DROUGHT MANAGEMENT PLAN
LAMPERTI FARM

The Urgency Ordinance approved by the Lake County Board of Supervisors on July 27th, 2021 (Ordinance No. 3106) requires applicants to provide a plan depicting how the applicants plan to reduce water use during a declared drought emergency. The proposed cultivation operation would be composed of 432,800 ft^2 of outdoor cultivation/canopy area with an estimated annual water use requirement of approximately 20.8 acre-feet per year/cultivation season. All water for the proposed cultivation operation will come from an existing onsite groundwater well located at Latitude 39.01236° and Longitude -122.65807°.

Per the Water Conservation and Use requirements outlined in the State Water Resources Control Board's Cannabis General Order, Mr. Lamperti shall implement the following Best Practical Treatment and Control (BPTC) measures to conserve water resources:

- Regularly inspect the entire water delivery system for leaks and immediately repair any leaky faucets, pipes, connectors, or other leaks;
- Apply weed-free mulch in cultivation areas that do not have ground cover to conserve soil moisture and minimize evaporative loss;
- Implement water conserving irrigation methods (drip or trickle and micro-spray irrigation);
- 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);
- Install float valves on all water storage tanks to keep them from overflowing onto the ground.

With the Water Conservation and Use requirements outlined above, the proposed cultivation operation would efficiently use water resources at all times. Additionally, Article 27 Section 27.11 of the Lake County Zoning Ordinance requires commercial cannabis cultivators using water from a groundwater well to install a water level monitor on their water supply well, and to regularly record readings from the continuous water level monitor. Well water level monitoring and reporting shall be performed as follows:

Seasonal Static Water Level Monitoring
Seasonal monitoring of well water levels provides information regarding long-term groundwater elevation trends. The water level in the onsite groundwater well shall be measured and recorded prior to the start of the cultivation season (March/April), and once in the fall (November) after the cultivation season has ended. Data reported to the Lake County Community Development Department as part of the Project's annual reporting requirements shall include a hydrograph plot of all seasonal water level measurements for the onsite groundwater well.

Water Level Monitoring During Extraction
The purpose of monitoring the water level in a well during extraction is to evaluate the performance of the well to determine the effect of the pumping rate on the water source during each cultivation

season. This information can be used to determine the capacity and yield of the onsite groundwater well for determining pump rates and the need for water storage. The frequency of water level monitoring will depend on the source, the source's capacity, and the pumping rate. It is recommended that initially the water level be monitored twice per week or more, and that the frequency be adjusted as needed depending on the impact the pumping rate has on the well water level. Data reported to the Lake County Community Development Department as part of the Project's annual reporting requirements shall include a hydrograph plot of the water level readings during the cultivation season.

In addition to the monitoring and reporting described above, the Project's annual report shall include an analysis of the water level monitoring data, demonstrating whether or not use of the onsite groundwater well is causing significant drawdown and/or impacts to the surrounding area and what measures were taken to reduce impacts. If there are impacts, a revised Water Management Plan shall be prepared and submitted to the Lake County Community Development Department, for review and approval, demonstrating how the project will mitigate the impacts in the future.

DROUGHT EMERGENCY RESPONSE

When a drought emergency has been declared for the area of the proposed cultivation operation, the operator may implement the following additional measures, as needed or appropriate to the site, to reduce water use and ensure both success of the cultivation operation and decreased impacts to surrounding areas:

- Install moisture meters to monitor how much water is in the soil at the root level and reduce watering to only what is needed to avoid excess;
- Cover the soil and drip lines with removable plastic mulch to reduce evaporation;
- Irrigate only in the early morning hours or before sunset;
- Cover plants with shaded meshes during peak summer heat to reduce plant stress and water needs;
- Add a soil amendments/ingredients to growing medium that retains water in a way to conserve water and aid plant growth/health. Soil amendments/ingredients such as peat moss, coco coir, compost, perlite, and vermiculite retain water and provide a good environment for cannabis to grow.

Additionally, to ensure both success and decreased impacts to the surrounding areas, Mr. Lamperti plans to reduce the outdoor cultivation/canopy area and water usage by approximately 10 percent during drought emergencies. To reduce water usage 43,200 ft^2 of the proposed cultivation/canopy area will not be planted when a drought emergency has been declared for Lake County. The cultivation/canopy area(s) to be left fallow will depend on when a drought emergency is declared (before or after the proposed cultivation/canopy areas have been planted), and Mr. Lamperti will prioritize the preferred cultivation/canopy areas over less desirable cultivation/canopy areas (based on cultivation experience). By implementing the Drought Management Plan outlined above, the estimated annual water demand for the proposed cultivation operation would be reduced from approximately 20.8 acre-feet to 18.8 acre-feet during periods of drought.

Water Use/Water Availability Study

1111 Sulphur Bank Drive
Clearlake Oaks, CA
APN 010-002-37, & 53, 006-520-10, 11, & 12, and 006-540-02 & 08

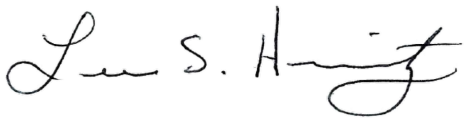
Prepared For:

Mr. Anthony Lamperti
1100 Sulphur Bank Drive
Clearlake Oaks, CA

August 23, 2021
Updated March 31, 2022

Prepared By:

HURVITZ ENVIRONMENTAL SERVICES INC.
105 Morris Street, Suite 188
Sebastopol, California 95472



Lee S. Hurvitz, PG #7573 CHG #1015
Certified Hydrogeologist

Project No. 5165.01

HURVITZ ENVIRONMENTAL
GEOLOGIC & ENVIRONMENTAL CONSULTING

August 23, 2021

Mr. Anthony Lamperti
1100 Sulphur Bank Drive
Clearlake Oaks, CA

Re: Water Use/Water Availability Study
1111 Sulphur Bank Drive
Clearlake Oaks, CA
APN 010-002-37, & 53, 006-520-10, 11, & 12, and 006-540-02 & 08
Hurvitz Environmental Project No. 5165.01

Mr. Lamperti

Hurvitz Environmental Services, Inc. (HES) is pleased to submit this Water Use/Water Availability Study for the above referenced property. HES prepared this Report in accordance with the Lake County Cannabis Ordinance. The purpose of this Report was to outline the sites proposed water usage rates and water conveyance systems as well as to evaluate whether or not the project water supply can adequately meet the proposed water demands.

Based on the information and assessments contained herein, we conclude that the wells discharge capacity and rate of recharge are sufficient to sustainably provide for the projected annual water use at the site. The quantity of groundwater to be used for the project is unlikely to result in significant declines in regional groundwater availability or depletion of groundwater resources over time. The potential for the project water-use to cause well interference or impacts to Creeks are also considered minimal.

We appreciate the opportunity to provide you with these services. Please do not hesitate to contact us at your convenience, should you have any questions or comments regarding this report or our recommendations.

Sincerely,
HURVITZ ENVIRONMENTAL SERVICES, INC

Lee S. Hurvitz, PG# 7573 CHG #1015
Certified Hydrogeologist

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1.0 INTRODUCTION AND SCOPE OF SERVICES

We understand that Anthony Lamperti, (the applicant) is applying to Lake County for approval to develop approximately 9.9-acres (432,800 ft^2 of cannabis canopy) of outdoor cannabis cultivation (the project) at the property identified as 1111 Sulphur Bank Drive, Clearlake Oaks, CA, Assessor's Parcel Number (APN) 010-002-37, & 53, 006-520-10, 11, & 12, and 006-540-02 & 08, (the site). According to the Lake County Cannabis Ordinance, development of property with the intent to cultivate cannabis requires a Hydrogeologic Assessment. Therefore, on behalf of the applicant Hurvitz Environmental Services (HES) conducted a Water Use/Water Availability Study and prepared this Hydrogeologic Assessment Report in accordance with the Lake County requirements.

This Water Use/Water Availability Study included the following elements:

- Estimates of existing and proposed water uses for the property.
- Characterization of local geologic and hydrogeologic conditions including defining water sheds and sub-basins.
- Review and analysis of a 6-hour well yield and recharge test.
- Well Completion Report assessment.
- Discussion on proposed methods for water level and water usage monitoring.
- Aquifer storage and recharge assessment.
- Severe drought condition assessment
- Assess potential for well interference between the project well and neighboring wells and between the project well and nearby streams.

2.0 SITE DESCRIPTION

The site is located in unincorporated Lake County, California, approximately 4 miles south of the community of Clearlake Oaks on the east side of Clearlake. Access to the property is obtained off of Highway 20 south on Sulphur Banks Road (**PLATE 1 – SITE LOCATION MAP**). The Lake County Assessor's Office identified the site as seven separate parcels APN 010-002-37, & 53, 006-520-10, 11, & 12, and 006-540-02 & 08, a total of 256.67 acers. Cultivation activities are only proposed on parcel APN 006-520-11 deeded 72.47 acres (Cultivation Parcel). The site lies in the Mayacama Mountains of the California Coast Ranges. The site landscape ranges from flat pasture land to oak and chaparral forest. The cultivation parcel is relatively flat and contains several barns, a water well and a pond (**PLATE 2 – USGS TOPOGRAPHIC MAP**). There are two unnamed Ephemeral Class III watercourses and two seasonal ponds on the Cultivation Parcel. There are also two Ephemeral Class II watercourses on the eastern half of the site. The larger of the two seasonal ponds supports aquatic wildlife and a lacustrine wetland (reed marsh). All areas of the proposed cultivation operation will be located more than 100 feet from any surface waterbody, including the two seasonal ponds. Site photographs are presented in **APPENDIX A** and the Engineering Design Plans are presented in **Appendix B**.

2.1 USGS 7.5 MINUTE QUANDRANGLE MAP

HES reviewed the United States Geological Survey (USGS) Clearlake Oaks 7.5-Minute Quadrangle Maps, 2015, (**PLATE 2 – USGS TOPOGRAPHIC MAP**). The Cultivation Parcel is relatively flat and gently sloping west toward the shore of Clearlake. An Ephemeral Class III drainage channel transect the middle of the cultivation property and flows west towards Clearlake. A second west flowing, Ephemeral Class II watercourse borders the cultivation parcel to the north. The peak elevation on the Cultivation Parcel, located along eastern parcel boundary, (which is Sulphur Bank Drive) is approximately 1,466 feet above mean sea level (MSL). The lowest elevation on the Cultivation Parcel is approximately 1,337 feet MSL near western boundary where one of the Ephemeral watercourses flows offsite toward Clearlake.

2.2 GEOLOGICAL CONDITIONS

HES reviewed the Geologic Map and Structure Section of the Clear Lake Volcanics, Northern California[1]. According to the Map reviewed, the site lies within a geologic region characterized by the Clear Lake Volcanics overlaying the Franciscan Assemblage. Specifically, the Andesite of Sulphur Springs (*asbf* and *asbp*) are of Pleistocene age and consist of sparsely porphyritic andesite and basaltic andesite occurring in flows (*f*) and pyroclastic deposits (*p*) across the site. These volcanics were deposited over the Upper Cretaceous to Upper Jurassic Franciscan Complex (*KFJ*) basement rock which is a mixture of marine chert, greenstone, greywacke, shale and metamorphic rocks of blueschist grade.

[1] USGS 1995 Geologic Map and Structure section of the Clear Lake Volcanics, Northern California, B.C. Hearn, Jr, J.M. Donnelly-Nolan, and F.E. Goff.

2.3 REGIONAL GROUNDWATER

According to www.ecoatlas.com[2] the project site is located within the Kelsey Creek-Clear Lake Watershed Region (HUC-10), and the Cultivation Parcel is within the Schindler Creek-Frontal Clear Lake Sub-watershed (HUC-12-180201160308), all within the jurisdiction of the Central Valley Regional Water Quality Control Board. A small portion of the project site crosses over into the Burns Valley Frontal Clearlake Sub-watershed (HUC-12-180201160309.) (see **PLATE 2 – USGS TOPOGRAPHIC MAP**).

Groundwater basins in this area are composed primarily of shallow alluvial deposits, and deposits of the Clear Lake Volcanics over the fractured basement rock of the Franciscan Formation. The groundwater at the site is found in Shoreline Inventory.

Review of the project Well Completion Report (#445224) for the well located on the Cultivation Parcel shows that the subsurface consists of alluvial material from the surface to 28 feet bgs, then changes to volcanic rock to 100 feet (see **APPENDIX C -WELL COMPLETION REPORT).**

[2] EcoAtlas has been developed through funding from the US Environmental Protection Agency and the California State Water Resources Control Board.

3.0 SITE DEVELOPMENT AND WATER USE

The proposed cultivation operation will be composed of ten (10) outdoor cultivation areas (ranging from 42,200 ft^2 to 43,500 ft^2 in size) for a total cannabis canopy of 432,800 ft^2 (9.9 acre). The growing medium of the proposed outdoor cultivation/canopy areas will be native soil amended with compost, worm castings, and organic dairy manure, with drip irrigation systems covered in white plastic mulch (to conserve water resources).

There are two wells on the site. Irrigation for cultivation will be from a well located adjacent to the cultivation area as shown on **PLATE 4 - SITE PLAN** and in **APPENDIX B - ENGINEERED SITE PLAN**. Discussions of the irrigation well construction and well yield are presented in Section 3.4 and 3.5 of this Report. The approximate location of the proposed outdoor cultivation area, wells, and other site features are also shown on **PLATE 4 – SITE PLAN** and in **APPENDIX B - ENGINEERED SITE PLAN**.

Irrigation water will be pumped from the irrigation well to four (4) 5,000-gallon water storage tanks. From the tanks the water will be distributed to the cultivation areas. To conserve water resources the proposed cultivation operation will utilize drip irrigation systems have soil moisture monitors and will irrigate in the morning to minimize evaporation losses. The estimated annual water-use for the entire 9.9-acre cultivation project (outdoor cultivation and employees) is 6,791,150 gallons, which is approximately 20.84 acre-feet of groundwater/year. The project plans do not involve any water diversions, or imported water so all project water will be derived from the project irrigation well. Details on the cultivation projects water usage, including breakdowns of average and peak monthly usage, are presented in **TABLE 1 – TOTAL PROJECT AND SITE WATER USAGE**.

3.1 CULTIVATION WATER USAGE

The applicant plans to cultivate up 9.9-acres (432,800 ft^2) in ten (10) outdoor cultivation areas. The applicant has not had any specific experience growing cannabis at this location but the applicant is working with experienced cannabis cultivators and is designing the system to use the least amount of water possible.

It is our understanding that a cannabis irrigation water usage rate of 2-acre feet/acre/year for outdoor cultivation is generally consistent with northern California averages. The applicant estimates that this 9.9-acre cultivation project will require a total of 6,765,950 gallons/year (20.76 acre-ft/year) of groundwater for irrigation, **TABLE 1 -TOTAL PROJECT AND SITE WATER USAGE.**

Therefore, it is estimated that the applicant will use **2.07-acre feet/acre/year** of groundwater for project irrigation. With an estimated 210-day cultivation season we estimate that the applicant will use an average of approximately **32,218 gallons/day** for the cultivation season (6,765,950 gallons/210 days).

3.2 RESIDENTIAL WATER USE

There are no residential buildings on the Cultivation Parcel and there are no immediate plans for residential development onsite. Therefore, residential water use was not a factor in this assessment.

3.3 LIVESTOCK

HES searched available sources for information regarding water use at farms raising livestock, most notably grazing dairy cows. As a general rule we found that water demand per cow was estimated to be 40 to 50 gallons of water per cow per day. However, A study conducted by the University of Michigan Extension monitored water usage at a commercial dairy farm in Ohio using 13 water meters at key locations for two years. The average milk production on this farm was 80 lb/cow/day. There were 854-1005 total cows on the farm during the study period. Over the two study years, the average drinking water per cow (both milking and dry cows) was 23.6 gallons and the average waste water (water used for cleaning) was 6.3 gallons/day for an average total water use of 29.9 gallons per cow per day which is significantly lower than the 40 to 50 gallons/cow/day commonly cited in the literature.[3]

Based on discussions with the current property owner, we understand that approximately 40 cows and 40 sheep graze on the site year-round and that the water for the cows and sheep is provided primarily from ponds located around the properties. However up to ½ of the water used for the cows and sheep comes from the project irrigation well. Therefore, based on the 30-gallons/day estimate for water use, estimated the annual groundwater demand for livestock onsite.

> 40 cows (average cows onsite per day) + 40 sheep (average sheep onsite per day) x 30 gallons/day (livestock water use) x 365 days/year x 0.5 (½ of water from groundwater) = **438,000 gallons/per year or 1.34 acre-feet/year = Livestock Groundwater Demand**

3.4 EMPLOYEE WATER USAGE

We understand that the Project will require two full-time farm mangers, as well as, several part-time employees. Therefore, for the purpose of this Assessment we estimate that the project will require an average of eight (8) full-time employees throughout the growing season. Potable water for farm workers will come from the Irrigation Well. Using the Napa County Water Availability Guidance Document[4] estimate of 15 gallons of water utilized per day per cultivation worker on site. As shown on **TABLE 1 -TOTAL PROJECT AND SITE WATER USAGE** Employee Water Usage was calculated as follows:

> Annual Onsite Worker Water Use = 8 (average number of daily employees) x 15 gallons/day (daily employee water usage) x 210 days/year =
> **25,200 gallons /year = 0.08 acre-feet/year = Employee Groundwater Use**

[3] http://msue.anr.msu.edu/news/water_use_on_dairy_farms

[4] Water Availability Analysis (WAA) Guidance Document, Napa County, Adopted May 12, 2015.

3.5 TOTAL PROJECT WATER USAGE

The annual project water use estimate is:

6,765,950 gallons (cultivation) + 438,000 gallons (livestock) + 25,200 gallons (employee) =
7,229,150 gallons or 22.19 acre-feet/year = Total Site Water Usage

TABLE 1 – TOTAL PROJECT AND SITE WATER USAGE

Source	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
	----------Gallons----------												
Cultivation	0	0	0	325,000	725,000	875,000	1,000,000	1,300,000	1,300,000	900,000	340,950	0	**6,765,950**
Employees	0	0	0	3,150	3,150	3,150	3,150	3,150	3,150	3,150	3,150	0	**25,200**
Livestock	30,000	30,000	30,000	30,000	30,000	38,000	40,000	45,000	45,000	45,000	40,000	35,000	**438,000**
TOTAL USAGE	30,000	30,000	30,000	358,150	758,150	916,150	1,043,150	1,348,150	1,348,150	948,150	384,100	35,000	**7,229,150**

Based on these estimates for onsite water use it appears that the peak groundwater demand will occur annually between August-September and will be approximately **44,201 gallons/day**. Average daily water demand at the site over the entire cultivation season (April-Nov) expected to be approximately **33,829 gallons/day**.

3.6 SITE WELL INFORMATION

There are two water supply well located on the site, a domestic well and an irrigation well as shown on **PLATE 4 – SITE PLAN** and in **APPENDIX B - ENGINEERED SITE PLAN.** Only the irrigation well, located adjacent to the cultivation area, will be used for this project. This well is located approximately 600 feet east of the shoreline of Clearlake. The Well Completion Report (#445224) and well yield testing data for the irrigation well is presented in **APPENDIX C & D,** respectively.

The site irrigation well was installed in August 1996 and is constructed with an 8-inch diameter PVC well casing installed to a total depth of 100 feet below ground surface (bgs). The Well Completion Report for this well (#445224) shows that the well is screened with 70-feet of slotted sections from 30 to 100 feet bgs. The water bearing zone is composed of hard to very hard, black to purple volcanic rock. At the time the well was drilled the estimated well yield was 250+ gallons per minute (gpm.).

A well yield test was conducted on the irrigation well by Irwin Well Drilling on May 22, 2020, **APPENDIX D WELL YIELD TEST.** The well was pumped for 4 hours at a rate between 185 to 172 gpm. Drawdown in the well stabilized at 10 feet below static while pumping at a rate of 172 gpm. This pumped rate was maintained for over 2 hours with no change in drawdown. Therefore, the specific capacity for the irrigation well was calculated to be 17.2 gpm/foot of drawdown (172 gpm/10 feet). Recharge was measured after the pumping ceased and within 18 minutes the water level in the well had recovered 100%.

Results of the well yield test indicate the irrigation well is capable of producing 172 gpm for at least 4 hours without overdrawing the aquifer. The average daily water demand at the site over the cultivation season (April-Nov) is expected to be 33,829 gallons/day. Pumping at a rate of 172 gpm this would require 197 minutes (3.28 hours) of pumping a day to produce that volume of water. The peak daily water demand of 44,201 gallons/day would require approximately 257 minutes (4.28 hours) of pumping.

4.0 WATER BALANCE INFORMATION

4.1 PRECIPITATION

Precipitation, primarily as rainfall is the major source of inflow to Clear Lake Volcanics aquifers. Though there are no climate stations on site or in the immediate vicinity, we estimate that the seasonal precipitation for the site is 38-inches/year [5]**.** Based on this precipitation it can be reasonably expected that approximately 3.17 acre-feet of rain falls on every acre of the site annually, or 814 acre-feet over the entire 256.67-acre Site.

4.2 GROUNDWATER STORAGE

As discussed in Section 3.4 of this Report, well log information indicated that the well screen interval of the irrigation well was 70 ft. It can be assumed that the screen interval of 70 ft is consistent with aquifer thickness in this area. From data obtained from the 2006 Lake County Water Inventory and Analysis[6] specific yields to range between 3% - 8% in this area. Thus, for the purpose of this assessment we conservatively assumed a specific yield of 5% to assess aquifer storage as follows.

Aquifer Thickness (70 feet) x Specific Yield (0.05)
x Project Parcels (256.67-acres) =
Estimated Aquifer Storage = 898 acre-feet

4.3 GROUNDWATER RECHARGE

Groundwater recharge is the replenishment of an aquifer with water from the land surface. It is usually expressed as an average rate of inches of water per year, similar to precipitation. Thus, the volume of recharge is the rate times the land area under consideration times the time period, and is usually expressed as acre-feet per year. In addition to precipitation, other sources of recharge to an aquifer are stream and lake or pond seepage, irrigation return flow (both from canals and fields) inter-aquifer flows, and urban recharge (from water mains, septic tanks, sewers, drainage ditches).

For this site, the very shallow volcanic aquifer is considered unconfined. Drainage features that intersect and border the site have likely eroded through some of the overlying layers and are contributing to the recharge of the site's aquifer through the stream bottom. However, it is also likely that a portion of the rain water falling directly on the site infiltrates the ground surface and migrates downward through the soil matrix until it recharges the aquifer. In addition, flow in the intermittent tributaries to the north of the cultivation property as well as Clearlake located west of the site may also be contributing to recharge of the aquifer near the site.

To estimate the groundwater recharge at the site we first assumed that the recharge to the aquifer is primarily through rainfall and that all rainfall accumulated within the 256.67-acre site.

[5] http://rainharvestcalculator.com/Rainfall/CA/Middletown/95461 based on 5-year average (2013-2017)
[6] Lake County Water Inventory and Analysis, California Department of Water Resources, March 2006.

Therefore, the annual precipitation available for recharge onsite can be estimated using the following data and equation.

256.67 acres x 3.17 feet (annual precipitation on the Cultivation Parcel) =
Estimated Annual Precipitation Onsite = 814 acre-feet

However, this estimate does not account for surface run-off, stream underflow, and evapo-transpiration that occurs in all watersheds. According to the USGS, the long-term average precipitation that recharges groundwater in these northern California regions is approximately 15 percent but can be as low as 1.67%. Since this site has relatively mixed topography with both upland and low-lying areas, we estimate that the long-term average precipitation that recharges groundwater within the entire site is slightly near the regional average of 15% with this data and the precipitation data presented above, we can re-calculate the groundwater recharge within the cultivation parcel using the following equation.

814 acre-feet (annual precipitation onsite) x 0.15 (long term average for recharge) =
Estimated Average Groundwater Recharge = 122.1 acre-feet/year

The total site groundwater usage is estimated to be **22.19 acre-feet/year** and the groundwater recharge is estimated to be **122.1 acre-feet/year** therefore it appears that the applicant will have sufficient water to meet their demands without creating overdraft conditions.

4.2.1 Drought Conditions

The recharge assessment was based on a recent 5-year average for rainfall in the region (2013-2017). However, this average, while lower than the 30-year average, did not account for severe drought conditions as we have seen over the past 2 years (2019-2021). If we were to assume drought conditions by using a value of 50% of the 5-year average rainfall used above, and assume that the groundwater recharge rate will be reduced to 8%, we can estimate the potential drought condition or low-end value for annual aquifer recharge as follows.

814 acre-feet (average precipitation onsite) x 0.5 (drought factor) x 0.08 (conservative long-term average for recharge) =

Estimated Severe Drought Value for Groundwater Recharge = 32.56 acre-feet/year

5.0 PUMPING INFLUENCE TO SURROUNDING PROPERTIES

To evaluate potential well pumping impacts to surface water bodies or wells on other properties, the potential lateral extent of pumping from the planned project well was estimated. Using general relationships discussed in Driscoll (1986)[7]**,** we estimated the lateral pumping influence using information from the 2021 well yield test. An approximate relationship between specific capacity calculated from the well yield testing, and aquifer transmissivity was used to obtain aquifer characteristics and estimate a potential radius of pumping influence. Transmissivity was estimated for an unconfined aquifer, using the relationship of Specific Capacity (yield/drawdown) x the coefficient of 1,500 (unconfined). To develop the slope of the drawdown curve from the pumping well, the value of Δs (drawdown over one log graph cycle) was calculated for a distance-drawdown relationship, where $T = 528Q/\Delta s$ (Driscoll,1986, Equation 9.11). The analysis is shown on the attached semi-log plots for the site's irrigation well **APPENDIX E – RADIUS OF PUMPING INFLUENCE**

The specific capacity for the irrigation well was calculated to be 17.2 gpm/foot drawdown (172 gpm/ 10 feet drawdown). Using this data and applying it to the site, we calculated a zone of pumping influence extending approximately 240 feet from the irrigation well, assuming an unconfined aquifer. There are no neighboring wells within 240 of the irrigation well (the site domestic well is located over 2,300 feet upgradient of this well).

There are two Class III ephemeral watercourses within 240 of the irrigation well. However ephemeral watercourses do not support aquatic habitat year-round and are typically dry by May/June of each year. Therefore, the potential for stream depletion as a result of the proposed onsite groundwater usage is not considered a concern to this assessment. Clearlake is located approximately 600 feet west of the proposed project irrigation well. Clearlake is also outside the estimated radius of pumping influence and is not considered a concern to this assessment.

[7] Groundwater and Wells, Second Edition, Fletcher G. Discoll, 1986, published by Johnson Division, St. Paul Minnesota, 1089p.

6.0 WATER QUALITY

HES did not perform water testing as part of this hydrogeologic assessment. However, we did look on the State Geotracker Database and determined that there are no contaminated sites identified within 1,000 feet of the project well. However, we recommend that the well designated for employees be tested for naturally occurring contaminants including arsenic, boron, nitrates and coliform bacteria before being used a s a potable water source.

7.0 CONCLUSIONS

The project site is located in the Clear Lake Volcanics and the Schindler Creek-Frontal Clear Lake Sub-watershed within an unconfined aquifer consisting primarily of volcanic rocks including andesite and basaltic andesite in flow and pyroclastic deposits. Recharge to the groundwater likely occurs primarily from direct precipitation and percolation as well as from stream flow from onsite creeks. The estimated groundwater usage for the entire site including project employees and livestock is approximately 22.19 acre-feet/year. Average annual recharge available to the site aquifer is estimated at 122.1 acre-feet/year. Based on well yield test data collected at the site, it appears that the aquifer storage and recharge area are sufficient to provide for sustainable annual water use at the site and within the area.

In summary:

Estimated Cultivation Irrigation Water Use – 20.76 acre-feet/year
Livestock Groundwater Use - 1.34 acre-feet
Site Worker Water Use - 0.08 acre-feet/year
Total Estimated Site Water Use – 22.19 acre-feet/year
Estimated Annual Recharge – 122.1 acre-feet/year
Estimated Recharge including Severe Drought – 32.56 acre-feet/year
Irrigation Well Sustainable Pumping rate – 172 gpm
Peak Daily Water Demand for Site – 44,201 gallons/day

- The quantity of groundwater to be used for the project compared to the average quantity of available groundwater indicates that pumping for the proposed project is unlikely to result in significant declines in groundwater elevations or depletion of groundwater resources over time.
- The horizontal and vertical separations between the project wells and the nearest neighboring properties are sufficient to not result in well interference. Potential impacts to nearby ephemeral watercourses are also not considered a concern to this assessment.

8.0 LIMITATIONS

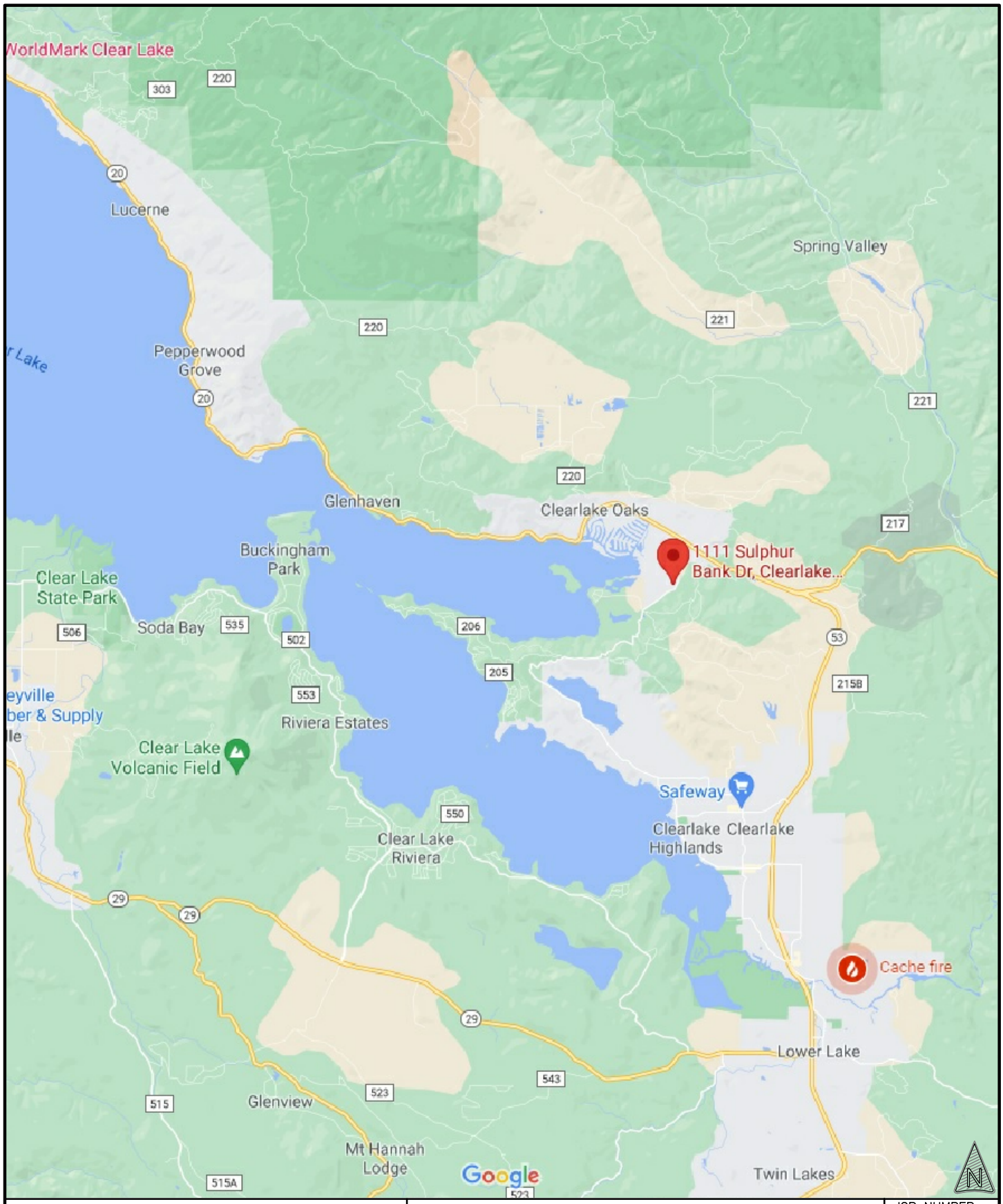
HES is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, laboratory test data and interpretations presented in this report.

Groundwater systems of Lake County are typically complex, and available data rarely allows for more than general assessment of groundwater conditions and delineation of aquifers. Hydrogeologic interpretations are based on the drillers' reports made available to us through the California Department of Water Resources, available geologic maps and hydrogeologic studies and professional judgment. This analysis is based on limited available data and relies significantly on interpretation of data from disparate sources of disparate quality.

It should be noted that hydro-geological assessments are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site evaluation. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated.

This study is not intended to assess if any soil contamination, waste emplacement, or groundwater contamination exists by subsurface sampling through the completion of soil borings and the installation of monitoring wells. The scope of work, determined by the client, did not include these activities.

This Report is for the exclusive use of Mr. Lamperti, its affiliates, designates and assignees and no other party shall have any right to rely on any service provided by Hurvitz Environmental Services without prior written consent.



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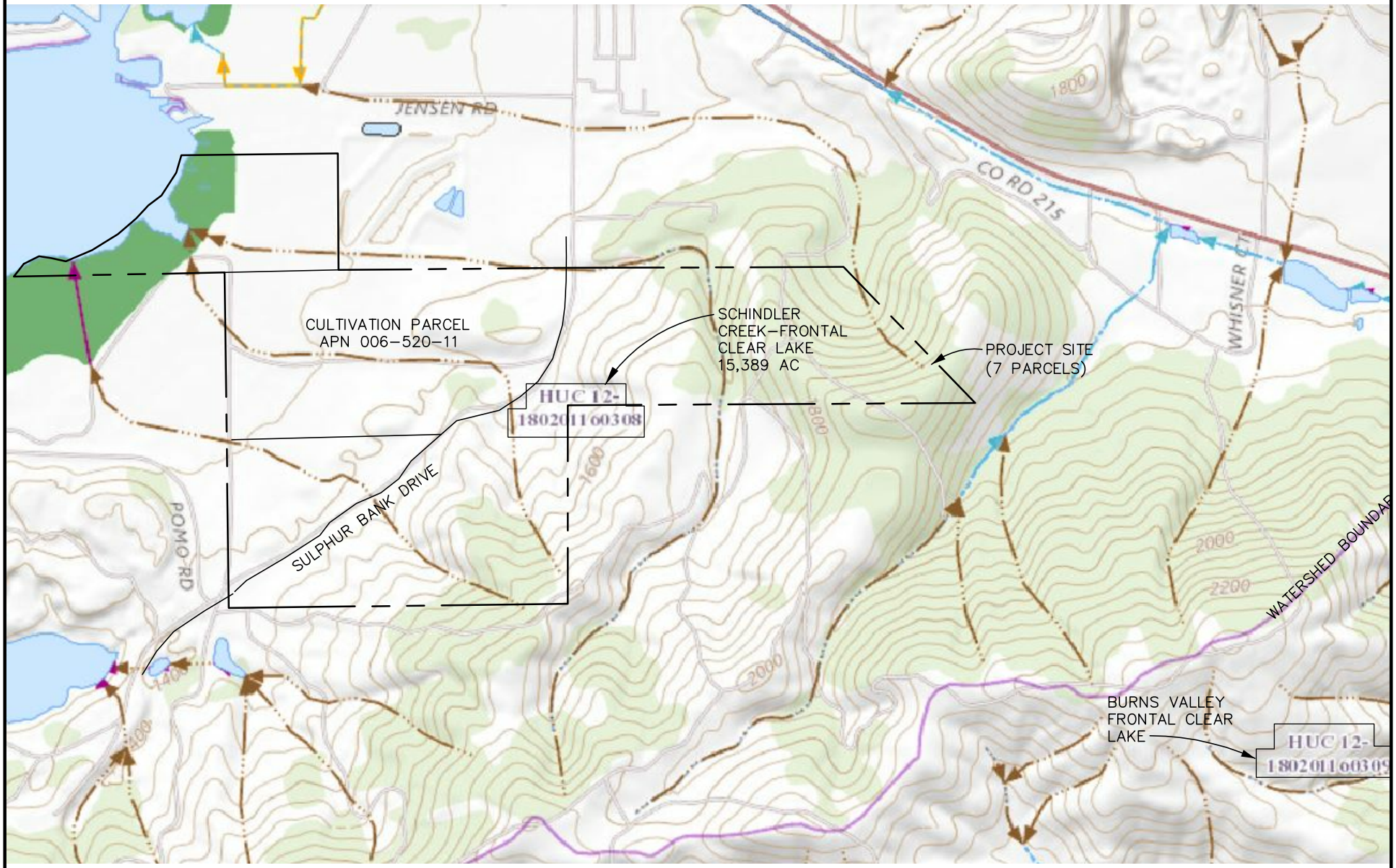
SEBASTOPOL, CA 95472
PH: 707.824.1690
FX: 707.824.2675
HURVITZ.ENVIRONMENTAL@GMAIL.COM
CA PG# 7573

SITE LOCATION MAP

1111 SULPHUR BANK DR
CLEARLAKE OAKS, CALIFORNIA 95423

JOB NUMBER: 5165.01
DATE: 8/20/21
PLATE: 1



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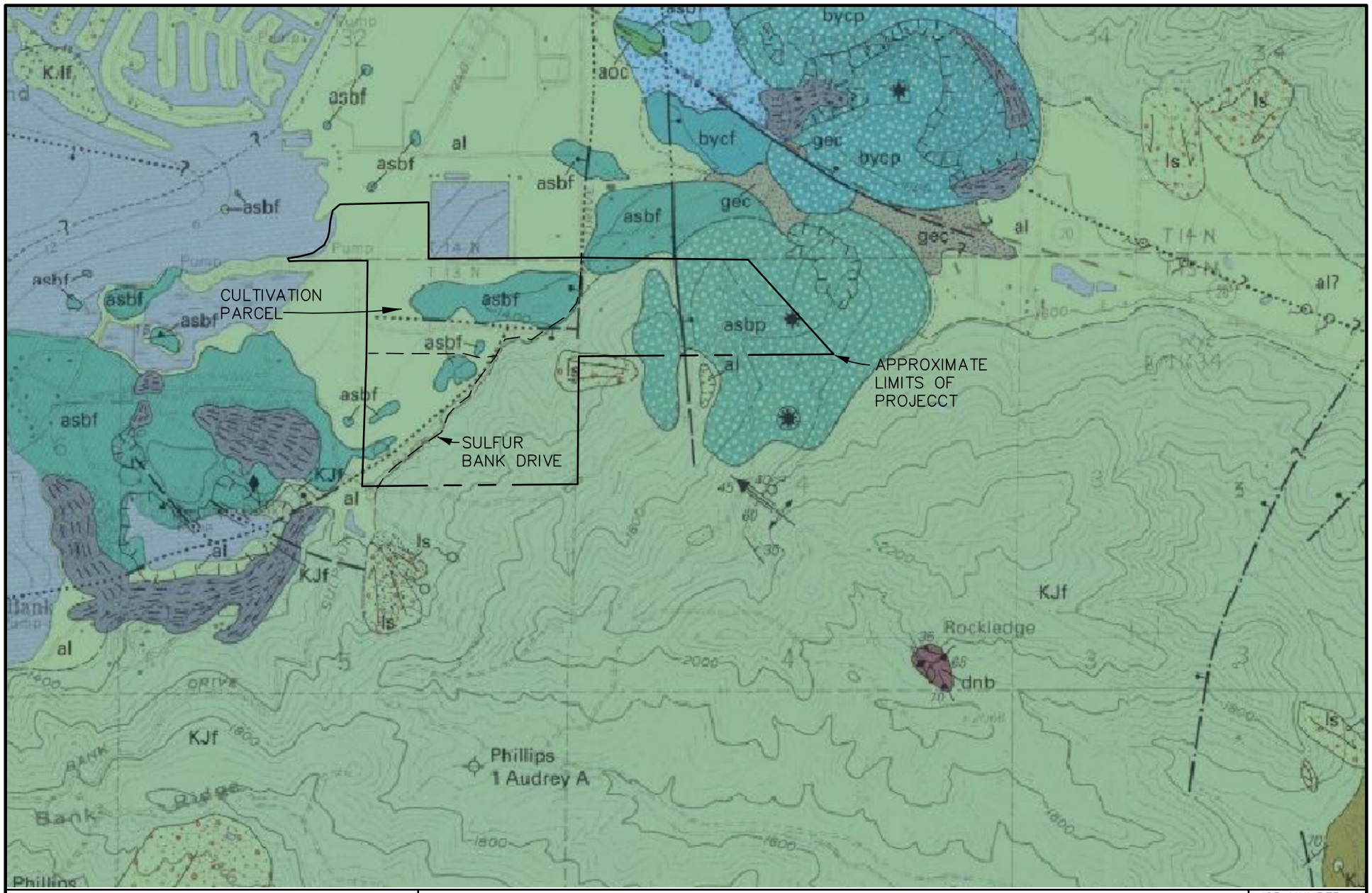
CA PG# 7573

USGS TOPOGRAPHIC MAP

1111 SULPHUR BANK DR
CLEARLAKE OAKS, CALIFORNIA 95423

JOB NUMBER: 5165.01
DATE: 8/20/21
PLATE: 2



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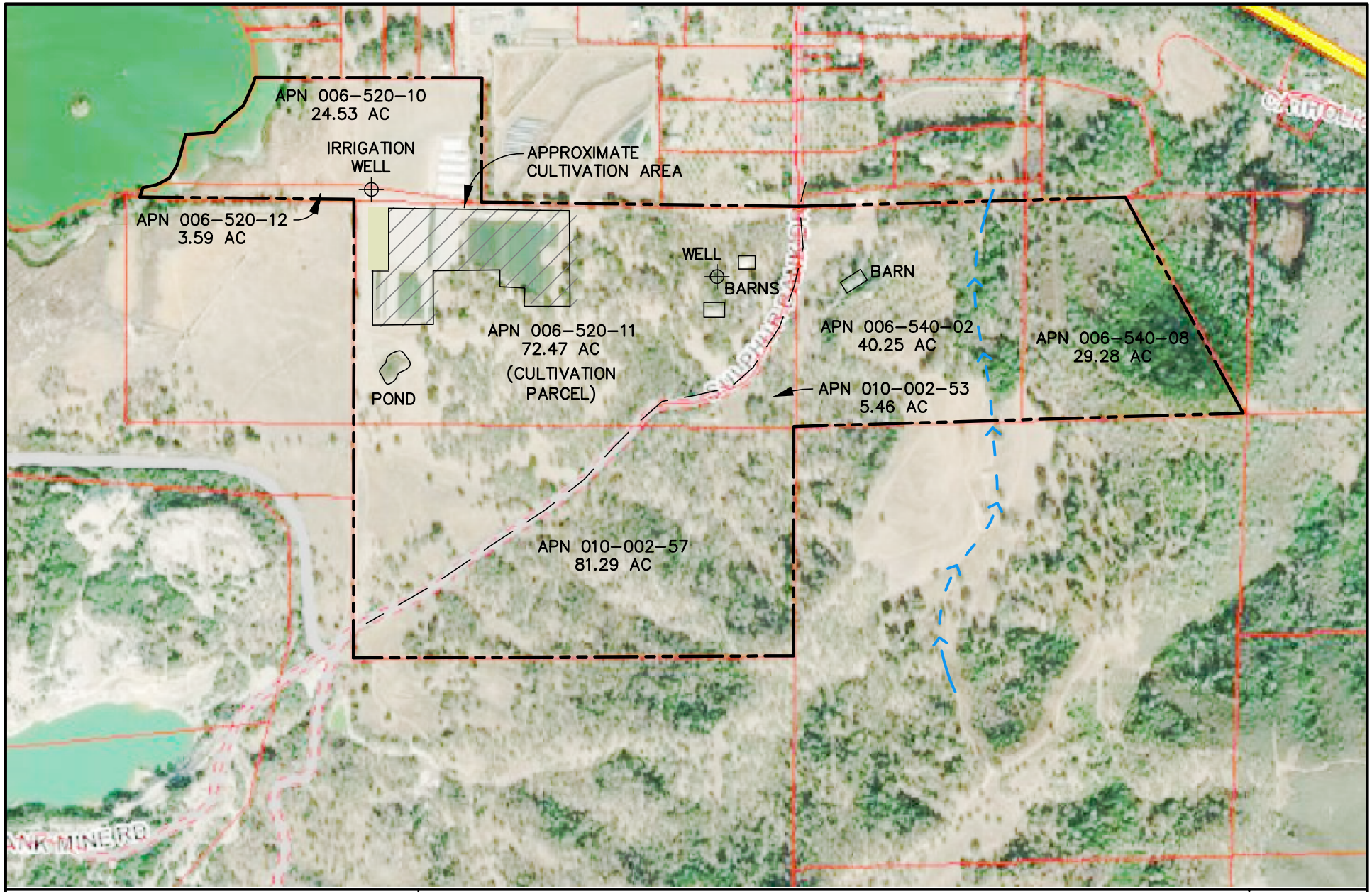
CA PG# 7573

GEOLOGIC MAP

1111 SULPHUR BANK DR
CLEARLAKE OAKS, CALIFORNIA 95423

JOB NUMBER: 5165.01
DATE: 8/20/21
PLATE: 3



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CA PG# 7573

SITE PLAN

1111 SULPHUR BANK DR
CLEARLAKE OAKS, CALIFORNIA 95423

JOB NUMBER: 5165.01
DATE: 8/20/21
PLATE: 4

APPENDIX A
SITE PHOTOGRAPHS

SITE PHOTOGRAPHS

Photo 1: View of project irrigation well.

Photo 2: View of cultivation activities on APN 006-520-11 (Cultivation Parcel).

SITE PHOTOGRAPHS

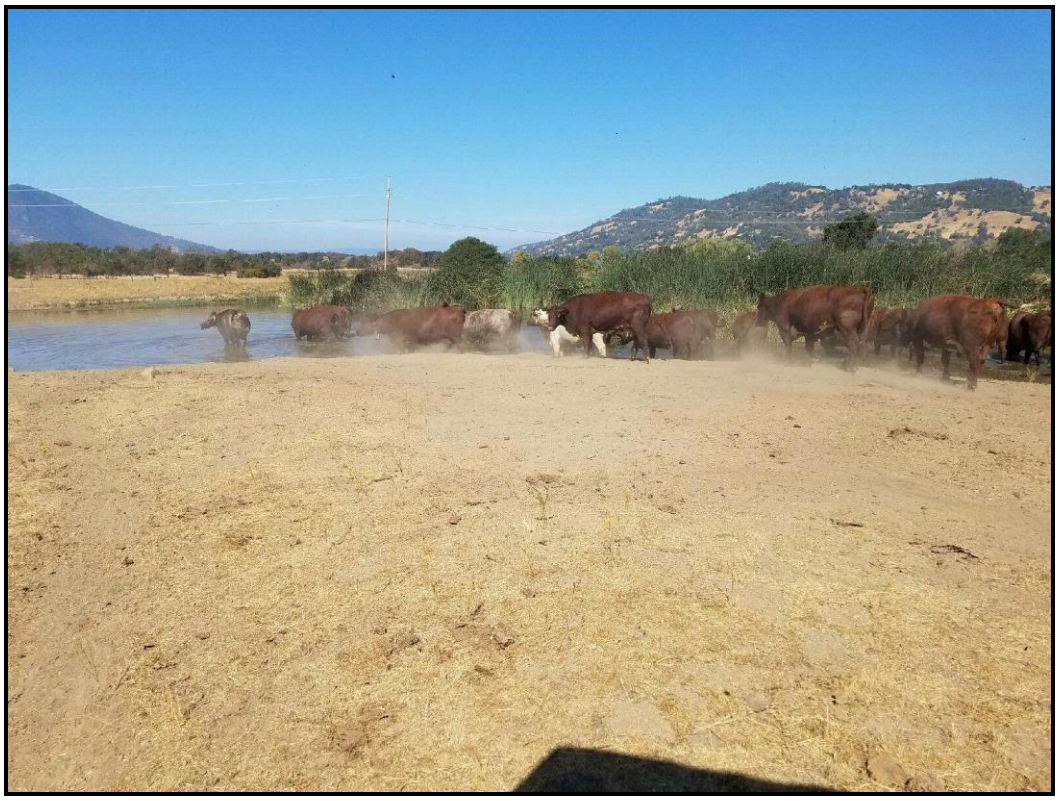
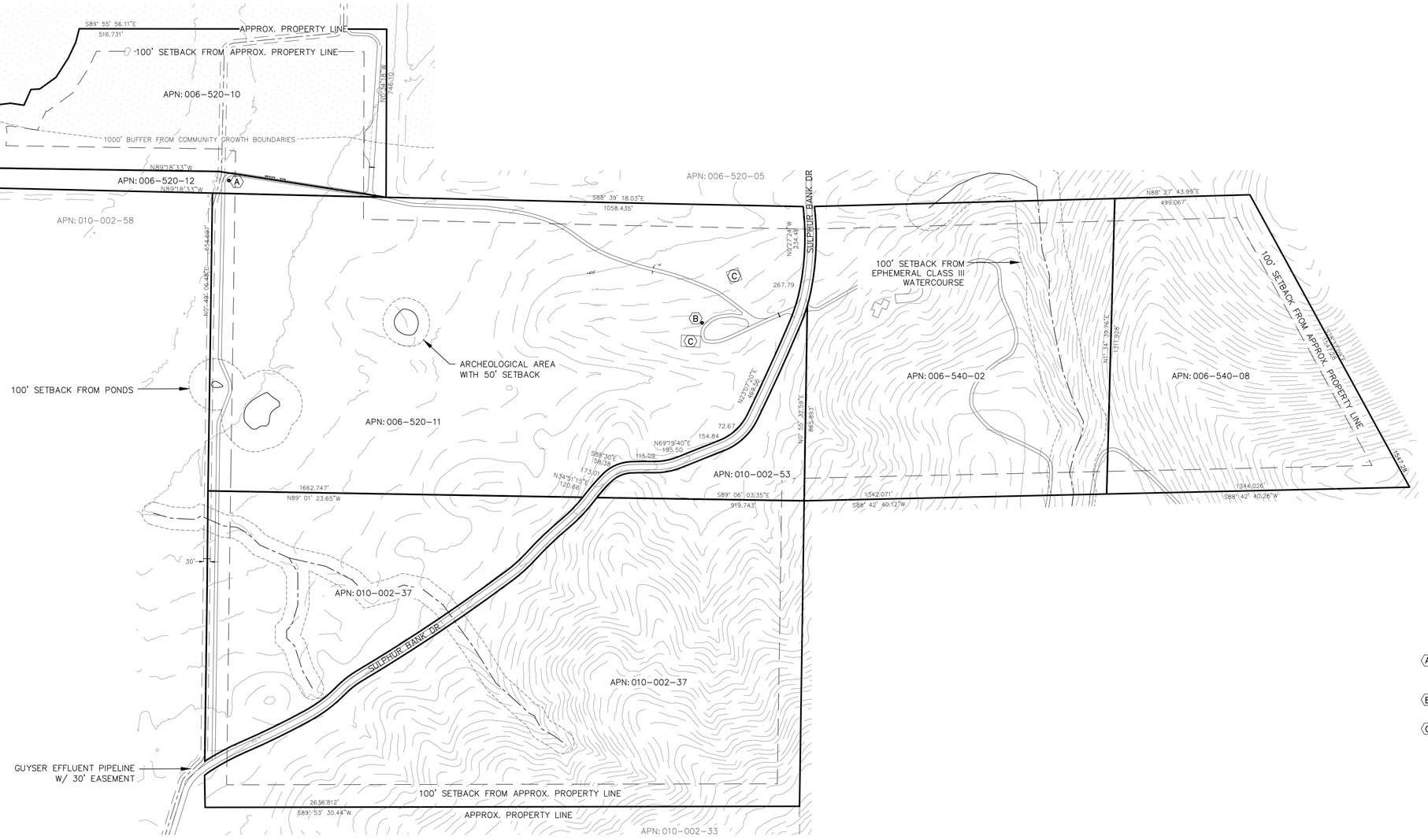


Photo #3: View of the larger of the two ponds located onsite.

Photo #4 View road crossing over ephemeral drainage located ~100-feet from the southwest corner of the cultivation area.

APPENDIX B
ENGINEERED SITE PLAN



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CLEARLAKE OAKS, CA 95423 - LAKE COUNTY
APN's: 006-520-10, 11, & 12, 006-540-02 & 08, 010-002-037 & 53

LEGEND:

1530	CONTOUR ELEVATION
	FENCE
	CREEK / SWALE
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
DWY	DRIVEWAY
(E)	EXISTING
(P)	PROPOSED
RD	ROAD
SF	SQUARE FEET

NOTES:
CONTOUR INTERVAL IS 10'

(A) (E) GROUNDWATER WELL
LAT: 39.01236°
LONG: -122.65807°

(B) (E) GROUNDWATER WELL
LAT: 39.01064°
LONG: -122.65062°

(C) (E) BARN

EXISTING CONDITIONS SITE PLAN

GRAPHIC SCALE

250 0 125 250

(IN FEET)
1 inch = 250 ft.

Revisions:

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

PLANS PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER
JASON B. VINE
No. 67800
exp06/30/23
CIVIL
STATE OF CALIFORNIA

EXISTING CONDITIONS SITE PLAN
1111 SULFUR BANK DR

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JOB NUMBER:
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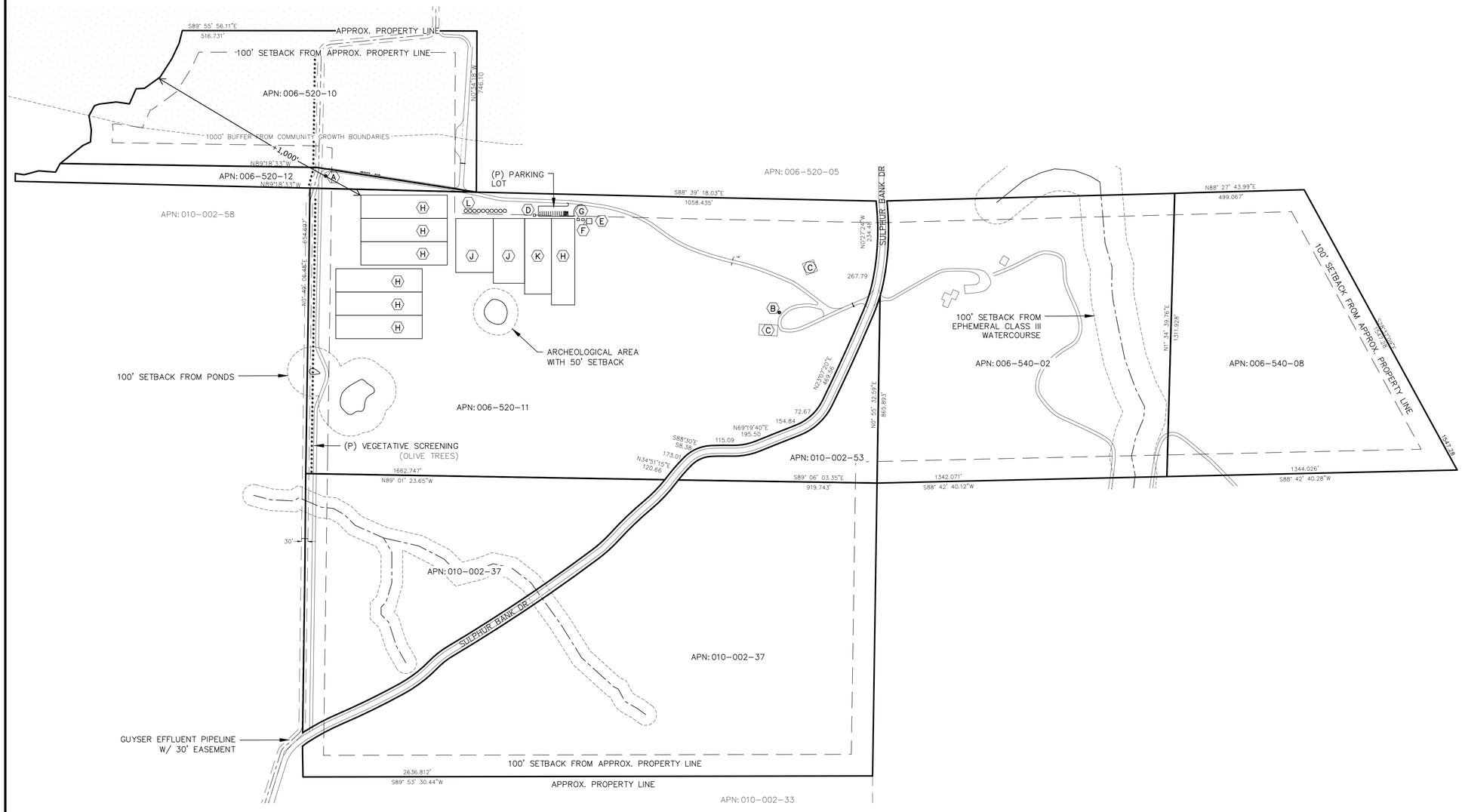

PROPOSED CONDITIONS SITE PLAN

GRAPHIC SCALE

250 0 125 250

(IN FEET)
1 inch = 250 ft.

1111 SULPHUR BANK DR.
CLEARLAKE OAKS, CA 95423 - LAKE COUNTY
APN's: 006-520-10, 11, & 12, 006-540-02 & 08, 010-002-037 & 53

LEGEND:

1530	CONTOUR ELEVATION
	FENCE
	CREEK / SWALE
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
DWY	DRIVEWAY
(E)	EXISTING
(P)	PROPOSED
RD	ROAD
SF	SQUARE FEET

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LAT: 39.01064°
LONG: -122.65062°

(C) (E) BARN

(D) (P) 10'X12' PESTICIDE & AG CHEMICAL STORAGE AREA

(E) (P) 25'X25' COMPOST AREA

(F) (P) 10'X12' SECURITY CENTER

(G) (P) DESIGNATED REFUSE AREA

(H) (P) 43,200 SF OUTDOOR CULTIVATION/CANOPY AREAS

(J) (P) 43,500 SF OUTDOOR CULTIVATION/CANOPY AREAS

(K) (P) 43,400 SF OUTDOOR CULTIVATION/CANOPY AREA

(L) (P) TEN 5,000-GALLON HEAVY-DUTY PLASTIC WATER STORAGE TANKS

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PROPOSED CONDITIONS SITE PLAN
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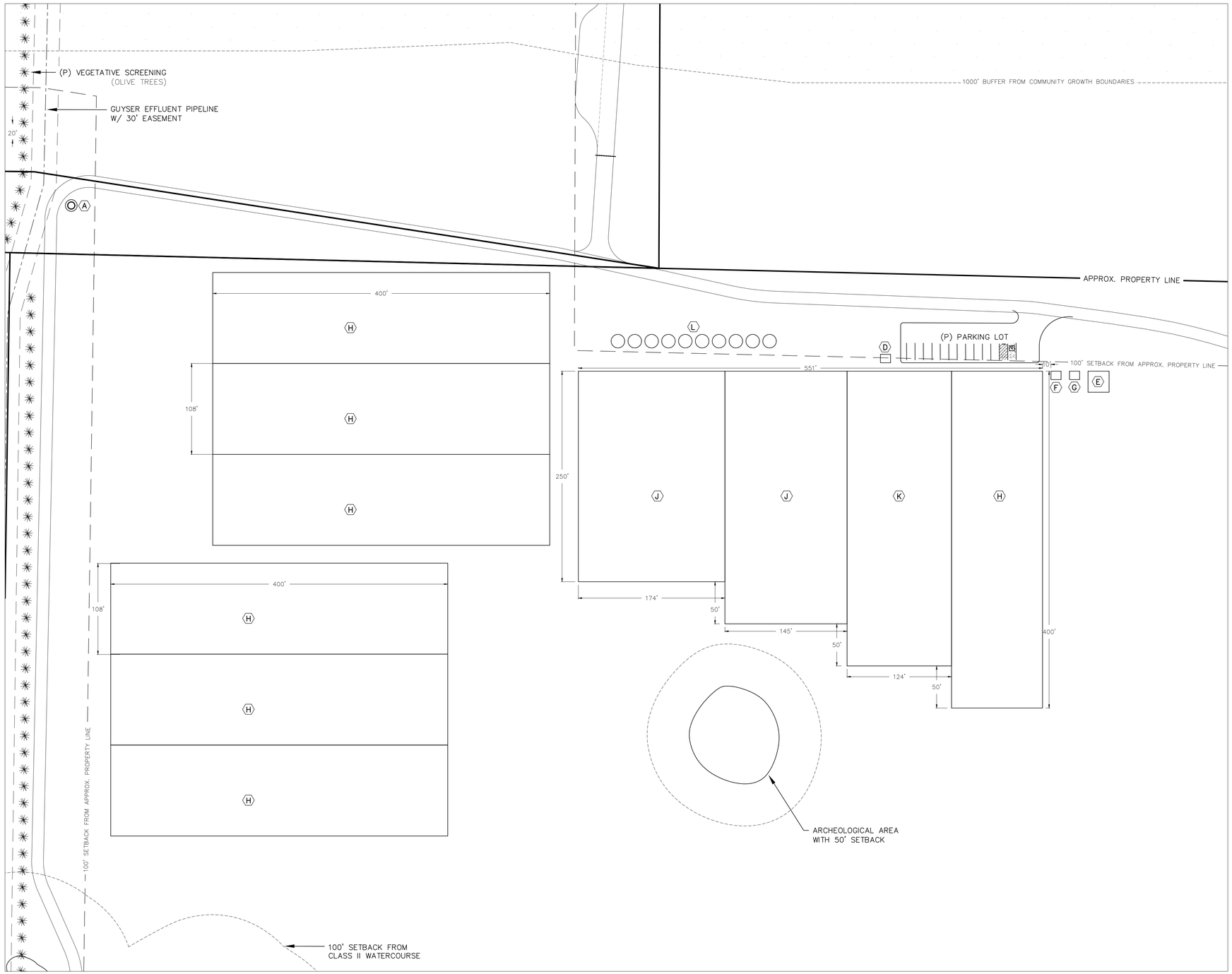

LEGEND:

1530	CONTOUR ELEVATION
	FENCE
	CREEK / SWALE
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
DWY	DRIVEWAY
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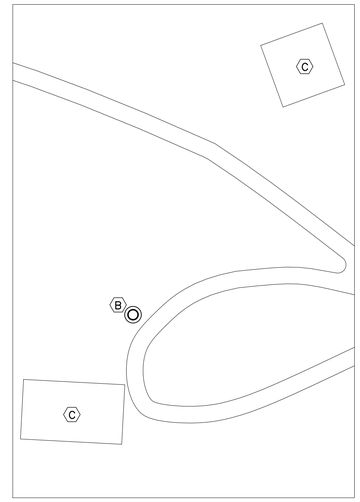
SF	SQUARE FEET



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(L) (P) TEN 5,000-GALLON HEAVY-DUTY PLASTIC WATER STORAGE TANKS

CULTIVATION SITE PLAN WITH CANOPY

GRAPHIC SCALE

60 0 30 60

(IN FEET)
1 inch = 60 ft.

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exp06/30/23
CIVIL
STATE OF CALIFORNIA

CULTIVATION SITE PLAN WITH CANOPY
1111 SULFUR BANK DR

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LAKE COUNTY

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DATE PLOTTED:
8/20/21

SCALE OF DRAWING:
SEE PLAN

JOB NUMBER:

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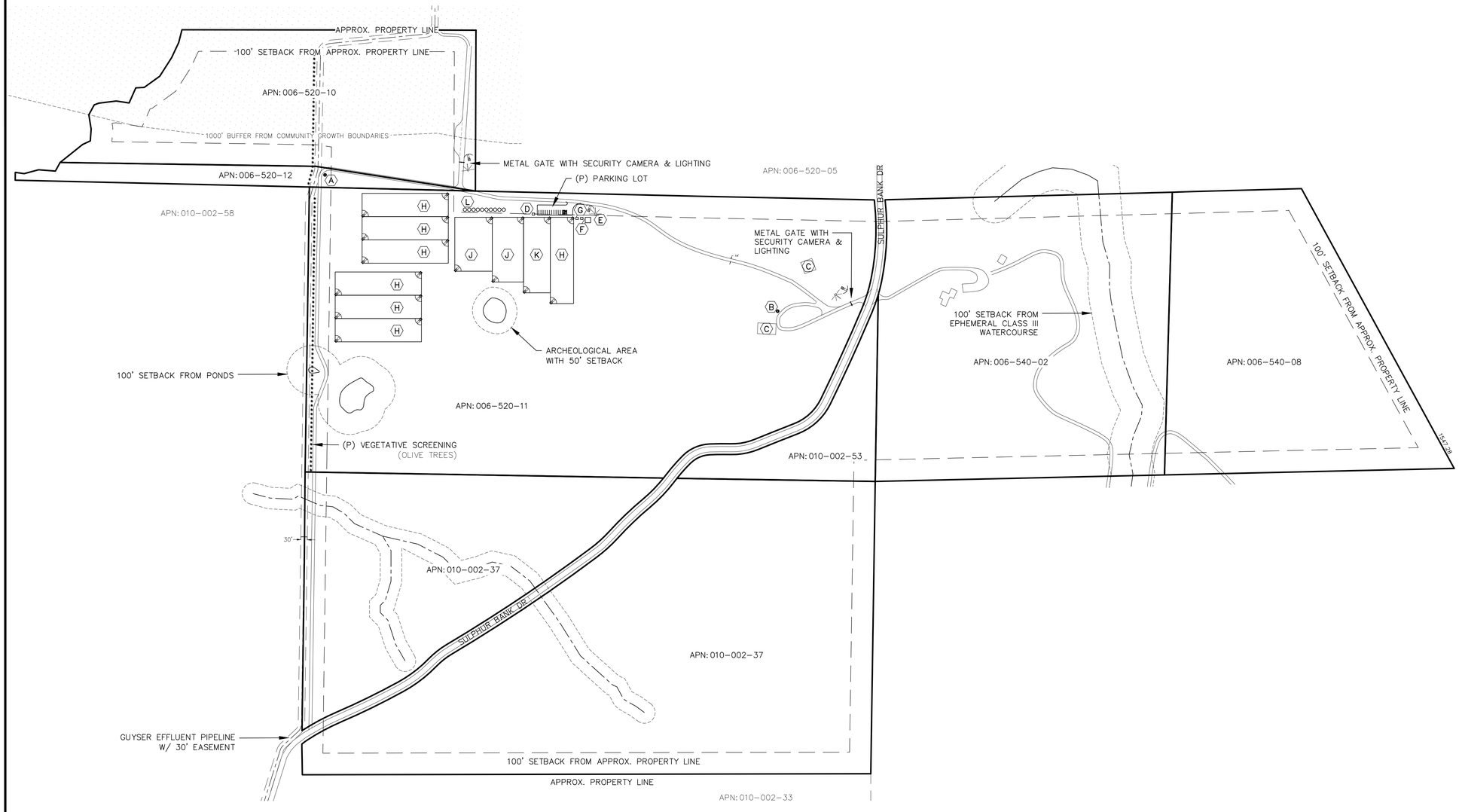

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APN's: 006-520-10, 11, & 12, 006-540-02 & 08, 010-002-037 & 53

LEGEND:

1530	CONTOUR ELEVATION
	FENCE
	CREEK / SWALE
	SECURITY LIGHT
	SECURITY CAMERA
APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
DWY	DRIVEWAY
(E)	EXISTING
(P)	PROPOSED
RD	ROAD
SF	SQUARE FEET

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(L) (P) TEN 5,000-GALLON HEAVY-DUTY PLASTIC WATER STORAGE TANKS

SECURITY SITE PLAN

GRAPHIC SCALE

250 0 125 250

(IN FEET)
1 inch = 250 ft.

Revisions:

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No. 67800
exp 06/30/23
CIVIL
STATE OF CALIFORNIA

SECURITY SITE PLAN
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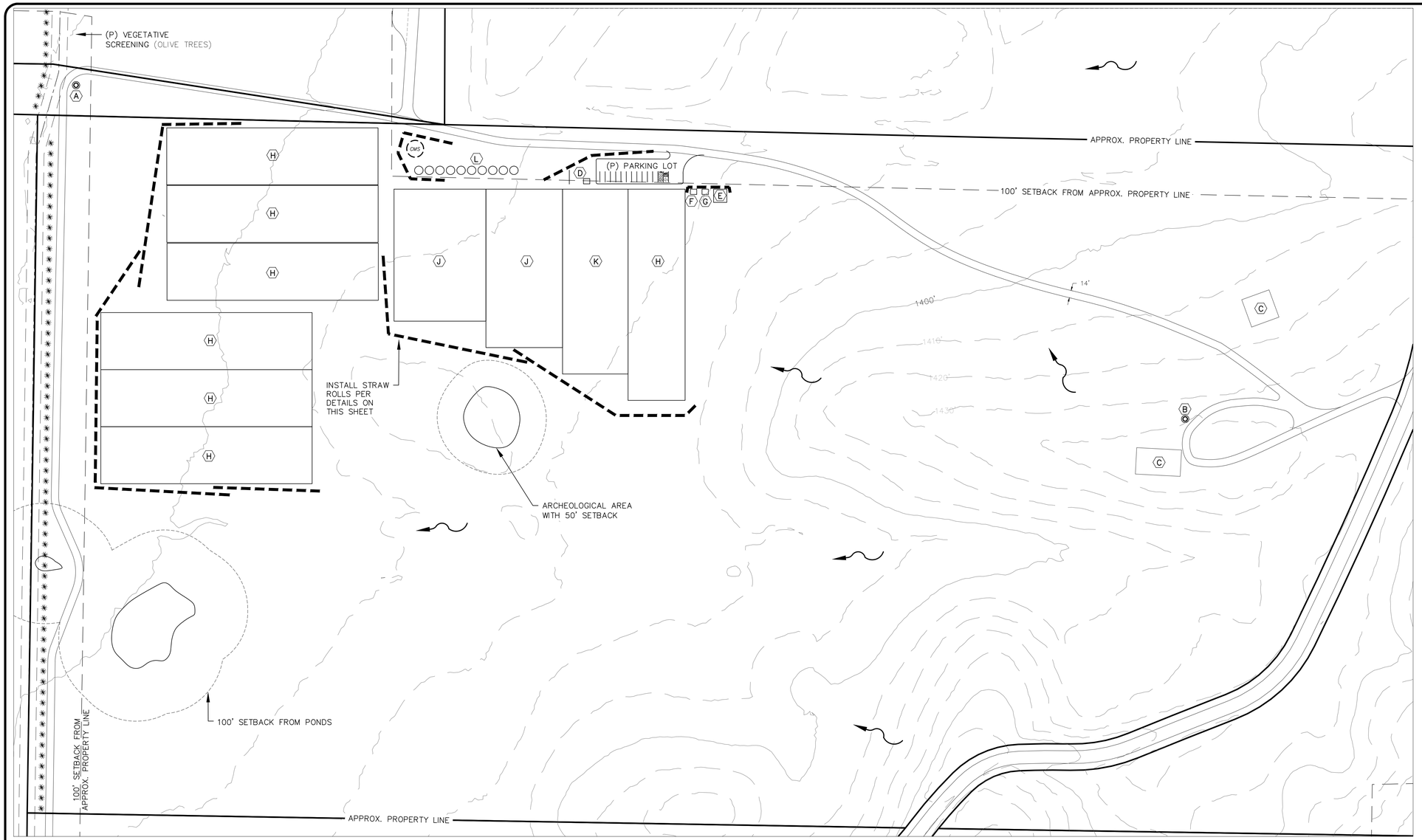

EXISTING TREES

DRAINAGE PATTERNS

STRAW ROLLS (ADJUST TO SUIT FIELD CONDITIONS)

DISCHARGE POINT

S-1 SAMPLING LOCATION

CMS CONSTRUCTION MATERIALS STORAGE AREA

LEGEND:

1530 CONTOUR ELEVATION

FENCE

CREEK / SWALE

APN	ASSESSOR'S PARCEL NUMBER
APPROX	APPROXIMATELY
DWY	DRIVEWAY
(E)	EXISTING
(P)	PROPOSED
RD	ROAD
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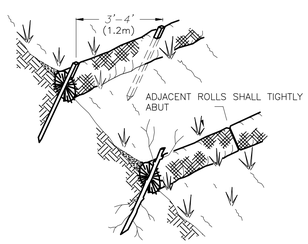
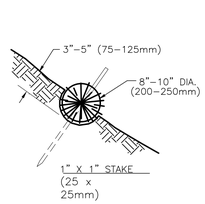
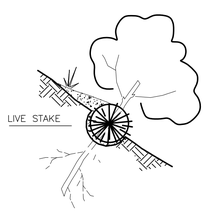
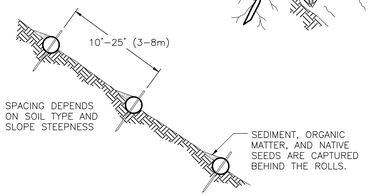
STRAW ROLL DETAILS

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









EROSION & SEDIMENT CONTROL PLAN

GRAPHIC SCALE

100 0 50 100

(IN FEET)
1 inch = 100 ft.

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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EROSION & SEDIMENT CONTROL PLAN
1111 SULFUR BANK DR

APN's:006-520-10, 11, & 12, 006-540-02 & & 08, 010-002-037 & 53
1111 SULPHUR BANK DR.
CLEARLAKE OAKS, CA 95423
LAKE COUNTY

PLOTTED BY: ---
DATE PLOTTED: 8/20/21
SCALE OF DRAWING: SEE PLAN
JOB NUMBER:
CADD FILE:
SHEET: 1

APPENDIX C
WELL COMPLETION REPORT

ORIGINAL
File with DWR

OCT 10 1996

Page ____ of ____

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

No. 445224

DWR USE ONLY — DO NOT FILL IN
13N/07W-05M
STATE WELL NO./STATION NO.
LATITUDE ____ LONGITUDE ____
APN/TRS/OTHER

Owner's Well No. ____
Date Work Began 7-24-96, Ended 8-1-96
Local Permit Agency Lake County Environmental Health Dept.
Permit No. WE 1340 Permit Date 7-24-96

GEOLOGIC LOG

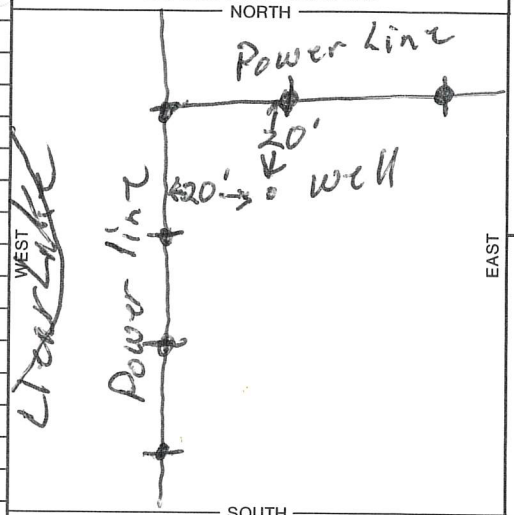
ORIENTATION (✓) X VERTICAL ____ HORIZONTAL ____ ANGLE ____ (SPECIFY)
DEPTH TO FIRST WATER 2 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0	2	Brown Soil
2	10	Brown Gravely Soil
10	22	Light Brown Gravely Clay
22	25	Sand & Gravel
25	28	Gray Clay & Gravel
28	35	Hard Black & Purple Vol. rock
35	62	Very Hard Purple Vol. rock
62	100	Very Hard Black & Purple Vol. rock, Fractured w/green Fract. Fill

TOTAL DEPTH OF BORING 100 (Feet)
TOTAL DEPTH OF COMPLETED WELL 100 (Feet)

Address 1111 Sulphur Bank Dr.
City Clearlake Oaks
County Lake
APN Book 06 Page 520 Parcel 11
or Township 13N Range 07W Section 5
or Latitude ____ DEG. ____ MIN. ____ SEC. NORTH Longitude ____ DEG. ____ MIN. ____ SEC. WEST

LOCATION SKETCH



Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)
X NEW WELL
MODIFICATION/REPAIR
____ Deepen
____ Other (Specify)
____ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

PLANNED USE(S) (✓)
____ MONITORING
WATER SUPPLY
____ Domestic
____ Public
X Irrigation
____ Industrial
____ "TEST WELL"
____ CATHODIC PROTECTION
____ OTHER (Specify)

DRILLING METHOD Mud Rotary FLUID Mud

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 5 (Ft.) & DATE MEASURED 8-1-96
ESTIMATED YIELD* 250+ (GPM) & TEST TYPE Bit-Air
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN ____ (Ft.)
** May not be representative of a well's long-term yield.*

CASING(S)

DEPTH FROM SURFACE Ft.	to Ft.	BORE-HOLE DIA. (Inches)	TYPE (✓) BLANK	SCREEN	CONDUCTOR	FILL PIPE	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)
0	30	13	X				PVC F480	8	SDR21	
30	100	11		X			PVC F480	8	SDR21	.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	20		X		
20	100				Pea Gravel

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.
OCT 3 1 1996
NAME Dan McMullen Well Drilling
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS 1487 Old Long Valley Rd CITY Clearlake Oaks STATE CA ZIP 95423
Signed Dan McMullen WELL DRILLER/AUTHORIZED REPRESENTATIVE
DATE SIGNED 8-6-96
C-57 LICENSE NUMBER 533152

WR 188 REV. 7-90

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

APPENDIX D
WELL YIELD TEST

Pumping Test Data Collection Sheet

Water System ID: WE1340	Owner: Dennis Pluth	Well Tag No.: 3
DOH Source ID:	Water System Name: Pluth Irrig.	Well Name: Lake Well
Type of Test: Pump	Conducted By: Nolan Irwin	Date: 5-22-20
Static Water Level (as measured from reference point): 16'		County: Lake
Observation Wells? Yes		Well Elevation (MSL): 1338
Distance of observation well (r) from pumped well (ft): 112'		

Time	Time (t) since pumping began (min)	Depth to Water Level (ft)	Drawdown (ft)	t/r^2	Pumping Rate (Q) (gpm)	Comments
12:01	1	16'	1		185	
	2	18'	2		180	
	3	18			180	
	4	18			180	
12:05	5	19	3		180	
	6	19			180	
	7	19			180	
	8	19			180	
	9	19			180	
12:10	10	20	4		176	
	11	20			176	
	12	20			176	
	13	20			176	
	14	20			176	
	15	21	5		176	
12:20	20	22	6		176	
	25	23	7		172	
1230	30	24	8		172	
	35	25	9		172	
	40	25			172	
12:45	45	26	10			
	50	26				
	55	26				
1:00	1:00	26				
	1:15	26				
1:30	1:30	26				
	1:45	26				
2:00	2:00	26				
2:15	2:15	26				
2:30	2:30	26				
2:45	2:45	26				
3:00	3:00	26				
3:15	3:15	26	10			

Nolan Irwin 5-22-20

Pumping Test Data Collection Sheet

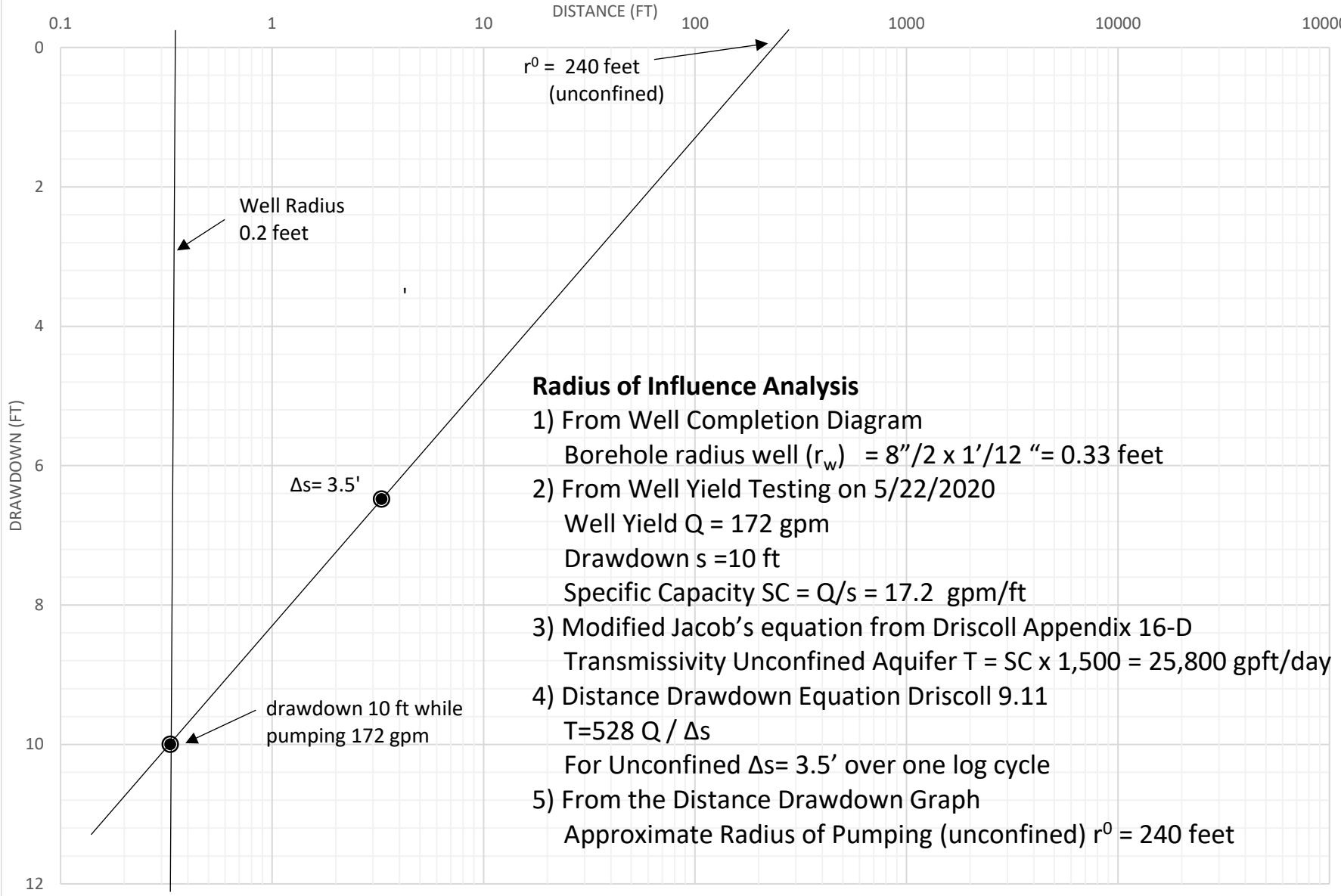
Water System ID WE1340	Owner: Dennis Pluth	Well Tag No: 3
DOH Source ID	Water System Name: Pluth Irrig.	Well Name: Lake Well
Type of Test: Pump	Conducted By: Nolan Irwin	Date: 5-22-20
Static Water Level (as measured from reference point): 16'		County: Lake County
Observation Wells? yes		Well Elevation (MSL): 1338
Distance of observation well (r) from pumped well (ft): 112'		

Time	Time (t) since pumping began (min)	Depth to Water Level (ft)	Drawdown (ft)	t/r^2	Pumping Rate (Q) (gpm)	Comments
	3:30	26	10		172	
	3:45	26	10		172	
4:00	4:00	26	10		172	
4:01	4:01	23	7		0	
	4:02	22	6		↓	
	4:03	21	5			
	4:04	20	4			
	4:05	20	4			
	4:06	19	3			
	4:07	19	3			
	4:08	19	3			
	4:09	19	3			
	4:10	18	2			
	4:11	18	2			
	4:12	18	2			
	4:13	17	1			
	4:14	17	1			
	4:15	17	1			
	4:16	17	1			
	4:17	17	1			
4:18	4:18	16	0			

Nolan Irwin 5-22-20

APPENDIX E
RADIUS OF INFLUENCE PLOTS

Appendix E Irrigation Well Radius of Pumping Influence
1111 Sulphur Bank Drive, Clearlake Oaks, CA



Radius of Influence Analysis

1) From Well Completion Diagram
   Borehole radius well (r_w) = 8”/2 x 1’/12 “= 0.33 feet
2) From Well Yield Testing on 5/22/2020
   Well Yield Q = 172 gpm
   Drawdown s =10 ft
   Specific Capacity SC = Q/s = 17.2 gpm/ft
3) Modified Jacob’s equation from Driscoll Appendix 16-D
   Transmissivity Unconfined Aquifer T = SC x 1,500 = 25,800 gpft/day
4) Distance Drawdown Equation Driscoll 9.11
   T=528 Q / Δs
   For Unconfined Δs= 3.5’ over one log cycle
5) From the Distance Drawdown Graph
   Approximate Radius of Pumping (unconfined) r^0 = 240 feet