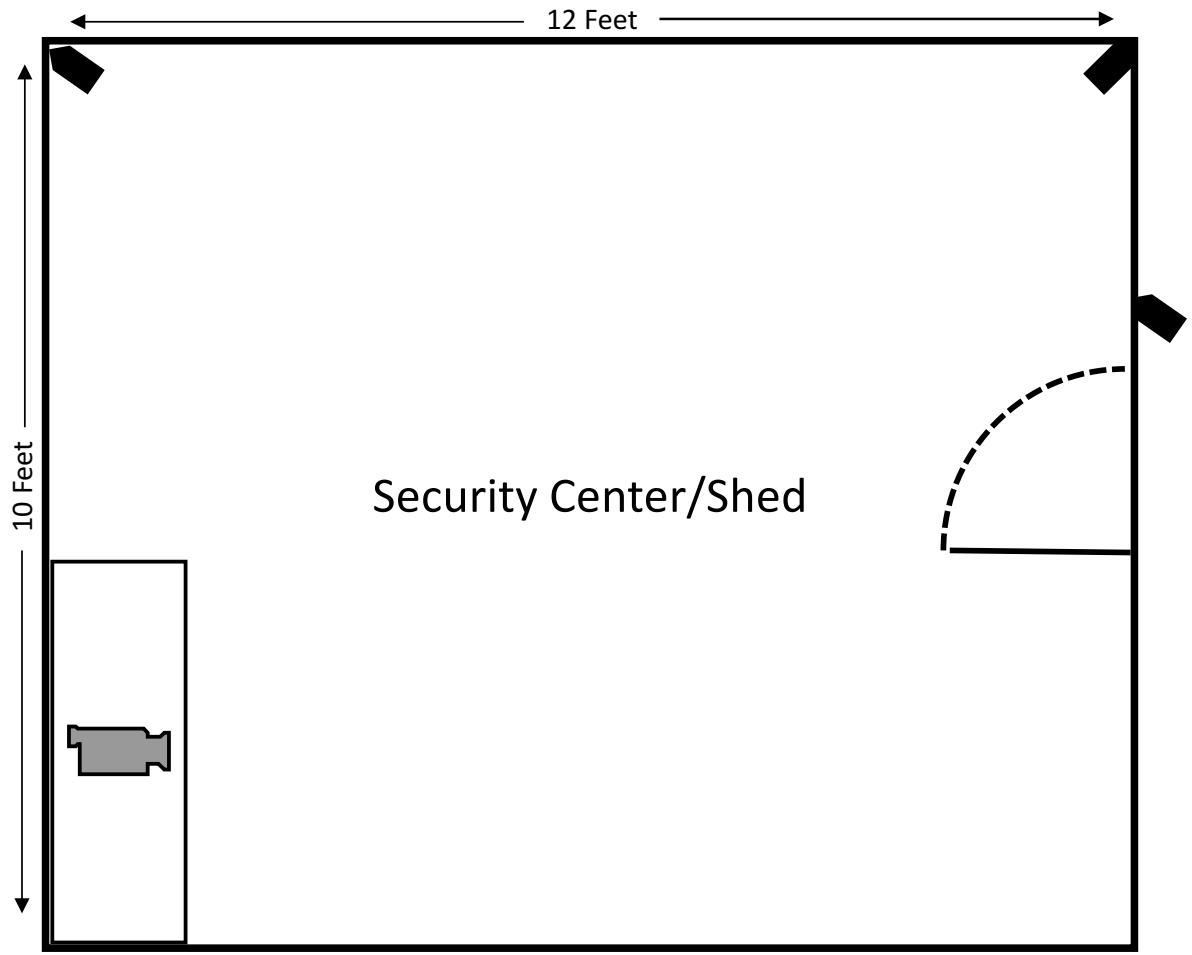
# Security Center/Shed
## (Proposed Wooden Shed)




Video Surveillance Monitoring and Recording Station

Waterproof Surveillance Cameras with 1080p resolution and a 90° field of view.
(Arrow indicates direction of view)

# SECTION – H

## STORM WATER MANAGEMENT PLAN

# Storm Water Management Plan

## Purpose and Overview

Emerald Mountain Farms, Inc. (EMF) is seeking a Major Use Permit from the County of Lake Community Development Department for a proposed Outdoor Commercial Cannabis Cultivation Operation at 1850 Ogulin Canyon Road near Clearlake, CA on Lake County APN 010-053-03 (Project Parcel), with A-Type 13 Distributor Transport Only, Self-Distribution. The proposed cultivation operation would be composed of a 34,316 $ft^2$ outdoor cultivation/canopy area, a 15,000 $ft^2$ outdoor cultivation/canopy area, a 10,000 $ft^2$ outdoor cultivation/canopy area, a 6,862 $ft^2$ outdoor cultivation/canopy area, a 2,384 $ft^2$ outdoor cultivation/canopy area, a 120 $ft^2$ Pesticides and Agricultural Chemicals Storage Area (existing wooden shed), a 120 $ft^2$ Security Center (proposed wooden shed), and nine 5,000-gallon water storage tanks. The proposed cultivation areas will be enclosed with 6-foot tall woven wire fences, covered with privacy screen/mesh where necessary to screen the cultivation/canopy areas from public view. The growing medium of the proposed outdoor cultivation/canopy areas will be an imported organic soilless growing medium (composed mostly of composted forest material) in aboveground fabric pots, with drip irrigation systems. All water for the proposed cultivation operation will come from the existing onsite groundwater well located at Latitude: 38.99555° and Longitude: -122.68973°.

The intent/purpose of this Storm Water Management Plan is to protect the water quality of the surface water and stormwater management systems managed by Lake County, and to evaluate the impact on downstream property owners. EMF's proposed cultivation operation will increase the impervious surface area of the Project Parcel by approximately 1,020 $ft^2$, or less than 0.1% of the Project Parcel, through the installation of a 120 $ft^2$ Security Center (proposed wooden shed) and nine 5,000-gallon heavy-duty plastic water storage tanks. The proposed outdoor cultivation areas will not increase the impervious surface area of the Project Parcel and should not increase the volume of runoff from the Project Site.

EMF will focus on low impact development (LID) and "green" stormwater management infrastructure to achieve permanent stabilization post site development as quickly as possible. LID practices utilizing "green" infrastructure will manage storm water by minimizing impervious surfaces, maintaining, preserving, and enhancing existing vegetation, and by using natural systems to filter and infiltrate stormwater into the ground. LID with "green" storm water infrastructure is cost competitive with traditional storm water management infrastructure/practices, while providing numerous other long-term benefits, such as improved water quality, ecosystem enhancement, and preserved/improved aesthetics. The stormwater management measures outlined in this Storm Water Management Plan meet and/or exceed the requirements of the Lake County Storm Water Management Ordinance (Chapter 29 of the Lake County Ordinance Code)

## Receiving Water Bodies and Infrastructure

The proposed cultivation operation will be located on a low ridge that divides the Burns Valley-Frontal Clear Lake watershed (HUC12) from the Grizzly Creek-North Fork Cache Creek watershed (HUC12). An unnamed intermittent Class II watercourse at the bottom of Blackeye Canyon flows from south to west through western half of the Project Parcel. Multiple ephemeral Class III watercourses form on the Project Property, and either flow south into Blackeye Canyon or north into Phipps Creek. The unnamed intermittent Class II watercourse continues west and flows into Burns Valley approximately 1 mile west of the Project Property. Phipps Creek passes under Highway 20 and enters the North Fork of Cache Creek approximately 1.5 miles northeast of the Project Property.

There are two existing culverted ephemeral Class III watercourse crossings in the western half of the Project Parcel on Ogulin Canyon Road. All proposed project disturbance will occur more than 100 feet from all natural surface water bodies. The unnamed intermittent Class II watercourse passes over Ogulin Canyon Road via rocked ford crossing ~4,500 feet west of the Project Property. Phipps Creek passes under Highway 20 via a concrete box culvert.

## Ground Disturbance and Grading

Soils of the Project Property in the area of the proposed cultivation operation are identified as the Skyhigh-Asbill complex and Sleeper variant-Sleeper loams by the NRCS Web Soil Survey (attached), and characterized as well-drained clay loams. EMF's proposed cultivation operation will increase the impervious surface area of the Project Parcel by approximately 1,020 $ft^2$, or less than 0.1% of the Project Parcel, through the installation of a 120 $ft^2$ Security Center (proposed wooden shed) and nine 5,000-gallon heavy-duty plastic water storage tanks. Development of the proposed cultivation operation would disturb less than two acres of blue oak woodland habitat, and would not require any grading or tree removal. The proposed outdoor cultivation/canopy areas will not increase the impervious surface area of the Project Parcel and should not increase the volume of runoff from the Project Site.

## Stormwater Management Measures

EMF's proposed cultivation operation will increase the impervious surface area of the Project Parcel by approximately 1,020 $ft^2$, or less than 0.1% of the Project Parcel, through the installation of a 120 $ft^2$ Security Center (proposed wooden shed) and nine 5,000-gallon heavy-duty plastic water storage tanks. All structures and cultivation areas will be located more than 100 feet from surface water bodies, and stormwater runoff from the structures and cultivation areas will be discharged to the well-vegetated buffers surrounding the proposed cultivation operation, to filter pollutants and to promote stormwater retention and infiltration.

The proposed outdoor cultivation/canopy areas will not increase the impervious surface area of the Project Parcel and should not increase the volume of runoff from the Project Site. Well-vegetated buffers (minimum 100 feet) will be maintained around the proposed cultivation areas to filter

and/or remove any sediment, nutrients, and/or pesticides mobilized by stormwater runoff, and prevent those pollutants from reaching nearby surface water bodies.

## Erosion and Sediment Control Measures

Well-vegetated buffers will be maintained around the proposed cultivation operation. Established vegetation within and around the proposed cultivation operation will be maintained/protected to the extent possible, as a permanent erosion and sediment control measures. A native grass seed mixture and certified weed-free straw mulch will be applied to all areas of the exposed soil prior to November 15th of each year at a rate of two tons per acre, until permanent stabilization has been achieved. Straw wattles will be installed and maintained throughout the proposed cultivation operation per the attached Erosion and Sediment Control Plan, until permanent stabilization has been achieved. If areas of concentrated stormwater runoff begin to develop, additional erosion and sediment control measures will be implemented to protect those areas and their outfalls. EMF's Site Manager will conduct monthly monitoring inspections to confirm that this operation is in compliance with California Water Code.

## Regulatory Compliance

The Project Parcel has been enrolled for coverage under the State Water Resource Control Board's Cannabis General Order since March 2nd, 2018 (WDID: 5S17CC400707). The stormwater management measures outlined above meet or exceed the requirements of the Lake County Storm Water Management Ordinance (Chapter 29 of the Lake County Ordinance Code). Development of the proposed cultivation operation, with the implementation of the LID practices and erosion and sediment control measures outlined above, will not increase the volume of stormwater discharges from the Project Property onto adjacent properties or flood elevations downstream.

## Monitoring and Reporting Program

The following are the Monitoring and Reporting Requirements for EMF's proposed cannabis cultivation operation from the Cannabis General Order:

- Winterization Measures Implementation
- Tier Status Confirmation
- Third Party Identification (if applicable)
- Nitrogen Application (Monthly and Total Annual)

An Annual Report shall be submitted to the State Water Quality Control Board by March 1st of each year. The Annual Report shall include the following:

1. Facility Status, Site Maintenance Status, and Storm Water Runoff Monitoring.
2. The name and contact information of the person responsible for operation, maintenance, and monitoring.

A letter transmitting the annual report shall accompany each report. The letter shall summarize the numbers and severity of violations found during the reporting period, and actions taken or planned to correct the violations and prevent future violations. The transmittal letter shall contain the following penalty of perjury statement and shall be signed by the Discharger or the Discharger's authorized agent:
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

EMF will adhere to these monitoring requirements to maintain compliance with the Cannabis General Order and will be happy to provide a copy of their Annual Monitoring Report to Lake County Officials if requested.

## Growing Medium Management

### Growing Medium Overview

The growing medium of EMF's proposed outdoor cannabis cultivation area will composed of an above grade organic soilless growing medium (composed mostly of composted forest material), within round fabric garden pots. The organic soilless growing medium of each garden pot/bed will be amended with compost, composted manure, worm castings, and vermiculite (only when needed to achieve the desired soil density), and reused annually. EMF will only use low salt fertilizers, so that salts do not accumulate within the organic soilless growing medium of the proposed cultivation areas, rendering it unusable.

### Growing Medium Waste

Ideally, the growing medium of the cultivation areas will be amended and reused each year/cultivation season. In the event of a root and/or soil borne pest infestation, the infested soil will be removed from the cultivation area(s), quarantined, treated with a pesticide that targets the infestation and that is approved for use in cannabis cultivation by the California Department of Food and Agriculture, then incorporated with compost in the designated composting areas. After composting, the treated soil will be reintroduced to the proposed outdoor cultivation area(s) as a soil amendment. No growing medium waste should be generated from EMF's proposed cannabis cultivation operation (all growing medium should be recycled/reused).

# Cannabis Vegetative Material Waste Management

## Cannabis Waste

"Cannabis waste" is an organic waste, as defined in Section 42649.8(c) of the Public Resources Code. Cannabis waste generated from the proposed cannabis cultivation operation will be limited to cannabis plant leaves and stems. All other parts of cannabis plants cultivated at this site will be transferred to a State of California-licensed Distributor for distribution to State of California-licensed Manufacturers and Retailers. EMF anticipates that the proposed cannabis cultivation operation will generate less than 400 pounds of dried cannabis waste each cultivation season (April 1st through November 15th). All cannabis waste will be composted onsite.

## Cannabis Waste Composting

All cannabis waste generated from EMF's proposed cultivation operation will be composted on-site and in compliance with Title 14 of the California Code of Regulations at Division 7, Chapter 3.1. Cannabis waste will be ripped/shredded and placed in the designated composting area. In the designated composting area, cannabis waste will be composted until it is incorporated into the soils of the proposed outdoor cultivation area as a soil amendment.

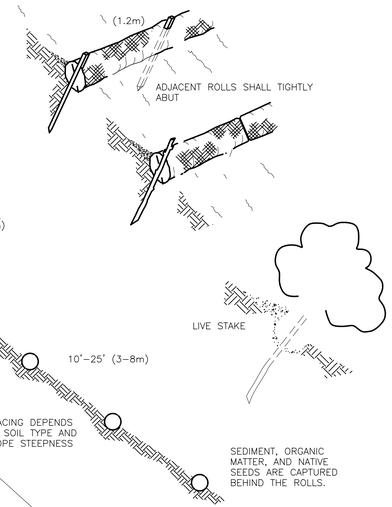
## Cannabis Waste Records/Documentation

Cannabis waste generated from EMF's proposed cannabis cultivation operation will be identified, weighed, and tracked while onsite. All required information pertaining to cannabis waste will be entered into the State of California Cannabis Track-and-Trace (CCTT) system. EMF will maintain accurate and comprehensive records regarding cannabis waste generation that will account for, reconcile, and evidence all activity related to the generation or disposition of cannabis waste. All records will be kept on-site for seven (7) years and will be made available during inspections.

**NOTES:**

1. STRAW ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3"–5" (75–125mm) DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
2. STRAW ROLLS MUST BE PLACED ALONG SLOPE CONTOURS

# STRAW ROLL DETAILS




- (A) CLASS II INTERMITTENT WATERCOURSE
- (B) CLASS III EPHEMERAL WATERCOURSE
- (C) 100' SETBACK FROM WATERCOURSE
- (D) (E) GROUNDWATER WELL LAT: 38.980376° LONG: –122.577846°
- (E) (P) 10,000 SF OUTDOOR CULTIVATION/CANOPY AREA
- (F) (P) 6,862 SF OUTDOOR CULTIVATION/CANOPY AREA
- (G) (P) 34,316 SF OUTDOOR CULTIVATION/ CANOPY AREA
- (H) (P) 2,384 SF OUTDOOR CULTIVATION / CANOPY AREA
- (I) (P) 10'x12' PESTICIDE & AGRICULTURAL CHEMICAL STORAGE AREA
- (J) (P) 9–5,000 GALLON WATER STORAGE TANKS
- (K) (P) 10'x12' SECURITY CENTER
- (L) (P) DESIGNATED REFUSE AREA
- (M) (P) 15,000 SF OUTDOOR CULTIVATION/CANOPY AREA

**LEGEND:**

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| | CONTOUR ELEVATION |
| | FENCE |
| | ASPHALT |
| | GRAVEL |
| | EARTH |
| | FLOOD ZONE |
| | CREEK / SWALE |
| APN | ASSESSOR'S PARCEL NUMBER |
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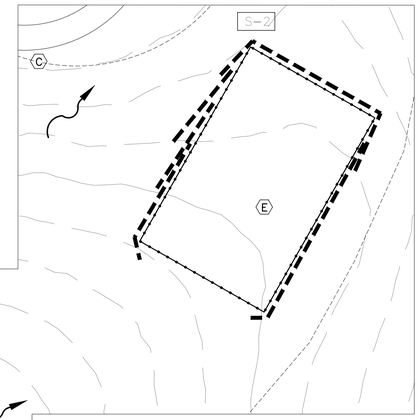
| DWY | DRIVEWAY |
| (E) | EXISTING |
| (P) | PROPOSED |
| RD | ROAD |
| SF | SQUARE FEET |

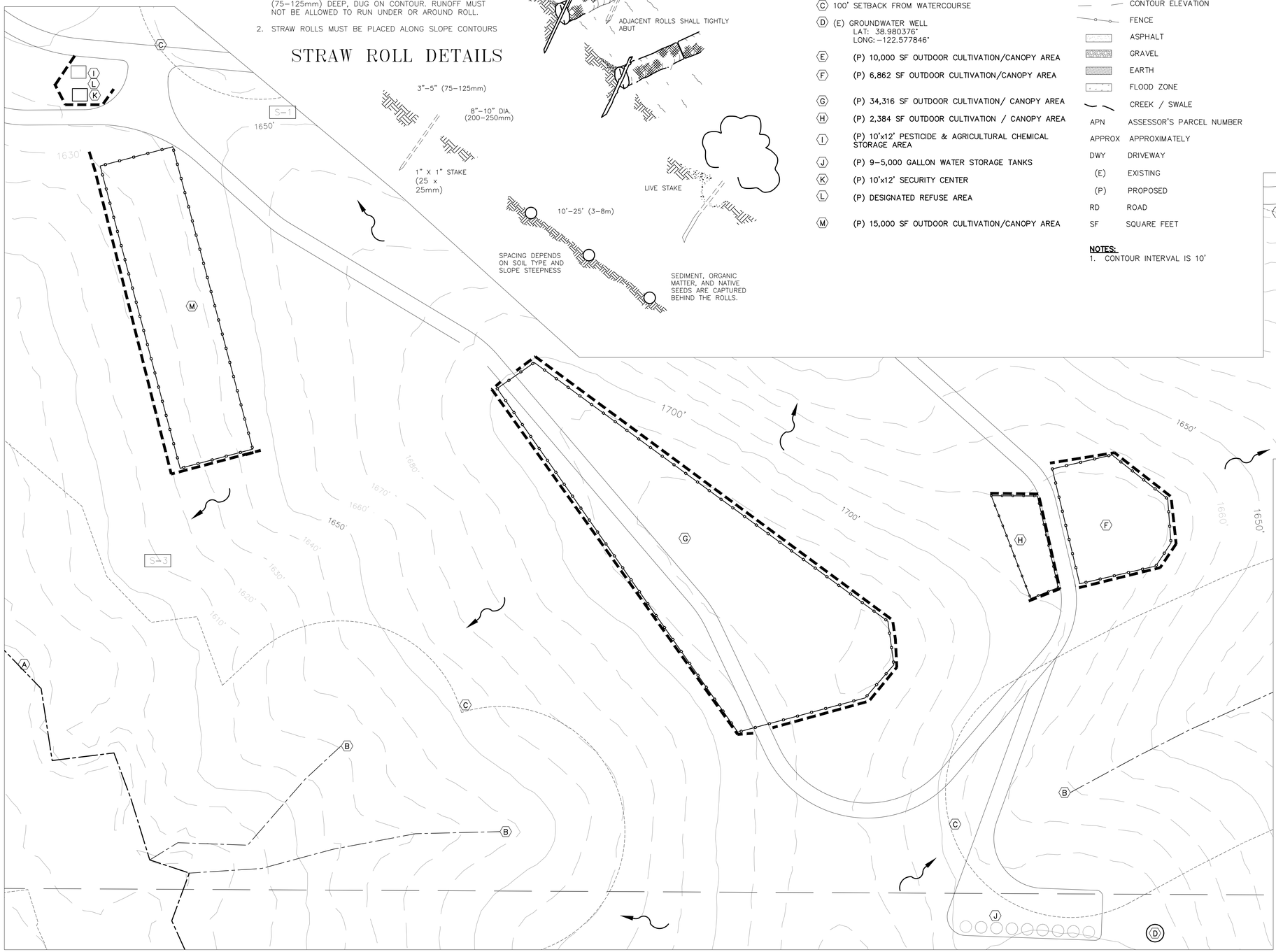
**NOTES:**

1. CONTOUR INTERVAL IS 10'

**LEGEND**

S-1
CMS




**EROSION & SEDIMENT CONTROL NOTES:**

1. CONTRACTOR IS TO IMPLEMENT BEST MANAGEMENT PRACTICES (BMPS) TO CONTROL EROSION CONTROL AND REDUCE THE OFF–SITE DISCHARGE OF SEDIMENT TO THE MAXIMUM EXTENT PRACTICABLE.
2. EROSION CONTROL BMPS SHALL BE IN PLACE AND MAINTAINED ALL YEAR ROUND.
3. HE CONTRACTOR SHALL FOLLOW THE GUIDELINES FROM THE "CALIFORNIA STORMWATER BMP HANDBOOK" FOR THE MEASURES SHOWN OR STATED ON THESE PLANS.
4. CONTRACTOR MUST ENSURE THAT THE CONSTRUCTION SITE IS PREPARED PRIOR TO THE ONSET OF ANY STORM.
5. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED. CHANGES TO THIS EROSION AND SEDIMENT CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE QUALIFIED SWPPP PRACTITIONER (QSP).
6. THIS PLAN MAY NOT COVER ALL THE SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO ANTICIPATED FIELD CONDITIONS. VARIATIONS MAY BE MADE TO THE PLAN IN THE FIELD SUBJECT TO THE APPROVAL OF OR AT THE DIRECTION OF A REPRESENTATIVE OF LAKE COUNTY.
7. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CHECKED BEFORE AND AFTER ALL STORMS TO ENSURE MEASURES ARE FUNCTIONING PROPERLY.
8. CONTRACTOR SHALL MAINTAIN A LOG AT THE SITE OF ALL INSPECTIONS OR MAINTENANCE OF BMPS, AS WELL AS, ANY CORRECTIVE CHANGES TO THE BMPS OR EROSION AND SEDIMENT CONTROL PLAN.
9. THE CONTRACTOR SHALL INSTALL THE STABILIZED CONSTRUCTION ENTRANCE PRIOR TO COMMENCEMENT OF GRADING. LOCATION OF THE ENTRANCE MAY BE ADJUSTED BY THE CONTRACTOR TO FACILITATE GRADING OPERATIONS. ALL CONSTRUCTION TRAFFIC ENTERING THE PAVED ROAD MUST CROSS THE STABILIZED CONSTRUCTION ENTRANCE.
10. ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE SWEPT AT THE END OF EACH WORKING DAY OR AS NECESSARY.
11. ANY LOOSE GROUND FROM EXCAVATING GRADING OPERATIONS SHALL BE SECURED PRIOR TO ANY RAIN EVENT. STRAW OR TARP ALL DISTURBED OR EXCAVATED GROUND.
12. CONTRACTOR SHALL PLACE GRAVEL BAGS AROUND ALL NEW DRAINAGE STRUCTURE OPENINGS IMMEDIATELY AFTER THE STRUCTURE OPENING IS CONSTRUCTED. THESE GRAVEL BAGS SHALL BE MAINTAINED AND REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED.
13. AS A MINIMUM, ALL GRADED AREAS AND EXPOSED SOIL WITHIN THE PROJECT SHALL BE SEEDED PER THE REQUIREMENTS OF LAKE COUNTY.
14. DUST GENERATION MUST BE MINIMIZED AND A WATER TRUCK MUST BE AVAILABLE ON–SITE FOR ADEQUATE DUST CONTROL.

Revisions:
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REALM ENGINEERING
CIVIL ENGINEERING, SURVEYING & PLANNING
1767 MARKET STREET SUITE c
REDDING, CA. 96001
530-526-7493


PLANS PREPARED UNDER THE SUPERVISION OF:

# CULTIVATION SITE PLAN WITH CANOPY

EMERALD MOUNTAIN FARMS, INC.

APN: 010-053-03
1850 OGLIN CANYON RD.
CLEARLAKE, CA 95422
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 3/11/22
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
CADD FILE:
SHEET: 1

3 July 2020

WDID: 5S17CC400707

**DISCHARGER**
Norman Grimm
Emerald Mountain Farms, Inc.
P.O. Box 2071
Clearlake, CA 95422

**LANDOWNER**
James Ruth
Clear Lake Mountain Partners, LLC
1337 Eagle Bend Drive
Southlake, TX 76092

**NOTICE OF APPLICABILITY, WATER QUALITY ORDER WQ-2019-0001-DWQ, NORMAN GRIMM, APN 010-053-030-000, LAKE COUNTY**

Norman Grimm for Emerald Mountain Farms, Inc (hereafter "Discharger") submitted a change of information request on 24 June 2020 for a change of Discharger enrollment in the State Water Resources Control Board's (State Water Board's) *Cannabis Cultivation Policy- Principles and Guidelines for Cannabis Cultivation* (Policy), and the *General Waste Discharge Requirements and Waiver of Waste Discharge Requirements for Discharges of Waste Associated with Cannabis Cultivation Activities*, Order No. WQ-2019-0001-DWQ (General Order). Based on the information provided, the Discharger self-certifies the cannabis cultivation activities are consistent with the requirements of the State Water Board. This letter provides notice that the Policy and General Order are applicable to the site as described below. You are hereby assigned waste discharge identification (WDID) number **5S17CC400707**.

The Discharger is responsible for all applicable requirements in the Policy, General Order, and this Notice of Applicability (NOA), including submittal of all required reports. The Discharger is the sole person with legal authority to, among other things, change information submitted to obtain regulatory coverage under the General Order; request changes to enrollment status, including risk designation; and terminate regulatory coverage. The Central Valley Regional Water Quality Control Board (Central Valley Water Board) will hold the Discharger liable for any noncompliance with th5e81 Policy, General Order, and this NOA, including non-payment of annual fees.

Pursuant to the General Order and Policy, James Ruth for Clear Lake Mountain Partners, LLC (hereafter "Landowner") is ultimately responsible for any water quality degradation that occurs on or emanates from the property and for unauthorized water diversions. Accordingly, the Landowner, in addition to the Discharger, may be held responsible for correcting non-compliance.

The last NOA for this site was issued 16 March 2018. As noted above, Central Valley Water Board staff received a final, signed request for a change of information on 24 June 2020. Changes requested included a change in Discharger, Discharger mailing address, Landowner, Landowner mailing address, and third party representative. The request has been received and our records have been updated.

## 1. FACILITY AND DISCHARGE DESCRIPTION

The information submitted by the Discharger states the disturbed area is equal to or greater than 2,000 square feet and less than 1 acre (43,560 square feet), no portion of the disturbed area is within the setback requirements, no portion of the disturbed area is located on a slope greater than 30 percent, and the cannabis cultivation area is less than 1 acre.

Based on the information submitted by the Discharger, the cannabis cultivation activities are classified as Tier 1, low risk.

## 2. SITE-SPECIFIC REQUIREMENTS

The Policy and General Order are available on the Internet at http://www.waterboards.ca.gov/cannabis. The Discharger shall ensure that all site operating personnel know, understand, and comply with the requirements contained in the Policy, General Order, this NOA, and the Monitoring and Reporting Program (MRP, Attachment B of the General Order). Note that the General Order contains standard provisions, general requirements, and prohibitions that apply to all cannabis cultivation activities.

The application requires the Discharger to self-certify that all applicable Best Practicable Treatment or Control (BPTC) measures are being implemented, or will be implemented by the onset of the winter period (November 15 - April 1), following the enrollment date.

## 3. TECHNICAL REPORT REQUIREMENTS

The following technical report(s) shall be submitted by the Discharger as described below:

1. An updated *Site Management Plan* must be submitted within 90 days of this NOA; this deadline falls on **30 September 2020.** For more information on the requirements to submit a *Site Management Plan*, see General Order Provision C.1.a, and Attachment A, Section 5. Attachment D of the General Order provides guidance on the contents of a *Site Management Plan*. Dischargers that cannot implement all applicable BPTC measures by the onset of the winter period, following their enrollment date, shall submit to the appropriate Central Valley Water Board a *Site Management Plan* that includes a time schedule and scope of work for use by the Central Valley Water Board in developing a compliance schedule as described in Attachment A of the General Order. You are not required to use a Qualified Professional for developing the *Site Management Plan.* However, you are required to submit the *Site Management Plan* to Central

Valley Water Board staff for approval prior to any site development.

2. *A Site Closure Report* must be submitted 90 days prior to permanently ending cannabis cultivation activities and seeking to rescind coverage under the Conditional Waiver. The *Site Closure Report* must be consistent with the requirements of General Order Provision C.1.e., and Attachment A, Section 5. Attachment D of the General Order provides guidance on the contents of the *Site Closure Report.*

## 4. MONITORING AND REPORTING PROGRAM

The Discharger shall comply with the Monitoring and Reporting Program (MRP). Attachment B of the General Order provides guidance on the contents for the annual reporting requirement. Annual reports shall be submitted to the Central Valley Water Board by March 1 following the year being monitored. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Central Valley Water Board's Executive Officer or the State Water Board's Chief Deputy Director, or Deputy Director.

## 5. ANNUAL FEE

According to the information submitted, the discharge is classified as Tier 1, low risk with the current annual fee assessed at $600. The fee is due and payable on an annual basis until coverage under this General Order is formally rescinded. To rescind coverage, the Discharger must submit a Notice of Termination, including a *Site Closure Report* at least 90 days prior to termination of activities and include a final MRP report.

## 6. TERMINATION OF COVERAGE UNDER THE GENERAL ORDER & REGIONAL WATER BOARD CONTACT INFORMATION

Cannabis cultivators that propose to terminate coverage under the Conditional Waiver or General Order must submit a Notice of Termination (NOT). The NOT must include a *Site Closure Report* (see Technical Report Requirements above), and Dischargers enrolled under the General Order must also submit a final monitoring report. The Central Valley Water Board reserves the right to inspect the site before approving a NOT. Attachment C includes the NOT form and Attachment D of the General Order provides guidance on the contents of the *Site Closure Report.*

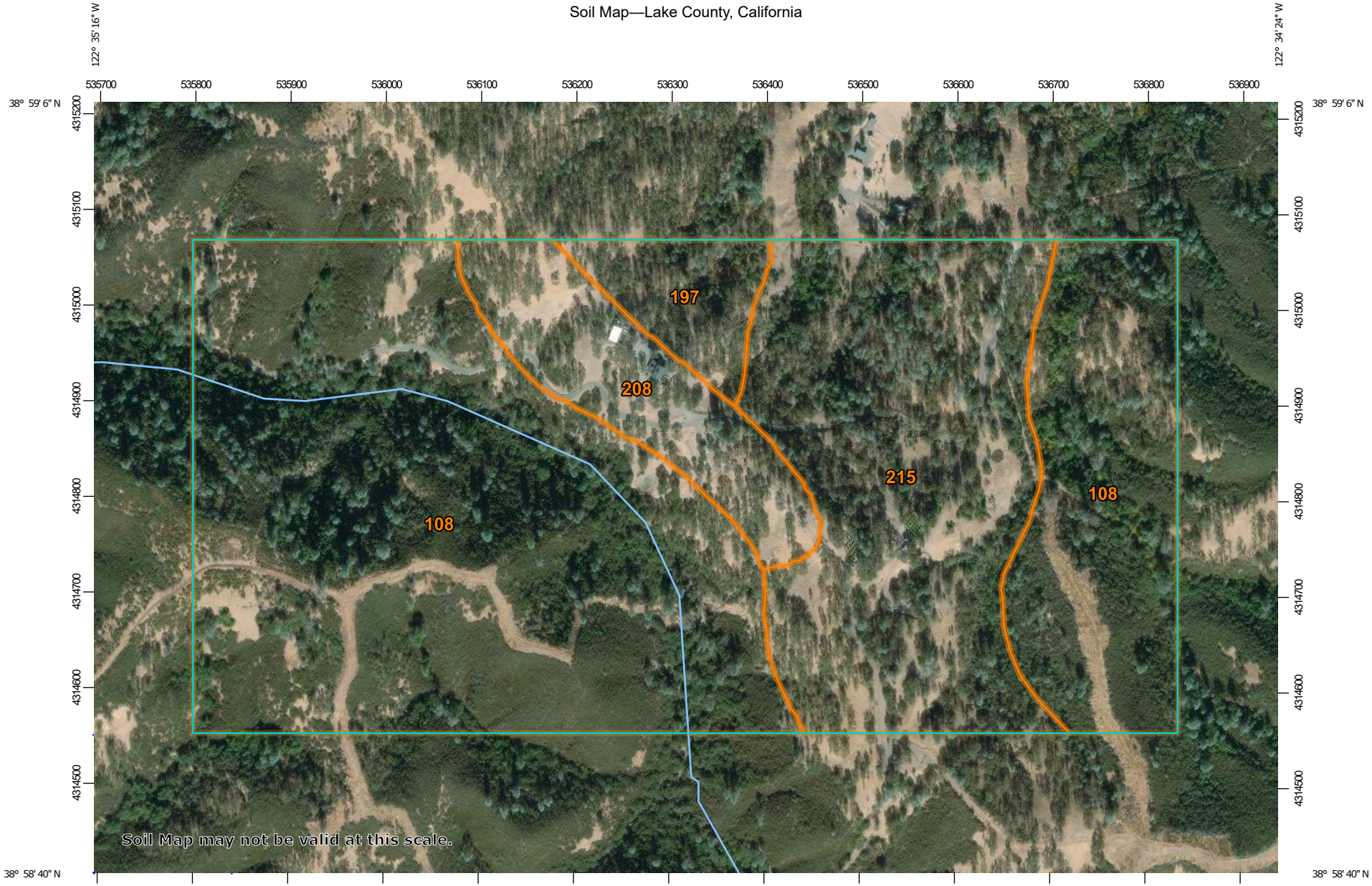
If the Discharger cannot comply with the General Order, or will be unable to implement an applicable BPTC measure contained in Attachment A by the onset of the winter period each year, the Discharger shall notify Central Valley Water Board staff by telephone at 530-224-4845 so that a site-specific compliance schedule can be developed.

All monitoring reports, submittals, discharge notifications, and questions regarding compliance and enforcement should be directed to centralvalleyredding@waterboards.ca.gov or 530-224-4845.

*(for)* Patrick Pulupa,
Executive Officer

JF:mb

cc via email: Kevin Porzio, State Water Resources Control Board, Sacramento
Mark Roberts, Lake County Planning Department, Lakeport




Map Scale: 1:5,680 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

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:
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: Lake County, California
Survey Area Data: Version 16, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 18, 2016—Nov 4, 2017

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

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 108 | Bally-Phipps-Haploxeralfs association, 30 to 75 percent slopes | 81.6 | 61.6% |
| 197 | Phipps complex, 30 to 50 percent slopes | 5.2 | 3.9% |
| 208 | Skyhigh-Asbill complex, 15 to 50 percent slopes | 11.2 | 8.4% |
| 215 | Sleeper variant-Sleeper loams, 30 to 50 percent slopes | 34.4 | 26.0% |
| **Totals for Area of Interest** | | **132.4** | **100.0%** |

# SECTION – I

## WATER USE MANAGEMENT PLAN

# Water Use Management Plan

## Purpose and Overview

Emerald Mountain Farms, Inc. (EMF) is seeking a Major Use Permit from the County of Lake Community Development Department for a proposed Outdoor Commercial Cannabis Cultivation Operation at 1850 Ogulin Canyon Road near Clearlake, CA on Lake County APN 010-053-03 (Project Parcel), with A-Type 13 Distributor Transport Only, Self-Distribution. The proposed cultivation operation would be composed of a 34,316 $ft^2$ outdoor cultivation/canopy area, a 15,000 $ft^2$ outdoor cultivation/canopy area, a 10,000 $ft^2$ outdoor cultivation/canopy area, a 6,862 $ft^2$ outdoor cultivation/canopy area, a 2,384 $ft^2$ outdoor cultivation/canopy area, a 120 $ft^2$ Pesticides and Agricultural Chemicals Storage Area (existing wooden shed), a 120 $ft^2$ Security Center (proposed wooden shed), and nine 5,000-gallon water storage tanks. The proposed cultivation areas will be enclosed with 6-foot tall woven wire fences, covered with privacy screen/mesh where necessary to screen the cultivation/canopy areas from public view. The growing medium of the proposed outdoor cultivation/canopy areas will be an imported organic soilless growing medium (composed mostly of composted forest material) in aboveground fabric pots, with drip irrigation systems. All water for the proposed cultivation operation will come from the existing onsite groundwater well located at Latitude: 38.99555° and Longitude: -122.68973°.

This/EMF's Water Use Management Plan is designed to conserve Lake County's water resources and to ensure that the proposed cultivation operation's water use practices are in compliance with applicable County, State, and Federal regulations at all times. This Water Use Management Plan focuses on designing a water efficient delivery system and irrigation practices, and the appropriate and accurate monitoring and reporting of water use practices.

## Description of Water Resources

### Surface Water

The proposed cultivation operation will be located on a low ridge that divides the Burns Valley-Frontal Clear Lake watershed (HUC12) from the Grizzly Creek-North Fork Cache Creek watershed (HUC12). An unnamed intermittent Class II watercourse at the bottom of Blackeye Canyon flows from south to west through western half of the Project Parcel. Multiple ephemeral Class III watercourses form on the Project Property, and either flow south into Blackeye Canyon or north into Phipps Creek. All aspects of EMF's proposed cultivation operation will be located over 100 feet from these surface water bodies.

### Groundwater

Soils of the Project Property are identified as the Bally-Phipps-Haploxeralfs association, the Skyhigh-Asbill complex, and Sleeper variant-Sleeper loams by the NRCS Web Soil Survey. The Bally-Phipps-Haploxeralfs association is characterized as well-drained gravelly and gravelly clay loams derived from alluvium. The Skyhigh-Asbill complex is characterized as well-drained clay loams derived from sandstone and shale parent material. Sleeper variant-Sleeper loams are

characterized as well-drained clay loams weathered from sedimentary rock. The United States Geological Survey Map of the Santa Rosa Quadrangle defines the area in the vicinity of the Project area as the Cache Formation, composed mostly of pebbly sandstone, conglomerate, siltstone, and tuff. The Project Property is located in the Clear Lake Cache Formation Groundwater Basin as identified in the 2006 Lake County Groundwater Management Plan. The only water-bearing formation in the Clear Lake Cache Formation Groundwater Basin is the Cache Formation, which is generally of low porosity. A groundwater well was drilled in the southeast corner of the Project Parcel in 2018 to a depth of 260 feet below ground surface (bgs), through brown gravelly clay (0-40 feet bgs), shale and sandstone (40-200 feet bgs), greenstone (200-210 feet bgs), and Franciscan gravels (210-260 feet bgs). At the time of drilling, the groundwater well had an estimated yield of approximately 50 gallons per minute (please see attached Well Completion Report).

## Water Resources Protection

EMF will maintain existing, naturally occurring, riparian vegetative cover (e.g., trees, shrubs, and grasses) in aquatic habitat areas to the maximum extent possible to maintain riparian areas for streambank stabilization, erosion control, stream shading and temperature control, sediment and chemical filtration, aquatic life support, wildlife support, and to minimize waste discharges. Access roads and parking areas will be graveled to prevent the generation of fugitive dust, and vegetative ground cover will be preserved and/or re-established as soon as possible throughout the entire site to filter and infiltrate stormwater runoff from the access roads, parking areas, and the proposed cultivation operation. Personnel will have access to portable restroom facilities at all times when onsite, and the portable restroom facilities will be serviced regularly.

## Water Sources and Storage

Water will be provided to EMF's proposed cultivation operation from an existing onsite groundwater well located at Latitude 38.980376° and Longitude -122.577846°. The well was drilled in 2018 to a depth of 260 feet and has an estimated yield of more than 50 gallons per. A well performance test was performed of the onsite well in January of 2021, proving that the well can still produce more than 30 gallons per minute. EMF proposes to install nine 5,000-gallon heavy-duty plastic water storage tanks on the Project Property, to provide stored water for the proposed cultivation operation and for fire suppression in the event of a wildfire emergency.

## Irrigation

From the CalCannabis Cultivation Licensing Program's Final Programmatic Environmental Impact Report (PEIR):
"According to Hammon et al. (2015), water use requirements for outdoor cannabis production (25-35 inches per year) are generally in line with water use for other agricultural crops, such as corn (20-25 inches per year), alfalfa (30-40 inches per year), tomatoes (15-25 inches per year), peaches (30-40 inches per year), and hops (20-30 inches per year). In a study of cannabis cultivation in Humboldt County, approximate water use for an outdoor cultivation site was

27,470 gallons (0.08 acre-feet) per year on average and ranged from approximately 1,220 to 462,000 gallons per year (0.004 to 1.4 acre-feet), with the size of the operation being a major factor in this range. Annual water uses for a greenhouse operation averaged approximately 52,300 gallons (0.16 acre-feet) and ranged from approximately 610 to 586,000 gallons (0.002 to 1.8 acre-feet) annually (Butsic and Brenner 2016). During a field visit conducted by technical staff to an outdoor cultivation site, one cultivator reported using approximately 75,000 gallons (0.23 acre-feet) for 1 year's entire cannabis crop (approximately 66 plants), or approximately 1,140 gallons per plant per year."

EMF's cultivation practices are most similar to commercial tomato or hops production with an estimated water use requirement of 35 inches per year. EMF's total combined proposed outdoor cannabis cultivation/canopy area is 68,562 $ft^2$, with an expected total annual water use requirement of 4.6 acre-feet or 1,496,000 gallons. The cultivation season for EMF's proposed outdoor cannabis cultivation operation would begin in April and end in November of each year. The following table presents the expected water use of the proposed cultivation operation by month during the cultivation season in gallons and acre-feet.

| April | May | June | July | Aug | Sept | Oct | Nov |
|---|---|---|---|---|---|---|---|
| 65,200 | 195,500 | 228,100 | 260,700 | 293,300 | 260,700 | 162,900 | 32,600 |
| 0.2 | 0.6 | 0.7 | 0.8 | 0.9 | 0.8 | 0.5 | 0.1 |

Irrigation water for the proposed cultivation operation, would be pumped from the existing onsite groundwater well to nine proposed 5,000-gallon water storage tanks, via an HDPE water supply line. The water storage tanks will be equipped with float valves to shut off the flow of water from the well and prevent the overflow and runoff of irrigation water when full. HDPE water supply lines will be run from the water storage tanks to the irrigation systems of each proposed cultivation area. The water supply lines will be equipped with safety valves, capable of shutting off the flow of water so that waste of water and runoff is prevented/minimized when leaks occur and the system needs repair, and inline water meters compliant with California Code of Regulations, Title 23, Division 3, Chapter 2.7. EMF staff will maintain daily water meter readings records for a minimum of five years, and will make those records available to Water Boards, CDFW, and Lake County staff upon request. The irrigation system of the proposed cultivation area(s) will be composed of PVC piping, black poly tubing, and drip tapes/lines.

## Water Conservation

Per the Water Conservation and Use requirements outlined in the SWRCB's Cannabis General Order, EMF will implement the following Best Practical Treatment and Control (BPTC) measures to conserve water resources:

- EMF staff will regularly inspect their entire water delivery system for leaks and immediately repair any leaky faucets, pipes, connectors, or other leaks.
- EMF will apply weed-free mulch in cultivation areas that do not have ground cover to conserve soil moisture and minimize evaporative loss.
- EMF will implement water conserving irrigation methods (drip or trickle and micro-spray irrigation).

- EMF will maintain daily records of all water used for irrigation of cannabis. Daily records will be calculated by using a measuring device (inline water meter) installed on the main irrigation supply line between the water storage area and cultivation area(s).

## Water Availability Analysis

Water will be provided to EMF's proposed cultivation operation from an existing groundwater well located at Latitude 38.980376° and Longitude -122.577846°. The well was drilled in 2018 to a depth of 260 feet and has an estimated yield of more than 50 gallons per. A four hour well performance test was performed on the well in January of 2021 by Cramer Enterprises (License No. 98176), proving that the well can produce at least 30 gallons per minute (please see attached). EMF proposes to install nine 5,000-gallon heavy-duty plastic water storage tanks on the Project Property, to provide stored water for the proposed cultivation operation and for fire suppression in the event of a wildfire emergency. EMF's existing groundwater well can produce at least 30 gallons per minute, and up to 43,200 gallons per day. EMF's peak anticipated water demand is ~9,780 gallons per day, with an average daily water demand of ~6,235 gallons though out the cultivation season (240 days, April through November). At 30 gallons per minute, EMF's existing onsite groundwater well could meet the peak anticipated water demand in 5 hours and 26 minutes, and could meet the average daily water demand in 3 hours and 28 minutes. Additionally, EMF proposes to establish more than seven times the anticipated average daily demand (45,000 gallons) of water storage capacity on the Project Parcel. As such, there is little doubt that EMF's water supply groundwater well will be able to meet the proposed cultivation operations water demands on the hottest driest days in the latest part of the summer when irrigation water is needed most.

*The free Adobe Reader may be used to view and complete this form. However, software must be purchased to complete, save, and reuse a saved form.

File Original with DWR

Page 1 of 1

Owner's Well Number 1

Date Work Began 3-29-18 Date Work Ended 4-2-18

Local Permit Agency Lake County Environmental Health

Permit Number _____ Permit Date _____

State of California

# Well Completion Report

*Refer to Instruction Pamphlet*

No. xxxxxxx

**DWR Use Only – Do Not Fill In**

State Well Number/Site Number

N Latitude W Longitude

APN/TRS/Other

## Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify _____

Drilling Method Air Rotary Drilling Fluid _____

| Depth from Surface Feet | to Feet | Description Describe material, grain size, color, etc |
|---|---|---|
| 0 | 40 | Brown Gravely clay |
| 40 | 70 | Grey shale / sandstone |
| 70 | 200 | Black shale / sandstone / calsite |
| 200 | 210 | Green stone |
| 210 | 260 | Franciscan Gravels |

Total Depth of Boring 265 Feet

Total Depth of Completed Well 260 Feet

## Well Owner

Name Dale Soditus

Mailing Address P.O. Box 3416

City Clearlake State CA Zip 95422

## Well Location

Address 1850 Ogulin Canyon Rd.

City Clear Lake County LAKE

Latitude 38° 58' 48.87" N Longitude 122° 34' 40.88" W

(Deg. Min. Sec.)

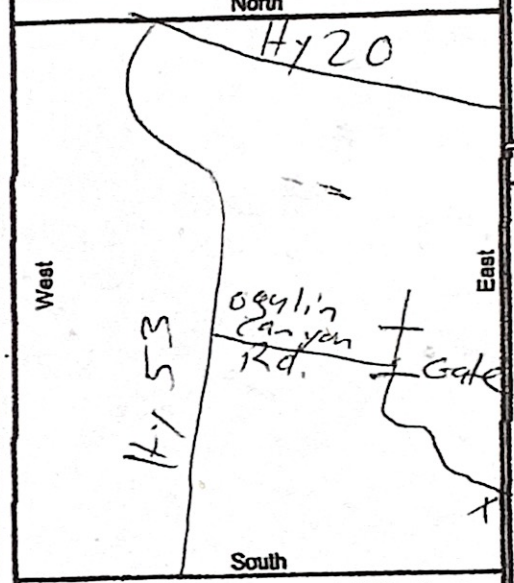
Datum _____ Dec. Lat. _____ Dec. Long. _____

APN Book _____ Page _____ Parcel 010-053-03

Township _____ Range _____ Section _____

## Location Sketch

(Sketch must be drawn by hand after form is printed.)




Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. Please be accurate and complete.

## Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other _____
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

## Planned Uses

○ Water Supply
☒ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other _____

## Water Level and Yield of Completed Well

Depth to first water 210' (Feet below surface)

Depth to Static Water Level 110 (Feet) Date Measured 4-2-18

Estimated Yield * 50 (GPM) Test Type Air Lift

Test Length 2 HRS (Hours) Total Drawdown _____ (Feet)

*May not be representative of a well's long term yield.

## Casings

| Depth from Surface Feet | to Feet | Borehole Diameter (Inches) | Type | Material | Wall Thickness (Inches) | Outside Diameter (Inches) | Screen Type | Slot Size if Any (Inches) |
|---|---|---|---|---|---|---|---|---|
| 0 | 60 | 9" | F480 | PVC | 1/4" | 5" | Blank | — |
| 60 | 200 | 7 1/4 | F480 | PVC | 1/4" | 5" | Blank | — |
| 200 | 260 | 7 1/4 | F480 | PVC | 1/4" | 5" | Perf | .032" |

## Annular Material

| Depth from Surface Feet | to Feet | Fill | Description |
|---|---|---|---|
| 0 | 1 | Concrete | SEAL |
| 1 | 21 | Bentonite | |
| 21 | 260 | 5/16 Pea | Gravel Pack |

## Attachments

☐ Geologic Log
☐ Well Construction Diagram
☐ Geophysical Log(s)
☐ Soil/Water Chemical Analyses
☐ Other _____

Attach additional information, if it exists.

## Certification Statement

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief

Name Will Peterson Well Drilling
Person, Firm or Corporation

4789 Cascade Hy Kelseyville CA 95451
Address City State Zip

Signed _____ 4-2-18 100905 3
C-57 Licensed Water Well Contractor Date Signed C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

# Well Test

| | | | |
|---|---|---|---|
| **Job Name-** | Danielle Fontenot | **Well Diam** | 4 1/2" pvc |
| **Location-** | 1850 Ogulin Canyon Rd | **Static** | 105.8' |
| **Operator-** | RH/Reese | **Well Depth** | 246' |
| **Meter SN-** | 16944649 | **Setting** | 240' + pump |
| **Original Meter Reading-** | 0035150 | **Pump** | 2 HP 230v Grundfos |
| **Final Meter Reading -** | 0040540 | **Was the pump running upon arrival?** | Yes ☐ No ☒ |

| Date | Time | Time Since Last Reading | Meter Reading | GPM | Pumping Level | Color | Comment |
|---|---|---|---|---|---|---|---|
| 1/14/21 | | | | | | | |
| | 13:35 | 1 min | 0035150 | 30.5 | 112.7' | Clear | Sulfur smell |
| | 13:36 | 1 min | | 30.5 | 115.3' | | |
| | 13:37 | 1 min | | 30.5 | 115.7' | | |
| | 13:38 | 1 min | | 30.5 | 115.6' | | |
| | 13:39 | 1 min | | 30.5 | 115.8' | | |
| | 13:40 | 1 min | | 30.5 | 115.8' | | |
| | 13:42 | 2 min | | 30.5 | 115.8' | | |
| | 13:44 | 2 min | | 30.5 | 115.8' | | |
| | 13:46 | 2 min | | 30.5 | 115.8' | | |
| | 13:48 | 2 min | | 30.5 | 115.8' | | |
| | 13:50 | 2 min | | 30.5 | 115.8' | | Sulfur smell |
| | 13:55 | 5 min | | 30 | 116.2 | | |
| | 14:00 | 5 min | | 30 | 116.2' | | |
| | 14:05 | 5 min | | 30 | 116.4' | | |
| | 14:20 | 15 min | | 30 | 116.5' | | |
| | 14:35 | 15 min | | 30 | 116.6' | | |
| | 14:50 | 15 min | | 30 | 116.7' | | |
| | 15:05 | 15 min | | 30 | 116.8' | | |
| | 15:35 | 30 min | | 30 | 117' | | |
| | 16:05 | 30 min | | 30 | 117.2' | | |
| | 16:35 | 30 min | | 30 | 117.4' | Clear | Sulfur smell |
| | 17:05 | 30 min | 0040540 | | 117.4' | | |
| | | | | | | | |
| | Recovery | | | | | | |
| | | | | | | | |
| | 17:10 | | | | 117' | | |
| | 17:11 | | | | 114' | | |
| | 17:12 | | | | 111' | | |
| | 17:13 | | | | 108' | | |
| | 17:14 | | | | 107.8' | | |
| | 17:15 | | | | 107.8' | | |
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