



**MEMORANDUM**

May 8, 2023

To: Ms. Pam Arifian  
Planner III, Conservation & Engineering Division  
Napa County Planning, Building, & Environmental Svcs  
Sent via email ([Pam.Arafian@countyofnapa.org](mailto:Pam.Arafian@countyofnapa.org))

cc Mr. Jim Bean, Pritchard Hill Properties LLC  
Sent via email ([jim@brandnapavalley.com](mailto:jim@brandnapavalley.com))

Mike Muelrath, Applied Civil Engineering  
Sent via email ([Mike@appliedcivil.com](mailto:Mike@appliedcivil.com))

From: Edward Linden & Anthony Hicke  
Richard C. Slade & Associates LLC

Re: Response to County Comments on  
Water Availability Analysis  
Pritchard Hill Properties LLC  
APN Nos. 032-560-023 and 031-010-034

Job No. 643-NPA05

Dear Ms. Arifian,

This letter has been prepared to help answer questions that were posed to Richard C. Slade & Associates, LLC, Consulting Groundwater Geologists (RCS) and the project engineer, Applied Civil Engineering, Inc (ACE), during our March 27, 2023, conference call meeting. The purpose of the meeting was to review questions raised by Napa County PRMD and their consultant, Luhdorff and Scalmanini Consulting Engineers (LSCE), regarding the proposed new vineyard development project WAA Memorandum (2020) and associated Addendum (2023) prepared by RCS. As described in those RCS-prepared documents, the property owner, Pritchard Hill Properties LLC (PHP), intends to develop new vineyard areas on the subject property (APNs 032-560-023 and 031-010-034).

Specific requests posed by the County and/or LSCE during the conference call are underlined below, followed by the RCS response.



**Provide additional detail on the easement for the “Canyon Well”.**

On March 10, 2023, Ms. Vicki Kretsinger’s sent an email to Ms. Arafian (forwarded to RCS) in which she wrote:

*“As we discussed during our meeting a couple plus weeks ago, it would be very helpful for the applicant to provide clear evidence of the ongoing accessibility and use of the Canyon well. If there is any question about that well as a reliable source of supply, it affects the information in the WAA to support the project.”*

Mr. Muelrath was forwarded this message on March 13, 2023 and provided a response via email on March 15, 2023 regarding the easement for the Canyon Well; Mr. Muelrath refers to the Canyon Well as the “Colgin Ravine Well”. Therein, Mr. Muelrath directly responded to Ms. Kretsinger’s message regarding provision evidence of the ongoing accessibility and use of the Canyon Well, as follows:

*“Regarding Vicki’s first point – the easement for the Colgin Ravine Well is attached (at that time the “Colgin” property was owned by Wender, and the “PHP” property was owned by Long”. I think this covers the “clear evidence of the ongoing accessibility and use of the Canyon well” requested below.”*

That easement document that was attached to the above-referenced email is attached to this Memorandum.

**Provide additional detail on the easement for the “Easement Well” that exists at the southeast corner of the PHP property.**

Although the Easement Well exists on the subject PHP property, it is owned by others (i.e., not Pritchard Hill Properties LLC). An easement reportedly exists to supply water to a neighboring offsite property, but this well is not currently used (RCS, 2020). As reported by ACE, and discussed during the conference call meeting, the easement associated with the Easement Well is limited to providing water to an offsite property for residential use.

As described by ACE, if, theoretically, the owner of the Easement Well decided to attempt to use the Easement Well for uses other than residential supply (such as a vineyard or a winery), that proposed use would require preparation of a new WAA because it would require County-approval of a discretionary permit for that alternate and/or additional groundwater use.

**Comment on the redundancy of the Fitts Well and the New Well.**

Although not explicitly discussed in the WAA (RCS, 2020), the New Well was originally drilled by the property owner to provide redundancy to the Fitts Well. Groundwater levels in the area of the property where the New Well and Fitts well were constructed are relatively very deep compared to water levels to other areas of Napa County. As shown on Table 1 of the WAA (RCS, 2020), not reproduced herein, the Fitts well was constructed using air-rotary drilling methods to a depth of 855 ft, using 6-inch PVC casing; it has a current static water level at a depth on the order of 700



ft. Drilling and reaming wells via the air rotary method to such depths can be challenging in general; certain drillers in the Napa County region are limited as to the diameter of borehole that can be properly drilled and constructed to such depths, particularly when using air rotary drilling methods. Due to limitations on the size and ability of air compressors readily possessed by local drillers to provide the necessary pressures and volumes of air, larger-diameter air-rotary drilled boreholes are challenging. Hence, construction of a 6-inch diameter cased well to a depth of 869 ft was likely a more cost effective and feasible drilling operation at the time of construction of both wells.

As summarized in Table 2 of the WAA (RCS, 2020), not reproduced herein, the well is capable of pumping at rates on the order of 35 gpm, and it has a specific capacity of more than 2 gallons per minute per foot of water level drawdown (gpm/ft ddn). Hence very little water level drawdown occurs when pumping the Fitts well relative to other wells constructed in the Sonoma Volcanics. With a specific capacity of 2 gpm/ft ddn, drawdown in the Fitts well when pumping at 15 gpm is on the order of 17 ft. The aquifer system into which the well is constructed could likely produce water at much higher rates, but the pumping rate is limited by the size of the pump that can fit down a deep 6-inch diameter, PVC cased well. Therefore, as a means to increase the production of the Fitts Well (the pumping rate for which was limited by the size of the pump that could fit into the well), the property owner elected to drill a second, similarly constructed well near the Fitts Well, to serve as a redundant source and effectively double the pumping capacity in the area. The New Well was successfully constructed with construction parameters and pumping characteristics that are very similar to those for the Fitts Well.

As documented in the WAA (RCS, 2020), multiple pumping tests were performed in the Fitts Well and the New Well to document the pumping rates at which they are capable of operating. These tests included a constant rate pumping test performed in the Fitts Well, at a rate of 34 gallons per minute (gpm). The other pumping test, described in RCS (2020), was a simultaneous constant rate pumping test that was performed to evaluate the combined pumping rate attainable onsite from simultaneous pumping of the Fitts Well and the New Well. During that second combined test, the Fitts Well again produced groundwater at a rate of 34 gpm, whereas the New Well simultaneously produced groundwater at a rate of 35 gpm. The combined pumping rate that resulted from the simultaneous testing of the two wells was therefore 71 gpm, which is nearly twice the pumping required rate from the wells to meet the demands of the project; about 38 gpm to 43 gpm combined is needed (RCS 2020).

#### **Comment on the 100 feet of drawdown noted on the New Well Completion Report.**

On the WCR for the New Well, the driller, Pulliam Well Exploration, Inc. (PWE) noted the total drawdown during a 15 gpm airlift test was 100 ft. However, water level drawdown cannot be determined during airlifting. Regardless, even if the actual drawdown had been 100 ft, such a large value would be much greater than the roughly 18 ft of drawdown that WAS observed by RCS when pumping the well at 35 gpm (a higher pumping rate) while the Fitts well was also pumping. LSCE expressed a desire to understand the significance of the drawdown value, and requested that RCS contact the well driller for insight.



Measurement of drawdown while airlifting is impossible, by the nature of the airlifting. In the experience of RCS, when a driller records a “drawdown” value for an airlift test, that value typically represents the depth to the bottom of the airline, or the amount of airline that was installed into the well below the static water level. For the New Well WCR, the latter explanation is most likely based on the depth of the well (869 ft) and the reported static water level reported for the airlift test (720 ft), an airline depth setting of 100 ft below static water level (or 820 ft) at the time is a reasonable assumption, particularly when compared to the pumping test data presented in the WAA prepared by RCS (2020).

At the request of LSCE, RCS also attempted to contact the well driller, Pulliam Well Exploration, Inc, of Angwin, CA, to determine if the driller could provide more insight into the recorded 100-foot drawdown value. Pulliam Well Exploration, Inc, is no longer in business, and their phone number does not answer. RCS also contacted Pulliam Well Drilling, of Napa, CA, because both companies were owned by one of each Pulliam Brothers. Pulliam Well Drilling confirmed that Pulliam Well Exploration is no longer in business, and all parties associated with the company have moved to Texas and likely did not retain any of their records. Coincidentally, Pulliam Well Drilling is also no longer in business.

**Provide additional detail on the monitoring program recommendations and seasonal water levels.**

In the WAA (RCS, 2020), RCS included the following passage as item number 11 in the Conclusions section:

*“RCS recommends implementation of a groundwater monitoring program at the subject property. This would include the frequent, ongoing monitoring of static and pumping water levels in the onsite wells, and also of the instantaneous flow rates and cumulative pumped volumes from each of the onsite wells via dual-reading flow meters (that records both flow rate and totalizing values, respectively) at each well. RCS also recommends that water level transducers be purchased and installed in the onsite wells to permit the automatic, frequent, and accurate recording of water levels in those wells. By continuing to observe the trends in groundwater levels and future well production rates/volumes over time by qualified professionals, potential declines in water levels and well production in the onsite wells, along with possible changes in operational pumping scenarios, can be addressed in a timely manner.”*

As described in that quoted passage, frequent and ongoing groundwater monitoring has been previously recommended by RCS for the subject property. Such an ongoing groundwater monitoring program may also yield insights regarding possible seasonal variations in water levels in the aquifer(s) beneath the subject property. Seasonal water level data is specifically important for the aquifer(s) beneath the subject property because most of the groundwater pumping at the subject property, and in the Pritchard Hill region, occurs during the vineyard irrigation season. Frequent data collection (with data collected at a minimum weekly during the irrigation season, and monthly during the non-irrigation season, as an example) will help to illustrate seasonal



changes in water levels. Automatic data logging devices could be used to capture data on a daily basis, or even several readings per hour throughout the year, if desired.

**Provide more information on how the 14% recharge rate was determined, and how this property relates to the Conn Creek watershed and Napa River near Napa watershed recharge rates from the LSCE & MBK 2013 Memorandum.**

A discussion of recharge rates was provided in the Tier 1 Water Availability Analysis (RCS, 2020), as follows:

*“Estimates of groundwater recharge as a percentage of rainfall were presented for a number of watersheds (but not all watersheds) in Napa County in the report titled “Updated Napa County Hydrogeologic Conceptual Model” (LSCE&MBK, 2013) prepared for Napa County. Watershed boundaries within Napa County are shown on Figures 8-3 and 8-4 in that report (not reproduced herein). Figure 6, “Watershed Boundaries,” was prepared for this project using those same watershed boundaries provided by MBK Engineers (MBK), for which watershed water balance data are available in the LSCE&MBK, 2013 report. As shown on Figure 6, the subject property is located along the boundary line of the watersheds referred to by MBK as the “Napa River Watershed near Napa” and “Conn Creek Watershed.” As shown on Table 8-9 on page 97 of the referenced report (LSCE&MBK, 2013), 17% and 21% of the average annual rainfall that occurs within the “Napa River Watershed near Napa” and “Conn Creek Watershed,” respectively, was estimated to be able to deep percolate as groundwater recharge. Note that, as shown on Table 8-8 of LSCE&MBK (2013), several sub-watershed areas are tributary to the “Napa River Watershed near Napa,” including the “Conn Creek Watershed.” Groundwater recharge estimates from rainfall into the Sonoma Volcanics by RCS for the nearby Long Ranch “Parcel 12” project (2019), as well as for other nearby projects for Mountain Peak (2015) and Bloodlines LLC (2017), which are located within the “Napa River Watershed near Napa” and overlying similar volcanic geologic materials as the subject property, provided a more conservative 14% estimate for those properties.”*

The stated 14% recharge value was derived by RCS for those prior, nearby projects as follows. Prior to the publication of LSCE & MBK (2013), recharge estimates regularly used by RCS and others for the Sonoma Volcanics throughout Napa County in different watersheds have historically ranged from 7% to perhaps 14%. A more site-specific estimate of the deep percolation rate of rainfall at the subject property can be made using data from LSCE & MBK (2013) in conjunction with the county-provided 10-year average PRISM rainfall dataset (Napa County, 2022) and the boundary of the Napa Valley subbasin of the Napa-Sonoma Valley Groundwater Basin (adapted from CA DWR, 2003). Figure 1A shows the watershed boundaries of LSCE & MBK (2013), superimposed on a geologic map of the region (USGS, 2007); Figure 1B shows a reproduction of the explanation of geologic units and symbols for that USGS map. The bold brown line shown on Figure 1A represents the approximate outline of the Napa Valley subbasin (CA DWR, 2003), which



roughly delineates the boundary between alluvial deposits on the Napa Valley floor (shown as tan to light yellow areas) and the hill and mountain areas that generally surround these alluvial deposits. The subject property is shown on Figure 1A lying just east-southeast of the boundary of the Napa River Watershed Near Napa, and in the same Sonoma Volcanics rocks that comprise a large portion of the western side of the watershed.

As discussed above, LSCE & MBK (2013) estimated that 17% of the average annual rain that falls within the “Napa River Watershed near Napa” undergoes deep percolation and recharges the groundwater in the local aquifers. However, this “recharge rate” estimate is a watershed-wide water balance-based average that does not differentiate between hydrogeologically distinct areas of the watershed. It is more likely that the actual percentage of rainfall that undergoes deep percolation into the valley floor alluvial deposits (within the brown boundary on Figure 1A) of the “Napa River Watershed near Napa” is significantly higher than the percentage of rainfall that undergoes deep percolation into the geologic materials that are exposed throughout the hillside and mountain areas of the watershed.

A more hydrogeologically plausible estimate of the groundwater recharge rate in the hill and mountain areas can be calculated by assuming that this rate is higher within the Napa Valley subbasin portion of the watershed (primarily valley floor alluvial deposits), relative to the groundwater recharge rate in the hill and mountain areas of the watershed that are outside of the subbasin (and are generally underlain by different geologic materials that are more consolidated and generally less permeable). This is as opposed to using a constant groundwater recharge rate throughout the entire watershed, as presented by LSCE & MBK (2013). The key value that is required to calculate this estimate is the average volume of rain that falls in each of these distinct portions of the watershed (valley floor areas versus hill and mountain areas). To accomplish this, the following values (also presented on Table 1, “Calculation of Theoretical Rainfall Recharge Percentage - Napa River Near Napa Watershed”) were calculated with a GIS:

- 45.58 square miles (sqmi) - The area of the Napa Valley subbasin (CA DWR, 2003) within the “Napa River Watershed near Napa” (LSCE & MBK, 2013), or the “valley floor portion”.
- 172.89 sqmi - The area<sup>1</sup> of the portion of the “Napa River Watershed near Napa” (LSCE & MBK, 2013) that is not within the Napa Valley subbasin (CA DWR, 2003), or the “hill and mountain portion”.
- The average annual rainfall value for the valley floor portion was derived by calculating the area-weighted average of the portions of the County-provided PRISM rainfall dataset (Napa County, 2022) cells that are within both the watershed and the subbasin.
- The average annual rainfall value for the hill and mountain portion was derived by calculating the area-weighted average of the portions of the County-provided PRISM rainfall dataset (Napa County, 2022) cells that are within the watershed, but are outside of the subbasin.

The results of these calculations are shown on Table 1. With these values, and as shown on Table 1, assuming the average rainfall as calculated using the County-provided PRISM data set,

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<sup>1</sup> Calculated in the “NAD 1983 StatePlane California II FIPS 0402 (US Feet)” projected coordinate system.



three scenarios are presented in which the deep percolation percentage on the floor of the Napa Valley is adjusted to values higher than 17% that are more hydrogeologically plausible than a 17% deep percolation percentage. The results of the three scenarios listed on Table 1 are as follows:

- Scenario 1 assumes a valley floor (alluvium) deep percolation percentage of 20%, with a resultant deep percolation percentage for the volcanic rocks in the adjoining hill and mountain areas of the watershed of 16%.
- Assuming the deep percolation of rainfall in the alluvium is 25% for Scenario 2, the percentage of rainfall that is calculated to deep percolate in the adjoining hill and mountain areas of the watershed is 15%.
- A deep percolation percentage in the alluvium for Scenario 3 of 30% yields a deep percolation percentage for the volcanic rocks in the adjoining hill and mountain areas of 14%.

Based on the analyses presented in Table 1, a value of 14% is an appropriate and conservative estimate for the groundwater recharge rate for areas within and proximal to the “Napa River Watershed Near Napa”, but outside of the alluvial deposits of the Napa Valley subbasin (e.g., the subject property).

**Attachments:**

Table 1, “Calculation of Theoretical Rainfall Recharge Percentage - Napa River Near Napa Watershed”)

Figure 1, “Watershed Geology”

Figure 1B, “Watershed Geology Legend”

“Easement Well” Easement: “1998 0007119 Easement in Gross Granted by Wender to Long.pdf”



**References:**

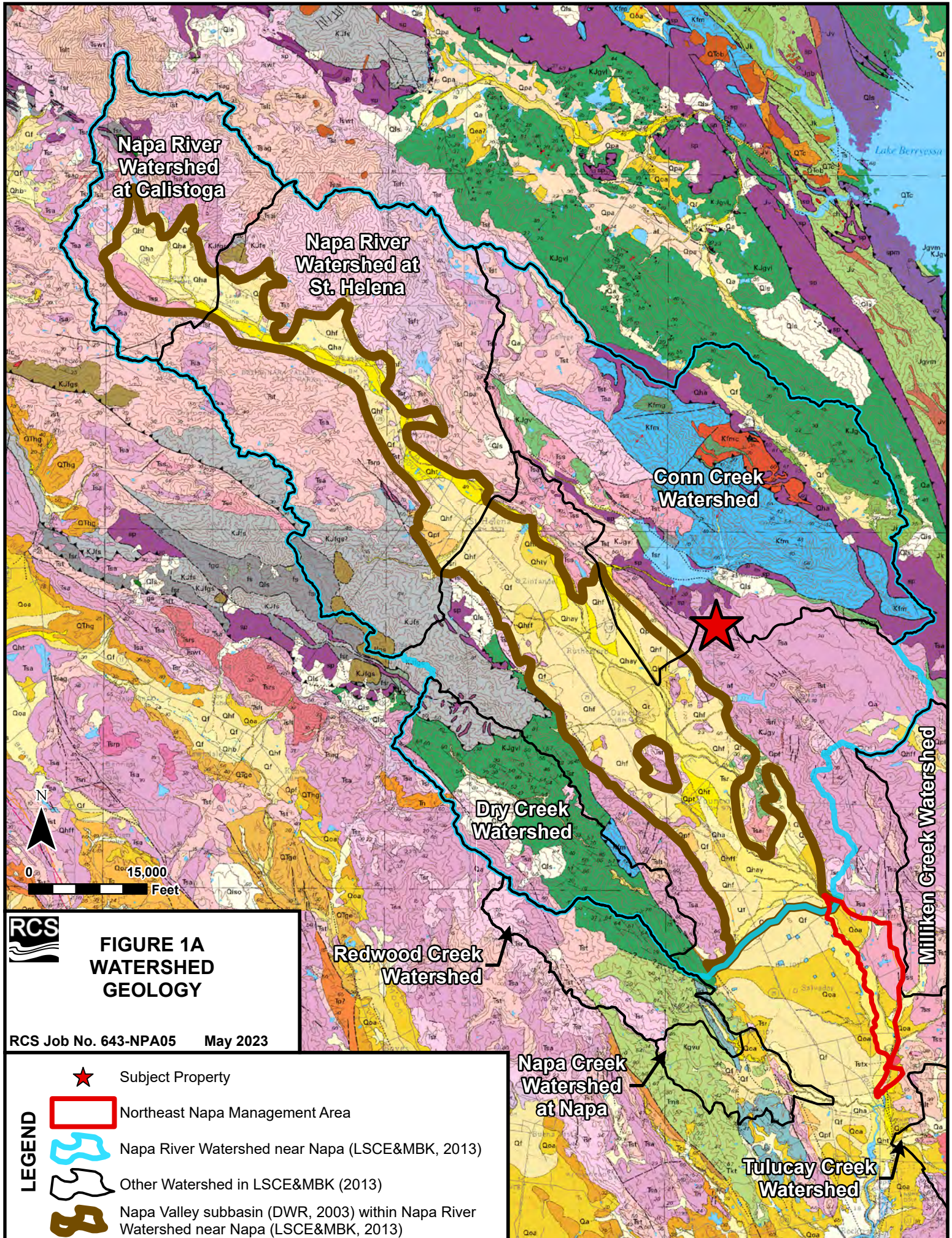
- CA DWR (California Department of Water Resources), 2003. California's Groundwater, Bulletin 118 Update 2003. October 2003.
- LSCE & MBK (Luhdorff & Scalmanini Consulting Engineers and MBK Engineers), 2013. Updated Hydrogeologic Conceptualization and Characterization of Conditions, Prepared for Napa County. January 2013.
- Napa County, 2022. MeanPrecip\_WY\_2012\_2021\_PRISM. Feature Service polygon layer. Credits: <https://prism.oregonstate.edu/recent/> (data modified by LSCE and Napa Co. PBES). Last updated: 10/20/2022. Accessed 12/14/2022 at: <https://napacounty.maps.arcgis.com/home/item.html?id=985a11dfb2ab45518254354036c93aa2>
- Richard C. Slade & Associates LLC (RCS), 2020. Results of Napa County Tier 1 Water Availability Analysis Pritchard Hill Properties LLC 90, 92, and 95 Long Ranch Road Vicinity Pritchard Hill, Napa County, CA. Dated 7/13/2020.
- Richard C. Slade & Associates LLC (RCS), 2023. Addendum to Tier 1 Water Availability Analysis (WAA), Revised Precipitation Dataset, Pritchard Hill Properties LLC. Dated 1/10/2023.
- USGS, 2007. Graymer, et al. Geologic Map and Map Database of Eastern Sonoma and Western Napa Counties, California. US Geological Survey Scientific Investigations Map 2956. Version 1.0, April 3, 2007.

**Table 1**  
**Calculation of Theoretical Rainfall Recharge Percentage - Napa River Near Napa Watershed**

Portion of "Napa River Watershed Near Napa"	Area*		PRISM Rainfall <sup>†</sup> (inches)	Rainfall Volume (AFY)	Scenario 1 Deep Percolation		Scenario 2 Deep Percolation		Scenario 3 Deep Percolation	
	(mi <sup>2</sup> )	(acres)			Percentage (%)	Volume (AF)	Percentage (%)	Volume (AF)	Percentage (%)	Volume (AF)
Valley Floor Portion	45.58	29,171	29.42	71,518	20%	14,304	25%	17,880	30%	21,455
Hill and Mountain Portion	172.89	110,650	31.83	293,498	16%	47,735	15%	44,159	14%	40,583
Entire Watershed	218.47	139,821	31.32	364,932	17%	62,038	17%	62,038	17%	62,038

<sup>†</sup>PRISM 10-Year Average Rainfall (2012-2021) provided by Napa County (2022)

\*Calculated in the "NAD 1983 StatePlane California II FIPS 0402 (US Feet)" projected coordinate system



**FIGURE 1A  
WATERSHED  
GEOLOGY**

RCS Job No. 643-NPA05 May 2023

- LEGEND**
- ★ Subject Property
  - ▭ Northeast Napa Management Area
  - 🌊 Napa River Watershed near Napa (LSCE&MBK, 2013)
  - 🌊 Other Watershed in LSCE&MBK (2013)
  - 🌊 Napa Valley subbasin (DWR, 2003) within Napa River Watershed near Napa (LSCE&MBK, 2013)

LIST OF MAP UNITS

[Some unit exposures on the map are too small to distinguish the color for unit identification. These units are labeled where possible, and unlabeled units are attributed in the database.]

SURFICIAL DEPOSITS

af	Artificial fill (Historic)
afbm	Artificial fill over Bay mud (Historic)
alf	Artificial levee fill (Historic)
Qhc	Stream channel deposits (late Holocene)
Qhay	Younger alluvium (late Holocene)
Qhty	Terrace deposits (late Holocene)
Qha	Alluvium (Holocene)
Qht	Terrace deposits (Holocene)
Qhf	Alluvial fan deposits (Holocene)
Qhff	Fine-grained alluvial fan deposits (Holocene)
Qhl	Natural levee deposits (Holocene)
Qhb	Basin deposits (Holocene)
Qhbm	Bay mud (Holocene)
Qa	Alluvium (Holocene and late Pleistocene)
Qt	Terrace deposits (Holocene and late Pleistocene)
Qf	Alluvial fan deposits (Holocene and late Pleistocene)
Qls	Landslide deposits (Holocene and late Pleistocene)
Qlsa	Andesitic composition
Qlsr	Rhyolitic composition
Qpa	Alluvium (late Pleistocene)
Qpt	Terrace deposit (late Pleistocene)
Qpf	Alluvial fan deposits (late Pleistocene)
Qoa	Alluvium (late and early Pleistocene)
Qlso	Landslide deposits (late and early Pleistocene)
Clear Lake Volcanics	
Qr	Rhyolite (Pleistocene)
QTob	Olivine basalt (Pleistocene and Pliocene)
QTt	Tuff (Pleistocene and/or Pliocene)
Tr	Rhyolite (Pliocene)
QTc	Cache Formation (Pleistocene and/or Pliocene)
QTge	Glen Ellen Formation (early Pleistocene? and Pliocene)
QThg	Huichica and Glen Ellen Formations, undivided (early Pleistocene? and Pliocene)

Sonoma Volcanics

Tsv	Sonoma Volcanics, undivided (Pliocene and late Miocene)
Tsr	Rhyolite flows
Tsrl	Rhyolite plugs
Tsrs	Soda rhyolite flows
Tsrp	Perilitic rhyolite
Tsrb	Rhyolite breccia
Tsa	Andesite to basalt lava flows
Tsal	Andesite to dacite plugs
Tsb	Basalt flows
Tsfd	Basalt or andesite lava flows and sediments
Tst	Pumiceous ash-flow tuff
Tswt	Welded ash-flow tuff
Tstx	Tuff(?)
Tsag	Agglomerate
Tslt	Tuff breccia
Tsft	Tuff
Tss	Volcanic sand and gravel
Tsd	Diatomite
Twg	Wilson Grove Formation (late Pliocene to late Miocene)
Tc	Sand and gravel of Cotati (Pliocene and late Miocene)
Tp	Petaluma Formation (early Pliocene and late Miocene)
Tdr	Donnell Ranch Volcanics (late Miocene)
Th	Neroly Sandstone (late Miocene)
Tca	Cierbo Sandstone (late Miocene)
Tbm	Burdell Mountain volcanics (late and middle? Miocene)
Tms	Unnamed sandstone (middle Miocene)
Tkt	Kirker Tuff (early Miocene and/or Oligocene)
Td	Unnamed sandstone (Eocene and Paleocene)
Ts	Unnamed sandstone (Eocene? or Paleocene?)

GREAT VALLEY COMPLEX

Great Valley sequence	
KJgv	Sandstone, shale, and conglomerate (Late Cretaceous to Late Jurassic)
Kgvu	Sandstone, shale, and conglomerate (Late Cretaceous)
Kv	Venado Formation (Late Cretaceous)
KJgvl	Sandstone and shale (Early Cretaceous and Late Jurassic)
KJsp	Sedimentary serpentinite member
Jk	Knoxville Formation (Late Jurassic)
Jsp	Sedimentary serpentinite member
Jgvm	Mélange
Coast Range ophiolite	
Jv	Basaltic pillow lava and breccia (Jurassic)
Jmi	Mafic intrusive complex (Jurassic)
Jgb	Gabbro (Jurassic)

sn	Serpentinite (Jurassic)
sc	Silica-carbonate rock
spm	Serpentinite-matrix mélange
FRANCISCAN COMPLEX	
fsr	Mélange, including blocks, mapped locally, of:
sp	Serpentinite
fs	Graywacke
ch	Chert
fgc	Greenstone and chert
gs	Greenstone
m	High-grade metamorphic rocks
Kfss	Sandstone (Late Cretaceous, Turonian?)
Kfm	Metagraywacke (Late and Early Cretaceous)
Kfmc	Metachert (Late and Early Cretaceous)
Kfmg	Metagreenstone (Late and Early Cretaceous)
KJfs	Graywacke and melange (Early Cretaceous and Late Jurassic)
KJfc	Chert (Cretaceous to Jurassic)
KJgc	Greenstone and chert (Cretaceous to Jurassic)
KJgs	Greenstone (Cretaceous to Jurassic)

MAP SYMBOLS

	Contact—Depositional or intrusive contact, dashed where approximately located, dotted where concealed
	Fault—Dashed where approximately located, small dashes where inferred, dotted where concealed, queried where location is uncertain, orange denotes Quaternary-active fault, magenta denotes Holocene active-fault
	Reverse or thrust fault—Dashed where approximately located, small dashes where inferred, dotted where concealed, queried where location is uncertain; sawteeth on upper plate
	Anticline—Dashed where approximately located, dotted where concealed
	Syncline—Dashed where approximately located, dotted where concealed
	Strike and dip of bedding
	Strike and dip of bedding, top indicator observed
	Strike and dip of bedding, approximate
	Overturned bedding
	Overturned bedding, top indicator observed
	Crumpled bedding
	Air photo attitude
	Vertical bedding
	Horizontal bedding
	Strike and dip of foliation
	Strike and dip of foliation and bedding
	Vertical foliation
	Strike and dip of joint

Reproduced from "Geologic Map and Map Database of Eastern Sonoma and Western Napa Counties, California (USGS, 2007)



FIGURE 1B  
EXPLANATION OF  
GEOLOGIC MAP  
UNITS AND SYMBOLS

RECORDING REQUESTED BY:

FIRST AMERICAN TITLE

WHEN RECORDED MAIL TO:

MR ROBERT W LONG  
203 YORKTOWN  
LOMBARD, ILL 60148

Order No. 92684  
Escrow No.



1998 007119

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**NAPA COUNTY**  
JOHN TUTEUR

AT REQUEST OF: FIRST AMERICAN TITLE CO  
03/23/1998 08:00 AM  
Fee: \$ 19.00 Pgs: 5  
TT: \$ .00

Space above this line for recorder's use

NVC

THIS PAGE IS TO BE ATTACHED TO THE FOLLOWING DOCUMENT: EASEMENT FOR WELLS AND WATER LINES

BETWEEN THE FOLLOWING: JOSEPH H. WENDER and ROBERT W.LONG

**EASEMENT FOR WELLS AND WATER LINES**

This Agreement made this 18 day of March, 1998, by and between JOSEPH H. WENDER hereinafter referred to as "GRANTOR", and ROBERT W. LONG, hereinafter referred to as "GRANTEE."

WHEREAS, Grantor is the owner of certain real property located in an unincorporated area of Napa County, California, hereinafter referred to as the "Servient Tenement," and described as follows:

**PARCEL ONE:**

Parcel 9, as shown on Map No. 4989 entitled, "Parcel Map of the Lands of Long Family Partners", filed November 19, 1997 in Book 22 of Maps at pages 32-43, inclusive, in the office of the County Recorder of said Napa County.

APN #032-010-067

**PARCEL TWO:**

A non-exclusive Easement for vehicular and pedestrian ingress, egress, utilities and general roadway uses, including drainage and landscaping over those portions of Parcels 2, 3, 4 and 5 as shown on said Map No. 4989.

**PARCEL THREE:**

A non-exclusive Easement for vehicular and pedestrian ingress, egress, utilities and general roadway uses, including drainage and landscaping over that certain 40' roadway described as follows:

COMMENCING at an angle point on the South line of the Lands of Long Family Partners, Ltd., recorded October 4, 1993 under Series Number 1993 032002 of Official Records of Napa County, said point being at the 'Westerly terminus of the boundary line course designated as South 74° 46' 51" West 678.57 feet; thence along said line North 74° 46' 51" East 57.77 feet to the center of an existing road, said point being on a curve from which the radius point bears North 28° 06' 40" East 200.00 feet; thence along the center of said road the following courses: on a curve to the left having a radius of 200.00 feet through a central angle of 28' 58' 10" an arc length of 101.12 feet, North 89° 08' 30" East 22.35 feet, on a curve to the left having a radius of 125.00 feet through a central angle of 14° 31' 05" an arc length of 31.67 feet, North 74° 37' 25" East 28.86 feet, on a curve to the left having a radius of 60.00 feet through a central angle of 44° 43' 07" an arc length of 46.83 feet, North 29° 54' 18" East 20.35 feet, on a curve to the left having a radius of 225.00 feet through a central angle of 8° 41' 02" an arc length of 34.10 feet to the said South line of Long Family Partners, Ltd.

**PARCEL FOUR:**

A non-exclusive Easement for vehicular and pedestrian ingress, egress, utilities and

general roadway uses, including drainage and landscaping over that certain 40 foot roadway described as follows:

COMMENCING at an angle point on the North line of the lands of Long Family Partners, Ltd., recorded October 4, 1993 under Series Number 1993 03 1997 of Official Records of Napa County, said point being at the Northerly terminus of the boundary line course designated as North 1° 14' 33" West 212.20 feet in said document; thence along said line South 1° 14' 33" East 40.80 feet to the center of an existing road, said point being the true point of beginning; thence leaving said line along the center of said existing road the following courses: South 71° 34' 27" East 66.06 feet, on a curve to the right having a radius of 500.00 feet through a central angle of 116° 15' 54" an arc length of 141.94 feet, South 54° 30' 08" East 143.87 feet, on a curve to the left having a radius of 500.00 feet through a central angle of 2° 14' 34" an arc length of 19.57 feet, South 56° 44' 42" East 53.22 feet, on a curve to the left having a radius of 100.00 feet through a central angle of 15° 44' 13" an arc length of 27.47 feet, South 72° 28' 55" East 52.75 feet, on a curve to the left having a radius of 100.00 feet through a central angle of 35° 24' 22" an arc length of 61.80 feet, South 37° 04' 33" East 62.30 feet, on a curve to the left having a radius of 200.00 feet through a central angle of 32° 04' 59" an arc length of 111.99 feet, South 69° 09' 32" East 241.59 feet, on a curve to the left having a radius of 200.00 feet through a central angle of 7° 17' 43" an arc length of 25.46 feet, South 76° 27' 15" East 46.31 feet, on a curve to the right having a radius of 200.00 feet through a central angle of 10° 22' 12" an arc length of 36.20 feet, South 66° 05' 03" East 27.76 feet, on a curve to the left having a radius of 750.00 feet through a central angle of 6° 08' 40" an arc length of 80.43 feet, South 72° 13' 44" East 144.75 feet, on a curve to the right having a radius of 750.00 feet through a central angle of 8° 23' 35" an arc length of 109.86 feet, South 63° 50' 09" East 113.87 feet and on a curve to the right having a radius of 750.00 feet through a central angle of 4° 03' 10" an arc length of 53.05 feet to the West line of Section 7 of Township 7 North, Range 4 West, Mount Diablo Base and Meridian, as shown on Map No. 4516 filed in Book 28 of Surveys at page 26 in the office of the County Recorder of said Napa County, said line also being the Westerly line of the Lands of Long Family Partners, Ltd., recorded October 4, 1993 under Series Number 1993 032002 of Official Records of Napa County, from which the Southwest corner of said lands and the Southwest corner of said Section 7 bears South 1° 37' 38" East 600.68 feet.

#### PARCEL FIVE

An exclusive Easement, 60 feet in width, for vehicular and pedestrian ingress, egress, utilities and general roadway uses, including drainage and landscaping as described in the Easement Grant Deed to Long Family Partners, Ltd., recorded May 13, 1994 under Series Number 1994 016172 of Official Records of Napa County.

**PARCEL SIX.**

A non-exclusive Easement for vehicular and pedestrian ingress and egress and general roadway uses including drainage, landscaping and gates lying within the parcel described in the Deed from the City of Napa, recorded May 13, 1994 under Series Number 1994 016172 of Official Records of Napa County, as the same lies within the parcel of land described in the Deed to the Long Family Partners, Ltd., a limited partnership recorded October 4, 1993 under Series Number 1993 032000 of Official Records of Napa County.

WHEREAS, Grantor desires to grant to grant to Grantee an easement in gross for the benefit of Grantee, his heirs, successors and assigns; and

NOW THEREFORE, it is agreed as follows:

1. Grantor hereby grants to Grantee the following easement:
2. The easement granted herein is an exclusive right to use those two wells presently existing on the Servient Tenement which are presently connected to the existing Long Family Partners water system by means of two existing water pipelines, together with a right of way for two existing water pipelines extending from each well to the water storage system located on lands adjacent to the Servient Tenement.
3. The foregoing notwithstanding, the Grantor reserves the right to relocate the aforementioned water pipelines at his own expense upon providing notice and receiving the consent of the Grantee, which consent shall not be unreasonably withheld.
4. Nothing in this easement is intended to convey any rights to the well drilled by Weeks Drilling & Pump in June, 1997, or any well developed thereafter.
5. The use of the water effectively granted by this easement is limited to residential, agricultural, and winery use located on any of the parcels owned as of the date this document is recorded either by Long Family Partners, Ltd., and Illinois limited partnership, or by Robert W. Long, an individual; it is the intent of the parties that this easement be an easement in gross, and the intent and purpose of this paragraph is merely to limit the extent of use.
6. The easements granted herein include the rights of reasonable access, maintenance, and repair. This easement includes the right to re-drill or otherwise deepen or improve the wells designated in Exhibit A; however, Grantee has no right under this easement to drill any additional wells on the Servient Tenement.
7. This instrument contains the entire agreement between the parties relating to the rights herein granted and the obligations herein assumed. Any oral representations or modifications concerning this instrument shall be of no force and effect excepting a subsequent modification in writing, signed by the party to be charged.

END OF DOCUMENT

8. In the event of any controversy, claim, or dispute relating to this instrument or the breach thereof, the prevailing party shall be entitled to recover from the losing party reasonable expenses, attorney's fees and costs.

9. This instrument shall bind and inure to the benefit of the respective heirs, personal representative, successors, and assigns of the parties hereto.

SIGNED: Joseph H. Wender DATE: 3-18-96  
Joseph H. Wender, Grantor

State of California

County of ~~Map~~ Los Angeles

On 3/18/98, 1998, before me, Rocio Amador, personally appeared Joseph H. Wender, personally known to me (or proved to me on the basis of satisfactory evidence) to be the persons whose names are subscribed to the within instrument and acknowledged to me that they executed the same in their authorized capacities, and that by their signatures on the instrument the persons, or the entities on behalf of which the persons acted, executed the instrument.

WITNESS my hand and official seal.

RIGHT THUMBPRINT

Rocio Amador

