February 4, 2025

Fulton Vineyard
c/o Drew L. Aspegren, P.E.
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SUBJECT: WATER AVAILABILITY ANALYSIS REPORT
268 PETRIFIED FOREST ROAD
CALISTOGA, CALIFORNIA
NAPA COUNTY APN 020-430-018, -019, -027
EBA Job No. 24-3623

Dear Mr. Aspegren,

EBA Engineering (EBA) is pleased to present this Water Availability Analysis (WAA) in connection with permitting services for the planned vineyard development at the subject site located at 268 Petrified Forest Road in Calistoga, California (herein referred to as the project site). The intent of this WAA is to provide required information to obtain a water use permit for the planned vineyard development in conformance to the requirements of Napa County's WAA Guidance Document, adopted May 12, 2015 (Napa County, 2015).

This WAA concludes that project site groundwater demands are less than the estimated volume of water available for groundwater recharge on the project site under average precipitation years. Further, the existing groundwater well at the project site, is located greater than 500 feet to an existing nearby well(s), is located greater than 1,500 feet to a nearby spring(s) and is located less than 1,500 to a nearby Significant Stream(s). As such, Tier 1 and 3 analyses will be evaluated in conformance with the previously outlined Napa County permitting guidance documentation.

- Well Permit Standards – Applicable Tables available on the Napa County website on the Groundwater Sustainability page;
- *Draft GSA Response to the Governor's Emergency Executive Order*, prepared by Napa County, dated June 2, 2022; and
- *WAA Guidance Document,* prepared by Napa County, adopted May 12, 2015.

1.0 BACKGROUND INFORMATION

1.1 Project Description

The project site is located off of Petrified Forest Road approximately 1.5 miles west of Calistoga in Napa County (Figure 1, Appendix A). The project site consists of three parcels that are further identified by Napa County Assessor's Parcel Number (APN) 020-430-018, 020-430-019, and 020-430-027 and are approximately 40.11-acres (AC), 40.00 AC, and 22.67 AC in size, respectively. The total deeded acreage for the project site is 102.78 AC. The parcel identified by APN 020-430-018 is currently developed with approximately 1.85 AC of existing vineyards, access roads, a small pond, and undeveloped stands of fir and oak trees. The parcel identified by APN 020-430-027 is currently covered predominantly with undeveloped stands of fir and oak trees. The parcel identified by APN 020-430-019 is currently developed with an existing well, access roads, and undeveloped stands of chaparral and fir and oak trees. A site plan illustrating the general project site features is presented as Figure 2, Appendix A. Ground elevations across the project site range from approximately 520 to 1,185 feet above mean sea level (MSL). The project site is mapped as a predominantly Boomer-Forward-Felta complex soil and Forward silt loam soil (NRCS, 2020). The Boomer-Forward-Felta complex soil has a hydrologic soil group rating that ranges from B to C and the Forward silt loam soil has a hydrologic soil group rating of C.

There is one existing water supply well that will be used for the proposed increase. This well is located on APN 020-430-019. A Well Completion Report (WCR), archived by the California Department of Water Resources (DWR), for the existing on-site well, was not found. This existing on-site well will be herein referred to as Well # 3 (No WCR). During a site visit by Ray's Well Testing Service on September 30, 2021, depth-to-water (DTW) was measured at 482 feet below top of casing (TOC) with a total well depth of 663 feet below TOC. Please refer to Figure 2 (Appendix A) for the location of Well # 3.

The proposed project consists of the installation of approximately 3.66 AC net of vineyards. Upon installation of the proposed new vineyards on the project site, water from the project well described above (Well # 3) will be used to irrigate the proposed vineyards. According to the Client, water from Well # 3 is not being used to irrigate any existing vineyards. The approximately 1.85 AC of existing vineyards, located on the project site parcel identified by APN 020-430-018, are currently irrigated with water from Well # 1 and Well # 2 located on the adjacent parcels to the west, also owned by the Client. Please refer to Figure 2 (Appendix A) for the approximate locations of the proposed vineyard areas and Figure 3 (Appendix A) for the approximate locations of Well # 1 and Well # 2.

1.2 Hydrogeologic Setting

The Coast Ranges geomorphic province encapsulates the greater north bay area with northwest-trending ridges and valleys that run subparallel to the San Andreas Fault Zone. Regional geology surrounding the project site has been mapped to generally consist of Modern to Pliocene aged sedimentary deposits underlain by Pliocene aged Sonoma

Volcanics (California Geological Survey [CGS], 2013). These sedimentary formations are expected to be shallow, consisting of conventional deposits of clays, silts, sands, and colluvium, and are expected to be underlain by the Tuff of Petrified Forest (Tstp) formation that consists of silicic tuff, tuff breccia, and agglomerate, with several intercalated andesitic to dacitic lava flows (Figure 4, Appendix A). An unnamed and approximately located fault trending northwest/southeast is mapped through the northern portion of the project site.

EBA performed a literature search of WCRs archived by the California Department of Water Resources and Environmental Permitting documentation archived within the Napa County Electronic Document Retrieval database. The scope of the research encompassed available records for wells located within a 500-foot radius of the project site. Publicly available septic system design drawings were used to further identify well locations on neighboring properties. After EBA personnel conducted a site visit and a literature search, no water supply wells were identified within 500 feet of Well # 3. Please refer to Figure 3 (Appendix A) for an illustration of all identified well locations and Appendix B for the respective WCRs.

WCRs maintained by the DWR for nearby wells are consistent with mapped geology, wherein drillers described encountering predominantly ash, clay, and embedded rock from the ground surface to the maximum depths explored. Groundwater is contained within rock fractures, which are expected to have a wide range of transmissivity values depending on the extents of fracture networks. Reported well yields in nearby wells completed in Sonoma Volcanics range from 13 to 88 GPM. According to Bulletin 118-4 (CDWR, 1975 and 1982), Sonoma Volcanic formation groundwater yields range from slight to moderate and have specific yields ranging from 0 to 15 percent. Please refer to Figure 4 (Appendix A) for a map of the geology in the vicinity of the project site.

The lithology at the project site, observed by EBA during a recent site visit, was consistent with regional mapping.

A mapped Significant Stream, Cyrus Creek, is located approximately 940 feet to the south of Well # 3, at its closest location. Please note that the distance from Well # 3 to the closest location on Cyrus Creek is based on Cyrus Creek mapped on United States Geological Survey (USGS) topographic map (USGS, 1958). Cyrus Creek is located approximately 1,223 feet to the east of Well # 3, at its closest point, as mapped on the Napa County Planning, Building, & Environmental Services Department (PBES) Map Explorer (Napa County, 2024). Given that Cyrus Creek is closer to Well # 3 as mapped by the USGS, EBA assumed as a conservative measure, that Cyrus Creek is located approximately 940 feet to the south of Well # 3. Please refer to Figure 3 (Appendix A) for a map of the project site in relation with Cyrus Creek.

1.3 Local Climate

After correspondence with Raulton Haye at the County of Napa, in response to the Engineering Division's memorandum dated January 15, 2025, it was agreed that the

following 10-year average annual rainfall for the subject parcels would remain as described below. Review of published data by the Parameter-Elevation Regressions on Independent Slopes Model (PRISM) Climate Group, indicates the 10-year (2012 – 2021) average annual rainfall in the vicinity of the project site as defined by correspondence with Napa County is 36.06 inches per year (Prism, 2024). EBA understands the 10-year rainfall is considered average as defined by correspondence with Napa County. The 10-year data were evaluated using the 4 km spatial resolution and the interpolate grid cell values function.

Mean annual potential evapotranspiration (ET_o) was estimated to be 49.08 inches per year based on reference ET_o tables for Oakville provided in the California Irrigation Management Information System (CIMIS) Reference Evapotranspiration Website (CIMIS, 2024).

2.0 EXISTING AND PROPOSED ON-SITE GROUNDWATER DEMANDS

Existing and proposed water demands were estimated based on the *WAA Guidance Document*. Water demand estimates are provided in acre-feet per year (AFY).

2.1 Existing Groundwater Demand

The existing water demand was estimated to be 0.93 AFY (Appendix C). Existing water use is associated with approximately 1.85 AC of existing vineyards. Annual existing vineyard irrigation was estimated to be 0.93 AFY, with an application rate of 0.50 AFY per AC of vineyard. Please refer to Table 1 below for a summary of existing water demands and Table 1 *Existing/Proposed Water Usage* in Appendix C for a detailed accounting of the existing water demand calculations.

TABLE 1 – EXISTING WATER DEMANDS

Water Use	***Water Use Estimation Criteria***	***Water Demand (AFY)[1]***
Vineyard Irrigation (1.85 Acres)	0.50 AFY[1] per Acre	0.93
	TOTAL	**0.93**

[1] AFY: Acre-Feet per Year

2.2 Proposed Groundwater Demand

The proposed project would increase the estimated existing annual demand by 1.83 AFY (Table 2 on the following page). Annual proposed vineyard irrigation was estimated to be 1.83 AFY, with an application rate of 0.50 AFY per AC of vineyard. Please refer to Table 1 *Existing/Proposed Water Usage* in Appendix C for a detailed accounting of the proposed water demand calculations.

TABLE 2 – PROPOSED WATER DEMANDS		
Water Use	***Water Use Estimation Criteria***	***Water Demand (AFY)[1]***
Vineyard Irrigation (3.66 Acres)	0.50 AFY[1] per Acre	1.83
TOTAL		**1.83**

[1] AFY: Acre-Feet per Year

The total existing and proposed groundwater demand for the project site was estimated to be 2.76 AFY (Appendix C). Please note that for the sake of this analysis, all existing and proposed groundwater demand will be pumped from Well # 3.

3.0 GROUNDWATER RECHARGE ANALYSES

3.1 Project Site Groundwater Recharge Methodology

After correspondence with Raulton Haye at the County of Napa, in response to the Engineering Division's memorandum dated January 15, 2025, it was agreed that the following groundwater recharge analyses be evaluated based on the deeded acreage of the project site parcels. The following evaluations are based on the deeded 102.78 AC size.

EBA analyzed the project site groundwater budget by comparing estimated inflows and outflows from the fractured-rock aquifer complex. The volume available for recharge was estimated based on precipitation as the principal source of inflow while outflows were estimated based on run-off, evapotranspiration, canopy interception, and spring losses. While secondary sources of inflow (such as upgradient boundary flow), and secondary sources of outflow (such as downgradient boundary flow, and surface-water-groundwater interaction) potentially contribute to the groundwater budget, they are assumed to be equal and resultant in no net gain or loss. Based on this approach, the following equation was used to calculate potential volume of water available for recharge:

$$\textit{Volume of Water Available for Recharge} = P - (R + ET_a + E_{CI} + S)$$

where "P" is equal to precipitation (in acre-feet per year [AFY]), "R" is equal to run-off (in AFY), "ET_a" is equal to actual evapotranspiration (in AFY), "E_{CI}" is equal to evaporative losses related to canopy interception (in AFY) and "S" is equal to spring flow (in AFY). The groundwater recharge analysis was performed during average precipitation years (10-year period from 2012 to 2021). Details regarding the calculation of each of these variables are presented below.

Precipitation (P)

The total volume of precipitation that falls within the area of the project site was calculated by multiplying the average annual precipitation rate (36.06 inches per year) by the sum of the area of the project site (102.78 AC). The total annual precipitation over this area corresponds to approximately 308.85 AFY during average precipitation years.

Run-off (R)

The percentage of the total precipitation that results as outflow (i.e., run-off) was estimated by comparing the ground slopes within the project site to run-off coefficients (RCs) for various types of developed and natural settings (Napa County Road & Street Standards, 2023). In general, slope surfaces were separated by areas identified as "low" (0 to 5 percent), "normal" (5 to 10 percent), "high" (10 to 30 percent), and "extreme" (greater than 30 percent). In this regard, the relative percentages of slopes within the project site that align with these categories are approximately 0, 2, 36, and 62 percent, respectively. These areas, in turn, were further separated by the types of settings. Table 3 below provides a breakdown of the setting types and range of RCs used in the analysis:

TABLE 3 (PROJECT SITE)
RUNOFF COEFFICENTS AND AREAS

Land Type	*Area (AC)*	*Runoff Coefficient (RC)*
Woodlands (Oak/Fir/Chaparral)	95.04	0.31 – 0.50
Vineyards (existing + proposed)	5.51	0.33 – 0.41
Disturbed Area	1.13	0.50 – 0.60
Access Roads	1.00	0.75 – 0.80
Pond	0.10	-
TOTAL	**102.78**	-

Using the aforementioned variables, the annual run-off volume for each area was calculated by multiplying the respective areas by the annual precipitation volume, followed by multiplying the corresponding products by the applicable RC. Please note that the acreages summarized in Table 3 correspond to future land use of the project site parcels. The summation of all the area run-off volumes equates to the total annual run-off volume for the entire project site. The average annual run-off volume was calculated to be approximately 143.79 AFY during average precipitation years.

Actual Evapotranspiration (ET_a)

As previously noted in Subsection 1.3 (*Local Climate*), the mean annual potential evapotranspiration (ET_o) for the area is estimated to be 49.08 inches per year, which translates to a total ET_o volume of approximately 455.95 AFY within the area of the project site parcels. Actual Evapotranspiration (ET_a) in turn, was calculated using a Water Use Classification of Landscape Species (WUCOLS) site specific model as described in *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California* (UC

Cooperative Extension, 2000). The WUCOLS model estimates ET_a for the native vegetation and landscaping. A review of aerial photography was utilized to determine appropriate species factors (K_S) and density factors (K_D) as outlined in the WUCOLS Guidance Documentation. A microclimate factor (K_{MC}) of 1 was selected based upon review of available climate data. Resulting landscape coefficients (K_L) were then multiplied by respective unit areas to determine an estimated ET_a for these vegetation types within the project site parcel.

Proposed vineyard ET_c (Crop Evapotranspiration) was calculated in general accordance with methodologies described in the *California Crop and Soil Evapotranspiration for Water Balances and Irrigation Scheduling/Design* (CDWR, 2003). A vineyard crop density of 60 percent cover was assumed. The reference crop evapotranspiration value for this crop type, crop cover, and region is 27.23 inches per year during typical years. The evapotranspiration demand is provided by the evapotranspiration from effective precipitation in addition to evapotranspiration from applied water. As such, the amount of applied water reported for the vineyard (0.50 AFY per AC), was subtracted from the reference crop evapotranspiration value (CDWR, 2003) to yield a unit crop evapotranspiration value due to effective precipitation alone (unit ET_c). Note the unit ET_c equates to the volume of precipitation across the project site parcel that will be lost by evapotranspiration and not available for groundwater recharge. ET_a for existing vineyard was calculated by multiplying the unit ET_c by the associated acreage of vineyard. These calculations for vineyard ET_a were performed during average precipitation years.

The total ET_a within the project site parcels was then calculated to represent approximately 66.81 AFY during average precipitation years.

Canopy Interception (EC_I)

Canopy interception corresponds to the fraction of rainfall that is intercepted by the canopy of trees and shrubs and subsequently lost to evaporation. This fraction was estimated using equations developed by Helvey and Patric (Helvey & Patric, 1965) that utilize gross rainfall, throughput (i.e., rainfall that reaches the ground through spaces in the vegetative canopy and as drip from leaves, twigs, and stems), and stemflow (i.e., rainfall that is caught on the canopy and reaches the ground by running down stems) variables. The calculation excluded grassland, vineyard, surface water bodies, pavement, and roof areas as the fraction of canopy interception for these areas is assumed to be negligible or not applicable. All other areas within the project site covered by tree canopy (approximately 95.04 AC) were subjected to canopy interception losses. Canopy interception loses were calculated to be approximately 16.85 AFY during average precipitation years.

Springs (S)

Published data regarding spring flow discharges in the area were not available (Napa County, 2022a). EBA did not identify any potential spring locations during our field reconnaissance.

Water Budget Results

Using each of the calculated values in the groundwater recharge equation, the corresponding estimated volume of water available for groundwater recharge on the project site is approximately 81.40 AFY during average precipitation years. The proposed groundwater demand for the project site is 2.76 AFY. Based on the estimated groundwater demand of 2.76 AFY, this total groundwater use equates to approximately three percent of the water available for recharge in the area of the project site during average precipitation years. Results from the project water budget analysis are summarized in Tables 4 below.

TABLE 4
RESULTS FROM PROJECT SITE RECHARGE CALCULATIONS
AVERAGE RAINFALL YEAR

Description	***Inflow/Outflow***	***Volume (AFY)***
Precipitation	Inflow	+ 308.85
Run-off	Outflow	- 143.79
Actual Evapotranspiration	Outflow	- 66.81
Canopy Interception	Outflow	- 16.85
Springs	Outflow	-
TOTALS	-	***81.40***

AFY: Acre-Feet per year.

4.0 WELL CHARACTERISTICS

4.1 Daily Water Demand

In accordance with the estimates outlined earlier, the projected total annual groundwater use for the proposed project is 2.76 AFY. The total annual groundwater use for the existing and proposed vineyards of 2.76 AFY (899,349 gallons) is equivalent to a maximum daily water demand of approximately 4,996 gallons per day (GPD), assuming a growing season of 180 days. Therefore, the total annual groundwater use for the proposed project of 2.76 AFY is equivalent to a maximum daily water demand of approximately 4,996 GPD.

4.2 Pumping Rate and Duration

As presented above, the daily water demand is approximately 4,996 GPD. Whereas the demand would likely occur intermittently throughout the day, the total volume was assumed to be pumped at one time as a conservative measure.

As previously mentioned, there are two existing wells (Well # 1 and Well # 2) that are used for irrigation of the existing vineyard on the project site. Well # 3 is proposed to be used for the proposed increase. With that being said, EBA will assume that Well # 3 will be used for all irrigation pumping as a conservative measure. The pumping duration required to meet the maximum daily water demand was estimated based on the average corrected yield (36 GPM) from the data collected from the WCRs of water supply wells located in close proximity to the project site. An 80 percent multiplier was applied to the yield data to account for well inefficiency (assumed). As previously noted, a WCR was not found for the project well (Well # 3). Given the proximity of Well # 3 to the nearby wells completed in predominantly Sonoma Volcanics, EBA assumed Well # 3 was completed in similar lithology as the water supply wells located in close proximity to the project site.

At an average conservative pumping rate of 36 GPM, approximately 139 minutes of pumping is required to reach the maximum daily water demand. Based on known drawdown and recharge characteristics of wells in the vicinity of the project site, it is likely that Well # 3 will be solely capable of providing water supply for the proposed project. However, it should be noted that actual yield verification and pumping tests of Well # 3 have not been performed. As such, actual yield values for Well # 3 may not be substantial enough to provide for the proposed increase. As previously mentioned, it should be noted that the analysis conducted herein regarding stream depletion assumes that all groundwater will be pumped from Well # 3.

4.3 Aquifer Transmissivity

Determination of aquifer transmissivity was accomplished using available data from the WCRs of water supply wells screened in lithology (Sonoma Volcanics), Well # 3 is assumed to be completed in. The average corrected yield (36 GPM) and average drawdown (145 feet) data recorded in the WCRs was used in empirical transmissivity equations published in the *Groundwater and Wells* (Driscoll, 1986) and the *Manual of Applied Field Hydrogeology* (Weight & Sonderegger, 2001). The methods used to calculate transmissivity are presented below:

Method I:

$$\frac{Q}{s} = \frac{T}{2000}$$

for a confined aquifer, where "Q" is discharge rate (GPM), "s" is feet of drawdown in the well, and "T" is transmissivity (gallons per day per foot [GPD/ft]). For the purpose of this analysis, the aquifer is assumed to be partially confined based on the description given by the well driller at the time of well installation. The corresponding results from the calculation indicated a transmissivity value of 497 GPD/ft (66.4 square feet per day [ft^2/day]).

Method II:

$$T = 38.9(Sc)^{1.18}$$

where T = transmissivity (ft^2/day)
Sc = specific capacity (gallons per minute per foot)

The specific capacity was defined as the quotient of 36 GPM as the pumping rate and the measured drawdown of 145 feet. The corresponding results from the calculation indicated a transmissivity value of approximately 7.52 ft^2/day (56.2 GPD/ft).

Based on the methods used above, aquifer transmissivity estimated from water supply wells in the vicinity of the project site ranges between approximately 56.2 and 497 GPD/ft.

4.4 Aquifer Storage Coefficient

Aquifer characteristics were based on WCR data and literature values. As discussed previously in *Section 4.3*, a range of aquifer transmissivity values were calculated using available data from the WCRs and empirical transmissivity equations. A range of aquifer storage coefficient values were also calculated, using available data from the WCR data and literature values. EBA calculated an approximate range of aquifer storage coefficient values by multiplying the range of specific storage values (Fissured Rock, $1.0x10^{-6}$ to $2.1x10^{-5}$) provided on Table F-3 in Appendix F of the *WAA Guidance document* by the approximate saturated aquifer thickness in the project site area. The saturated aquifer thickness (642 feet) in the project site area was estimated based on the average static groundwater level and the deepest well completion depth from values recorded on WCRs of wells located in close proximity to the project site. This corresponds to storage coefficient values ranging from 0.00064 to 0.013. In an effort to further refine the estimated transmissivity and storage coefficient values, EBA integrated the ranges presented above into the Theis equation in order to further calibrate the transmissivity and storage coefficient as observed in the wells in the area.

5.0 SURFACE WATER DEPLETION FROM GROUNDWATER PRODUCTION

Tier 3, outlined in the *WAA Guidance document* and the *Well Permit Standards – Applicability Tables,* requires that a groundwater/surface water interaction evaluation be conducted for an increase in groundwater use, for a project with an existing well(s) located within 1,500 feet of a Significant Stream(s). As previously mentioned, a mapped Significant Stream, Cyrus Creek, is located approximately 940 feet to the south of Well # 3, at its closest location. Please note that the distance from Well # 3 to the closest location on Cyrus Creek is based on Cyrus Creek mapped on USGS topographic maps. Cyrus Creek is located approximately 1,223 feet to the east of Well # 3, at its closest point, as mapped on the Napa County Planning, Building, & Environmental Services Department (PBES) Map Explorer (Napa County, 2024). Given that Cyrus Creek is closer to Well # 3 as mapped by the USGS, EBA assumed as a conservative measure, that Cyrus Creek is

located approximately 940 feet to the south of Well # 3. Please refer to Figure 3 (Appendix A) for a map of the project site in relation with Cyrus Creek.

According to the *WAA Guidance document,* "streamflow depletion will be calculated using industry standard methods appropriate to the aquifer under consideration; such methods include the Hantush Equation applicable for aquifers hydraulically connected with surface waters (Hantush, 1965)." EBA used the web-based United States Geological Survey (USGS) STRMDEPL08 tool to characterize streamflow depletion from a nearby pumping well (USGS, 2022). As outlined in *Section 4.0,* EBA refined the estimated transmissivity and storage coefficient values by integrating the ranges into the Theis equation to further calibrate the transmissivity and storage coefficient. Distance drawdown output results of the Theis equation suggest that drawdown from the pumping of Well # 3 should not extend past a linear distance of 220 feet when pumping at a rate of 36 GPM for one day. Please refer to *Section 4.0* above for a description of the calculations for the model parameter values, storage coefficient, and transmissivity.

The following assumed parameter values were input into the model:

- Distance between Well # 3 and Cyrus Creek (940 feet);
- Transmissivity value of 290 GPD/ft (38.8 ft^2/day);
- Storage coefficient value of 0.013;
- Streambed Leakance value of 100 feet;
- A pumping rate of 36 GPM, as per the average of the corrected yields reported on nearby WCRs; and
- A pumping duration of 1 day.

EBA utilized the aquifer transmissivity of 38.8 ft^2/day and the aquifer storage coefficient of 0.013 in the streamflow depletion model based on the calibration using the Theis equation as outlined in Subsection 4.4. The results of the streamflow depletion model does not indicate stream depletion at a distance of approximately 940 feet from the project well (Well # 3).

Based on the aforementioned calculations, it is EBA's opinion that pumping from the project well (Well # 3) well will not contribute to streamflow depletion in Cyrus Creek. Furthermore, the distance drawdown calculation using the Theis equation presented above suggests no drawdown from the pumping well at a distance of 220 feet which correlates with the Hantush Equation.

6.0 CONCLUSIONS

The results of the WAA have indicated that the groundwater demand associated with the project site (2.76 AFY) is not expected to have a significant impact on current and future groundwater availability, surface water, or neighboring wells under existing or foreseeable future use conditions. This conclusion is based on the following:

- According to the water recharge analyses conducted herein, the amount of water available for recharge over the project site area, during average precipitation years, was calculated to be approximately 81.40 AFY. Based on the estimated groundwater demand of 2.76 AFY, this total groundwater use equates to approximately three percent of the water available for recharge in the area of the project site during average precipitation years.

- Based on the distance information provided herein, it does not appear that a Tier 2 Well or Spring Interference evaluation is required.

- With regards to the effects of groundwater pumping at the project site on flow of water in Cyrus Creek, surface water depletion as a result of on-site groundwater extraction is not expected from the Well # 3.

Based on the results of this evaluation, it is EBA's professional opinion that the Tier 1 and 3 analyses are in conformance with the requirements outlined in Napa County's *WAA Guidance Document* and *Well Permit Standards*.

7.0 LIMITATIONS

This report was prepared in accordance with generally accepted standards of professional hydrogeologic and engineering principles and practices at the place and time this study was performed. This warranty is in lieu of all other warranties, either expressed or implied. The conclusions presented herein are based solely on information made available to us by others, and includes professional interpretations based on limited research and data. Based on these circumstances, the decision to conduct additional investigative work to substantiate the findings and conclusions presented herein is the sole responsibility of the Client. No guarantee is made that groundwater of sufficient quantity or quality will be found in any specific depth or interval nor that pumping will not affect quality nor quantity of water found, streamflow, and/or subsidence. This report has been prepared solely for the Client and any reliance on this report by third parties shall be at such party's sole risk.

8.0 CLOSING

EBA appreciates the opportunity to be of service on this project. If you should have any questions regarding the information contained herein, please do not hesitate to contact our office at (707) 544-0784.

Sincerely,
EBA ENGINEERING

Prepared by

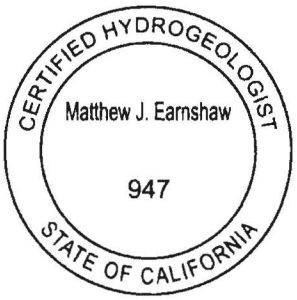
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Project Geologist

Reviewed by

Matthew Earnshaw

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Matthew Earnshaw, P.G., C.E.G., C.Hg., QSD
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Appendices: Appendix A: Figures
Appendix B: Nearby Wells – Water Well Completion Reports
Appendix C: Existing/Proposed Water Use
Appendix D: Erosion Control Plan

9.0 REFERENCES

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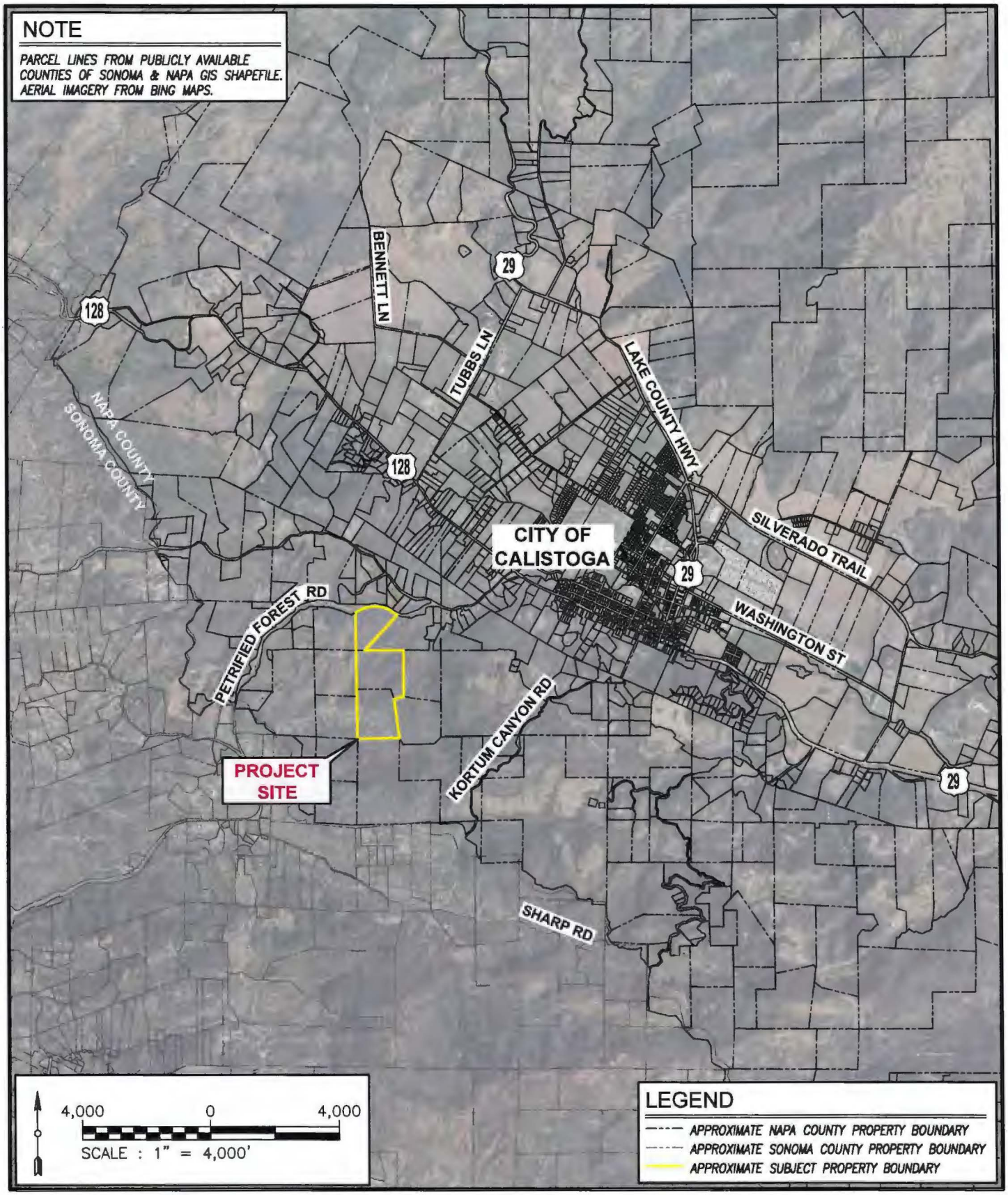
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APPENDIX A

FIGURES



EBA ENGINEERING
825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

LOCATION MAP

FULTON VINEYARD
268 PETRIFIED FOREST ROAD
APNS 020-430-018, -019, -027

FIGURE
1
24-3623

SITE MAP

FULTON VINEYARD
268 PETRIFIED FOREST ROAD
APNs 020-430-018, -019, -027

FIGURE 2

EBA ENGINEERING

EBA ENGINEERING
835 5TH AVENUE, SUITE C
SAN RAFAEL, CA 94901
TEL: (707) 544-2860

WATER WELL COMPLETION REPORT LOCATION MAP

FULTON VINEYARD
268 PETRIFIED FOREST ROAD
APNs 020-430-018, -019, -027

FIGURE 3

84-2003

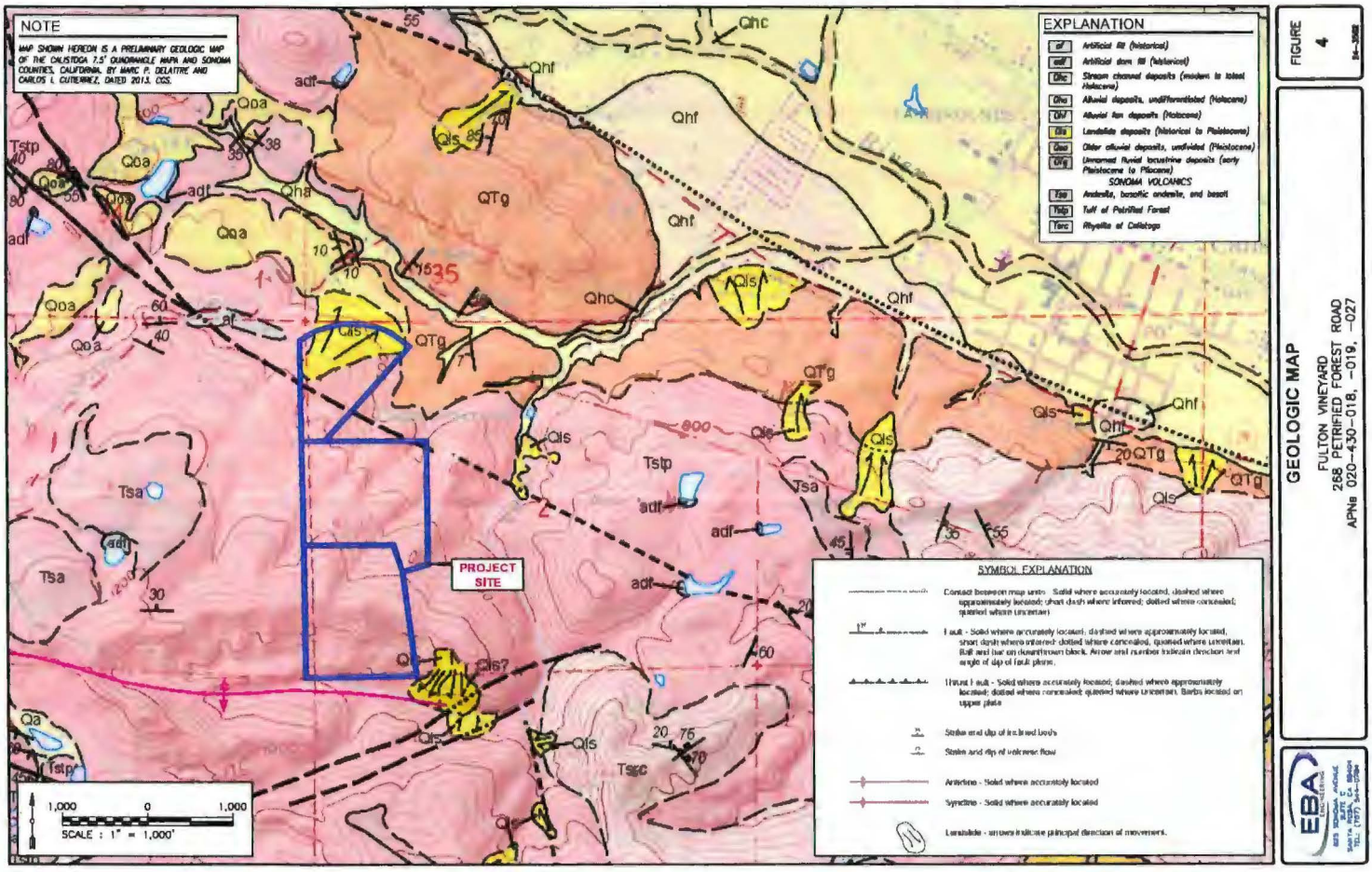


FIGURE 4

GEOLOGIC MAP

FULTON VINEYARD
268 PETRIFIED FOREST ROAD
APNs 020-430-018, -019, -027

EBA ENGINEERING

APPENDIX B

NEARBY WELLS
WATER WELL COMPLETION REPORTS

QUADRUPLICATE
For Local Requirements

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

Page ___ of ___
Owner's Well No. 1
Date Work Began 1-27-96 Ended 1-25-96 No. 474517
Local Permit Agency
Permit No. Permit Date 11/21/95

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

GEOLOGIC LOG

ORIENTATION (✓) ___ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DEPTH TO FIRST WATER 180 (Ft.) BELOW SURFACE

DEPTH FROM SURFACE Ft. to Ft.	DESCRIPTION *Describe material, grain size, color, etc.*
0 to 180	brown sand, rock
180 to 280	brown sand, rock, water
280 to 515	brown sand, rock, water, publick wish

RECEIVED
MAY - 5 1997
DEPT. OF ENVIRONMENTAL MANAGEMENT

TOTAL DEPTH OF BORING 520 (Feet) 515
TOTAL DEPTH OF COMPLETED WELL ___ (Feet)

WELL OWNER

Name [redacted]
Mailing [redacted]
CITY [redacted] STATE [redacted] ZIP [redacted]

WELL LOCATION

Address [redacted]
City [redacted]
County [redacted]
APN Book ___ Page ___ Parcel ___
or Township ___ Range ___ Section ___
or Latitude ___ DEG. ___ MIN. ___ SEC. NORTH Longitude ___ DEG. ___ MIN. ___ SEC. WEST

LOCATION SKETCH

NORTH
WEST
EAST
SOUTH
¼ mi
well
Illustrate or Describe Distance of Well from Landmarks such as Roads, Buildings, Fences, Rivers, etc.
PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

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

PLANNED USE(S) (✓)

___ MONITORING
WATER SUPPLY
___ Domestic
___ Public
___ Irrigation
___ Industrial
___ "TEST WELL"
___ CATHODIC PROTECTION
___ OTHER (Specify)

DRILLING METHOD ROTARY FLUID AIR

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH OF STATIC WATER LEVEL 150 (Ft.) & DATE MEASURED 9-14-96
ESTIMATED YIELD* 40 (GPM) & TEST TYPE AIR LIFT
TEST LENGTH 3 (Hrs.) TOTAL DRAWDOWN 370 (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 to 25	12	✓				PLASTIC		200	
25 to 240	8	✓							
240 to 340	8		✓					32	

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft. to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0 to 25	✓			
25 to 195				#2 RAPID

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 [redacted] (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
ADDRESS [redacted] CITY [redacted] STATE [redacted] ZIP [redacted]
Signed [redacted] WELL DRILLER/AUTHORIZED REPRESENTATIVE DATE SIGNED [redacted] C-57 LICENSE NUMBER [redacted]

DWR 188 REV. 7-90
IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

20-430-06

*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 _____ of _____

Owner's Well Number _____

Date Work Began 03/01/2013 Date Work Ended 3/8/2013

Local Permit Agency Napa County

Permit Number E13-00036 Permit Date 2/6/13

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0172364

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify _____

Drilling Method Air Drilling Drilling Fluid Air

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	80	Yellow Ash & Yellow Clay
80	120	Brown Ash
120	160	Yellow Ash
160	380	Blue Green Ash
380	500	Light Green Ash
500	560	Dark Gray Ash
		Perforation Layout
		P = Peforatrion
		B = Blank
		0 - 260 ft blank
		P
		B 300 ft
		P
		B
		P
		B
		P 400 ft
		B
		P
		P
		B
		P 500 ft
		P
		B
		P 560 ft

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APR 18 2013
DEPT. OF ENVIRONMENTAL MANAGEMENT

Total Depth of Boring 560 Feet

Total Depth of Completed Well 560 Feet

Well Owner

Name [redacted]n

Mailing Address [redacted]ay

City [redacted]a State [redacted] Zip [redacted]

Well Location

Address 263 Petrified Forest Road

City Calistoa County Napa

Latitude ___ Deg. ___ Min. ___ Sec N Longitude ___ Deg. ___ Min. ___ Sec W

Datum _____ Decimal Lat. _____ Decimal Long. _____

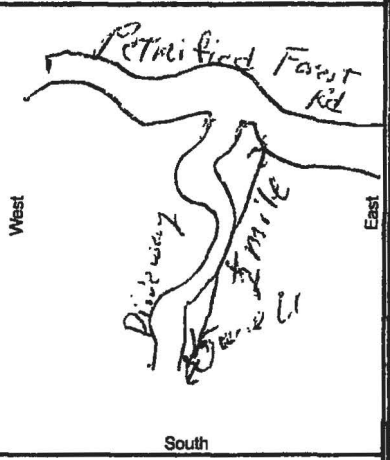
APN Book 020 Page 430 Parcel 006-000

Township _____ Range _____ Section _____

Location Sketch

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

North



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 300 (Feet below surface)

Depth to Static Water Level 250 (Feet) Date Measured 03/08/2013

Estimated Yield * 85 (GPM) Test Type Air Lift

Test Length 3.0 (Hours) Total Drawdown 290 (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	55	12	Blank	PVC Sch. 40	R21	6		
55	260	9	Blank	PVC Sch. 40	R21	6		
260	560	9	Screen	PVC Sch. 40	R21	6	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	52	Cement	cement
52	560	Filter Pack	# 6 Well 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 Pulliam Well Exploration Inc
Person, Firm or Corporation

4371 Cantelow Road Vacaville CA 95688
Address City State Zip

Signed Jon Pulliam 3/14/2013 808-508
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

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

File Original with DWR

Page _____ of _____

Owner's Well Number _____

Date Work Began 09/30/2015 Date Work Ended 10/7/2015

Local Permit Agency Napa County

Permit Number E15-00462 Permit Date 6/24/15

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0287725

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify _____

Drilling Method Air Drilling Drilling Fluid Air

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	10	Brown Ash White Boulders
10	60	Green Clay with Green Serpentine
60	80	Black Ash
80	140	Green Serpentine
140	180	White Ash
180	380	Green Serpentine
380	420	Black Ash & Green Volcanic Rock
420	570	Green Serpentine
570	580	Red Ash
580	615	Black Ash
615	630	Green Serpentine
		Perforation lay out: P = perforation, B = blank
		0 to 377 blank
		P
		B
		P
		B
		P
		B 497 ft 380 ft 25 GPM
		P 480 ft 40 GPM
		B 600 ft 55 GPM
		P
		B
		P
		P 617 ft

RECEIVED
NOV 09 2015
Napa County Planning, Building & Environmental Services

Total Depth of Boring 630 Feet

Total Depth of Completed Well 617 Feet

Well Owner

Name [redacted]

Mailing Address [redacted]

City Benicia State Ca Zip 94510

Well Location

Address 263 Petrified Forest Road

City Calistoga County Napa

Latitude ___ Deg. ___ Min. ___ Sec. N Longitude ___ Deg. ___ Min. ___ Sec. W

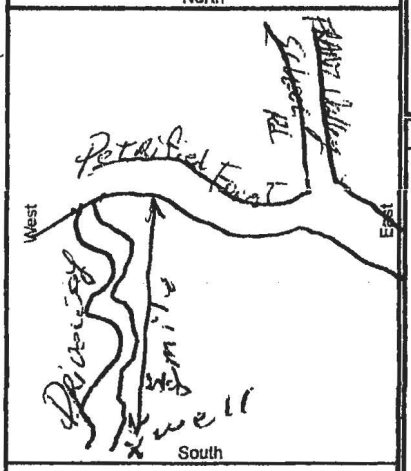
Datum _____ Dec. Lat. _____ Dec. Long. _____

APN Book 020 Page 430 Parcel 006-+000

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 380 (Feet below surface)

Depth to Static Water Level 310 (Feet) Date Measured 10/07/2015

Estimated Yield * 55 (GPM) Test Type Air Lift

Test Length 3.0 (Hours) Total Drawdown 310 (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	12	Blank	PVC Sch. 40	R21	6		
60	377	10	Blank	PVC Sch. 40	R21	6		
377	617	10	Screen	PVC Sch. 40	R21	6	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	54	Cement	
54	617	Filter Pack	Birds eye well pk.

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 Pulliam Well Exploration Inc
Person, Firm or Corporation

4371 Cantelow Road Vacaville CA 95688
Address City State Zip

Signed _____ 10/20/2015 808-508
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 - WL

*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

State of California

Well Completion Report

Refer to Instruction Pamphlet

No. e0161588

Page _____ of _____

Owner's Well Number _____

Date Work Began 09/10/2012 Date Work Ended 9/24/2012

Local Permit Agency Napa County

Permit Number E12-00543 Permit Date 9/10/12

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

Geologic Log

Orientation ◉ Vertical ○ Horizontal ○ Angle Specify _____

Drilling Method Air Drilling Drilling Fluid Air / Mud

Depth from Surface Feet	to Feet	Description Describe material, grain size, color, etc
0	60	Brown Clay
60	90	Brown Clay with hard Basalt Rock
90	140	Fractured Gray Rock
140	400	Gray Rock / Gray Ash
400	620	White Ash with Gray Rock
620	690	Green Serpentine with Gray Rock
690	720	Gray Rock with Black Ash
720	740	Black Ash
740	780	Gray, Green, & Black Ash
780	815	Gray Ash with Gray Clay

RECEIVED

DEC – 3 2012

DEPT. OF ENVIRONMENTAL MANAGEMENT

		Perforation Layout	
		X= Perferation	
		O= Blank	
		0 to 220: Blank	0
		X	X
		0	0
		0	0
		0 300 feet	X 600 feet
		0	0
		0	0
		X	X
		0	0
		0 400 feet	X 700 feet
		X	0
		0	X
		0	X
		X	0
		0 500 feet	X 800 feet

Total Depth of Boring 815 Feet

Total Depth of Completed Well 800 Feet

Well Owner

Name [redacted]

Mailing Address [redacted]

City [redacted] State [redacted] Zip [redacted]

Well Location

Address 255 Petrified Forest Road

City Calistoga County Napa

Latitude ___ Deg. ___ Min. ___ Sec. N Longitude ___ Deg. ___ Min. ___ Sec. W

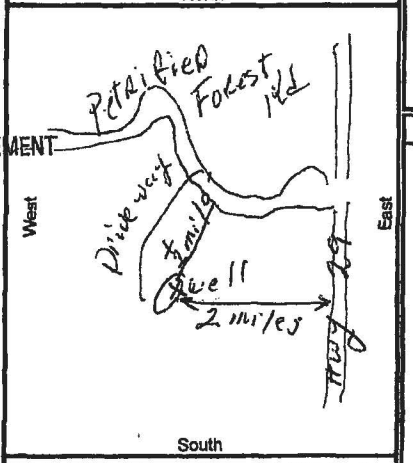
Datum ___ Decimal Lat. ___ Decimal Long. ___

APN Book 020 Page 430 Parcel 007-000-34

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 320 (Feet below surface)

Depth to Static Water Level 290 (Feet) Date Measured 09/24/2012

Estimated Yield * 30 (GPM) Test Type Air Lift

Test Length 18.0 (Hours) Total Drawdown 490 (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	51	12.5	Blank	PVC Sch. 40	R21	6		
51	220	10	Blank	PVC Sch. 40	R21	6		
220	800	10	Screen	PVC Sch. 40	R21	6	Milled Slots	0.032

Annular Material

Depth from Surface Feet	to Feet	Fill	Description
0	51	Cement	cement, vol clay
51	800	Filter Pack	#6 well 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 Pulliam Well Exploration
Person, Firm or Corporation

4371 Cantelow Road Vacaville CA 95688
Address City State Zip

Signed [signature] 10/07/2012 808-508
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

QUADRUPLICATE
For Local Requirements

Page 1 of 1

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet
No. 0916005

DWR USE ONLY — DO NOT FILL IN
STATE WELL NO./ STATION NO.
LATITUDE LONGITUDE
APN/TRS/OTHER

Owner's Well No. Well #1
Date Work Began 3/24/2004, Ended 4/8/2004
Local Permit Agency Napa Co Environ Health
Permit No. 96-12615 Permit Date 2/19/2004

GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD MUD ROTARY FLUID Bentonite

DEPTH FROM SURFACE Ft.	to Ft.	DESCRIPTION *Describe material, grain, size, color, etc.*
0	18	Reddish brown clay
18	27	Gray and purple clay, gray and purple rock
27	56	Hard gray and purple rock
56	117	Hard light green and gray rock with fractures
117	202	Hard gray weathered rock with fractures
202	210	Bluish gray clay
210	212	Blue clay and streaks of rock
212	217	Blue clay
217	237	Blue clay with embedded rock
237	292	Hard gray rock and blue clay
292	327	Hard gray rock and gray clay

RECEIVED
APR 21 2004
DEPT. OF ENVIRONMENTAL MANAGEMENT

TOTAL DEPTH OF BORING 327 (Feet)
TOTAL DEPTH OF COMPLETED WELL 320 (Feet)

WELL OWNER

Name [redacted]
Mailing Address [redacted]
CITY STATE ZIP

WELL LOCATION

Address 255 Petrified Forest Road
City Calistoga CA
County Napa
APN Book 020 Page 430 Parcel 007 034
Township ___ Range ___ Section ___
Latitude ___ DEG. ___ MIN. ___ SEC. ___ DEG. ___ MIN. ___ SEC.

LOCATION SKETCH

NORTH / WEST / EAST / SOUTH

Illustrate or Describe Distance of Well from Roads, Buildings, Fences, Rivers, etc. and attach a map Use additional paper if necessary. PLEASE BE ACCURATE & COMPLETE.

ACTIVITY (✓)

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

PLANNED USES (✓)
WATER SUPPLY
✓ Domestic ___ Public
___ Irrigation ___ Industrial
MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE 1
DEPTH OF STATIC WATER LEVEL 70 (Ft.) & DATE MEASURED 4/8/2004
ESTIMATED YIELD * 20 (GPM) & TEST TYPE BAILED
TEST LENGTH 3 (Hrs.) TOTAL DRAWDOWN 100 (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	50	13 1/2								
50	327	11								
+1.5	320		✓				pvc	6	CL200	
100	240			✓						.032
280	300			✓						.032

ANNULAR MATERIAL

DEPTH FROM SURFACE Ft.	to Ft.	TYPE CEMENT (✓)	BENTONITE (✓)	FILL (✓)	FILTER PACK (TYPE/SIZE)
0	50	✓			
50	63		✓		
63	320			✓	1/8 x 1/4 gravel

ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analysis
___ 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 Weeks Drilling & Pump (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
P.O. Box 176 ADDRESS Sebastopol CITY CA STATE 95473 ZIP
Signed Melissa G. Lopez WELL DRILLER/AUTHORIZED REPRESENTATIVE
04/15/04 DATE SIGNED
177681 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

E18-00709
well
WL

State of California

Well Completion Report

Form DWR 188 Submitted 4/29/2019
WCR2019-005879

Owner's Well Number 02 Date Work Began 03/13/2019 Date Work Ended 03/18/2019

Local Permit Agency Napa County Planning Building and Environmental Services

Secondary Permit Agency Permit Number E18-00709 Permit Date 09/12/2018

Well Owner (must remain confidential pursuant to Water Code 13752)

Name [redacted]

Mailing Address [redacted]

City CALISTOGA State CA Zip 94515

Planned Use and Activity

Activity New Well

Planned Use Water Supply Domestic

Well Location

Address 100 KORTUM CANYON RD APN 020-430-013

City CALISTOGA Zip 94515 County Napa Township 08 N

Latitude 38 Deg. 33 Min. 56.0159 Sec N Longitude -122 Deg. 35 Min. 56.7959 Sec W Range 07 W

Section 11

Baseline Meridian Mount Diablo

Dec. Lat. 38.56556 Dec. Long. -122.59911 Ground Surface Elevation

Vertical Datum Horizontal Datum WGS84 Elevation Accuracy

Location Accuracy Location Determination Method Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Air

Total Depth of Boring 340 Feet

Total Depth of Completed Well 335 Feet

Water Level and Yield of Completed Well

Depth to first water 35 (Feet below surface)

Depth to Static Water Level 100 (Feet) Date Measured 03/18/2019

Estimated Yield* 15 (GPM) Test Type Air Lift

Test Length 24 (Hours) Total Drawdown 230 (feet)

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

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	4	TOPSOIL
4	35	SOFT BLUE SANDSTONE
35	75	GRAVEL & CHARCOAL/ REDWOOD
75	105	YELLOW SANDSTONE
105	175	MIXED BLUE & YELLOW SANDSTONE
175	230	GEENSTONE
230	340	BLACK & RUST COLORED FRACTURED ROCK

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	75	Blank	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563			
1	75	335	Screen	PVC	OD: 5.563 in. | SDR: 21 | Thickness: 0.265 in.	0.265	5.563	Milled Slots	0.032	

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	50	Cement	Portland Cement/Neat Cement		6 SAC 3/8'S
50	340	Filter Pack	8 x 16	#6 well pack	YELLOW

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	50	12.25
50	340	8.75

Certification Statement

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

Name KOENIG DRILLING
Person, Firm or Corporation

5757 DAVIS CIRCLE (Address) | ROHNERT (City) | CA (State) | 94928 (Zip)

Signed *electronic signature received* (C-57 Licensed Water Well Contractor) | 04/29/2019 (Date Signed) | 1038648 (C-57 License Number)

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

20-430-05

#3/7/91 2965

QUADRUPLICATE
Use to comply with local requirements

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

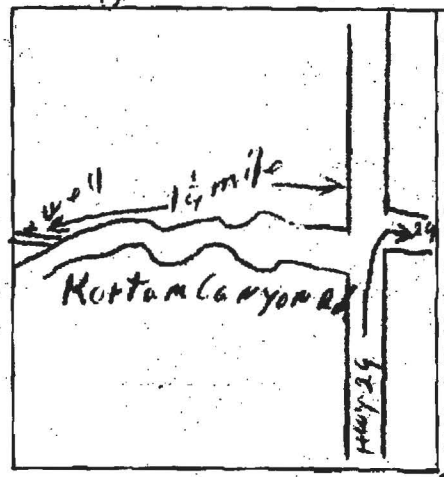
Do not fill in
No. 371064

Notice of Intent No. _____
Local Permit No. or Date 27321

State Well No. _____
Other Well No. _____

(1) OWNER: Name Steve Ridge
Address Kortum Canyon Rd
City Calistoga ZIP _____

(2) LOCATION OF WELL (See instructions):
County Na Owner's Well Number _____
Well address if different from above Kortum Canyon
Township 10 Range 4W Section 25
Distance from cities, roads, railroads, fences, etc. 1/4 W of Hwy 29 on Kortum Canyon Rd.



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☑ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☐
Irrigation ☐
Industrial ☐
Test Well ☐
Municipal ☐
Other ☑
(Describe)

(5) EQUIPMENT:
Rotary ☐ Reverse ☐
Cable ☐ Air ☑
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☑ No ☐ Size No.
Diameter of bore
Packed from 26 to 595 ft.

(7) CASING INSTALLED:
Steel ☐ Plastic ☑ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	595	8	200

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size
300	595	Factory

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☑ No ☐ If yes, to depth 26 ft.
Were strata sealed against pollution? Yes ☐ No ☑ Interval _____ ft.
Method of sealing Cement

(10) WATER LEVELS:
Depth of first water, if known —— ft.
Standing level after well completion 300 ft.

(11) WELL TESTS:
Was well test made? Yes ☑ No ☐ If yes, by whom? Driller
Type of test Pump ☐ Bailer ☐ Air lift ☑
Depth to water at start of test 700 ft. At end of test _____ ft.
Discharge 22 gal/min after 6 hours Water temperature ——
Chemical analysis made? Yes ☐ No ☑ If yes, by whom? _____
Was electric log made Yes ☐ No ☑ If yes, attach copy to this report

(12) WELL LOG: Total depth 640 ft. Completed depth 595 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	85	brown rock
85	285	gray ash
285	340	gray ash with brown & gray rock
340	535	gray & white ash
535	640	gray ash with white & black & green ash

VOID IN PUBLIC USE
NOT FOR PUBLIC USE SEC. 13752
WATER CODE SEC.

RECEIVED
FEB 28 1991
DEPT OF ENVIRONMENTAL MANAGEMENT

Work started 10-22 1990 Completed 11-5 1990

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.
Signed _____ (Well Driller)
NAME Fullam Well Drilling
(Person, firm or corporation) (Typed or printed)
Address 9377 Freestone Flat Rd
City Forestville ZIP 95436
License No. 343477 Date of this report 11-7-90

DWR 188 (REV. 12-86) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM 86 96355

P - 01

TO: [illegible]

BYRNE, THOMAS J

DUPLICATE
Driller's Copy

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in
No. 095268

Intent No. ____ or Date. ____

State Well No. ____
Other Well No. ____

1) OWNER: Name [redacted]
Address [redacted]
City [redacted] Zip [redacted]

2) LOCATION OF WELL: (See instructions)
County Napa Owner's Well Number 20-430-15
Well address if different from above Kortum Cyn Rd
Township Calistoga Range ____ Section ____
Distance from cities, roads, railroads, fences, etc. ____

DO NOT MATCH.
WELL IS ON (R) SIDE OF ROAD ASSUMED
well site next to road.
Kortum Canyon Rd.
1.2 Mi.
Calistoga
Stop sign
T 13 N
R 5 W

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic [ ]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Stock [ ]
Municipal [ ]
Other [ ]

EQUIPMENT:
ary [ ] Reverse [ ]
ble [ ] Air [X]
er [ ] Bucket [ ]

(6) GRAVEL PACK:
Yes [ ] No [X] Size ____
Diameter of bore 8 5/8
Packed from ____ ft. to ____ ft.

CASING INSTALLED:
[ ] Plastic [X] Concrete [ ]

(8) PERFORATIONS: power saw
Type of perforation or size of screen

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	445	6	160	445	745	1/8x3

WELL SEAL:
Surface sanitary seal provided? Yes [X] No [ ] If yes, to depth ____ ft.
Are strata sealed against pollution? Yes [ ] No [X] Interval ____ ft.
Method of sealing grout

) WATER LEVELS:
Depth of first water, if known 330 ft.
Standing level after well completion 230 ft.

) WELL TESTS:
Was well test made? Yes [X] No [ ] If yes, by whom? driller
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test ____ ft. At end of test ____ ft.
75 gal/min after ____ hours Water Temperature ____
) Chemical analysis made? Yes [ ] No [X] If yes, by whom? ____
Electric log made? Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG: Total depth 745 ft. Depth of completed well 745 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	18	light gray tuffa
18	62	brown clay w/embedded rock & hard basalt stringers
62	142	purple & white rock-hard
142	185	light gray tuffa
185	330	purple rock-mod hard
330	442	black w/ purple & white rock s soft
442	490	black & light gray volcanic ro. soft
490	585	multi color rock medium-sort
585	745	volcanic pumice - soft

ONLY FOR PUBLIC USE
WATER CODE SEC. 13752

RECEIVED
JUL 31 1991
DEPT. OF ENVIRONMENTAL MANAGEMENT

Work started 9/17 19 80 Completed 10/3 19 80

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

SIGNED ____ (Well Driller)

NAME Doshier-Gregson Drilling, Inc
(Person, firm, or corporation) (Typed or printed)
Address 5365 Napa-Vallejo Hwy
City Vallejo, Ca Zip 94590
License No. 291001 Date of this report 10/7/80

188 (REV. 7-76) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

08N07W02F

8N/7W-2

ORIGINAL
File with DWR

CONFIDENTIAL LOG
Water Code Sec. 13752

WATER WELL DRILLERS REPORT

(Sections 7079, 7080, 7081, 7082, Water Code)

THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

Do Not Fill In

No 11097

State Well No.

Other Well No. 8N/7W-2F

2

(2) LOCATION OF WELL:

County Napa Owner's number, if any

Township, Range, and Section T7N Petrified Forest Rd. Lot 28.3 and 2 T8N R.7W. MDB&M.

Distance from cities, roads, railroads, etc.

(3) TYPE OF WORK (check):

New Well ☑ Deepening ☐ Reconditioning ☐ Destroying ☐

If destruction, describe material and procedure in Item 11.

(4) PROPOSED USE (check):

Domestic ☑ Industrial ☐ Municipal ☐
Irrigation ☐ Test Well ☐ Other ☐

(5) EQUIPMENT:

Rotary ☐
Cable ☑
Other ☐

(6) CASING INSTALLED:

STEEL: OTHER:
SINGLE ☐ DOUBLE ☐

From ft.	To ft.	Diam.	Gage or Wall	Diameter of Bore	From ft.	To ft.
0	173	8"	188			

If gravel packed

Size of shoe or well ring: 7"x6"x8"
Size of gravel:
Describe joint Brittoweld

(7) PERFORATIONS OR SCREEN:

Type of perforation or name of screen Machine slotted

From ft.	To ft.	Perf. per row	Rows per ft.	Size in. x in.
152	173	2	10	1/8 x 3

(8) CONSTRUCTION:

Was a surface sanitary seal provided? Yes ☑ No ☐ To what depth 20 ft.
Were any strata sealed against pollution? Yes ☐ No ☑ If yes, note depth of strata
From ft. to ft.
From ft. to ft.
Method of sealing Cement grout.

(9) WATER LEVELS:

Depth at which water was first found, if known 80 ft.
Standing level before perforating, if known ft.
Standing level after perforating and developing 60 ft.

(10) WELL TESTS:

Was pump test made? Yes ☑ No ☐ If yes, by whom? Driller
Yield: 13 gal./min. with 50 ft. drawdown after 1 hrs.
Temperature of water Was a chemical analysis made? Yes ☐ No ☑
Was electric log made of well? Yes ☐ No ☑ If yes, attach copy

(11) WELL LOG:

Total depth 188 ft. Depth of completed well ft.

Formation: Describe by color, character, size of material, and structure

0 - 60 ft.	Cemented gravel & boulders
60 - 79	Blue clay
79 - 110	Hard blue gravel & boulders
110 - 136	Hard blue clay
136 - 173	Hard blue gravel & boulders
173 - 188	Hard blue rock

CONFIDENTIAL LOG
Water Code Sec. 13752

Work started Oct 15 70, Completed Oct 28 70

WELL DRILLER'S STATEMENT:

This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

NAME Walter Pettis (Person, firm, or corporation) (Typed or printed)

Address 1561 Mayflower Ave Santa Rosa Calif.

[SIGNED] Walter Pettis (Well Driller)

License No. 163052 Dated Nov 2, 70

SKETCH LOCATION OF WELL ON REVERSE SIDE

DWR 188 (REV. 9-65)

86301-950 10-66 80M TRIP ① △ OSP

#7/2/91 A 3460

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

Do not fill in

No. 384833

QUADRUPLICATE
Use to comply with local requirements

Notice of Intent No. _____
Local Permit No. or Date _____

State Well No. _____
Other Well No. _____

(1) OWNER: Name Gordon Seiberlich
Address 1345 Lincoln Ave.
City Calistoga, CA ZIP 94515

(2) LOCATION OF WELL (See instructions):
County Napa Owner's Well Number 020-430-026
Well address if different from above Petrified Forrest Road
Township _____ Range _____ Section _____
Distance from cities, roads, railroads, fences, etc. _____

WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well [X] Deepening [ ]
Reconstruction [ ]
Reconditioning [ ]
Horizontal Well [ ]
Destruction [ ] (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic [X]
Irrigation [ ]
Industrial [ ]
Test Well [ ]
Municipal [ ]
Other [ ]
(Describe)

(5) EQUIPMENT:
Rotary [ ] Reverse [ ]
Cable [ ] Air [X]
Other [ ] Bucket [ ]

(6) GRAVEL PACK:
Yes [X] No [ ] Size Pea
Diameter of bore 11"
Packed from 180 ft. to 28 ft.

(7) CASING INSTALLED:
Steel [ ] Plastic [X] Concrete [ ]

From ft.	To ft.	Dia. in.	Gage or Wall
0	95	6	200

(8) PERFORATIONS:
Type of perforation or size of screen

From ft.	To ft.	Slot size
92	195	.032

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth _____ ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval _____ ft.
Method of sealing Bentonite Pellets Concrete

(10) WATER LEVELS:
Depth of first water, if known 80 ft.
Standing level after well completion 40 ft.

(11) WELL TESTS:
Was well test made? Yes [X] No [ ] If yes, by whom? Driller
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test _____ ft. At end of test Complete ft.
Discharge 50 gal/min after 2 hours Water temperature _____
Chemical analysis made? Yes [ ] No [X] If yes, by whom? _____
Was electric log made Yes [ ] No [X] If yes, attach copy to this report

(12) WELL LOG: Total depth 190 ft. Completed depth 180 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Topsoil
3	25	Brown Clay Rock Imbedded
25	40	Blue Clay
40	70	Blue Clay Rock Imbedded
70	95	Brown & Black Rock Soft
95	115	Red Black & Brown Rock Fract Med.
115	130	Black Brown & White Rock Fract Med.
130	205	Multi Color Rock Fract Med.

CONFIDENTIAL
NOT FOR PUBLIC USE
WATER CODE SEC. 13752

RECEIVED
JUN 28 1991
DEPT. OF ENVIRONMENTAL MANAGEMENT

Work started 6-20 19 91 Completed 6-21 19 91

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signed _____ (Well Driller)
NAME DOSHIER-GREGSON, INC. (Person, firm, or corporation) (Typed or printed)
Address 5365 Napa-Vallejo Highway
City Vallejo, CA ZIP 94590
License No. 258826 Date of this report 6-26-91

DWR 188 (REV. 12-86) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM 86 96355

QUADRUPLICATE
Use to comply with local requirements

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

WATER WELL DRILLERS REPORT

7/2/91 L
H 3462

Do not fill in

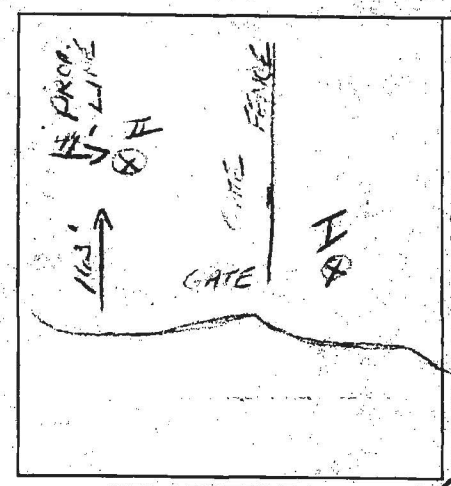
No. 384834

Notice of Intent No. _____
Local Permit No. or Date _____

State Well No. _____
Other Well No. _____

(1) OWNER: Name Gordon Salberlich
Address 1365 Lincoln Ave.
City Calistoga, CA ZIP 94515

(2) LOCATION OF WELL (See instructions):
County Napa Owner's Well Number 020-430-025
Well address if different from above Petrified Forest Road
Township _____ Range _____ Section _____
Distance from cities, roads, railroads, fences, etc. _____



WELL LOCATION SKETCH

(3) TYPE OF WORK:
New Well ☒ Deepening ☐
Reconstruction ☐
Reconditioning ☐
Horizontal Well ☐
Destruction ☐ (Describe destruction materials and procedures in Item 12)

(4) PROPOSED USE:
Domestic ☒
Irrigation ☐
Industrial ☐
Test Well ☐
Municipal ☐
Other ☐
(Describe)

(5) EQUIPMENT:
Rotary ☐ Reverse ☐
Cable ☐ Air ☒
Other ☐ Bucket ☐

(6) GRAVEL PACK:
Yes ☒ No ☐ Size #3
Diameter of bore 14"
Packed from 195 to 27 ft.

(7) CASING INSTALLED:
Steel ☐ Plastic ☒ Concrete ☐

From ft.	To ft.	Dia. in.	Gage or Wall
0	95	6"	200

(8) PERFORATIONS:
Type of perforation or size of screen .032

From ft.	To ft.	Slot size
95	195	.032

(9) WELL SEAL:
Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth _____ ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval _____ ft.
Method of sealing Bentonite Pellets Concrete

(10) WATER LEVELS:
Depth of first water, if known 100 ft.
Standing level after well completion 47 ft.

(11) WELL TESTS:
Was well test made? Yes ☒ No ☐ If yes, by whom? Driller
Type of test Pump ☐ Bailer ☐ Air lift ☒
Depth to water at start of test 45 ft. At end of test Complete ft.
Discharge 50 gal/min after 2 hours Water temperature _____
Chemical analysis made? Yes ☐ No ☒ If yes, by whom? _____
Was electric log made Yes ☐ No ☒ If yes, attach copy to this report

(12) WELL LOG: Total depth 205 ft. Completed depth 195 ft.

from ft.	to ft.	Formation (Describe by color, character, size or material)
0	3	Topsoil
3	25	Brown Clay Rock Interbed
25	40	Blue Clay
40	70	Blue Clay Rock Interbed
70	95	Brown & Black Rock Soft
95	115	Red Black & Brown Rock Fract. Hrd.
115	130	Black Brown & White Rock Fract Hrd.
130	205	Multi Color Rock Fract. Hrd.

RECEIVED
JUN 28 1991
ENVIRONMENTAL MANAGEMENT
DEPT. OF

Work started 6-22 19 91 Completed 6-26 19 91

WELL DRILLER'S STATEMENT:
This well was drilled under my jurisdiction and this report is true to the best of my knowledge and belief.

Signed _____ (Well Driller)
NAME [illegible] (Person, firm, or corporation) (Typed or printed)
Address 5365 Napa-Vallejo Highway
City Vallejo, CA ZIP 94590
License No. 295826 Date of this report 6-26-91

DWR 188 (REV. 12-86) IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM 86 96335

COPY NOT FOR PUBLIC USE
WATER CODE SEC. 13752
CONFIDENTIAL

E19-00532 WL

State of California

Well Completion Report

Form DWR 188 Submitted 11/6/2019

WCR2019-015885

Owner's Well Number 1 | Date Work Began 10/15/1919 | Date Work Ended 11/01/2019

Local Permit Agency Napa County Planning Building and Environmental Services

Secondary Permit Agency | Permit Number ~~E19-00532~~ | Permit Date 09/26/2019

Well Owner (must remain confidential pursuant to Water Code 13762)

Name [redacted]

Mailing Address [redacted]

City Calistoga State Ca Zip 94515

Planned Use and Activity

Activity New Well

Planned Use Water Supply Irrigation - Landscape

Well Location

Address 347 Shaw-Williams RD

City Calistoga Zip 94515 County Napa

Latitude 38 (Deg.) 34 (Min.) 47 (Sec.) N Longitude -122 (Deg.) 36 (Min.) 41 (Sec.) W

Dec. Lat. 38.5797222 Dec. Long. -122.6113889

Vertical Datum | Horizontal Datum WGS84

Location Accuracy | Location Determination Method

APN 020-030-006

Township 09 N

Range 07 W

Section 35

Baseline Meridian Mount Diablo

Ground Surface Elevation

Elevation Accuracy

Elevation Determination Method

Borehole Information

Orientation Vertical Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite

Total Depth of Boring 440 Feet

Total Depth of Completed Well 398 Feet

Water Level and Yield of Completed Well

Depth to first water 75 (Feet below surface)

Depth to Static Water Level 73 (Feet) Date Measured 11/01/2019

Estimated Yield* 88 (GPM) Test Type Air Lift

Test Length 3 (Hours) Total Drawdown (feet)

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

Geologic Log - Free Form

Depth from Surface Feet to Feet		Description
0	10	brown sandy clay
10	20	tan sandy ash
20	35	gray volcanic ash
35	55	tan volcanic ash
55	60	tan ash with embedded gravel
60	380	cemented sand & gravel with ash stringers
380	410	green, gray volcanic ash
410	440	tan sandy ash

RECEIVED

NOV 2 0 2019

Napa County Planning, Building & Environmental Services

Casings

Casing #	Depth from Surface Feet to Feet		Casing Type	Material	Casings Specifications	Wall Thickness (inches)	Outside Diameter (inches)	Screen Type	Slot Size if any (inches)	Description
1	0	138	Blank	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625			
1	138	238	Screen	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625	Milled Slots	0.032	
1	238	258	Blank	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625			
1	258	338	Screen	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625	Milled Slots	0.032	
1	338	358	Blank	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625			
1	358	378	Screen	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625	Milled Slots	0.032	
1	378	398	Blank	PVC	OD: 6.625 in. | SDR: 21 | Thickness: 0.316 in.	0.316	6.625			

Annular Material

Depth from Surface Feet to Feet		Fill	Fill Type Details	Filter Pack Size	Description
0	56	Cement	10.3 Sack Mix		
56	440	Other Fill	See description.		#6 sand

Other Observations:

Borehole Specifications

Depth from Surface Feet to Feet		Borehole Diameter (inches)
0	440	12

Certification Statement

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

Name: HUCKFELDT WELL DRILLING INC
Person, Firm or Corporation

994 KAISER ROAD | NAPA | CA | 94558
Address | City | State | Zip

Signed: *electronic signature received* | 11/06/2019 | 439746
C-57 Licensed Water Well Contractor | Date Signed | C-57 License Number

DWR Use Only

CSG #	State Well Number	Site Code	Local Well Number

N — Latitude Deg/Min/Sec

W — Longitude Deg/Min/Sec

TRS:

APN:

APPENDIX C

EXISTING/PROPOSED

WATER USE

December, 2024
EBA PROJECT NO. 24-3623

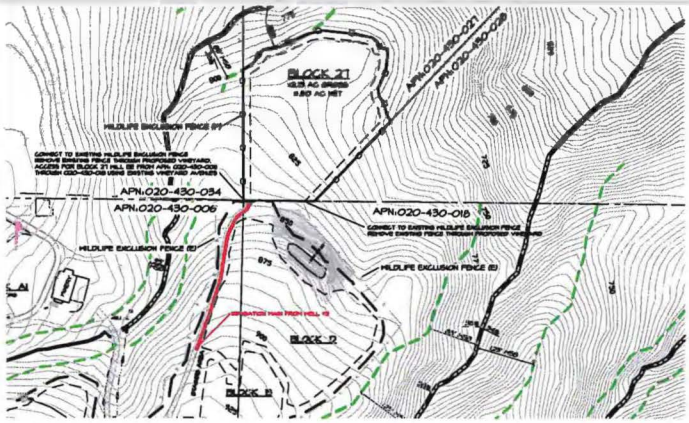
268 PETRIFIED FOREST ROAD, NAPA CA
APN 020-430-018, -019, -027
EXISTING/PROPOSED WATER USAGE
TABLE 1

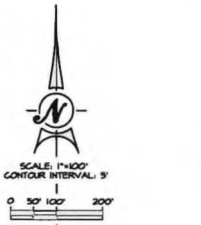
WATER USAGE			
Description	**Water Usage Rate[1]**	**Detailed Description**	**Water Demand (acre-feet/year)**
Residential			
Primary Residence	0.5 to 0.75 acre-feet per year (plus additional usage from landscaping and/or pools)		NA
Secondary Residence or Farm Labor Dwelling	0.20 to 0.50 acre-feet per year		NA
Agricultural			
Vineyards		Includes 5.51 acres of existing & proposed vineyards	
Irrigation Only	0.2 to 0.5 acre-feet per acre per year		2.76
Heat Protection	0.25 acre-feet per acre per year		NA
Frost Protection	0.25 acre-feet per acre per year		NA
Irrigated Pastures	4.0 acre-feet per acre per year		NA
Orchards	4.0 acre-feet per acre per year		NA
Livestock (sheep or cows)	0.01 acre-feet per acre per year		NA
Winery			
Process Water	2.15 acre-feet per 100,000 gal. of wine		NA
Domestic and Landscaping	0.50 acre-feet per 100,000 gal. of wine		NA
Employees	15 gallons per shift		NA
Tasting Room Visitation	3 gallons per visitor		NA
Events and Marketing, with on-site catering	15 gallons per visitor		NA
Industrial			
Food Processing	31.0 acre-feet per employee per year		NA
Printing/Publishing	0.60 acre-feet per employee per year		NA
Commercial			
Office Space	0.01 acre-feet per employee per year		NA
Warehouse	0.05 acre-feet per employee per year		NA
Estimated Annual Water Demand (acre-feet per year)			**2.76**

[1] Water usage rates from Napa County WAA Guidance Document - Appendix B. Adopted May 12, 2015

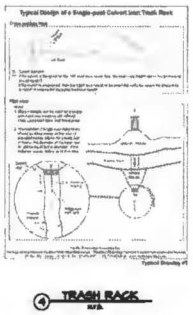
APPENDIX D

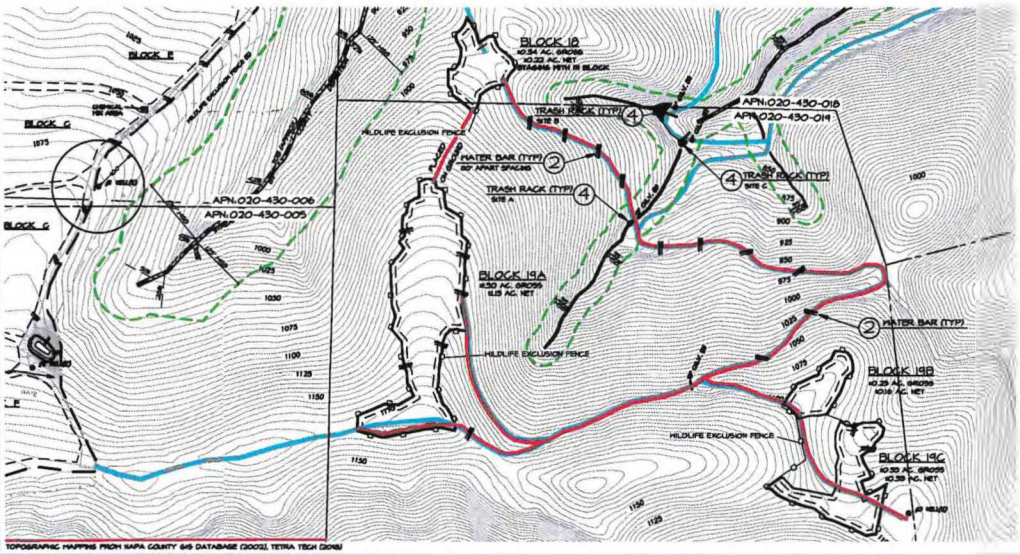
EROSION CONTROL PLAN











Notes

1. Existing road improvements as shown on plan, with the construction and annual maintenance of waterbars no more the 25ft of the exposed road length is delivering sediment to the stream system. All culverted stream crossing a single post truck rock will be installed above inlet and armored fill will be constructed where applicable.
2. Existing avenues in proposed vineyard blocks will be graded out to conform with vineyard operations.
3. All Roads which are not gravel or paved shall be seeded and mulched every year before October 15th.
4. Waterbars shall be installed as shown on this sheet
5. Any new roads built for vineyard operations will need to be reviewed by NCRCD for conformance with Water Board standards.

Legend

- BLOCK BOUNDARY
- AVENUE/HEADSPACE
- VINEYARD BOUNDARY (APPROX.)
- (2) DETAIL 2
- (E) EXISTING
- PROPERTY LINE APPROXIMATE LOCATION
- PROPOSED IRRIGATION MAIN WITHIN ROADWAY APPROXIMATELY 4500' PIPE
- ROAD PAVED
- ROAD NOT DRAINING TO STREAM SYSTEM
- ROAD DRAINING TO STREAM SYSTEM
- WATER BAR

Stream Crossing Type

- Culvert (site A, B, C)

REV.	DESCRIPTION	BY	DATE
2	PER COUNTY COMMENTS 2-20-24	DLA	10-1-24
1	PER COUNTY COMMENTS 12-11-23	DLA	2-2-24

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

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(707) 963 4927

DATE 10-25-23 | SCALE AS SHOWN | DRAWN JRJ | CHECKED DLA | APPROVED

FULTON RANCH VINEYARD
263 PETRIFIED FOREST ROAD

EROSION CONTROL PLAN
TRACK 1- NEW VINEYARD
ROAD AND IRRIGATION PLAN

SHEET 4 OF 4