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Water Availability Analysis

**WATER AVAILABILITY ANALYSIS FOR
THE WHEELER FARMS WINERY
588 ZINFANDEL LANE, ST. HELENA, CA
APN 030-260-016**

As required by Napa County Planning, Building & Environmental Services (PBES), this study outlines the availability of groundwater for an existing winery located at 588 Zinfandel Lane, St. Helena, CA 94574.

PROJECT DESCRIPTION

It is our understanding that Wheeler Farms Winery is proposing to increase the wine production limit from 50,000 gallons per year to 70,000 gallons per year and the number of employees from 22 to 23. Refer to Use Permit #P08-00672-UP and #P14-00283 for additional information on approved uses. This analysis evaluates the water available for the subject parcel to support the water usage demand from the increase in wine production and additional staff members per Napa County PBES guidelines.

Table 1 summarizes the approved and proposed staffing plan:

TABLE 1: STAFFING PLAN SUMMARY		
Description	Number of Employees	
	Existing	Proposed
Full-time Employees	14	15
Part-time Employees	0	0
Harvest/Seasonal Employees	8	8

Table 2 summarizes the marketing plan:

TABLE 2: MARKETING PLAN SUMMARY			
Description	Number of Guests	Event Staff	Frequency
Tour & Tasting Visitors	32 per day	0 per day	Daily
Food & Wine Pairings	24 per event	0 per event	4 per month
Wine Club / Release Events	75 per event	7 per event	4 per year
Large Event	120 per event	7 per event	2 per year

EXHIBITS

The associated USGS “Topographic Site Location Information” included in the Use Permit Modification application package shows the project site and approximate property line locations. Information regarding the location of the existing wells and structures are shown on the associated Use Permit Modification Drawings and the attached “Well Location Exhibit”. All exhibits and drawings mentioned above were prepared by Bartelt Engineering.

WATER USE CRITERIA

TABLE 3: GROUNDWATER OVERVIEW	
Parcel Zoning	Agricultural Preserve (AP)
Project Parcel Location	Napa Valley Floor ¹
Parcel Size	11.66 ± acres
Water Use Criteria	1.0 acre-feet per acre per year
Well and Spring Interference	No
Groundwater/Surface Water Interaction	No
Screening Tier	Tier 1

As summarized in Table 3 Groundwater Overview, the subject parcel is located in the Agricultural Preserve (AP) Zoning District. Per the PBES Water Availability Analysis (WAA)-Guidance Document dated May 12, 2015 the water use criteria for a parcel located in the Napa Valley Floor and/or All Other Areas that are not designated as a groundwater deficient area without any well or spring interference must follow Tier 1 requirements.

SOURCE WATER INFORMATION

The subject parcel contains two (2) groundwater wells. A description of each water source is summarized below:

- The existing domestic (winery) well is located in the southeasterly corner of the subject parcel within the existing vineyard adjacent to Zinfandel Lane and is used for domestic and irrigation water uses.
- The existing irrigation well is also located near the southeasterly corner of the subject parcel near the property line adjacent to Zinfandel Lane and is currently used for irrigation water uses only.

The Owner proposes to temporarily take the existing irrigation well offline and use the existing domestic well for all water uses on the parcel. Refer to the Technical, Managerial and Financial (TMF) Capacity worksheet for additional information on the existing water system and proposed modifications included with the Use Permit Modification Application.

¹ As displayed on the Napa County Watershed Information & Conservation Council (WICC) website, November 2014 Updates, Interactive Map.

Well Description

The domestic well was drilled by Huckfeldt Well Drilling, Incorporated in 2015 and has a recorded state well number of e0237636. The domestic well has a reported completion depth of 638 feet with a 56 foot cement annular seal. Static water was observed at 22 feet below ground surface at the time of drilling.

The existing irrigation well was drilled in 1971. Per the Application and Permit to Construct a Water Well, the irrigation well has an eight (8) inch steel casing. The observed flow rate is reported to be in excess of 25 gallons per minute (gpm) by vineyard management personnel.

Well Yield Information

A yield test was performed on the domestic well by Doshier Gregson Pump & Well Service on February 19, 2016. Prior to the start of the yield test, static water level was recorded at 26 feet below surface. A sustained yield of 80 gpm was recorded after eight (8) hours of continuous pumping. Static water levels recovered to 29 feet below surface after 10 hours and 45 minutes of rest.

Water System Classification

The water system at Wheeler Farms Winery is permitted as a state regulated Public Water System (PWS)² as a transient non-community (TNC) public water system because it serves less than five (5) connections, serves less than 25 yearlong residents³ and does serve 25 people per day at least 60 days per year, but does not serve 25 or more of the same people for at least 6 month out of a year. The water system classification will not change as part of this Use Permit Modification Application.

Neighboring Water Source(s)

Based on review of neighboring property records at Napa County PBES and discussions with PBES staff, potential well interference may occur with the existing wells located on APN(s) 030-290-043, 030-290-044, and 030-050-019. Due to the low pumping demand rate and the recovery rate of the subject parcel domestic well, pumping of the domestic winery well is not anticipated to negatively impact the neighboring well and therefore, a well interference analysis is not being performed.

Refer to the attached "Well Location Map" prepared by Bartelt Engineering for location of the existing onsite wells and neighboring wells.

Water Quality

Raw water was collected from the domestic well and analyzed by Cal Test Laboratories, an accredited lab located in Napa, CA per the California Code of Regulations Title 22. In general, the results do not show any primary constituents testing above the maximum contaminant level. Elevated Iron and Manganese levels above the secondary standard contaminant level were also reported. Water quality results are on file with Napa County

² The public water system source code number is 2800054-001; refer to the public water system permit for additional information.

³ Yearlong resident is considered an individual served by the water system for 183 or more days annually.

PBES as part of the Public Water System Permit with the State of California Drinking Water Program.

GROUNDWATER SUBAREA

According to the Napa County Watershed Information & Conservation Council (WICC), the subject parcel is located within the Napa Valley Floor – St. Helena groundwater subarea. The St. Helena groundwater subarea of the Napa Valley Floor consists of 12,274± acres.

WATERSHED INFORMATION

The subject parcel is located within the lower St. Helena Reach of the Napa River Watershed which is not considered a municipal watershed. The Napa River Basin Watershed consists of 234,194± acres.

GEOLOGICAL FEATURES

According to the Soil and Geology Map located on the WICC website, the subject parcel and surrounding areas appear to be underlain with Alluvial Fan Deposits (Holocene & Late Pleistocene).

WATER DEMAND

Estimated Water Use

The total water demand for the existing and proposed uses for the project is calculated below based on the *Guidelines for Estimating Residential and Non-residential Water Use* from the WAA Guidance Document (2015):

TABLE 4: EXISTING WATER DEMAND SUMMARY	
Description	Estimated Water Usage
Winery (50,000 gallons per year)	
Process Water	1.08 acre-feet/year
Domestic and Landscaping Water	0.25 acre-feet/year
Agricultural	
Vineyard Irrigation Only (9.4± acres)	4.70 acre-feet/year
Heat Protection (9.4± acres)	2.35 acre-feet/year
Frost Protection (4.7± acres with additional frost protection provided by fan)	1.18 acre-feet/year
Recycled Water Credit (5.3± acres) ⁴	-1.70 acre-feet/year
Total Existing Water Demand with Recycled Water Credit	7.86 acre-feet/year

⁴ Recycled water credit is from irrigation of treated process wastewater. Refer to the Onsite Wastewater Dispersal Feasibility Study prepared by Bartelt Engineering for additional information.

TABLE 5: PROPOSED WATER DEMAND SUMMARY

Description	Estimated Water Usage
Winery (70,000 gallons per year)	
Process Water	1.51 acre-feet/year
Domestic Water and Landscaping Water	0.35 acre-feet/year
Agricultural	
Vineyard Irrigation Only (5.3± acres)	2.65 acre-feet/year
Heat Protection (5.3± acres)	1.33 acre-feet/year
Frost Protection (5.3± acres)	1.33 acre-feet/year
Recycled Water Credit (0.0) acres	0.0 acre-feet/year
Total Proposed Water Demand without Recycled Water Credit	7.17 acre-feet/year

As shown in Table 4 and 5, the water demand is estimated to decrease from 7.86 acre-feet/year to 7.17 acre-feet/year as part of the proposed improvements. The greatest water demand for the proposed project results from vineyard irrigation.

Although treated PW can still be utilized as a source for onsite vineyard/landscape irrigation, the Owner desires the option to use only well water for irrigation. When not utilized for irrigation, the treated PW would be dispersed through either a subsurface drip field or a pressure distribution field. Since treated PW can sometimes be used for irrigation, a recycled water credit is no longer applied when estimating proposed water demand. Refer to the Onsite Wastewater Feasibility Study prepared by Bartelt Engineering for additional information.

NAPA VALLEY FLOOR ALLOWABLE WATER ALLOTMENT

Per *Table 2A: Water Use Criteria* from the WAA Guidance Document (2015), the water use criteria for a parcel located in the Napa Valley Floor is defined as 1 acre-foot per acre per year. The subject parcel is entirely located within the Napa Valley Floor. The allowable water allotment for the applicable area is calculated below.

Allowable Water Allotment (acre-ft/yr) =

$$\begin{aligned} & \text{Napa Valley Floor parcel area (acres)} \times \text{Water use criteria (acre-ft/acre-yr)} \\ & = 11.66 \text{ acres} \times 1 \text{ acre-ft/acres-yr} = 11.66 \text{ acre-ft/yr} \end{aligned}$$

The allowable water allotment for the subject parcel is estimated to be 11.66 acre-feet per year.

SUMMARY

The groundwater demand generated as a result of the proposed project, which includes an increase in wine production and additional staff members is estimated to increase. The use of treated process wastewater for vineyard irrigation is no longer proposed as the primary dispersal option. Groundwater is proposed to be sourced from the existing winery well to

supply all project uses that includes domestic, process, and irrigation demands. The existing vineyard well is proposed to be temporarily taken offline. The proposed project water demand is 7.17 acre-feet per year. The water allotment for the subject parcel is calculated to be 11.66 acres

CONCLUSION

The above analysis shows that the increase in groundwater demand from the proposed project is less than the subject parcel water allotment and the estimated available water for the subject parcel satisfies the Tier 1 Water Use Criterion of the Napa County Water Availability Analysis.

ATTACHMENTS

Topographic Site Location Map

Well Location Exhibit

Table I – Existing Water Demand

Table II – Proposed Water Demand

REFERENCES

DHI Water Environment. (2005 - Version 1, November 30). Napa County Baseline Data Report. Chapter 16. Groundwater Hydrology.

Luhdorff & Scalmanini Consulting Engineers and MBK Engineers. (January 2013). *Updated Hydrogeological Conceptualization and Characterization of Conditions Prepared for Napa County.*

Napa County . (2015, May 12). Water Availability (WAA) - Design, Construction and Guidance Document.

Napa County Watershed Information & Conservation Council (WICC). (n.d.). Retrieved from www.napawatershed.org

Stamski, R. (2007). Geologic map and map database of eastern Sonoma and western Napa Counties, California. U.S. Geological Survey Sc. ientific Investigations Map 2956.

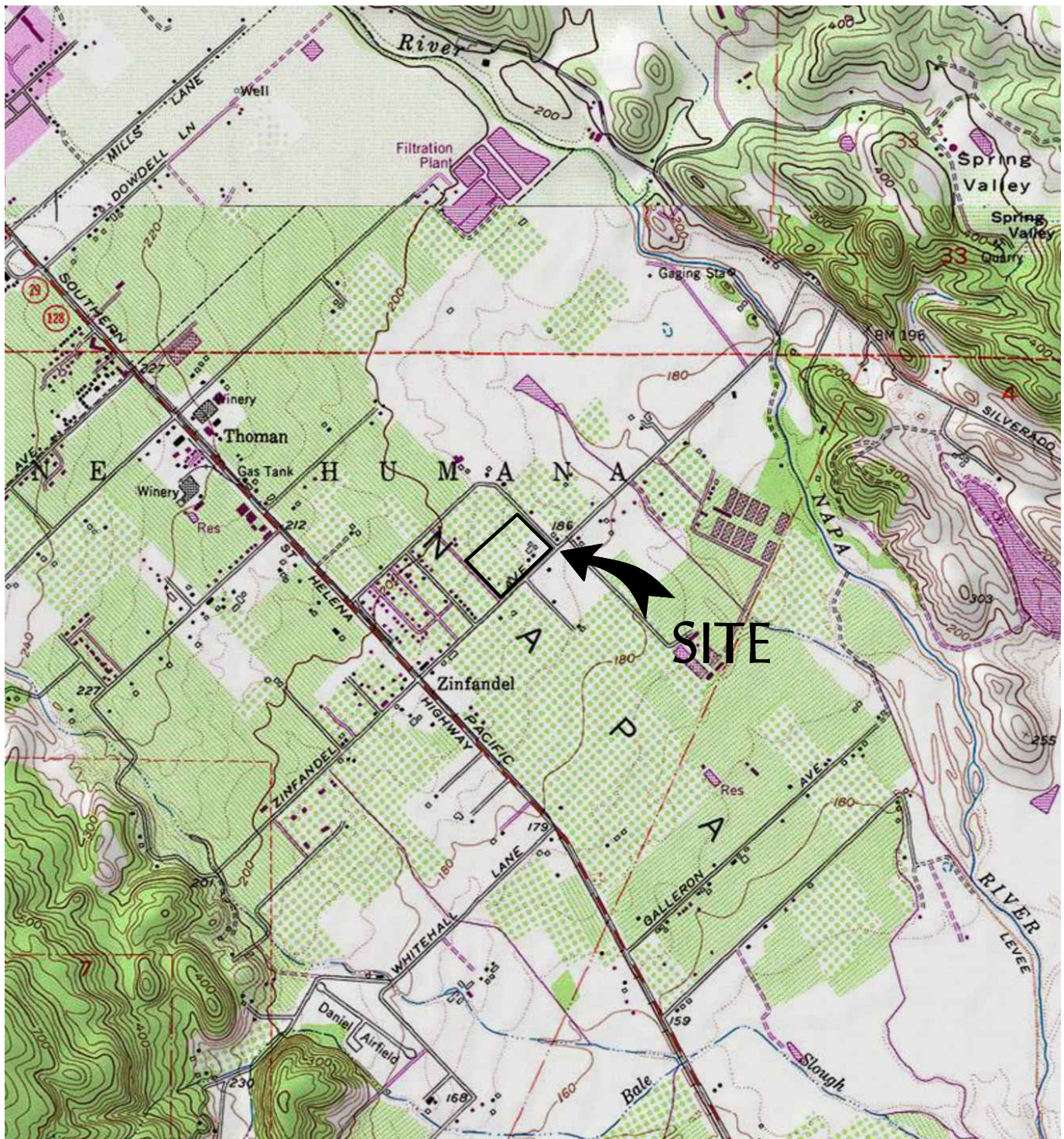
United States Geological Survey (USGS). (1960). Geology and Ground Water in the Napa and Sonoma Valleys, Napa and Sonoma Counties, California. *US Geological Survey Water Supply Paper 1495.*

TOPOGRAPHIC SITE LOCATION INFORMATION



USGS 7.5 MINUTE QUADRANGLE "RUTHERFORD"

Scale: 1" = 2000'



T.7 N.
T.8 N.

R. 5 W.

BARTELT

ENGINEERING

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Wheeler Farms Winery

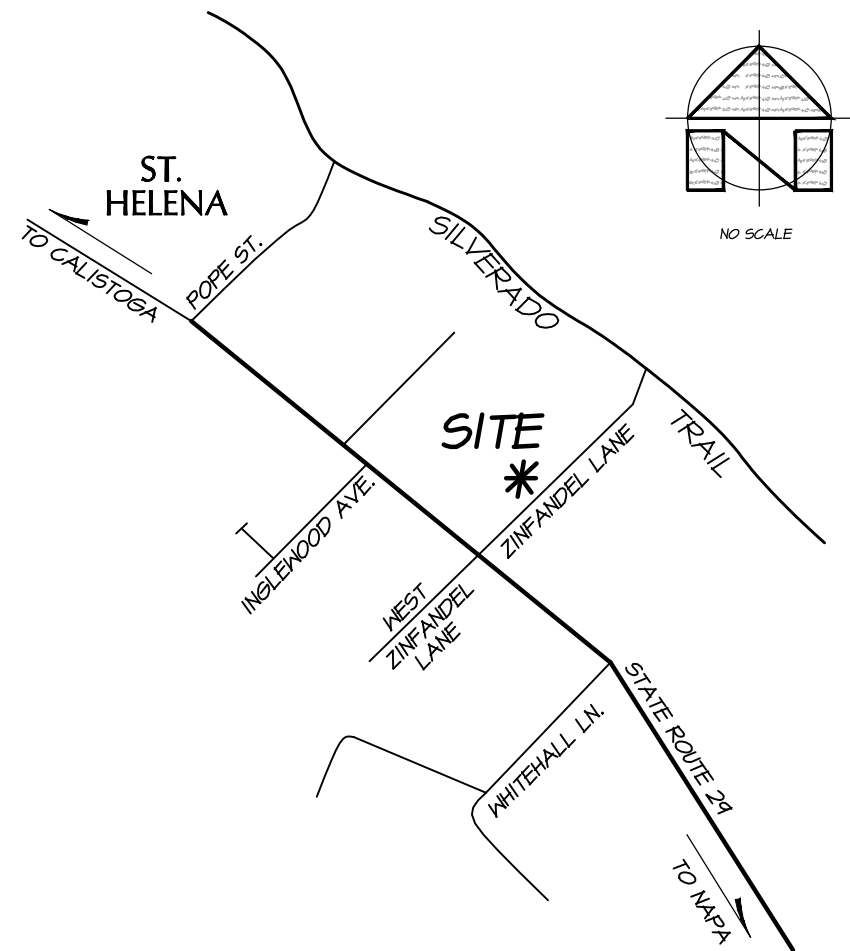
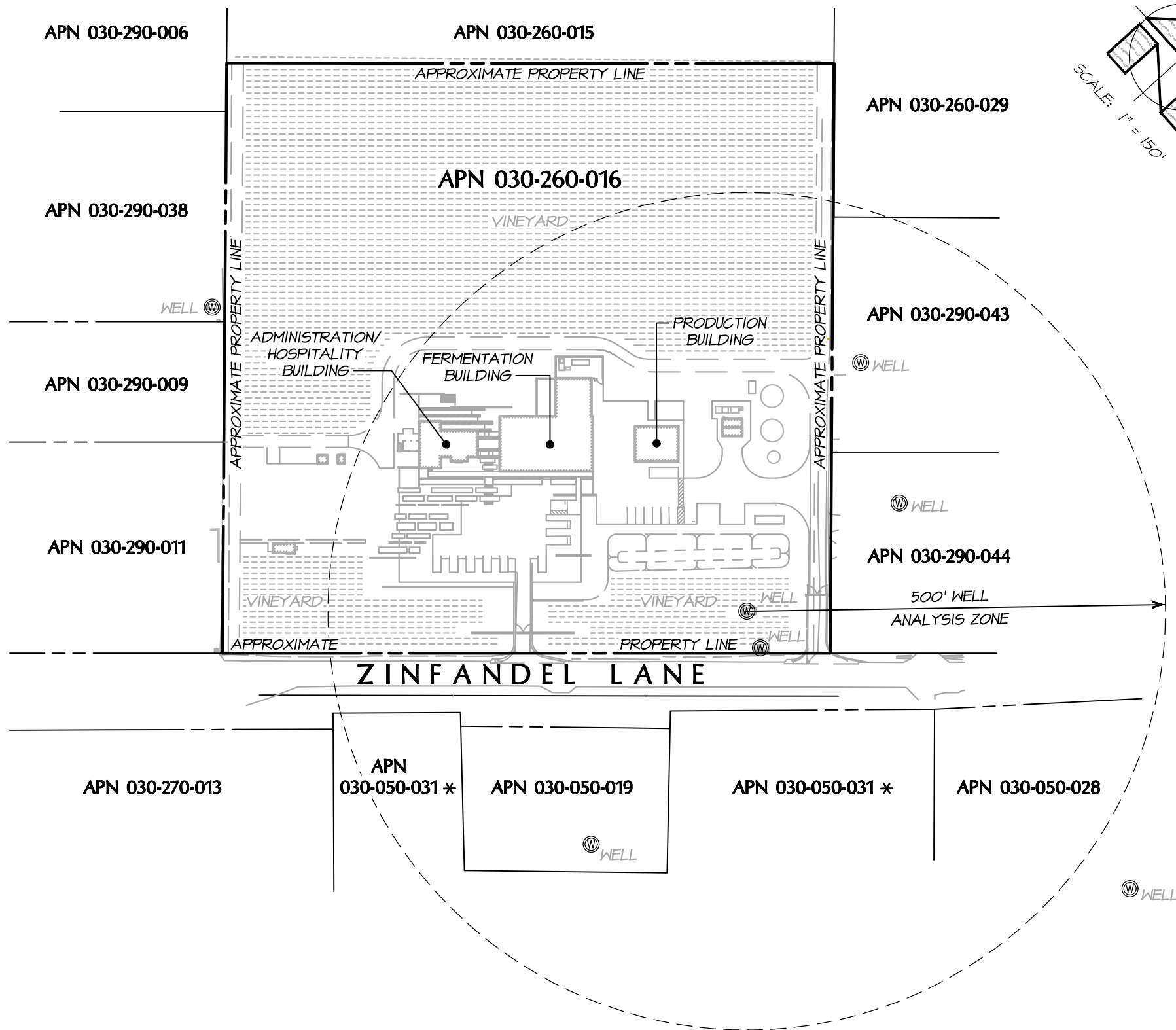
588 Zinfandel Lane

Napa County, CA 94574

APN 032-260-016

Job No. 08-16

12/8/2020 - 1:35 PM, KellyP, S:\LAND PROJECTS\2001-2012\0816\DWG\2019 JP MOD\EXHIBITS\0816-WELL LOC.DWG



**EXISTING CONDITIONS
WELL LOCATION EXHIBIT**
SCALE: 1" = 150'

NOTES:

* NO RECORDED WELL INFORMATION FOUND FOR THIS PARCEL.
WELL LOCATIONS ARE APPROXIMATE AND ARE BASED ON DATA OBTAINED FROM NAPA COUNTY ENVIRONMENTAL HEALTH DIVISION RECORDS. WELL LOCATION RECORDS VARY IN ACCURACY. LOCATION OF WELLS SHOULD BE FIELD VERIFIED.

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Wheeler Farms Winery
588 Zinfandel Lane
Saint Helena, CA
APN 030-260-016
Job No. 08-16
December 2020 - Revised
Sheet 1 of 1

Wheeler Farms Winery Existing Water Demand Table I

Winery Production Limit: 50,000 gallons/year
 Vineyard Area (used for irrigation and heat protection): 9.4 acres
 Vineyard Area (use for frost protection): 4.7 acres

<i>EXISTING WATER DEMAND</i>		
Description	Water Usage Rate ¹	Water Demand (acre-feet/year)
<u>Residential</u>		
Primary Residence	0.75 acre-feet/acre-year	-
Secondary Residence or Farm Labor Dwelling	0.5 acre-feet/acre-year	-
<u>Agricultural</u>		
Vineyards		
Irrigation Only	0.5 acre-feet/acre-year	4.70
Heat Protection	0.25 acre-feet/acre-year	2.35
Frost Protection	0.25 acre-feet/acre-year	1.18
Irrigated Pastures	4 acre-feet/acre-year	-
Orchards	4 acre-feet/acre-year	-
Livestock (sheep or cows)	0.01 acre-feet/acre-year	-
<u>Winery</u>		
Process Water	2.15 acre-feet/100,000 gallon of wine	1.08
Domestic & Landscaping	0.5 acre-feet/100,000 gallon of wine	0.25
<u>Industrial</u>		
Food Processing	31 acre-feet/employee-year	-
Printing/Publishing	0.06 acre-feet/employee-year	-
<u>Commercial</u>		
Office Space	0.01 acre-feet/employee-year	-
Warehouse	0.05 acre-feet/employee-year	-

<i>Total Existing Water Demand (acre-feet/year):</i>	9.56
<i>Recycled Water Credit (from treated process wastewater, acre-feet/year):</i>	-1.7
<i>Estimated Existing Water Demand (acre-feet/year):</i>	7.86
<i>Estimated Existing Water Demand (gallons/year):</i>	2,561,189

Notes:

1) Water usage rates referenced from *Appendix B: Estimated Water Use of Specified Land Use* from Napa County WAA-Guidance Document (2015)

Wheeler Farms Winery Proposed Water Demand Table II

Winery Production Limit: 70,000 gallons/year
 Vineyard Area (used for irrigation and heat protection): 5.3 acres
 Vineyard Area (use for frost protection): 5.3 acres

<i>PROPOSED WATER DEMAND</i>		
Description	Water Usage Rate ¹	Water Demand (acre-feet/year)
<u>Residential</u>		
Primary Residence	0.75 acre-feet/acre-year	-
Secondary Residence or Farm Labor Dwelling	0.5 acre-feet/acre-year	-
<u>Agricultural</u>		
Vineyards		
Irrigation Only	0.5 acre-feet/acre-year	2.65
Heat Protection	0.25 acre-feet/acre-year	1.33
Frost Protection	0.25 acre-feet/acre-year	1.33
Irrigated Pastures	4 acre-feet/acre-year	-
Orchards	4 acre-feet/acre-year	-
Livestock (sheep or cows)	0.01 acre-feet/acre-year	-
<u>Winery</u>		
Process Water	2.15 acre-feet/100,000 gallon of wine	1.51
Domestic & Landscaping	0.5 acre-feet/100,000 gallon of wine	0.35
<u>Industrial</u>		
Food Processing	31 acre-feet/employee-year	-
Printing/Publishing	0.6 acre-feet/employee-year	-
<u>Commercial</u>		
Office Space	0.01 acre-feet/employee-year	-
Warehouse	0.05 acre-feet/employee-year	-

Estimated Proposed Water Demand (acre-feet/year): 7.17
Estimated Proposed Water Demand (gallons/year): 2,336,352

Notes:

1) Water usage rates referenced from *Appendix B: Estimated Water Use of Specified Land Use* from Napa County WAA-Guidance Document (2015)

**TECHNICAL, MANAGERIAL AND FINANCIAL CAPACITY WORKSHEET FOR
WHEELER FARMS WINERY
588 ZINFANDEL LANE, ST. HELENA, CA
APN 030-260-016**

As required by Napa County Planning, Building & Environmental Services (PBES), the following Technical, Managerial and Financial (TMF) Capacity Worksheet outlines the potential requirements associated with modifying the existing public water system that serves the subject parcel located at 588 Zinfandel Lane, St. Helena, CA 94574.

PROJECT DESCRIPTION

It is our understanding that Wheeler Farms Winery is proposing to increase the wine production limit from 50,000 gallons per year to 70,000 gallons per year and the number of employees from 22 to 23. Refer to Use Permit #P08-00672-UP and minor modification #P14-00283 for additional information on approved uses. This TMF Capacity Worksheet describes the proposed changes to the permitted transient non-community (TNC) public water system which includes in an increase in water demand and a changed status of the existing irrigation well to “non-active”.

WATER SYSTEM OVERVIEW

TABLE 1: WATER SYSTEM OVERVIEW	
Water System Name	Wheeler Farms Winery
Location/Address	588 Zinfandel Lane, St. Helena, CA APN 030-260-016
Application Type	Amendment to permitted system
Water System ID	28-00054
Water System Classification	Transient Non-community (TNC)
Name of Person(s) Who Prepared the Report	Richard Paxton, P.E. Project Engineer Bartelt Engineering
Water Source	Well 001 (Winery Well)

TECHNICAL CAPACITY

System Description

Raw water is pumped from the winery well through sediment filters in a parallel configuration for removal of particulates from the water stream. Filtered water then passes through water softeners before being temporarily collected and stored in a 13,500 gallon storage tank.

The well pump is controlled via a demand basis through several float switches located in the storage tank. Stored water is pumped from the storage tank by distribution pumps to various points throughout the production building, fermentation building, and hospitality building. The distribution pumps operate based on a set pressure level of 60-65 pounds per square inch (psi). The sediment filter, water softener, and UV disinfection units are all located in the fire pump building.

Additional treatment located in the fermentation building consists of two (2) carbon filters (each with a rated capacity of 25 gpm) for removal of taste and odor. Four (4) UV disinfection systems (each with a rated capacity of 12 gpm) are also provided for disinfection prior to use in the winery and hospitality buildings.

One Year Projection

Based on the proposed wine production capacity, staffing plan, and marketing plan as well as the vineyard/landscape irrigation, the total annual water demand is estimated to be 2,336,266 gallons per year. The average water usage flow rate from all sources (domestic, process and irrigation) is estimated to be 6,400 gallons per day (gpd) or 4.5± gallons per minute (gpm). Refer to the Water Availability Analysis prepared by Bartelt Engineering for information on annual water usage and the Onsite Wastewater Dispersal Feasibility Study prepared by Bartelt Engineering for information on peak daily domestic and process water usage.

The water system service area, water demand, and the number of users are expected to remain constant over the next several years with no future plan for expansion.

SOURCE ADEQUACY

Groundwater

The winery well was drilled by Huckfeldt Well Drilling, Incorporated in 2015 and has a recorded state well number of e0237636. The winery well has a reported completion depth of 638 feet with a 56 foot cement annular seal. Static water was observed at 22 feet below ground surface at the time of drilling.

Surface Water Treatment

The water system will continue to be sourced from the existing groundwater domestic well. Surface water treatment is not included with the public water system.

Water Supply Capacity

The existing TNC water system will be able to supply water above the minimum requirements for at least 24 hours for each service connection. A yield test was performed on the domestic well by Doshier Gregson Pump & Well Service on February 19, 2016. Prior to the start of the yield test, static water level was recorded at 26 feet below surface. A sustained yield of 80 gpm was recorded after eight (8) hours of continuous pumping. Static water levels recovered to 29 feet below surface after 10 hours and 45 minutes of rest. Refer to the Public Water System Technical Report prepared by Bartelt Engineering that is on file at PBES for additional information to the existing water system.

As part of the Use Permit Modification Application, the existing irrigation well is proposed to be temporarily taken offline and no longer used as an active well source. Furthermore, treated process wastewater will not be a primary source for supplemental vineyard irrigation water. The facility desires to install either a subsurface drip field or pressure distribution leachfield as a secondary option for underground dispersal of treated process wastewater. The existing winery well is proposed to be the primary water source for the subject parcel that includes domestic, process, and irrigation water uses.

Water Quality

Water quality results from the existing groundwater wells were analyzed as part of the permitting process for the public water system. Ongoing chemical and bacteriological sampling is performed as part of the public water system permit. Additional water sampling is not required with the proposed modifications to the public water system permit.

CONSOLIDATION WITH OTHER WATER SYSTEMS

The closest large-scale municipal water system is operated by the City of St. Helena. The City of St. Helena's moratorium for water connections outside the St. Helena City Limits continues to be in effect. The existing winery is not connected to the City of St. Helena Water System. If municipal water service becomes available in the future, it is anticipated that the domestic well will continue to be utilized for wine production and irrigation water uses. Any municipal water service would be utilized for domestic purposes. There is no anticipated consolidation with other (existing) water systems near the site.

MANAGERIAL

Organizational Ability

The Owner of the water system is primarily responsible for reviewing and overseeing all winery financial and business decisions to ensure financial stability of the winery, in addition to allocating appropriate staffing levels and assigning responsibilities to ensure continuous water system quality. The water system will be primarily managed by the winery Facilities Manager. The Facilities Manager is responsible for managing the day-to-day operations of the winery including periodic inspection of the water system and will obtain sufficient training to inspect, operate, and maintain the water system equipment within specified parameters to meet state water quality standards; in addition, the Facilities Manager will also take groundwater samples as necessary and submit the samples to a local laboratory for testing. Approximately five percent (5%) of the Facilities Manager's time will be dedicated to inspecting, monitoring, and quality sampling of the water system.

The Facilities Manager typically performs visual inspections, routine operation, and maintenance of the water transmission and treatment system. Refer to the Public Water System Technical Report prepared by Bartelt Engineering for additional information on the Operations and Maintenance Plan.

Water Rights

The existing groundwater winery well and service area are both located on the subject parcel which belong exclusively to the Property Owner.

FINANCIAL

The TNC public water system does not generate revenue of its own. The water system expenses are covered as part of the general fund for winery operations. Most of the capital expenditures over a 10 year period will be minor. Annual maintenance and repair will be accomplished by onsite winery personnel, assisted by a private contractor (such as Oakville Pump or North Coast Water Works) and covered in the winery general fund. The expenses associated with water testing will also be covered as part of the winery general fund. Tests will be conducted by a private testing company (such as CalTest or Brelje and Race Laboratory).

Operational costs are not anticipated to increase as part of the proposed improvements. Refer to the Public Water System Technical Report prepared by Bartelt Engineering for additional information on the Capital Improvement Plan and Budget.

CONCLUSION

The proposed project is not anticipated to impact the existing public water system nor require an expansion. The proposed modifications to the existing water system will be included with a Public Water System Permit Amendment Application to the State of California and Napa County PBES following approval of the Use Permit Modification.