



May 7, 2024

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SUBJECT: WATER AVAILABILITY ANALYSIS REPORT
1260 SHADY BROOK LANE
NAPA, CALIFORNIA
NAPA COUNTY APN 052-190-013
EBA Job No. 23-3476

Dear Mr. Chen,

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 1260 Shady Brook Lane in Napa, 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 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 less than 1,500 feet to a nearby spring(s) and located less than 1,500 to a nearby Significant Stream(s). As such, Tier 1, 2, 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 on Shady Brook Lane approximately four miles east of the City of Napa in Napa County (Figure 1, Appendix A). The project site is further identified by Napa County Assessor's Parcel Number (APN) 052-190-013 and is approximately 41.80-acres (AC) in size. The project site is comprised of one parcel with a single-family residence with minor to moderate landscaping, a guest cottage without a kitchen, a covered pool, and an access road. The remainder of the property consists of undeveloped grasslands, oak trees and chaparral/scrub land cover. On-site water storage consists of an approximately 3,000 gallon above ground storage tank. 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 650 to 1,140 feet above mean sea level (MSL). The project site is mapped as a Hambright rock-outcrop complex soil with hydrologic soil group rating of D (NRCS, 2020).

There is one existing water supply well on the project site, which is currently being used. A Well Completion Report (WCR), archived by the California Department of Water Resources (DWR), for the on-site well (WCR No. 271119) was found. A Copy of the WCR for the on-site well can be found in Appendix B. Please refer to Figure 2 (Appendix A) for the location of the existing on-site well. Please note that a 2-hour pump test was conducted on the on-site well, in July 2021. Please refer to Appendix B for more detail regarding the pump test data from this on-site well.

The proposed project consists of the installation of approximately 1.00 AC of vineyard. Upon installation of the proposed new vineyard on the project site, water from the existing on-site well will be used to irrigate the entire proposed vineyard. Please refer to Figure 2 (Appendix A) for the approximate location of the vineyard area.

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 Late Pleistocene to Holocene aged sedimentary deposits underlain by Pliocene to Miocene aged Sonoma Volcanics (California Geological Survey, 2004). In the immediate vicinity of the project site, the surface geology has been mapped to consist of the Sonoma Volcanic unit Tsvm. Tsvm consists of basalt, basaltic andesite and andesite flows and breccias, interbedded with volcanic agglomerate and tuff. Please refer to the Geologic Map included herein as Figure 4 (Appendix A).

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 the existing on-site well location. Please note that the exact locations of the wells, located at the parcels identified by APN 052-380-028 and APN 052-190-008, were unable to be found. EBA assumed the wells identified on APN 052-380-028 and APN 052-190-008 were located near the parcel's residences. Please refer to Figure 3 (Appendix A) for an illustration of all identified well locations and Appendix B and C for the respective WCRs.

WCRs for the existing on-site well and the nearby wells are consistent with mapped geology, wherein drillers described encountering predominantly hard rock, volcanic rock, fractured rock, and clay. 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 20 to 75 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.

An unnamed intermittent creek runs north to south, through the project site. A spring, located on the project site approximately 1,300 feet to the north-northeast of the existing on-site well, reportedly has not been used for several decades for domestic or irrigation purposes. A yield test was conducted on the spring in November 1982, resulting in a reported yield of 2 gallons per minute (GPM). Please refer to Figure 2 (Appendix A) for the location of the existing spring on the project site.

A mapped Significant Stream, Murphy Creek, is located approximately 870 feet to the southeast of the existing on-site well (WCR No. 271119). Please refer to Figure 3 (Appendix A) for a map of the project site in relation with Murphy Creek.

1.3 Local Climate

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 25.81 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, 2023).

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 1.05 AFY (Appendix D). Existing water use is associated with a primary residence with minor to moderate landscaping, a guest cottage without a kitchen, and a covered pool. Water use for the primary residence (which includes minor to moderate landscaping) and a guest cottage without a kitchen was estimated to be 0.75 AFY and 0.25 AFY, respectively. The pool with cover was estimated to be 0.05 AFY. Please refer to Table 1 below for a summary of existing water demands and Table 1 *Existing/Proposed Water Usage* in Appendix D for a detailed accounting of the existing water demand calculations.

TABLE 1 – EXISTING WATER DEMANDS		
<i>Water Use</i>	<i>Water Use Estimation Criteria</i>	<i>Water Demand (AFY)¹</i>
Primary Residence	0.75 AFY ¹	0.75
Pool w/cover	0.05 AFY ¹	0.05
Secondary Residence (guest cottage)	0.25 AFY ¹	0.25
TOTAL		1.05

¹ AFY: Acre-Feet per Year

2.2 Proposed Groundwater Demand

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

TABLE 2 – PROPOSED WATER DEMANDS		
<i>Water Use</i>	<i>Water Use Estimation Criteria</i>	<i>Water Demand (AFY)¹</i>
Vineyard Irrigation (1.00 Acres)	0.50 AFY ¹ per Acre	0.50
TOTAL		0.50

¹ AFY: Acre-Feet per Year

The total existing and proposed groundwater demand for the project site was estimated to be 1.55 AFY (Appendix D).

3.0 GROUNDWATER RECHARGE ANALYSES

3.1 Project Site Groundwater Recharge Methodology

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. Please note that EBA conducted these analyses based on the approximate project site boundary provided by the Client, as shown in Figure 3, Appendix A. Based on this approach, the following equation was used to calculate potential volume of water available for recharge:

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

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_{Cl}” 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 (25.81 inches per year) by the sum of the area of the project site (41.80 AC). The total annual precipitation over this area corresponds to approximately 89.90 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, 2021). 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, 0, 49, and 51 percent, respectively. These areas, in turn, were further separated by the types of settings. Table 3 provides a breakdown of the setting types and range of RCs used in the analysis:

TABLE 3 (PROJECT SITE) RUNOFF COEFFICIENTS AND AREAS		
<i>Land Type</i>	<i>Area (AC)</i>	<i>Runoff Coefficient (RC)</i>
Oak/Chaparral Woodland	36.15	0.46 - 0.55
Grassland	3.00	0.48 - 0.57
Vineyards	1.00	0.46
Bare Rock	1.25	0.67
Residential	0.50	0.60
TOTAL	41.80	-

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 parcel. 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 46.12 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 171 AFY within the area of the project site parcel. 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 (Table 5, Zone 8). 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 parcel was then calculated to represent approximately 25.36 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 36.15 AC) were subjected to canopy interception losses. Canopy interception losses were calculated to be approximately 4.61 AFY during average precipitation years.

Springs (S)

A spring is located in the northeast portion of the project site. A yield test, yielding 2.0 GPM, was conducted on the spring in November 1982. Springs losses were calculated to be approximately 3.23 AFY, assuming a continuous spring flow of 2.0 GPM for 365 days.

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 10.58 AFY during average precipitation years. The proposed groundwater demand for the project site is 1.55 AFY. Based on the estimated groundwater demand of 1.55 AFY, this total groundwater use equates to approximately 14 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		
<i>Description</i>	<i>Inflow/Outflow</i>	<i>Volume (AFY)</i>
Precipitation	Inflow	+89.90
Run-off	Outflow	- 46.12
Actual Evapotranspiration	Outflow	- 25.36
Canopy Interception	Outflow	- 4.61
Springs	Outflow	- 3.23
TOTALS	-	10.58

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 1.55 AFY. The total annual groundwater use for the proposed vineyards of 0.50 AFY (162,926 gallons) is equivalent to a maximum daily water demand of approximately 905 gallons per day (GPD), assuming a growing season of 180 days. The total annual groundwater use for the primary residence of 0.75 AFY (244,388 gallons), a pool with cover of 0.05 AFY (16,293 gallons), and a secondary residence of 0.25 AFY (81,463 gallons) is equivalent to a maximum daily water demand of approximately 937 GPD, assuming a 365-day use frequency. Therefore, the total annual groundwater use for the proposed project of 1.55 AFY is equivalent to a maximum daily water demand of approximately 1,842 GPD.

4.2 Pumping Rate and Duration

As presented above, the daily water demand is approximately 1,842 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.

There is one existing water supply well on the project site. The pumping duration required to meet the maximum daily water demand was estimated based on the yield (10 GPM) from the pumping test conducting on the on-site water supply well. The on-site well (WCR No. 271119) appears to be completed in similar lithology as the water supply wells located in close proximity to the project site.

At an average conservative pumping rate of 10 GPM, approximately 184 minutes (3 hours) of pumping is required to reach the maximum daily water demand. It should be noted that the analysis conducted herein regarding stream depletion assumes that all groundwater will be pumped from the existing on-site well.

4.3 Aquifer Transmissivity

Determination of aquifer transmissivity was accomplished using available data from the pumping test conducting on the on-site water supply well. The yield (10 GPM) and drawdown (16 feet) from the pumping test data 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]). The corresponding results from the calculation indicated a transmissivity value of 1,250 GPD/ft (167 square feet per day [ft²/day]).

Method II:

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

where T = transmissivity (ft²/day)

S_c = specific capacity (gallons per minute per foot)

The specific capacity was defined as the quotient of 10 GPM as the pumping rate and the measured drawdown of 16 feet. The corresponding results from the calculation indicated a transmissivity value of approximately 22.3 ft²/day (167 GPD/ft).

Based on the methods used above, aquifer transmissivity estimated using data from the pumping test conducting on the on-site water supply well on the project site ranges between approximately 167 GPD/ft and 1,250 GPD/ft.

4.4 Aquifer Storage Coefficient

Aquifer characteristics were based on pumping test data, 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 pumping test 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, 1.0×10^{-6} to 2.1×10^{-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 (257 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 0.0003 to 0.0054. 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.

5.0 SPRING INTERFERENCE

Tier 2, outlined in the Napa County *WAA Guidance document* and the *Well Permit Standards – Applicability Tables*, requires that a spring interference evaluation be conducted for discretionary projects with an increase in groundwater use from an existing well(s) located less than 1,500 feet to a nearby natural spring(s). The existing on-site well (WCR No. 271119) is located less than 1,500 feet to a nearby spring. Therefore, the following Tier 2 evaluation to assess the potential connectivity with springs within 1,500 feet of the project well is described below in the following sections.

Given that the elevation of the spring is located approximately 240 feet above the elevation of the existing well head, it is EBA's opinion that the hydraulic connectivity between the water in the spring and the water pumped from the existing well is non-existent. Further, the elevation of the static water level in the existing well (690 feet above Mean Sea Level [MSL]), is significantly below the elevation of the spring. Please refer to Figure 5 (Appendix A) for a geologic cross-section showing the elevation difference between the spring and the existing well. It should also be noted that the distance drawdown output results of the Theis equation (*Section 4.0*) suggest that drawdown from the pumping of the existing well should not extend past a linear distance of 500 feet when pumping at a rate of 10 GPM for one day.

Based on the information provided herein, the increase in proposed groundwater use at the project site, satisfies the spring interference criteria, and is therefore in conformance with Napa County Guidelines.

6.0 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 existing wells located within 1,500 feet of a Significant Stream(s). As previously mentioned, a mapped Significant Stream, Murphy Creek, is located approximately 870 feet to the southeast of the existing on-site well (WCR No. 271119).

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 the existing well should not extend past a linear distance of 500 feet when pumping at a rate of 10 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 the existing groundwater well and Murphy Creek (870 feet);
- Transmissivity value of 870 GPD/ft (116 ft²/day);
- Storage coefficient value of 0.0054;
- Streambed Leakance value of 100 feet;
- A pumping rate of 10 GPM, as per the existing well pump test data; and
- A pumping duration of 1 day.

EBA utilized the aquifer transmissivity of 116 ft²/day and the aquifer storage coefficient of 0.0054 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 870 feet from the existing on-site well.

Based on the aforementioned calculations, it is EBA’s opinion that pumping from the existing on-site well will not contribute to streamflow depletion in Murphy Creek. Furthermore, the distance drawdown calculation using the Theis equation presented above suggests no drawdown from the pumping well at a distance of 500 feet which correlates with the Hantush Equation.

7.0 CONCLUSIONS

The results of the WAA have indicated that:

The groundwater demand associated with the project site (1.55 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 10.58 AFY. Based on the estimated groundwater demand of 1.55 AFY, this total groundwater use equates to approximately seven 14 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 Interference is required.
- Based on the analysis presented herein, it does not appear that pumping in the existing on-site well, will be able to substantially influence any nearby natural springs within 1,500 feet.
- With regards to the effects of groundwater pumping at the project site on flow of water in Murphy Creek, surface water depletion as a result of on-site groundwater extraction is expected to be de minimis.

Based on the results of this evaluation, it is EBA's professional opinion that the Tier 1, 2, and 3 analyses are in conformance with the requirements outlined in Napa County's *WAA Guidance Document* and *Well Permit Standards*.

8.0 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.

9.0 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



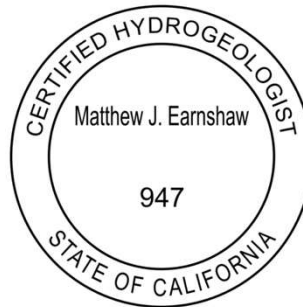
Ian Penn, G.I.T.
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Appendices: Appendix A: Figures
Appendix B: On-Site Water Well Completion Report and Pump Test
Appendix C: Nearby Wells – Water Well Completion Reports
Appendix D: Existing/Proposed Water Use

10.0 REFERENCES

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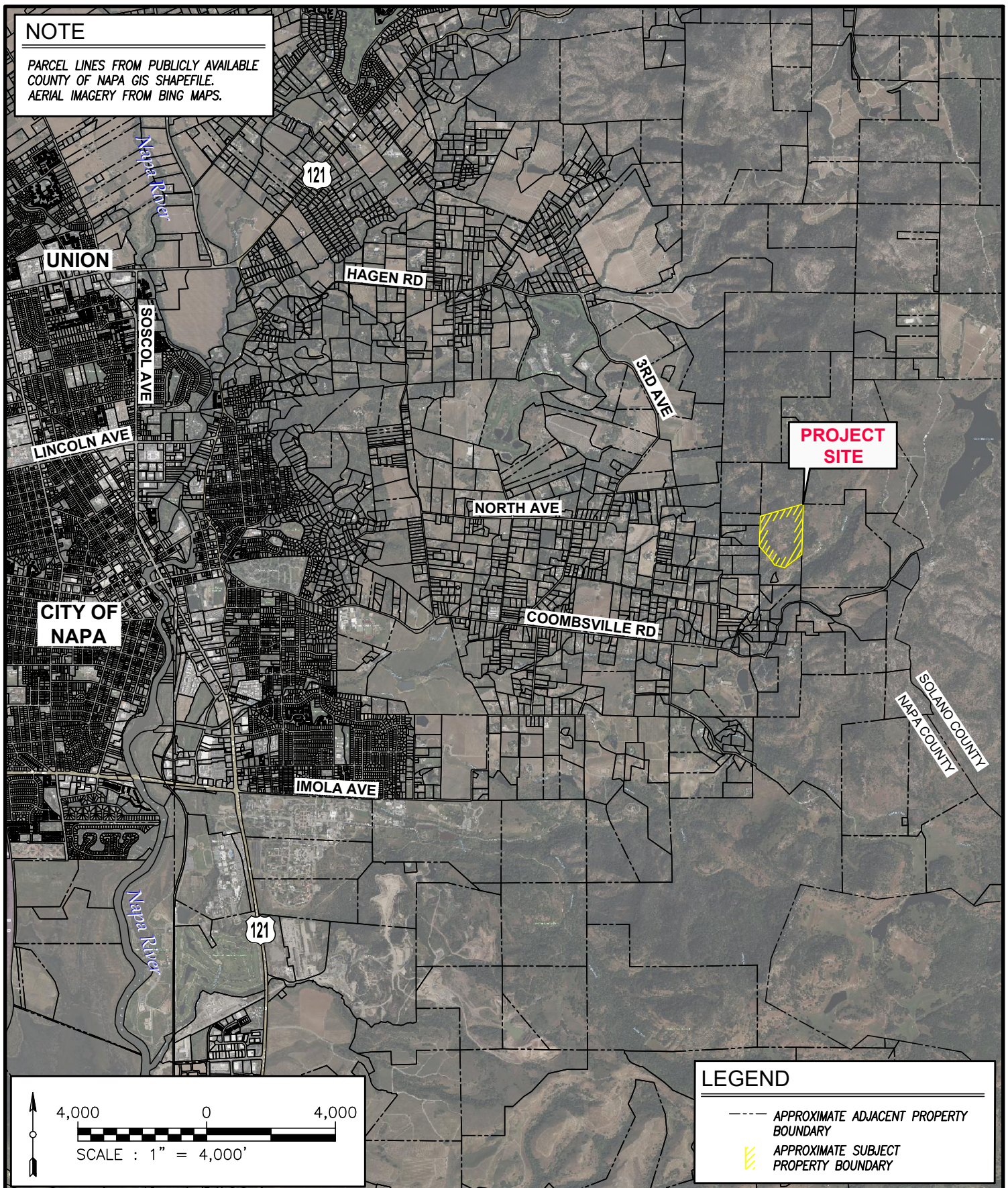
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APPENDIX A

FIGURES

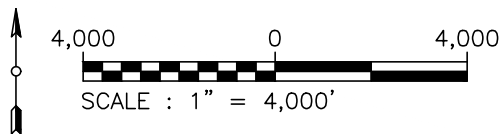
NOTE

PARCEL LINES FROM PUBLICLY AVAILABLE
COUNTY OF NAPA GIS SHAPEFILE.
AERIAL IMAGERY FROM BING MAPS.



LEGEND

- APPROXIMATE ADJACENT PROPERTY BOUNDARY
- /// APPROXIMATE SUBJECT PROPERTY BOUNDARY



LOCATION MAP

1260 SHADY BROOK LANE
NAPA, CALIFORNIA 94558
APN: 052-190-013

FIGURE

1

23-3476

NOTE

PARCEL LINES FROM PUBLICLY AVAILABLE
COUNTY OF NAPA GIS SHAPEFILE.
AERIAL IMAGERY FROM BING MAPS.

LEGEND

- APPROXIMATE NAPA COUNTY PARCELS BOUNDARY
- APPROXIMATE PROJECT SITE BOUNDARY
- ON-SITE WELL
- ▲ SPRING

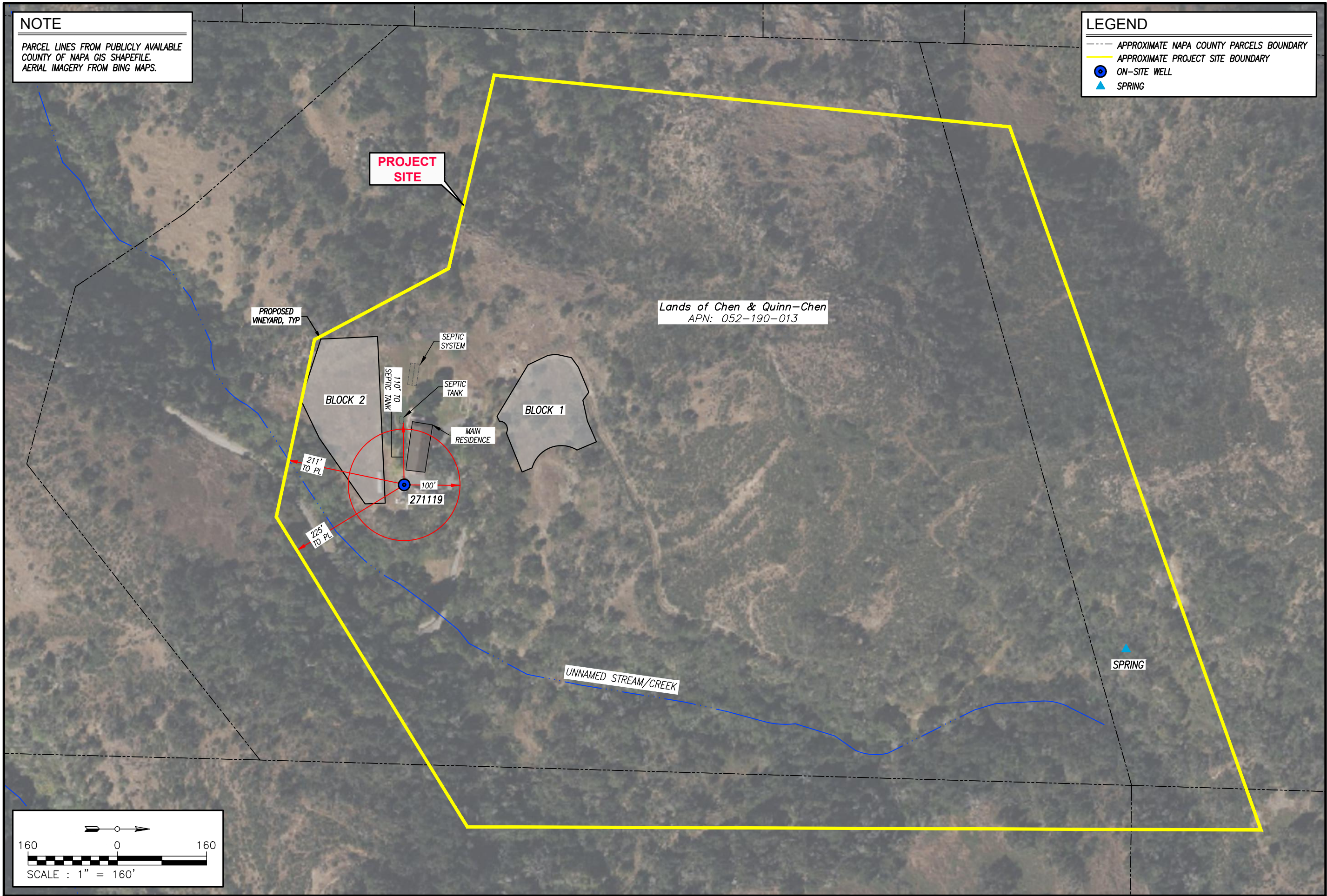
FIGURE
2

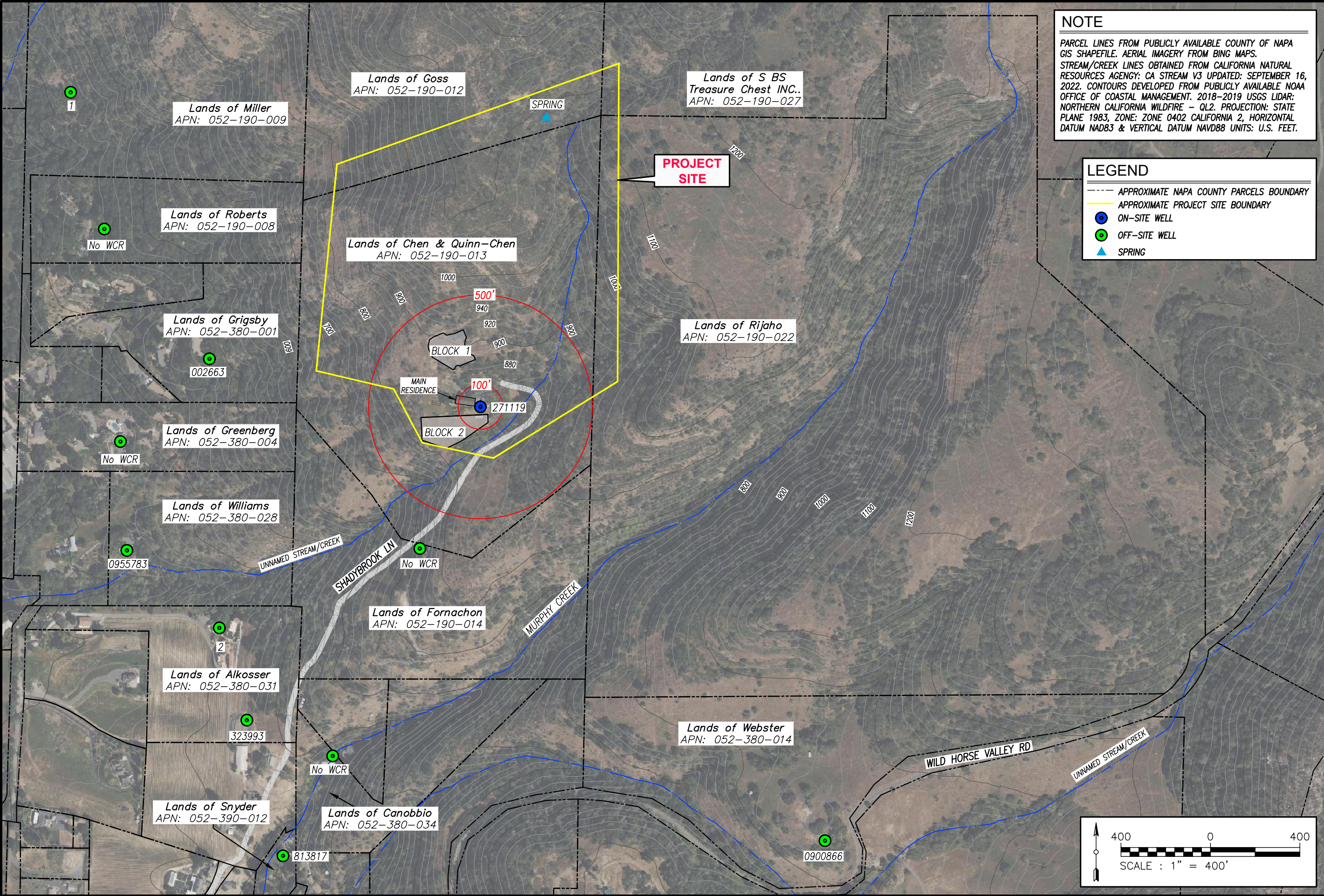
23-3476

SITE MAP

1260 SHADY BROOK LANE
NAPA, CALIFORNIA 94558
APN: 052-190-013

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

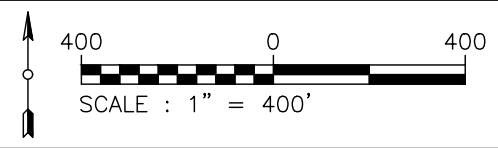


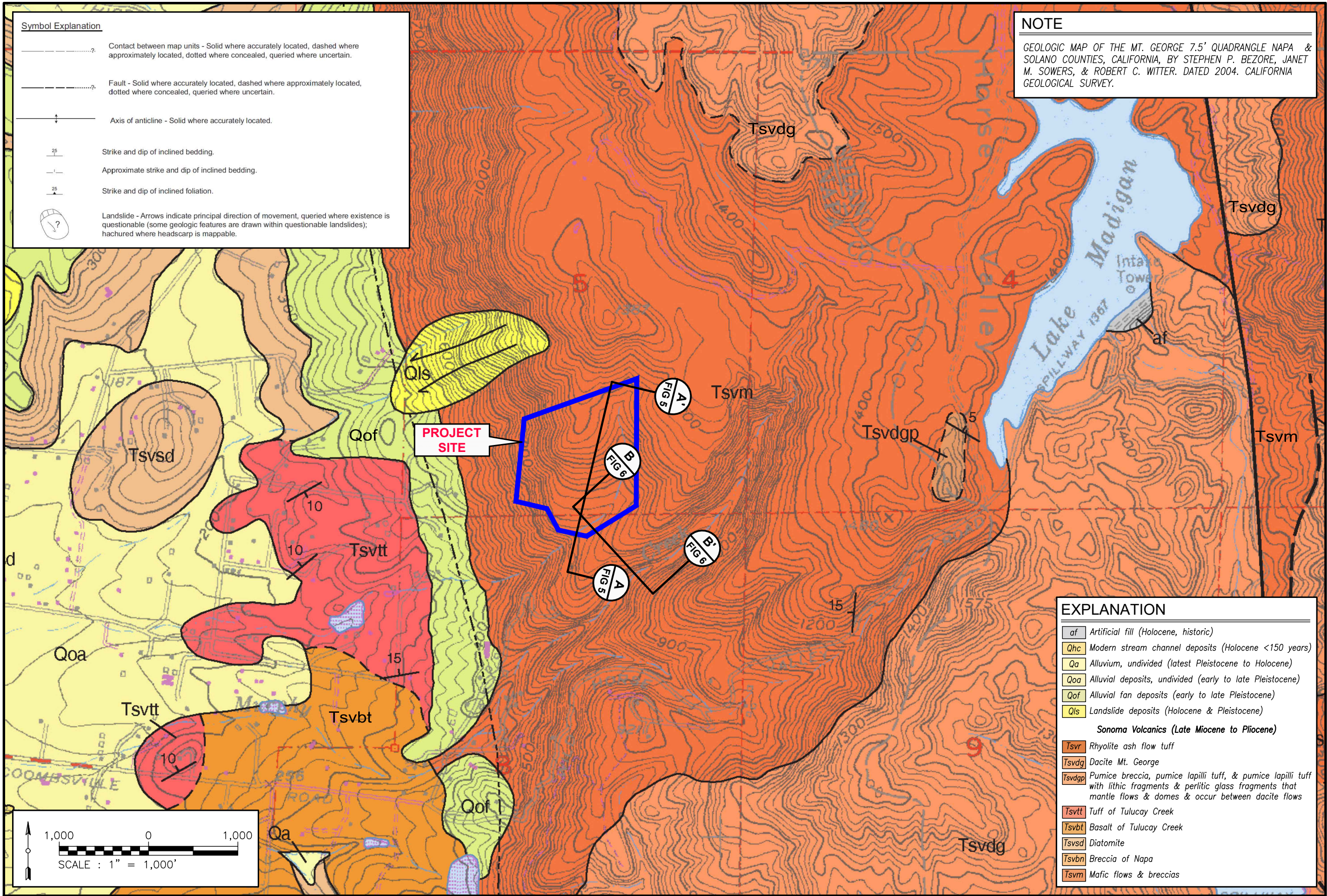


NOTE

PARCEL LINES FROM PUBLICLY AVAILABLE COUNTY OF NAPA GIS SHAPEFILE. AERIAL IMAGERY FROM BING MAPS. STREAM/CREEK LINES OBTAINED FROM CALIFORNIA NATURAL RESOURCES AGENCY: CA STREAM V3 UPDATED: SEPTEMBER 16, 2022. CONTOURS DEVELOPED FROM PUBLICLY AVAILABLE NOAA OFFICE OF COASTAL MANAGEMENT. 2018-2019 USGS LIDAR: NORTHERN CALIFORNIA WILDFIRE - QL2. PROJECTION: STATE PLANE 1983, ZONE: ZONE 0402 CALIFORNIA 2, HORIZONTAL DATUM NAD83 & VERTICAL DATUM NAVD88 UNITS: U.S. FEET.

- LEGEND**
- APPROXIMATE NAPA COUNTY PARCELS BOUNDARY
 - APPROXIMATE PROJECT SITE BOUNDARY
 - ON-SITE WELL
 - OFF-SITE WELL
 - ▲ SPRING





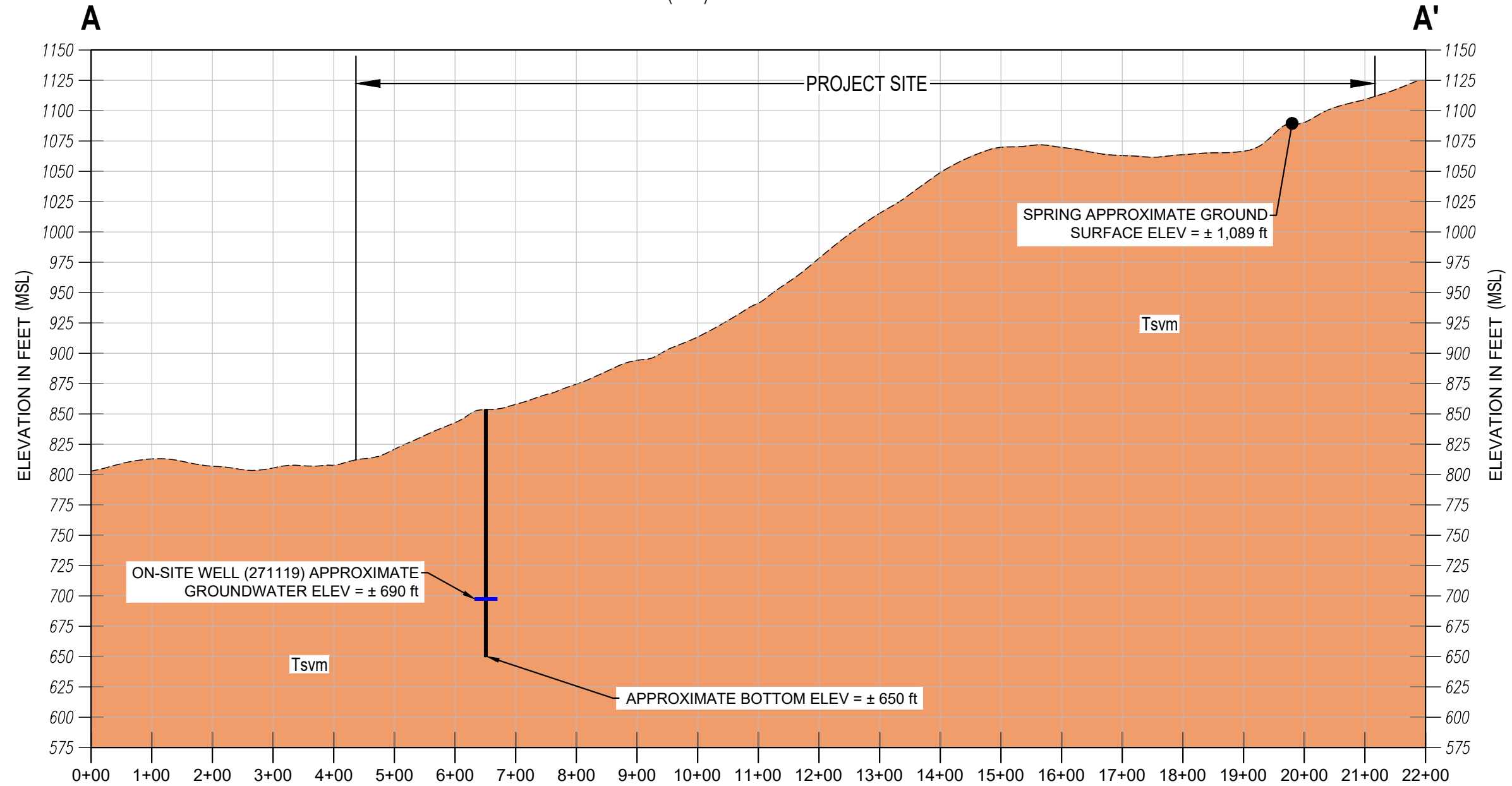
SECTION A-A'

AS DELINEATED IN PLAN VIEW ON
'GEOLOGIC MAP'— FIGURE 4

SEE LEGEND ON FIGURE 4 FOR
GEOLOGIC UNIT DESCRIPTIONS

APPROXIMATE SCALE:
HORIZONTAL: 1"=200'
VERTICAL: 1"=100'

(MSL) = MEAN SEA LEVEL



NOTE

GROUND SURFACE PROFILE BASED ON LIDAR FROM PUBLICLY AVAILABLE NOAA OFFICE OF COASTAL MANAGEMENT. 2018–2019 USGS LIDAR: NORTHERN CALIFORNIA WILDFIRE – QL2. PROJECTION: STATE PLANE 1983, ZONE: ZONE 0402 CALIFORNIA 2, HORIZONTAL DATUM: NAD83, VERTICAL DATUM NAD88 UNITS: U.S. FEET.

FIGURE

5

23–3476

GEOLOGIC CROSS SECTION (SPRING)

1260 SHADY BROOK LANE
NAPA, CALIFORNIA 94558
APN: 052–190–013



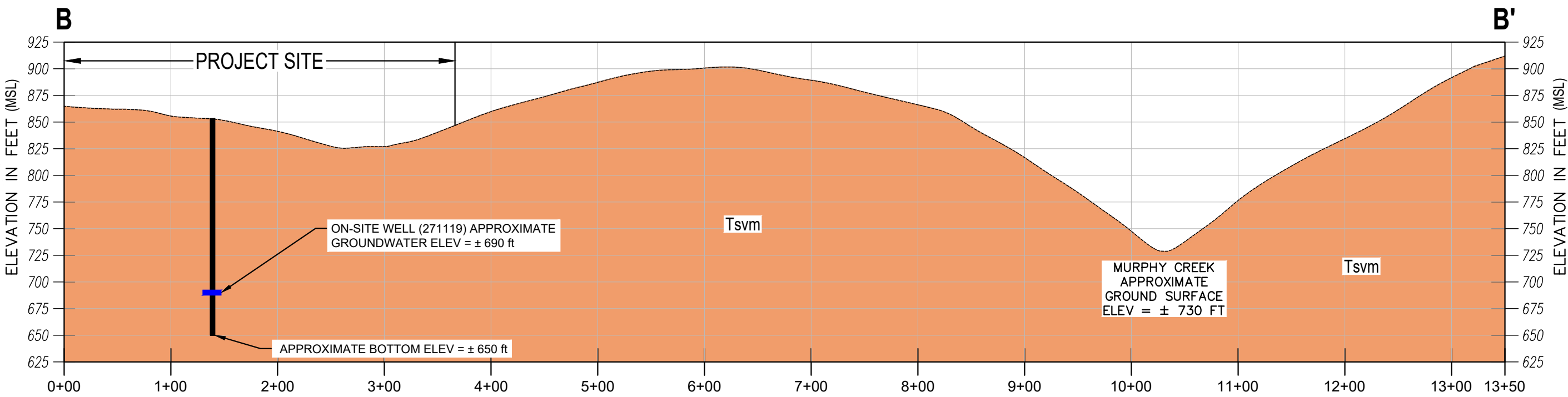
SECTION B-B'

AS DELINEATED IN PLAN VIEW ON
'GEOLOGIC MAP'— FIGURE 4

SEE LEGEND ON FIGURE 4 FOR
GEOLOGIC UNIT DESCRIPTIONS

APPROXIMATE SCALE:
HORIZONTAL: 1"=100'
VERTICAL: 1"=100'

(MSL) = MEAN SEA LEVEL



NOTE

GROUND SURFACE PROFILE BASED ON LIDAR FROM PUBLICLY AVAILABLE NOAA OFFICE OF COASTAL MANAGEMENT. 2018–2019 USGS LIDAR: NORTHERN CALIFORNIA WILDFIRE – QL2. PROJECTION: STATE PLANE 1983, ZONE: ZONE 0402 CALIFORNIA 2, HORIZONTAL DATUM: NAD83, VERTICAL DATUM NAD88 UNITS: U.S. FEET.

FIGURE

6

23–3476

GEOLOGIC CROSS SECTION (SIGNIFICANT STREAM)

1260 SHADY BROOK LANE
NAPA, CALIFORNIA 94558
APN: 052–190–013



APPENDIX B

ON-SITE WATER WELL COMPLETION REPORT

AND PUMP TEST

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. **271119**

Notice of Intent No. _____
Local Permit No. or Date **7-15-1988**

State Well No. _____
Other Well No. _____

(1) OWNER: Name
Address
City

(12) WELL LOG: Total depth 200 ft. Completed depth 200 ft.
from ft. to ft. Formation (Describe by color, character, size or material)

(2) LOCATION OF WELL (See instructions):

County Napa Owner's Well Number _____

Well address if different from above _____

Township 5 North Range 3 West Section 8

Distance from cities, roads, railroads, fences, etc. _____

0 - 1 Top Soil

1 - 12 Boulders, Dirt.

12 - 20 Obsidian

20 - 65 Sandstone

65 - 85 Yellow, Brown Sandstone

85 - 100 Hard Volcanics

100 - 140 Sandstone

140 - 150 Soft Volcanics

150 - 160 Molaz Volcanics 90% Black

160 - 200 Hard black volcanics

(3) TYPE OF WORK:

New Well ☒ Deepening ☐

Reconstruction ☐

Reconditioning ☐

Horizontal Well ☐

Destruction ☐ (Describe
destruction materials and pro-
cedures in Item 12)

(4) PROPOSED USE:

Domestic ☒

Irrigation ☐

Industrial ☐

Test Well ☐

Municipal ☐

Other ☐

(Describe)

WELL LOCATION SKETCH

(5) EQUIPMENT:

Rotary ☒ Reverse ☐

Cable ☐ Air ☒

Other ☐ Bucket ☐

(6) GRAVEL PACK:

Yes ☒ No ☐ Size 3/8 spec

Diameter of bore 8

Packed from 22 to 200 ft.

(7) CASING INSTALLED:

Steel ☐ Plastic ☒ Concrete ☐

From ft. To ft. Dia. in. Gage or Wall

+1 199 5 F-480

(8) PERFORATIONS:

Type of perforation or size of screen

From ft. To ft. Slot size

40 199 1/8

(9) WELL SEAL:

Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 22 ft.

Were strata sealed against pollution? Yes ☐ No ☒ Interval _____ ft.

Method of sealing concrete

(10) WATER LEVELS:

Depth of first water, if known 65 ft.

Standing level after well completion 40 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 40 ft. At end of test 160 ft.

Discharge 75 gal/min after 3 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

Work started 7-13 19 88 Completed 7-19 19 88

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 Leond Huckfeldt (Well Driller)

NAME Huckfeldt Well Drilling (Person, firm, or corporation) (Typed or printed)

Address 2110 Penny Lane

City Napa, Ca. ZIP 94559

License No. 439746 Date of this report 10-5-1988

DAVE BESS PUMP & WELL
LIC.# C-57 / C-10

1115 MT GEORGE AVE
NAPA, CA. 94558
707-226-2539/253-0574

WATER WELL TEST
REPORT # BW- 7/21

LOCATION(well address):1260 SHADY BROOK LANE _____ DATE: 7/7/21.
TEST REQUESTOR: REALTOR _____

SURFACE INSPECTION

CASING DIA. 5 EST. AGE OF WELL: DRILLED 1988 199 FT DEPTH OF WELL, SEE LOG

YES
SANITARY SEAL () PIPING SYSTEM () ELECTRICAL SYSTEM ()
PRESSURE TANK () WELL PUMP SIZE ()HP OPERATING VOLTS 240 AMPS LI() LII()

FLOW TEST DATA

METHOD OF TEST: 2 HOUR OPEN FLOW DISCHARGE TEST USING THE INSTALLED PUMP AND EXISTING EQUIPMENT.(TEST EQUIPMENT USED) 2" FLOW METER, 2" THROTTLING DISCHARGE VALVE, 0/200 # [RESSIRE GAGE AND A POWERS DEPTH STATIC METER.

TIME	RATE(GPM)	WATER LEVEL <i>in Feet</i>
1:20	60	160'
1:24	0	180'
1:28	10	177'
2:28	10	176'
3:28	10	176'

STATIC LEVEL PRIOR TO TEST 160)FT STATIC LEVEL @ END OF TEST (176)FT
TOTAL DRAW DOWN DURING THIS TEST WAS ()FT
(AVG.) GALLONS PER MIN 10 FOR 2 HOURS OF TESTING

GENERAL COMMENTS

PUMP HOUSE HAS INSULATION STORED IN IT MAKING A RAT HAVEN [REMOVE INSULATION]
CONTROL BOX WAS NOT PLACED IN RIGHT POSITION, TREE FROG IN SIDE, BOX WAS SET IN RIGHT POSITION

PUMP IN WELL NOW 2 HP , WHICH IS MOST LIKELY ORIGINAL WHEN WELL PRODUCED MORE VOLUME, { COULD BE REPLACED WITH ¾ HP FOR A LOWER FLOW

PUMP HOUSE ROOF HAS NO PROVISION TO PULL PUMP, { SKY LITE OR SOME OTHER OPENING NEEDED FOR ACCESS

TEST CONDUCTED BY: Dave Bess DATE: 7/7/21
(OPTIONAL) BACTERIA SAMPLED (YES) () NO () CHEMICAL SAMPLED YES () NO ()

Disclaimer: The data and conclusions provided herein are based upon the best information available to this company using standards and accepted practices of the water well industry. However, well yield conditions are

subject to dramatic changes in short periods of time due to usage and recharging of aquifers, etc. Therefore, the data and conclusions taken during this test are only valid of the day of the test and should not be relied upon to predict either the future quantity or quality of the well. This company makes no warranties either expressed or implied as to future water production and expressly disclaims and excludes liability for consequential or incidental damages arising out of the breach of any expressed or implied warranty of future water production or out of any use reported by the customer.

APPENDIX C

NEARBY WELLS

WATER WELL COMPLETION REPORTS

State of California
Well Completion Report
Form DWR 188 Submitted 2/17/2023
WCR2023-002663

Owner's Well Number	1	Date Work Began	01/10/2023	Date Work Ended	02/01/2023
Local Permit Agency	Napa County Planning Building and Environmental Services				
Secondary Permit Agency		Permit Number	E00583	Permit Date	11/18/2022

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

Planned Use and Activity

Activity	New Well
Planned Use	Water Supply Domestic

Well Location

Address										5370 COUNTRY LN										APN										052-380-001-000									
City		NAPA						Zip		94558				County		Napa						Township		05 N															
Latitude		38		18		7.2075		N		Longitude		-122		13		7.3253		W		Range		03 W																	
		Deg.		Min.		Sec.						Deg.		Min.		Sec.				Section		05																	
Dec. Lat.										38.3020021										Dec. Long.										-122.2187015									
Vertical Datum																				Horizontal Datum										WGS84									
Location Accuracy																				Location Determination																			
																				Method																			
																														Elevation Determination Method									

Borehole Information

Orientation	Vertical	Specify	
Drilling Method	Direct Rotary	Drilling Fluid	Air
Total Depth of Boring	290	Feet	
Total Depth of Completed Well	90	Feet	

Water Level and Yield of Completed Well

Depth to first water	60	(Feet below surface)
Depth to Static		
Water Level	60	(Feet)
Date Measured	02/07/2023	
Estimated Yield*	70	(GPM)
Test Type	Air Lift	
Test Length	1	(Hours)
Total Drawdown	220 (feet)	

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

Geologic Log - Free Form

Depth from Surface Feet to Feet:			Description
0	2	TOP SOIL	
2	30	CLAY	
30	65	HARD ROCK	
65	180	SOFT RED/ BLACK/ ROCK	
180	290	HARD FRACTURED ROCK	

QUADRUPLICATE
For Local Requirements

STATE OF CALIFORNIA
WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. **0955783**

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

Page 1 of 1

Owner's Well No. 1-3-13

Date Work Began 1-9-13

Local Permit Agency Napa County

Permit No. E12-00781

Permit Date 12-20-12

GEOLOGIC LOG

ORIENTATION (✓) ☒ VERTICAL ☐ HORIZONTAL ☐ ANGLE (SPECIFY) _____

DRILLING METHOD rotary FLUID mud

DEPTH FROM SURFACE

Ft. to Ft.

DESCRIPTION

Describe material, grain size, color, etc.

0-80 brownish & rock

80-240 hard black rock

240-290 soft black rock

290-340 greenish

340-390 greenish

390-440 greenish

440-490 greenish

490-540 greenish

540-590 greenish

590-640 greenish

640-690 greenish

690-740 greenish

740-790 greenish

790-840 greenish

840-890 greenish

890-940 greenish

940-990 greenish

990-1040 greenish

1040-1090 greenish

1090-1140 greenish

1140-1190 greenish

1190-1240 greenish

1240-1290 greenish

1290-1340 greenish

1340-1390 greenish

1390-1440 greenish

1440-1490 greenish

1490-1540 greenish

1540-1590 greenish

1590-1640 greenish

1640-1690 greenish

1690-1740 greenish

1740-1790 greenish

1790-1840 greenish

1840-1890 greenish

1890-1940 greenish

1940-1990 greenish

1990-2040 greenish

2040-2090 greenish

2090-2140 greenish

2140-2190 greenish

2190-2240 greenish

2240-2290 greenish

2290-2340 greenish

2340-2390 greenish

2390-2440 greenish

2440-2490 greenish

2490-2540 greenish

2540-2590 greenish

2590-2640 greenish

2640-2690 greenish

2690-2740 greenish

2740-2790 greenish

2790-2840 greenish

2840-2890 greenish

2890-2940 greenish

2940-2990 greenish

2990-3040 greenish

3040-3090 greenish

3090-3140 greenish

3140-3190 greenish

3190-3240 greenish

3240-3290 greenish

3290-3340 greenish

3340-3390 greenish

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4090-4140 greenish

4140-4190 greenish

4190-4240 greenish

4240-4290 greenish

4290-4340 greenish

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5140-5190 greenish

5190-5240 greenish

5240-5290 greenish

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5340-5390 greenish

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6090-6140 greenish

6140-6190 greenish

6190-6240 greenish

6240-6290 greenish

6290-6340 greenish

6340-6390 greenish

6390-6440 greenish

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6990-7040 greenish

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7090-7140 greenish

7140-7190 greenish

7190-7240 greenish

7240-7290 greenish

7290-7340 greenish

7340-7390 greenish

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8090-8140 greenish

8140-8190 greenish

8190-8240 greenish

8240-8290 greenish

8290-8340 greenish

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9140-9190 greenish

9190-9240 greenish

9240-9290 greenish

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10190-10240 greenish

10240-10290 greenish

10290-10340 greenish

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10390-10440 greenish

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11090-11140 greenish

11140-11190 greenish

11190-11240 greenish

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12090-12140 greenish

12140-12190 greenish

12190-12240 greenish

12240-12290 greenish

12290-12340 greenish

12340-12390 greenish

12390-12440 greenish

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13090-13140 greenish

13140-13190 greenish

13190-13240 greenish

13240-13290 greenish

13290-13340 greenish

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14140-14190 greenish

14190-14240 greenish

14240-14290 greenish

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14390-14440 greenish

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15090-15140 greenish

15140-15190 greenish

15190-15240 greenish

15240-15290 greenish

15290-15340 greenish

15340-15390 greenish

15390-15440 greenish

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15940-15990 greenish

15990-16040 greenish

16040-16090 greenish

16090-16140 greenish

16140-16190 greenish

16190-16240 greenish

16240-16290 greenish

16290-16340 greenish

16340-16390 greenish

16390-16440 greenish

16440-16490 greenish

16490-16540 greenish

16540-16590 greenish

16590-16640 greenish

16640-16690 greenish

16690-16740 greenish

16740-16790 greenish

16790-16840 greenish

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16890-16940 greenish

16940-16990 greenish

16990-17040 greenish

17040-17090 greenish

17090-17140 greenish

17140-17190 greenish

17190-17240 greenish

17240-17290 greenish

17290-17340 greenish

17340-17390 greenish

17390-17440 greenish

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17490-17540 greenish

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17940-17990 greenish

17990-18040 greenish

18040-18090 greenish

18090-18140 greenish

18140-18190 greenish

18190-18240 greenish

18240-18290 greenish

18290-18340 greenish

18340-18390 greenish

18390-18440 greenish

18440-18490 greenish

18490-18540 greenish

18540-18590 greenish

18590-18640 greenish

18640-18690 greenish

18690-18740 greenish

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18890-18940 greenish

18940-18990 greenish

18990-19040 greenish

19040-19090 greenish

19090-19140 greenish

19140-19190 greenish

19190-19240 greenish

19240-19290 greenish

19290-19340 greenish

19340-19390 greenish

19390-19440 greenish

19440-19490 greenish

19490-19540 greenish

19540-19590 greenish

19590-19640 greenish

19640-19690 greenish

19690-19740 greenish

19740-19790 greenish

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22190-22240 greenish

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25990-26040 greenish

26040-26090 greenish

26090-26140 greenish

26140-26190 greenish

26190-26240 greenish

26240-26290 greenish

26290-26340 greenish

2

HEALTH DEPT. USE ONLY

Log # 2

A.P. No. 52-380-25FEE 20.00DATE 9/24RECEIPT NO. 3032BY WFNAPA COUNTY HEALTH DEPARTMENT
DIVISION OF ENVIRONMENTAL HEALTH

RECEIVED

APPLICATION & PERMIT TO CONSTRUCT SEP 30 1976
A WATER WELLDIVISION OF
ENVIRONMENTAL HEALTHNAME [REDACTED] ADDRESS [REDACTED] DATE 9/24/76NAME Doshier + Greg Son ADDRESS Napa - Vallejo Hwy
(WELL DRILLER) (JOB LOCATION)TYPE OF WORK
NEW WELL ☒ RECONDITIONING ☐ DEEPENING ☐
TEST HOLES ☐ DESTROYING ☐ OTHER ☐
TYPE I PERMIT ☒ TYPE II PERMIT ☐ FEE ☐PROPOSED USE
DOMESTIC ☒ IRRIGATION ☐ INDUSTRIAL ☐ MUNICIPAL ☐
TEST WELL ☐ OTHER ☐Sewage disposal on site (existing or proposed) Public ☐ Individual ☒ Private ☐
Distance from well to any part of nearest sewage disposal system ☐ feet
(Sketch of site to accompany application.)TYPE OF EQUIPMENT TO BE USED
Rotary ☒ Cable ☐ Hand Dug ☐ Other ☐CONSTRUCTION PROPOSED
Diameter of casing 6" Material Plastic Annular Space: Size 2"
Sealed with: Concrete ☐ Grout ☒ Neat Cement ☐ Puddled Clay ☐ Other ☐
Conductor Casing: Yes ☐ No ☒ Material ☐
Chlorination by: Owner ☒ Pump Co. ☐ Driller ☐[Signature]
(SIGNATURE OF APPLICANT)9/24/76
(DATE)

CASING

CONSTRUCTION

Total Depth 235 Ft.
Surface Seal to 25 Ft.
Any stratas sealed: Yes ☐ No ☐
If yes, depth of stratas:
From Ft. to Feet
From Ft. to FeetPerforations:
From Ft. to Feet
From Ft. to Feet
From Ft. to Feet

WATER LEVELS

First water at 85 Feet
Static level at 65 Feet

WELL TESTS

How performed By air
Yield 25 GPM with 120 Feet
Drawdown Ft. after Hrs.

WELL LOG

(Formation; describe by color, size of material, structure)

	Ft.	to	Ft.
0	4	Topsoil	
4	7	Grey & wh. tuffa	
7	60	Blk. rock (med. hard)	
60	72	Grn. tuffa (med. hard)	
72	78	Blk. rock (hard)	
78	86	Grn. tuffa (med. hard)	
86	93	Blk. rock (hard)	
93	113	Grn., blk. & brn. tuffa (med. hard)	
113	128	Blk. rock w/ some brn. (hard)	
128	145	Blk. Basalt (very hard)	
145	156	Blk. & brn. vol. rock (hard)	
156	172	Blk. basalt (very hard)	
172	185	Blk. basalt (very hard) Vol. rock frac. (hard)	
185	189	Blk. basalt (very hard)	
189	210	Blk. & grn. tuffa (med. Hard) w/ strg. of blk. vol. rock fractures	
210	235	Blk. rock fract. & hard	

Signed [Signature]
License No. 294001

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. **323993**

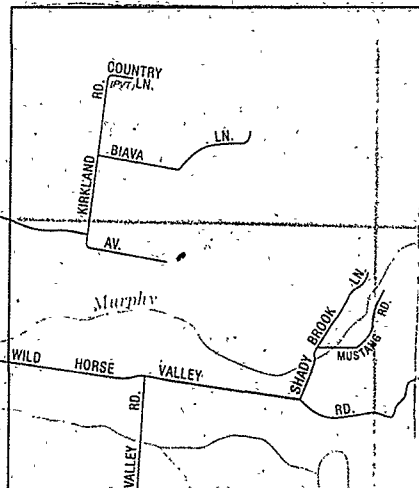
Notice of Intent No. _____
Local Permit No. or Date _____

State Well No. _____
Other Well No. _____

(1) OWNER: Name _____
Address _____
City _____

(2) LOCATION OF WELL (See instructions): A.P. #52-380-31
County Napa Owner's Well Number _____
Well address if different from above _____
Township _____ Range _____ Section _____
Distance from cities, roads, railroads, fences, etc. _____

(12) WELL LOG: Total depth 310 ft. Completed depth 305 ft.
from ft. to ft. Formation (Describe by color, character, size or material)
0 - 1 topsoil
1 - 20 brown gray black rock
20 - 30 brown black red rock
30 - 50 lt green & black rock
50 - 70 red gray black & green rock
70 - 90 brown black dk gray rock
90 - 150 black & dk gray rock hard
150 - 170 dk gray stringers white & red rock
170 - 210 black dk gray rock stringers red
210 - 230 black hard stringers red green
230 - 270 black red & brown rock hard
270 - 290 dk green black & red rock fract
290 - 310 black lt green lt red rock med



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 sea
Diameter of bore 8 3/4"
Packed from 20' to 305'

(7) CASING INSTALLED:

Steel ☐ Plastic ☒ Concrete ☐

(8) PERFORATIONS:

Type of perforation or size of screen

From ft.	To ft.	Dia. in.	Gage or Wall	From ft.	To ft.	Slot size
0	305	8"	F480	45'	305'	factory

(9) WELL SEAL:

Was surface sanitary seal provided? Yes ☒ No ☐ If yes, to depth 20 ft.
Were strata sealed against pollution? Yes ☐ No ☒ Interval _____ ft.
Method of sealing concrete

(10) WATER LEVELS:

Depth of first water, if known _____ ft.
Standing level after well completion 40 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 40 ft. At end of test 200 ft.
Discharge _____ gal/min after 5 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

Work started 07-11 1997 Completed 07-22 1997

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 Si (Well Driller)

NAME McLean & Williams, Inc.

Address 878 El Centro Ave. (Typed or printed)

City Napa ZIP 94558

License No. 396352 Date of this report 08-06-97

2

Signed: [Signature]
License 294001

QUADRUPLICATE
For Local Requirements

STATE OF CALIFORNIA
WELL COMPLETION REPORT
Refer to Instruction Pamphlet

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./STATION NO. 12125100

LATITUDE 38° 12' N LONGITUDE 122° 25' W

APN/TRS/OTHER 12125100

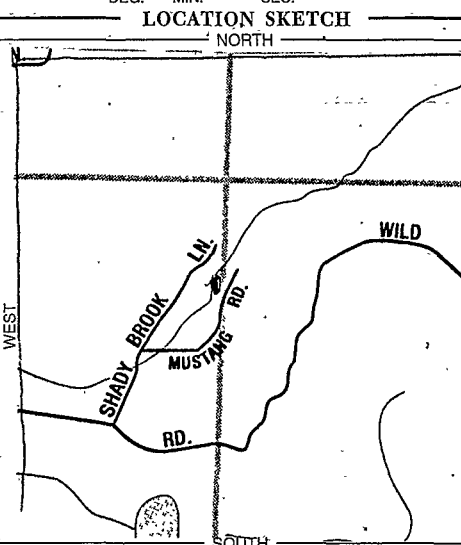
Page 1 of 1
Owner's Well No. 8-17-00
Date Work Began 8-17-00, Ended 8-24-00 No. **813817**
Local Permit Agency Napa
Permit No. 96-11487 Permit Date 4-25-00

GEOLOGIC LOG

WELL OWNER

ORIENTATION (✓)			☒ VERTICAL	☐ HORIZONTAL	☐ ANGLE	☐ (SPECIFY)
			DRILLING METHOD	Mud	FLUID	Bentonite
DEPTH FROM SURFACE			DESCRIPTION			
Ft. to Ft.			Describe material, grain size, color, etc.			
0	20	brown soils & boulders				
20	30	solid gray rock				
30	50	red & black rock fract				
50	70	dk gray rock stringers red & green				
70	80	dk gray rock hard				
80	90	red rock soft				
90	110	black red & gray rock med				
110	130	gray rock stringers red				
130	150	gray & black stringer red & green				
150	170	black & dk gray rock fract hard				
170	190	black & gray fract med				
190	210	black & gray stringers red & green fract				

Name [REDACTED]
Mailing Address [REDACTED]
CITY [REDACTED] STATE [REDACTED] ZIP [REDACTED]
Address 1019 Mustang Road
City Napa, CA 94558
County Napa
APN Book 052 Page 390 Parcel 012
Township Range Section Section
Latitude DEG. MIN. SEC. NORTH Longitude DEG. MIN. SEC. WEST



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)

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.

WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER 2 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 30 (Ft.) & DATE MEASURED 8-24-00
ESTIMATED YIELD * 30 (GPM) & TEST TYPE Air
TEST LENGTH 4 (Hrs.) TOTAL DRAWDOWN 180 (Ft.)
* May not be representative of a well's long-term yield.

TOTAL DEPTH OF BORING 210 (Feet)
TOTAL DEPTH OF COMPLETED WELL 200 (Feet)

DEPTH FROM SURFACE		BORE- HOLE DIA. (Inches)	CASING (S)						DEPTH FROM SURFACE		ANNULAR MATERIAL				
			TYPE (X)				MATERIAL / GRADE	INTERNAL DIAMETER (Inches)			GAUGE OR WALL THICKNESS	SLOT SIZE IF ANY (Inches)	TYPE		
Ft.	to	Ft.	BLANK	SCREEN	CON- DUCTOR	FILL PIPE									CE- MENT (X)
0	30	12 1/4						F480	6"	200					
30	100	9 7/8	X					F480	6"	200					
100	200	9 7/8		X				F480	6"	200	factory			X	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.

NAME McLean & Williams, Inc.
(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
878 El Centro Ave. Napa CA 94558
ADDRESS CITY STATE ZIP
Signed [Signature] DATE SIGNED 9-27-00 396352
WELL DRILLER/AUTHORIZED REPRESENTATIVE C-57 LICENSE NUMBER

ORIGINAL
File with DWR

STATE OF CALIFORNIA
WELL COMPLETION REPORT

Refer to Instruction Pamphlet

No. **0900866**

DWR USE ONLY — DO NOT FILL IN

05N03W08

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

APN/TRS/OTHER

Page ____ of ____

Owner's Well No. _____

Date Work Began **9-23-03**, Ended **9-26-03**

Local Permit Agency **Napa**

Permit No. **96-12418**

Permit Date **7/9/03**

DEPTH FROM SURFACE			DESCRIPTION
FL.	to	FL.	
0	20		topsoil red rock
20	40		gray hard rock
40	110		gray rock
110	150		multi color rock
150	170		gray hard rock
170	190		gray black rock
190	210		gray rock
210	230		gray black red green rock
230	270		black green gray rock
270	290		black green red rock
290	310		multi color lava rock

ORIENTATION () ☒ VERTICAL ☐ HORIZONTAL ☐ ANGLE _____ (SPECIFY)

DRAWING METHOD **air** FLUID **foam**

Describe material, grain size, color, etc.

TOTAL DEPTH OF BORING **310** (Feet)

TOTAL DEPTH OF COMPLETED WELL **310** (Feet)

WELL OWNER

Name _____

Mailing Address _____

CITY _____ ZIP _____

WELL LOCATION

Address **6440 Wild Horse Valley Road**

City **Napa**

County **Napa**

APN Book **052** Page **380** Parcel **014**

Township _____ Range _____ Section _____

Lat _____ DEG. MIN. SEC. N Long _____ DEG. MIN. SEC. W

LOCATION SKETCH

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")

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 _____ (FL.) BELOW SURFACE

DEPTH OF STATIC WATER LEVEL **180** (FL.) & DATE MEASURED **9/26/03**

ESTIMATED YIELD **37** (GPM) & TEST TYPE **air**

TEST LENGTH **3** (Hrs.) TOTAL DRAWDOWN **260** (FL.)

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

DEPTH FROM SURFACE		BORE-HOLE DIA. (Inches)	CASING (S)					SLOT SIZE IF ANY (Inches)	
FL.	to		FL.	TYPE ()	MATERIAL / GRADE	INTERNAL DIAMETER (Inches)	GAUGE OR WALL THICKNESS		
			BLANK	SCREEN	CON-DUCTOR	FILL PIPE			
0	60	12 3/4	X				F480	6"	200
60	110	9 7/8	X				F480	6"	200
110	150	9 7/8		X			F480	6"	200
150	170	9 7/8	X				F480	6"	200
170	270	9 7/8		X			F480	6"	200
270	290	9 7/8	X				F480	6"	200
290	310	9 7/8		X			F480	6"	200

DEPTH FROM SURFACE		ANNULAR MATERIAL				
FL.	to	FL.	CE-MENT ()	BEN-TONITE ()	FILL ()	FILTER PACK (TYPE/SIZE)
0	110					pea gravel
110	310					#6 sand

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 **McLean & Williams, Inc.**

(PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)

878 El Centro Ave., Napa, CA 94558

ADDRESS _____ CITY _____ STATE _____ ZIP _____

Signed **Sherry Salen** DATE SIGNED **1/27/04** C-57 LICENSE NUMBER **396352**

C-57 LICENSED WATER WELL CONTRACTOR

APPENDIX D
EXISTING/PROPOSED
WATER USE

1260 SHADY BROOK LANE, NAPA CA
APN 052-190-013
EXISTING/PROPOSED WATER USAGE
TABLE 1



WATER USAGE			
Description	Water Usage Rate ¹	Detailed Description	Water Demand (acre-feet/year)
<u>Residential</u>			
Primary Residence	0.5 to 0.75 acre-feet per year (plus additional usage from landscaping and/or pools)	Includes 0.05 acre-feet per year for a pool w/cover	0.80
Secondary Residence or Farm Labor Dwelling	0.20 to 0.50 acre-feet per year	Includes 1 guest cottage without kitchen	0.25
<u>Agricultural</u>			
Vineyards		Includes 1.00 acres of vineyards	
Irrigation Only	0.2 to 0.5 acre-feet per acre per year		0.50
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
<u>Winery</u>			
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
<u>Industrial</u>			
Food Processing	31.0 acre-feet per employee per year		NA
Printing/Publishing	0.60 acre-feet per employee per year		NA
<u>Commercial</u>			
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)			1.55

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