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# Water Availability Analysis & Water System Feasibility Report

Baldacci Family Vineyards (P15-00422-UP & P16-00295-VIEW)
Planning Commission Hearing, February 15, 2017

December 22, 2015
Revised March 24, 2015
Revised June 13, 2016

Napa County PBES
1195 Third Street
Room 210
Napa, CA 94559

RE: Baldacci Family Vineyards Use Permit Assistance - Water Availability Analysis
Project Number 2015167

Baldacci Family Vineyards is applying for a Use Permit Modification for the Baldacci Family Vineyards winery located at 6236 Silverado Trail, in Napa (APN: 031-230-006). The Use Permit Application includes an increase in production capacity from 20,000 to 40,000 gallons per year, and the construction of a new hospitality building, production building, below ground crush pad, and offices. The expanded winery will require a maximum of 10 full-time employees during crush or marketing events. Baldacci Family Vineyards anticipates 100 maximum tasting visitors per day with an average of 50 visitors per day. Additional daily visitors are anticipated for private marketing events with up to 100 visitors, and special industry/community events with up to 150 visitors. Summit has prepared the following Water Availability Analysis, which provides a comparison between the existing water use, proposed water use, and the estimated available water capacity on the property.

**Site Description**

Baldacci Family Vineyards is made up of a single parcel with a total area of 28.72 acres, 17.58 acres of which are existing vineyard. The facility is located with agricultural areas to the north, south, and west, and is bound on its easterly property line by Silverado Trail. The existing water sources for the property consist of 6 wells which serve the water demands of the existing winery, farmworker residence, 5 bedroom residence, and vineyard irrigation. Process wastewater from winery operations and sanitary sewage from domestic sources will be treated and disposed of in sub-surface disposal fields, either combined or in separate systems as discussed in the Wastewater Feasibility Study. Alternately, treated process wastewater can be re-used for vineyard irrigation to complement the irrigation supply from the existing wells.

Please refer to the Overall Site Plan attached for a general layout of the project components. These plans also include approximate property boundaries, existing buildings and agricultural development.

## EXISTING WATER DEMAND

Existing water uses on the property are based on the following:

- Existing 5 bedroom residence
- Process water demand from 20,000 gallons per year of wine production
- Existing 3 bedroom farmworker residence
- Existing maximum visitation with 54 daily visitors
- Existing maximum of 10 employees
- Irrigation of 17.58 acres of vineyard
- Irrigation of approximately 5,000 square feet landscaping

### Winery Process Water Demand

Water demand for wine production is expected to correlate to the process wastewater (PW) generated at the facility. The existing permitted wine production capacity is 20,000 gallons per year, with the existing process wastewater generation estimated as follows:

| | | |
|---|---|---|
| Existing Annual Peak Production | = | 20,000 gal wine/year |
| PW Generation Rate | = | 6 gal PW/gal wine[a] |
| Annual PW Flow | = | 20,000 gal wine x 6 gal PW/gal wine |
| | = | 120,000 gal PW/year |
| Average Daily PW Flow | = | (120,000 gal PW/year) / (365 days) |
| | = | 329 gal PW/day |
| Peak Daily PW Flow | = | (120,000 gal PW/year x 16.4[b] %)/(30 days) |
| | = | 656 gal PW/day |
| Annual Production Water Demand | = | (120,000 gal water/yr) / (325,851 gal/ac-ft) |
| | = | **0.37 ac-ft water/yr** |

[a] Generation rate based on industry standards
[b] Percentage of flows accounted for during the harvest month of September, based on water data from similar wineries

The existing annual water use associated with the existing production capacity is approximately 120,000 gallons per year, or 0.37 ac-ft per year.

### Winery Domestic Water Demand

Domestic water demand from existing winery operations is calculated per Napa County guidelines as follows:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Employees | 10 employees | x | 15[a] gpcd | x | 365 days | = | 54,750 gal/yr |
| Visitors (weekends) | 54 visitors | x | 3[a] gpcd | x | 104[b] days | = | 16,848 gal/yr |
| Visitors (weekdays) | 19 visitors | x | 3[a] gpcd | x | 261[b] days | = | 14,877 gal/yr |
| | | | | | | = | **0.27 ac-ft/yr** |

[a] Employee and visitor water demand per Napa County PBES's "Regulations for Design, Construction, and Installation of Alternative Sewage Treatment Systems," Table 4.

[b] Peak visitation occurs during weekend days and average visitation occurs during weekdays.

**Residential Domestic Water Demand**

There is also domestic water demand from the existing residences. Per Napa County guidelines, residential domestic water demand is calculated as follows:

| | | |
|---|---|---|
| Primary Residence - 5 BR | = | 0.75 ac-ft/yr |
| Secondary Residence (Farmworker Residence) - 3 BR | = | 0.50 ac-ft/yr |
| | = | **1.25 ac-ft/yr** |

Notes: Residential water demand per Napa County WAA Guidelines.

**Vineyard Irrigation Water Demand**

Water from the existing wells is used to irrigate 17.58 acres of on-site vineyards containing 23,300 grape vines. Baldacci Family Vineyards performs dry farming of the vineyards, and only irrigates twice per year with approximately 6 gallons of water per vine. The resulting annual volume is well below the Napa County suggested vineyard irrigation estimate of 0.2 - 0.5 ac-ft/ac/yr. The associated annual water use is:

23,300 vines x 6 gal/vine/watering x 2 waterings/year = **0.86 ac-ft/yr**

Vineyard irrigation will typically begin in June when onsite soils begin to dry and continue until October, with the peak irrigation period between July and August. All vineyard irrigation water, unless reclaimed process wastewater is used, is and will continue to be supplied by the existing wells. Water is not currently used, or proposed to be used, for frost or heat protection.

**Winery Landscape Irrigation Water Demand**

Existing winery landscape irrigation water demand is based 5,000 square feet (0.11 acres) of landscaping, the California Department of Water Resources Estimated Total Water Use (ETWU) equation, and parameters from Napa County PBES's Water Efficient Landscape Ordinance. All of the existing landscaping is drought tolerant, and irrigated via drip or similar irrigation system.

$$ETWU = (ETo)(0.62)\left(\frac{PF \times HA}{IE} + SLA\right)$$

Where:

ETWU = Estimated Total Water Use per year (gallons)
ETo = Reference Evapotranspiration (inches)
PF = Plant Factor from WUCOLS (see Section 491)
HA = Hydrozone Area [high, medium, and low water use areas] (square feet)
SLA = Special Landscape Area (square feet)
0.62 = Conversion Factor
IE = Irrigation Efficiency (minimum 0.71)

ETWU = (44.3 in/year)(0.62)[(0.2*5,000 SF)/0.9] = 30,518 gal/yr **= 0.09 ac-ft/yr**

Assumptions:

- Low water use types with a plant factor of 0.2 (native plants, shrubs, etc.).
- Yountville reference evapotranspiration rate of 44.3 inches/year.
- 90% irrigation efficiency (drip irrigation or similar)

## PROPOSED WATER DEMAND

Proposed additional water demand will be required to supply a 40,000 gallon per year winery facility. All existing water demand will continue, with additional demand required by winery processes, and winery tasting and event visitors.

### Winery Process Water Demand

The proposed wine production capacity is 40,000 gallons per year, with the projected process wastewater generation calculated as follows:

| | | |
|---|---|---|
| Proposed Annual Peak production | = | 40,000 gal wine/year |
| PW generation rate | = | 6 gal PW/gal wine[a] |
| Annual PW Flow | = | 40,000 gal wine x 6 gal PW/gal wine |
| | = | 240,000 gal PW/year |
| Average Daily PW Flow | = | (240,000 gal PW/year) / (365 days) |
| | = | 658 gal PW/day |
| Peak Daily PW Flow | = | (240,000 gal PW/year x 16.4[b] %)/(30 days) |
| | = | 1,312 gal PW/day |
| Annual Production Water Demand | = | (240,000 gal water/yr) / (325,851 gal/ac-ft) |
| | = | **0.74 ac-ft water/yr** |

[a] Generation rate based on industry standards

[b] Percentage of flows accounted for during the harvest month of September, based on water data from similar wineries

The expected annual water use associated with the proposed production capacity is 240,000 gallons per year, or **0.74 ac-ft per year**. Winery process water demand will continue to be provided by the existing wells.

### Winery Domestic Water Demand

Expected domestic water demand at the winery facility is determined based the number of employees, average daily tasting visitors, and marketing event visitors. A maximum of 100 visitors per day are expected between the months of May and September, and a maximum of 30 visitors per day are expected between the months of November and April. The proposed marketing event visitation is as follows:

| | | | | |
|---|---|---|---|---|
| Private Marketing Events | | | | |
| Wine Club Events | 6 events/yr | @ | 50 | visitors/event |
| Release Events | 4 events/yr | @ | 100 | visitors/event |
| Food & Wine Events | 24 events/yr | @ | 30 | visitors/event |
| Industry & Community Special Events [a] | 9 events/yr | @ | 150 | visitors/event |

[a] Industry & community special events will be permitted under a special events permit and are not requested as part of this Use Permit

Water demand is expected to be equivalent to the sanitary sewage (SS) generation for winery domestic uses. The domestic water supply for these marketing events will still be provided by the existing wells. Industry & community special events are also accounted for in the domestic water use of the winery facility. The proposed annual domestic water demand from winery operations is outlined in Table 1.

**Table 1. Proposed winery domestic water use at Baldacci Family Vineyards.**

| Use Type | Quantity (persons/day) | Water Demand (gal/person) | Daily Water Demand (gal/day) | Number of Days per year | Annual Water Demand (gal/year) |
|---|---|---|---|---|---|
| FT Employee | 10 | 15 | 150 | 365 | 54,750 |
| Peak Tasting Visitors (May - Sep) [a] | 100 | 3 | 300 | 365 | 109,500 |
| Wine Club Events [b] | 50 | 6 | 300 | 6 | 1,800 |
| Release Events [b] | 100 | 6 | 600 | 4 | 2,400 |
| Food & Wine Events [b] | 30 | 6 | 180 | 24 | 4,320 |
| Industry & Community Special Events [b] | 150 | 6 | 900 | 9 | 8,100 |
| | | | **Total Water Use (gal)** | | **180,870** |
| | | | **Average Water Use (gpd)[e]** | | **496** |
| | | | **Peak Water Use (gpd)[c]** | | **1,350** |
| | | | **Total Water Use (ac-ft/yr)** | | **0.55** |

[a] Peak tasting visitors are assumed 365 days a year to be conservative. Per capita water demand is based on Napa County PBES's "Regulations for Design, Construction, and Installation of Alternative Sewage Treatment Systems," Table 4: Wine Tasting Facility.

[b] Per capita water demand is based on Napa County PBES's "Regulations for Design, Construction, and Installation of Alternative Sewage Treatment Systems," Table 4: Wine Tasting Facility with an additional 3 gpcd for marketing visitors due to the extended duration of marketing events.

[c] Peak daily domestic water use is based on peak employees, peak tasting visitors, and maximum event visitors (150).

[d] Peak number of employees assumed every day to be conservative.

[e] Based on 365 days/year.

The expected annual domestic water use for the proposed winery marketing and visitation plan is 180,870 gallons per year, or **0.55** ac-ft per year.

**Residential Domestic Water Demand**

Per Napa County WAA Guidelines, the domestic water demand from the existing residences will remain unchanged from the pre-project estimate since the estimates provided in the WAA Guidelines are conservative in nature. Per Napa County guidelines, residential domestic water demand is calculated as follows:

| | | |
|---|---|---|
| Primary Residence - 5 BR | = | 0.75 ac-ft/yr |
| Secondary Residence (Farmworker Residence) - 3 BR | = | 0.50 ac-ft/yr |
| | = | **1.25 ac-ft/yr** |

Notes: Residential water demand per Napa County WAA Guidelines.

**Vineyard Irrigation Water Demand**

Vineyard irrigation water demand will remain the same as the existing demand: **0.86 ac-ft/yr**

**Winery Landscape Irrigation Water Demand**

Winery landscape irrigation water demand will remain the same as the existing demand: **0.09 ac-ft/yr**

## TOTAL WATER DEMAND

The total expected water demand of the property with the new winery facility is expected to be 3.62 ac-ft/yr, compared to an existing water demand of 3.22 ac-ft/yr. Please see Table 2 for a summary of existing and proposed annual water demand.

**Table 2. Summary of existing and proposed annual water demand.**

| | Annual Water Demand (ac-ft/yr) |
|---|---|
| Existing Water Demand | |
| Winery Process | 0.37 |
| Winery Domestic | 0.27 |
| Residential Domestic * | 1.25 |
| Vineyard Irrigation | 0.86 |
| Winery Landscape Irrigation | 0.09 |
| **Total Existing Water Demand** | **2.84** |
| Proposed Water Demand | |
| Winery Process | 0.74 |
| Winery Domestic | 0.55 |
| Residential Domestic * | 1.25 |
| Vineyard Irrigation | 0.86 |
| Winery Landscape Irrigation | 0.09 |
| **Total Proposed Water Demand** | **3.49** |
| ***Increase in Total Water Demand*** | ***0.65*** |

* Includes landscaping irrigation demand.

## WATER AVAILABILITY

Based on the Water Availability Analysis Guidance Document adopted May 12, 2015, the water allotment for Napa Valley Floor Areas is 1 ac-ft/acre/year; therefore, the Baldacci Family Vineyards parcel would be allotted 28.72 ac-ft/year. The total estimated water demand for process, domestic, and landscape uses of 3.49 ac-ft/year represents 12% of the water allotment. The proposed 23% net increase in water demand of 0.65 ac-ft/yr is equivalent to 2.2% of the annual water allotment.

## DROUGHT CONSERVATION

The facility plans to treat domestic and process wastewater generated at the facility and provide disposal in subsurface drip dispersal fields. The wastewater feasibility study also proposes the option of reusing treated process wastewater for vineyard irrigation, potentially decreasing the proposed water demand for vineyard irrigation by 240,000 gallons, or 0.74 ac-ft/yr. Treated domestic and process wastewater disposed of in subsurface systems will recharge the groundwater table through infiltration.

**CONCLUSION**

The total annual water demand of Baldacci Family Vineyards for process, domestic and irrigation uses is projected to be 3.49 ac-ft/yr, which is well below the water allocation of 28.72 ac-ft/yr. The anticipated peak daily potable water demand for the parcel should be met by the existing on-site wells.

Please contact us with any questions.

Sincerely,

Jason M. Roberts, P.E.
Project Engineer

Enclosed:
Use Permit Application Sheets UP1 & UP3

**ABBREVIATIONS:**

| | |
|---|---|
| AC | ASPHALT CONCRETE |
| ADMIN | ADMINISTRATIVE |
| APPROX | APPROXIMATE |
| BLDG | BUILDING |
| ℄ | CENTERLINE |
| DI | DRAIN INLET |
| (E) | EXISTING |
| FF | FINISH FLOOR |
| FH | FIRE HYDRANT |
| GB | GRADE BREAK |
| NCRSS | NAPA COUNTY ROAD & STREET STANDARDS |
| SD | STORM DRAIN |
| SS | SANITARY SEWER |
| TYP | TYPICAL |

**OWNER:**
**BALDACCI FAMILY VINEYARDS**
**6236 SLIVERADO TRAIL**
**NAPA, CALIFORNIA**

**APPLICANT:**
**THOMAS BALDACCI**
**BALDACCI FAMILY VINEYARDS**
**6236 SLIVERADO TRAIL**
**NAPA, CALIFORNIA**

APN 031-220-020
APN 031-230-018
APN 031-220-016
APN 031-220-015
APN 031-230-006
APN 031-230-007

APPROXIMATE PROPERTY LINE, TYP
157.14'±
770.51'±
1201.48'±
122.67'±
379.55'±
466'±
815'±
207.10'±
410.42'±
600'±
164'±
778.72'±
341.56'±
57.08'±
75'±

100' WELL SETBACK, TYP
(E) WELL #1 TO REMAIN
(E) WELL #2 TO REMAIN
(E) WELL #3 TO REMAIN
(E) WELL #4 TO REMAIN
(E) WELL #5 TO BE ABANDONED
(E) WELL #6 TO REMAIN
(E) LEACHFIELD TO BE ABANDONED
(E) VINEYARD
(E) 5 BR RESIDENCE
(E) RETAINING WALL
(E) FIRE ACCESS TO (E) RESIDENCE
(E) WINE CAVES
(E) DRIVEWAY TO RESIDENCE
(E) WATER TANKS TO BE RELOCATED
(E) GARAGE TO REMAIN
(E) PERMITTED FARMWORKER HOUSING TO REMAIN
(E) ENTRANCE TO BE USED FOR RIGHT TURN ONLY

**600' WINERY SETBACK FROM CENTERLINE OF SILVERADO TRAIL**
**PRODUCTION BLDG**
**CAVE PORTAL**
**WINE CAVES**
**ACCESSIBLE PATH OF TRAVEL**
**PRODUCTION PARKING (1 ACCESSIBLE SPACE, 3 TOTAL)**
**EMERGENCY VEHICLE TURNAROUND PER NCRSS**
**APPROX LOCATION OF FH**
**18' WIDE ACCESS ROAD W/2' SHOULDER**
**COURTYARD**
**APPROX LOCATION OF FH**
**VISITOR PARKING (11 SPACES)**
**RETAINING WALL**
**EVENT PARKING**
**FIRE ACCESS ROUTE**
**18' WIDE ACCESS ROAD W/(2) 1 ' SHOULDERS**
**RELOCATED GATE PER NCRSS**
**VEHICLE TURNAROUND**
**NEW ACCESS ROAD CONNECTION TO SILVERADO TRAIL**
**RELOCATED OLIVE GROVE**
**RELOCATED WATER TANKS**
**HOSPITALITY BLDG**
**534.14'±**
**(E) HOSPITALITY BLDG TO BE CONVERTED TO ADMINISTRATIVE BLDG**
**ACCESSIBLE PATH OF TRAVEL**
**ACCESSIBLE PARKING (2 SPACES)**
**TRASH ENCLOSURE**
**SILVERADO TRAIL**

0 80 160
GRAPHIC SCALE IN FEET

SUMMIT
Summit Engineering, Inc
463 Aviation Blvd, Suite 200 • Santa Rosa, CA 95403
707-527-0775 • www.summit-sr.com

**BALDACCI FAMILY VINEYARDS**
**6236 & 6171 SILVERADO TRAIL**
**NAPA, CALIFORNIA**
**APN 031-230-006 & APN 031-220-015**

**USE PERMIT APPLICATION**

**OVERALL SITE PLAN**

| | |
|---|---|
| | 2015-12-22 PERMIT SUBMITTAL |
| | 2016-03-24 PERMIT RESUBMITTAL |
| | 2016-06-13 PERMIT RESUBMITTAL |

| | |
|---|---|
| DATE: | 2015-12-22 |
| JOB NO: | 2015167 |
| SCALE: | AS SHOWN |
| DRAWN: | TF |
| CHECKED: | MS |
| SHEET | UP1 |

0 60 120
GRAPHIC SCALE IN FEET

100' SETBACK, TYP

(E) WELL #1

APN 031-220-020

APPROXIMATE PROPERTY LINE, TYP

APN 031-220-016

(E) WATER IRRIGATION TANKS (3–10,000 GAL)

(E) WELL #2

LAVA ROCK FOUND AT 12" (POTENTIAL DRAINTILES)

PRIMARY AND RESERVE DISPOSAL AREAS (40,000 SF AVAILABLE)

APN 031-220-015

(E) VINEYARD

APN 031-230-006

SP8 48"
SP4 48"
SP7 48"
SP3 48"
SP6 48"
SP2 48"
SP10 40"
SP12 42"
SP5 48"
SP1 48"
SP9 42"
SP11 36"

50' SETBACK

(E) VINEYARD

SETBACK TO DISPOSAL AREA

25'

(E) WELL #3

APPROXIMATE LOCATION (E) LEACHFIELD FOR 5 BR RESIDENCE TO BE ABANDONED

(E) SS TO BE ABANDONED

(E) VINEYARD

CAVE DRAIN OUTLET

(E) WELL #6

APPROXIMATE LOCATION (E) LEACHFIELD FOR FARMWORKER RESIDENCE AND WINERY TO BE REPLACED BY NEW SYSTEM

(E) VINEYARD

(E) SEPTIC TANK TO BE ABANDONED

(E) 5 BR RESIDENCE

10' SETBACK

PRODUCTION BUILDING

WINE CAVE TUNNEL FF 130.25 FT

APN 031-230-007

CAVE PORTAL

(E) WINE CAVE

(E) CAVE PORTALS

RELOCATED WATER TANKS (2-2,500 GAL)

HOSPITALITY BUILDING

(E) HOSPITALITY BUILDING TO BE CONVERTED TO ADMIN BUILDING

(E) WATER STORAGE TANKS (2–2,500 GAL)

TRASH ENCLOSURE

(E) GARAGE

(E) PERMITTED FARMWORKER RESIDENCE

ACCESS ROAD

PARKING

(E) WELL #5 TO BE ABANDONED

(E) WELL #4

SILVERADO TRAIL

CONNECT TRASH ENCLOSURE DRAIN TO SS

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**BALDACCI FAMILY VINEYARDS**
**6236 & 6171 SILVERADO TRAIL**
**NAPA, CALIFORNIA**
**APN 031-230-006 & APN 031-220-015**

**USE PERMIT APPLICATION**

**WASTEWATER SITE PLAN**

| | |
|---|---|
| 2015-12-22 | PERMIT SUBMITTAL |
| 2016-03-24 | PERMIT RESUBMITTAL |
| 2016-06-13 | PERMIT RESUBMITTAL |

DATE: 2015-12-22
JOB NO: 2015167
SCALE: AS SHOWN
DRAWN: TF
CHECKED: JR

SHEET **UP3**

# WATER SYSTEM FEASIBILITY REPORT

## Baldacci Family Vineyards

6236 Silverado Trail, Napa,
California

APN 031-230-006

SUMMIT

CIVIL STRUCTURAL ELECTRICAL WATER|WASTEWATER

Project No. 2015167

December 22, 2015

Revised March 24, 2016

Revised June 13, 2016

## TABLE OF CONTENTS



## LIST OF ENCLOSURES

# WATER SYSTEM FEASIBILITY
# BALDACCI FAMILY VINEYARDS

## SYSTEM DESCRIPTION

Baldacci Family Vineyards is applying for a Use Permit Modification for the existing winery facility to increase annual wine production capacity from the currently permitted 20,000 gallons to 40,000 gallons per year, and to increase the number of employees and visitors. Summit has prepared the following Water System Feasibility Analysis, which evaluates the capacity of the existing water system to provide sufficient water to meet the facility demands. The existing winery facility consists of a winery building, two residences, and 17.58 acres of vineyards. Water sources for the property consist of six groundwater wells located on the property as indicated in the site plan (Enclosure A). All six wells provide water for irrigation and domestic use for the winery and for the residences. The wells are:

- Well # 1, drilled in 2006 by Weeks Drilling and Pump, has a depth of 198 foot with a 50 foot cement annular seal and a capacity of 36 gallons per minute (gpm) for a 1 hour test.
- Well # 2, drilled in 2002 by McLean and Williams, has a depth of 610 foot with a 24 foot cement annular seal and a capacity of 30 gpm for a 2 hour test.
- Well # 3, drilled in 1999 by McLean and Williams, has a depth of 245 foot with a 23 foot cement annular seal and a capacity of 30 gpm for a 2 hr test.
- Well # 4, drilled in 1989 by Bess Pump and Well, has a depth of 326 foot with a 26 foot annular seal and a capacity of 25 gpm for a 2 hr test.
- Well # 5, drilled in 1984 by Doshier & Gregson, has a depth of 220 foot with a 20 foot cement annular seal and a capacity of 30 gpm for a 2 hr test.
- Well # 6, drilled in 2016 by McLean & Williams, Inc, has a depth of 440 feet with a 70 foot cement/bentonite seal and an estimated yield of 30 gpm.

All six wells are currently connected to the domestic water system, but the facility plans to utilize only well #1 and well #6 for the domestic water system. Other wells not with a 50 ft. seal will be disconnected from the domestic water system and used to supply water for irrigation. Two 10,000 gallon storage tanks provide water for irrigation and two 2,500 gallon storage tanks provide water for winery production and domestic uses. Total storage capacity onsite is 25,000 gallons for the water system. Water for wine production is treated at the winery with a softener. Water for domestic use is also softened and disinfected with a UV system.

The facility will have an estimated water demand of 660 gallons per day (gpd) average for process water, 1,350 gpd peak for domestic water use at the winery, and 960 gpd of domestic water use for the two residences, for a total demand of 2,970 gpd (6.2 gpm for 8 hrs). The Maximum Daily Demand (MDD) for the facility is estimated to be 4,455 gpd, and can be met with any of the existing wells. The existing system has two 2,500 gallon tanks for winery water use, which combined provide a total storage capacity of 5,000 gallons. The storage capacity at the winery for domestic water supply is sufficient to meet the MDD for the facility. Since

the site has multiple sources, the supply of any of the additional wells can be used to supplement any potential deficit in storage capacity during an emergency.

## WATER DEMAND

The proposed UP modifications are to increase wine production capacity to 40,000 gallons per year, increase the number of employees, and allow for tasting and event visitors. The water demand increase is expected to correlate with the estimated wastewater generation flows for process wastewater and sanitary sewage.

### Proposed Water Uses

Water use at the facility will be based on the following needs:

- Existing 5 bedroom residence
- Existing 3 bedroom farmworker residence
- Process needs for production capacity of 40,000 gallons of wine per year
- Full Time Employees = 10 per day (maximum)
- Tasting Visitors = 350 average per week, 100 max per day with catered food pairings
- Private and Industry Event Visitors :
- 24 Food & Wine events per year with 30 visitors each with catered food
- 6 Wine Club events per year with 50 visitors each with catered food
- 4 Release events per year with 100 visitors each with catered food
- * 9 special industry/community events per year with up to 150 visitors each with catered food
- Irrigation of 17.58 acres of vineyard
- Irrigation of 0.11 acres of landscape

  * Industry & community special events will be permitted under a special events permit and are not requested as part of this Use Permit

### Winery Process Water Demand

Water demand for wine production is expected to correlate to the process wastewater (PW) generated at the facility. Based on typical flow data from wineries of similar size and characteristics, the projected process wastewater generation for wine production is calculated as follows:

| | | |
|---|---|---|
| Proposed Annual production | = | 40,000 gal wine/year |
| PW generation rate | = | 6 gal PW/gal wine[a] |
| Annual PW Flow | = | 40,000 gal wine x 6 gal PW/gal wine |
| | = | 240,000 gal PW/year |
| Average PW Flow | = | (240,000 gal PW/year) / (365 days) |
| | = | 660 gal PW/day |

[a] Generation rate based on industry standards and water data for similar wineries

The expected annual water use for the proposed 40,000 gallons of wine per year production capacity is 240,000 gallons per year, with an average demand of 660 gpd. Winery process water demand will be provided by well # 1 and well #6.

**Residence Water Demand**

The domestic water demand from the existing main residence and the existing secondary residence (farmworker residence) with an additional proposed bedroom, is estimated per Napa County guidelines as follows:

| | | | | |
|---|---|---|---|---|
| Primary Residence (5 Bedroom) | = | 5 x 120 gpd/bedroom | = | 600 gpd |
| Secondary Residence (4 Bedroom) | = | 3 x 120 gpd/bedroom | = | 360 gpd |
| Total Water Demand | = | 960 gpd | | |

**Domestic Water Demand**

Domestic water use at the facility is determined based on the total number of employees, daily visitors and event guests. Sanitary sewage generation is expected to be equivalent to the water demand for domestic uses. Food pairing and meals are proposed for tasting and event visitors but all food will be catered and prepared off-site. Sanitary sewage generated at events with more than 50 guests will be managed using portable toilets; however, the water system would need to provide sufficient water to meet the event demands. Using Napa County standards, the proposed peak daily domestic water demand for the winery facility is estimated as follows:

Peak Day with Tasting and Events

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Employee | 10 | x | 15 | gpcd | = | 150 | gal/day |
| Tasting Visitors | 100 | x | 3[a] | gpcd | = | 300 | gal/day |
| Private Event Visitors [b] | 0 | x | 6[c] | gpcd | = | 0 | gal/day |
| Special Industry/Community Event Visitors [b] | 150 | x | 6[c] | gpcd | = | 900 | gal/day |
| Total | | | | | = | 1,350 | gal/day |

[a] Tastings will include catered food pairing
[b] Private events and special industry/community events are assumed to not occur simultaneously.
[c] Events will provide catered food

The expected water use for the proposed increase in employees and visitors is 1,350 gpd for a peak day. Domestic water demand will be provided by well # 1 and the proposed new well.

**Vineyard Irrigation Water Demand**

Baldacci Family Vineyards performs dry farming of the vineyards, and only irrigates twice per year with approximately 6 gallons of water per vine. The resulting annual volume is well below the Napa County suggested vineyard irrigation estimate of 0.2 - 0.5 ac-foot/ac/yr. The associated annual water use is:

| | | | | |
|---|---|---|---|---|
| 23,300 vines | x | 6 gal/vine/watering | = | 140,000 gal/watering day |

Vineyard irrigation will typically occur between June and October. All vineyard irrigation water is currently supplied by all the existing wells onsite. With the upgrades to the water system, vineyard irrigation will be provided by the irrigation wells only (wells with less than 50 ft. seal). Vineyard irrigation for the two watering days is provided by the two 10,000 gallons storage tanks onsite and should not impact water supply for domestic use. Water is not currently used, or proposed to be used, for frost or heat protection.

## MAXIMUM DAILY DEMAND (MDD)

The MDD will occur during the facility's peak months (September – October) and is determined based on the peak projected water demand for process and domestic water as follows:

**Table 1. GROUNDWATER MDD**

| DEMAND | FLOW (GPD) | 8-HR DEMAND (GPM) |
|---|---|---|
| Winery Process Water | 660 | 1.4 |
| Winery Domestic Water | 1,350 | 2.8 |
| Residential Water | 960 | 2.0 |
| **TOTAL** | **2,970** | **6.2** |

**MAXIMUM DAY DEMAND**

| | | |
|---|---|---|
| 2,970 GPD X 1.5 | = | 4,455 GPD |
| Required Storage Onsite | = | 5,000 Gallons |
| Existing Domestic Storage Onsite | = | 5,000 Gallons |

The facility has sufficient storage capacity to meet the MDD requirement for the proposed increase in water demand. Additionally, the facility will have a second domestic water supply well (well #6) to complement the water supply from well #1 and to supplement any potential deficit of storage capacity. The existing domestic wells to be used in the public water system (well #1 & well #2) should have sufficient capacity to adequately provide water to meet the projected daily water demand of 6.2 gpm.

## MANAGEMENT

Baldacci Family Vineyards is responsible for all finances, operations, compliance requirements, and establishment of policies. The facility's domestic water system is not currently classified as a public water system; however with the proposed changes the system will be classified as a transient –non community water system. Maintenance personnel at the winery are responsible for routine inspection and operations of the water system and treatment equipment. The winery supervisor/operator will have direct responsibility for

operation and maintenance of the water system. Major repairs, replacements and other engineering and professional services will be contracted out.

Currently all wells are connected to the water system. The existing system will be upgraded to include well #1 and well #6, which both have 50 ft. minimum seals. The rest of the wells, which do not have a 50 ft. minimum seals, will be removed from the water system and used separately for irrigation only.

Backwash from the water treatment system serving the domestic water system will be handled separately from the wastewater systems at the facility and will not be disposed of through either the proposed sanitary sewage disposal system or the proposed process wastewater disposal system.

## FINANCIAL

Baldacci Family Vineyards is not currently encumbered by any judgements, liens, or other financial liability that would prevent the operation of the winery water system. The annual operation and maintenance cost of the winery water system is expected to be $1,500 per year. The operating and maintenance costs of the system are covered by the income from retail wine sales. Any potential additional costs due to upgrades to the water system will be managed by the facility. There will be no expected additional financial impacts since the current water system has sufficient supply capacity to meet the increase in water demand.

**ENCLOSURE A**

**WASTEWATER SITE PLAN**

0 60 120
GRAPHIC SCALE IN FEET

100' SETBACK, TYP

(E) WELL #1

APN 031-220-020

APPROXIMATE PROPERTY LINE, TYP

APN 031-220-016

(E) WATER IRRIGATION TANKS (3–10,000 GAL)

(E) WELL #2

LAVA ROCK FOUND AT 12" (POTENTIAL DRAINTILES)

PRIMARY AND RESERVE DISPOSAL AREAS (40,000 SF AVAILABLE)

APN 031-220-015

(E) VINEYARD

APN 031-230-006

SP8 48"
SP4 48"
SP7 48"
SP3 48"
SP6 48"
SP2 48"
SP10 40"
SP12 42"
SP5 48"
SP1 48"
SP9 42"
SP11 36"

50' SETBACK

(E) VINEYARD

SETBACK TO DISPOSAL AREA

25'

(E) WELL #3

APPROXIMATE LOCATION (E) LEACHFIELD FOR 5 BR RESIDENCE TO BE ABANDONED

(E) SS TO BE ABANDONED

(E) VINEYARD

CAVE DRAIN OUTLET

(E) WELL #6

APPROXIMATE LOCATION (E) LEACHFIELD FOR FARMWORKER RESIDENCE AND WINERY TO BE REPLACED BY NEW SYSTEM

(E) VINEYARD

(E) SEPTIC TANK TO BE ABANDONED

(E) 5 BR RESIDENCE

10' SETBACK

PRODUCTION BUILDING

WINE CAVE TUNNEL FF 130.25 FT

APN 031-230-007

CAVE PORTAL

(E) WINE CAVE

(E) CAVE PORTALS

RELOCATED WATER TANKS (2-2,500 GAL)

HOSPITALITY BUILDING

(E) HOSPITALITY BUILDING TO BE CONVERTED TO ADMIN BUILDING

(E) WATER STORAGE TANKS (2–2,500 GAL)

TRASH ENCLOSURE

(E) GARAGE

(E) PERMITTED FARMWORKER RESIDENCE

ACCESS ROAD

PARKING

(E) WELL #5 TO BE ABANDONED

(E) WELL #4

SILVERADO TRAIL

CONNECT TRASH ENCLOSURE DRAIN TO SS

SUMMIT
Summit Engineering, Inc
463 Aviation Blvd, Suite 200 • Santa Rosa, CA 95403
707-527-0775 • www.summit-sr.com

**BALDACCI FAMILY VINEYARDS**
**6236 & 6171 SILVERADO TRAIL**
**NAPA, CALIFORNIA**
**APN 031-230-006 & APN 031-220-015**

**USE PERMIT APPLICATION**

**WASTEWATER SITE PLAN**

| | |
|---|---|
| 2015-12-22 | PERMIT SUBMITTAL |
| 2016-03-24 | PERMIT RESUBMITTAL |
| 2016-06-13 | PERMIT RESUBMITTAL |

DATE: 2015-12-22
JOB NO: 2015167
SCALE: AS SHOWN
DRAWN: TF
CHECKED: JR

SHEET **UP3**

**ENCLOSURE B**

**WELL LOGS**

well E06-1475 WR JA 2/8/07

QUADRUPLICATE
For Local Requirements

Page 1 of 1

STATE OF CALIFORNIA
# WELL COMPLETION REPORT
*Refer to Instruction Pamphlet*

No. E047294

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

Owner's Well No. WELL #1
Date Work Began 10/17/2006, Ended 10/27/2006
Local Permit Agency Napa Count Environmental
Permit No. E06-01475 Permit Date 10/11/2006

## GEOLOGIC LOG

ORIENTATION (✓) ✓ VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD AIR FLUID N/A

| DEPTH FROM SURFACE Ft. | to Ft. | DESCRIPTION *Describe material, grain, size, color, etc.* |
|---|---|---|
| 0 | 48 | Brown clay with embedded gravel |
| 48 | 51 | Blue, gray rock |
| 51 | 75 | Brown clay and rock |
| 75 | 112 | Dark gray shale |
| 112 | 119 | Gray volcanic rock, hard |
| 119 | 129 | Dark gray shale |
| 129 | 135 | Gray volcanic rock, hard |
| 135 | 270 | Dark gray shale |
| 270 | 273 | Gray volcanic rock, hard |
| 273 | 309 | Dark gray shale |
| 309 | 350 | Gray volcanic rock |
| 350 | 358 | Dark gray shale |
| 358 | 364 | Gray volcanic rock, hard |
| 364 | 431 | Dark gray shale |
| 431 | 471 | Greenish gray volcanic rock |
| 471 | 478 | Greenish gray volcanic rock, small |
| | | streak dark gray shale |
| 478 | 495 | Greenish gray volcanic rock |
| 495 | 504 | Hard greenish gray volcanic rock |
| 504 | 560 | Dark gray shale |

RECEIVED
NOV 17 2006
DEPT. OF
ENVIRONMENTAL MANAGEMENT

TOTAL DEPTH OF BORING 560 (Feet)
TOTAL DEPTH OF COMPLETED WELL 198 (Feet)

## WELL OWNER

Name Archangel Investments LLC
Mailing Address 219 Fieldcrest Court
Danville CA
CITY STATE ZIP

## WELL LOCATION

Address 6236 Silverado Trail
City Napa CA
County Napa
APN Book 031 Page 230 Parcel 006
Township ___ Range ___ Section ___
Latitude ___ DEG. ___ MIN. ___ SEC. ___ DEG. ___ MIN. ___ SEC.

## LOCATION SKETCH

NORTH
WELL #1
WEST
EAST
SOUTH

RECEIVED
NOV 20 2006
DEPT. OF
ENVIRONMENTAL MANAGEMENT

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

## ACTIVITY (✓)

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

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

## WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER N/A (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 33 (Ft.) & DATE MEASURED 10/27/2006
ESTIMATED YIELD 36 (GPM) & TEST TYPE Air Lift
TEST LENGTH 1 (Hrs.) TOTAL DRAWDOWN 189 (Ft.)
*May not be representative of a well's long-term yield.*

## CASING (S)

| DEPTH FROM SURFACE Ft. | to Ft. | BORE-HOLE DIA. (Inches) | TYPE (✓) BLANK | SCREEN | CONDUCTOR | FILL PIPE | MATERIAL / GRADE | INTERNAL DIAMETER (Inches) | GAUGE OR WALL THICKNESS | SLOT SIZE IF ANY (Inches) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 51 | 11 | | | | | | | | |
| 51 | 560 | 8 | | | | | | | | |
| +2 | 198 | | ✓ | | | | PVC | 5 | SDR21 | |
| 58 | 198 | | | ✓ | | | | | | .032 |

## ANNULAR MATERIAL

| DEPTH FROM SURFACE Ft. | to Ft. | TYPE CEMENT (✓) | BENTONITE (✓) | FILL (✓) | FILTER PACK (TYPE/SIZE) |
|---|---|---|---|---|---|
| 0 | 50 | ✓ | | | |
| 50 | 53 | | ✓ | | |
| 53 | 198 | | | ✓ | 1/8 x1/4 GRAV |

## ATTACHMENTS (✓)

___ Geologic Log
___ Well Construction Diagram
___ Geophysical Log(s)
___ Soil/Water Chemical Analysis
___ Other ___
*ATTACH ADDITIONAL INFORMATION, IF IT EXISTS.*

## CERTIFICATION STATEMENT

I, the undersigned, certify that this report is complete and accurate to the best of my knowledge and belief.
NAME Weeks Drilling & Pump (PERSON, FIRM, OR CORPORATION) (TYPED OR PRINTED)
P.O. Box 176 Sebastopol CA 95473
ADDRESS CITY STATE ZIP
Signed Melissa A Lopez WELL DRILLER/AUTHORIZED REPRESENTATIVE
11/13/06 DATE SIGNED
177681 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Well 31/230/06 WL

DWR USE ONLY — DO NOT FILL IN

STATE WELL NO./STATION NO.

LATITUDE LONGITUDE

QUADRUPLICATE
For Local Requirements

Page ___ of ___

Owner's Well No. ___

Date Work Began 10/21/02 , Ended 10/28/02

Local Permit Agency Napa

Permit No. 96-12233 Permit Date 10/17/02

STATE OF CALIFORNIA
# WELL COMPLETION REPORT
*Refer to Instruction Pamphlet*

No. 818730

## GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)

DRILLING METHOD air FLUID foam

| DEPTH FROM SURFACE Ft. | to Ft. | DESCRIPTION *Describe material, grain size, color, etc.* |
|---|---|---|
| 0 | 2 | topsoil |
| 2 | 30 | brown clay gravel imbedded |
| 30 | 50 | brown & gray rock |
| 50 | 70 | gray rock hard |
| 70 | 150 | lt&dk gray rock hard |
| 150 | 170 | lt&dk gray stringers black rock |
| 170 | 190 | gray&black rock |
| 190 | 230 | gray black&brown rock |
| 230 | 290 | lt&dk gray stringers black rock |
| 290 | 310 | lt dk gray&black rock hard |
| 310 | 370 | black&lt green lt gray rock |
| 370 | 505 | lt gray dk gray&stringers black&gray rock |
| 505 | 610 | lt gray dk gray stringers white green&black |

TOTAL DEPTH OF BORING 610 (Feet)

TOTAL DEPTH OF COMPLETED WELL 610 (Feet)

WELL #2

ZIP

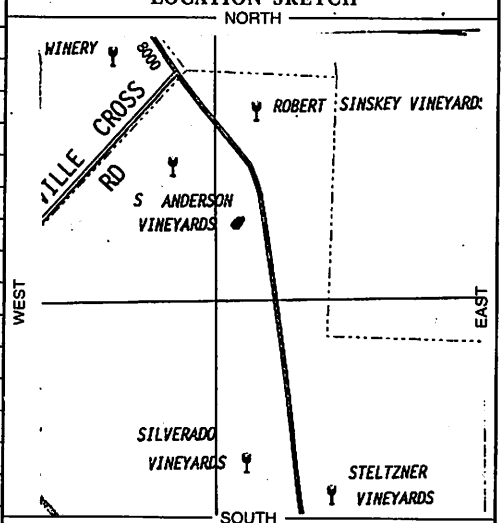
APN Book 31 Page 230 Parcel 06

Township ___ Range ___ Section ___

Latitude ___ DEG. ___ MIN. ___ SEC. NORTH

Longitude ___ DEG. ___ MIN. ___ SEC. WEST

## 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 (✓)

X NEW WELL

MODIFICATION/REPAIR
___ Deepen
___ Other (Specify)

___ DESTROY *(Describe Procedures and Materials Under "GEOLOGIC LOG")*

## PLANNED USES (✓)

WATER SUPPLY
X Domestic ___ Public
___ Irrigation ___ Industrial

MONITORING ___
TEST WELL ___
CATHODIC PROTECTION ___
HEAT EXCHANGE ___
DIRECT PUSH ___
INJECTION ___
VAPOR EXTRACTION ___
SPARGING ___
REMEDIATION ___
OTHER (SPECIFY) ___

## WATER LEVEL & YIELD OF COMPLETED WELL

DEPTH TO FIRST WATER ___ (Ft.) BELOW SURFACE

DEPTH OF STATIC WATER LEVEL a80 (Ft.) & DATE MEASURED 10/28/02

ESTIMATED YIELD * 30. (GPM) & TEST TYPE air

TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN 580 (Ft.)

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

## CASING (S)

| DEPTH FROM SURFACE Ft. | to Ft. | BORE-HOLE DIA. (Inches) | TYPE (✓) BLANK | SCREEN | CONDUCTOR | FILL PIPE | MATERIAL / GRADE | INTERNAL DIAMETER (Inches) | GAUGE OR WALL THICKNESS | SLOT SIZE IF ANY (Inches) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 24 | 12 1/4 | X | | | | F480 | 6" | 200 | |
| 24 | 50 | 9 7/8 | X | | | | F480 | 6" | 200 | |
| 50 | 210 | 9 7/8 | | X | | | F480 | 6" | 200 | factory |
| 210 | 230 | " | X | | | | F480 | 6" | 200 | |
| 230 | 290 | " | | X | | | F480 | 6" | 200 | factory |
| 290 | 350 | " | X | | | | F480 | 6" | 200 | |

## ANNULAR MATERIAL

| DEPTH FROM SURFACE Ft. | to Ft. | TYPE CEMENT (✓) | BENTONITE (✓) | FILL (✓) | FILTER PACK (TYPE/SIZE) |
|---|---|---|---|---|---|
| 0 | 24 | X | | | |
| 24 | 610 | | | | 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)

ADDRESS 878 El Centro Ave., CITY Napa STATE 94558 ZIP

Signed ___ WELL DRILLER/AUTHORIZED REPRESENTATIVE

1/27/03 DATE SIGNED

396352 C-57 LICENSE NUMBER

DWR 188 REV. 11-97

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Well 31-230-06 WL

**QUADRUPLICATE**
**For Local Requirements**

Page ___ of ___
Owner's Well No. ___

STATE OF CALIFORNIA
# WELL COMPLETION REPORT
*Refer to Instruction Pamphlet*
No. 813842

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

Date Work Began 10-21-99, Ended 10-26-99
Local Permit Agency Napa
Permit No. 96-11035 Permit Date 8-04-99

## GEOLOGIC LOG

ORIENTATION (✓) X VERTICAL ___ HORIZONTAL ___ ANGLE ___ (SPECIFY)
DRILLING METHOD Air FLUID foam

| DEPTH FROM SURFACE Ft. | to Ft. | DESCRIPTION *Describe material, grain size, color, etc.* |
|---|---|---|
| 0 | 10 | ~~brownsoil & clay~~ |
| 10 | 30 | ~~gray rock stringers brown clay~~ |
| 30 | 50 | ~~gray rock~~ |
| 50 | 70 | ~~dk & lt gray rock hard~~ |
| 70 | 150 | ~~dk gray rock hard~~ |
| 150 | 170 | ~~dk & lt gray rock hard & fract~~ |
| 170 | 245 | ~~lt gray & green rock hard fract~~ |

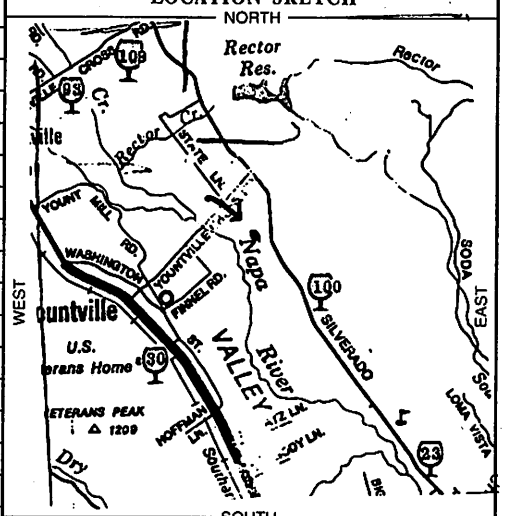
RECEIVED
DEC 28 1999
Department Of
ENVIRONMENTAL MANAGEMENT

TOTAL DEPTH OF BORING 245 (Feet)
TOTAL DEPTH OF COMPLETED WELL 245 (Feet)

Well # 3

APN Book 031 Page 230 Parcel 006
Township ___ Range ___ Section ___
Latitude ___ DEG. ___ MIN. ___ SEC. NORTH
Longitude ___ DEG. ___ MIN. ___ SEC. WEST

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

### PLANNED USES (✓)
WATER SUPPLY
X 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 170 (Ft.) BELOW SURFACE
DEPTH OF STATIC WATER LEVEL 100 (Ft.) & DATE MEASURED 10-26-99
ESTIMATED YIELD 30. (GPM) & TEST TYPE air
TEST LENGTH 2 (Hrs.) TOTAL DRAWDOWN 190 (Ft.)
** May not be representative of a well's long-term yield.*

### CASING (S)

| DEPTH FROM SURFACE Ft. | to Ft. | BORE-HOLE DIA. (Inches) | TYPE (✓) BLANK | SCREEN | CONDUCTOR | FILL PIPE | MATERIAL / GRADE | INTERNAL DIAMETER (Inches) | GAUGE OR WALL THICKNESS | SLOT SIZE IF ANY (Inches) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 145 | 9 7/8 | X | | | | F480 | 5" | 200 | |
| 145 | 245 | 9 7/8 | | X | | | F480 | 6" | 200 | factory |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

### ANNULAR MATERIAL

| DEPTH FROM SURFACE Ft. | to Ft. | TYPE CEMENT (✓) | BENTONITE (✓) | FILL (✓) | FILTER PACK (TYPE/SIZE) |
|---|---|---|---|---|---|
| 0 | 23 | X | | | |
| 23 | 245 | | | 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)
ADDRESS 878 El Centro Ave. CITY Napa STATE CA ZIP 94558
Signed ___ (WELL DRILLER/AUTHORIZED REPRESENTATIVE)
DATE SIGNED 11-23-99
C-57 LICENSE NUMBER 396352

DWR 188 REV. 11-97
IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

WELL 31-230-06 WL

# 3266

3/29/91

**ORIGINAL**
**File with DWR**

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES

# WATER WELL DRILLERS REPORT

*Do not fill in*

No. 324308

State Well No. _____

Other Well No. _____

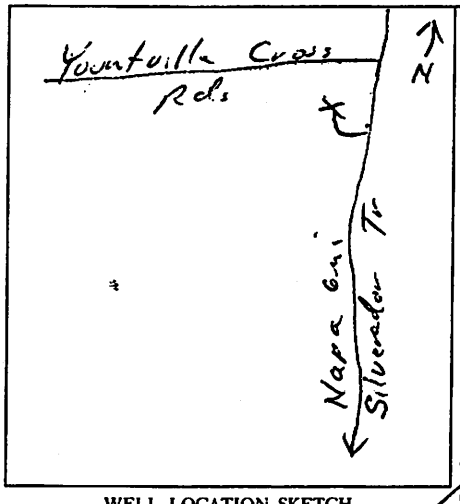
31-230-06

ZIP 94558

WELL #4

per 3

Distance from cities, roads, railroads, fences, etc. 6 mi North of Napa on Silverado Tr 1/2 mile beyond Yountville Cross Rd




WELL LOCATION SKETCH

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

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

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

(6) GRAVEL PACK:
Yes ☒ No ☐ Size 3/8"
Diameter of bore 8"
Packed from 2 to ft.

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

| From ft. | To ft. | Dia. in. | Gage or Wall |
|---|---|---|---|
| 0 | 325 | 5" | 200 |

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

| From ft. | To ft. | Slot size |
|---|---|---|
| 160 | 325 | .032 |

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

(10) WATER LEVELS:
Depth of first water, if known 247' ft.
Standing level after well completion 162' 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 162 ft. At end of test 260 ft.
Discharge Approx 35 gal/min after 2 hours Water temperature NA
Chemical analysis made? Yes ☐ No ☑ If yes, by whom? _____
Was electric log made Yes ☐ No ☑ If yes, attach copy to this report

(12) WELL LOG: Total depth 326 ft. Completed depth 326 ft.

| from ft. | to ft. | Formation (Describe by color, character, size or material) |
|---|---|---|
| 0 | 8 | Fractured Sand Stone Rock |
| 8 | 247 | Hard Lime Stone |
| 247 | 253 | Fractured Lime Stone |
| 253 | 295 | Hard Lime Stone |
| 295 | 315 | Fractured Lime Stone |
| 315 | 255 | Hard Limestone |



RECEIVED
MAR 15 1991
DEPT. OF ENVIRONMENTAL MANAGEMENT

Work started 12-15 19 89 Completed 12-19 19 89

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 D Bess (Well Driller)

NAME D Bess Pump & Well (Person, firm, or corporation) (Typed or printed)

Address 3346 Linda Vista

City Napa ZIP 94558

License No. 482027 Date of this report 12/20/89

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

well 31-230-06 WL

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF WATER RESOURCES
# WATER WELL DRILLERS REPORT

Do not fill in
No. 119583

Notice of Intent No.
Local Permit No. or Date

State Well No.
Other Well No.

WELL #5

Zip 94558

ber 31-230-06

(12) WELL LOG: Total depth 220 ft. Depth of completed well 220 ft.

| from ft. | to ft. | Formation (Describe by color, character, size or material) |
|---|---|---|
| 0 | 10 | Topsoil |
| 10 | 50 | Brown, black rock soft |
| 50 | 75 | Grey, brown & black rock soft |
| 75 | 100 | Black, red & brown med. hard |
| 100 | 125 | Black, red, light & dark grey rock med. hard |
| 125 | 150 | Light & dark grey rock med. hard |
| 150 | 175 | Black rock soft |
| 175 | 220 | Black rock stringers, red & brown med. hard |

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

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

WELL LOCATION SKETCH

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

(6) GRAVEL PACK:
Yes [ ] No [X] Size
Diameter of bore 8 3/4" in.
Packed from to ft.

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

| From ft. | To ft. | Dia. in. | Gage or Wall |
|---|---|---|---|
| 0 | 100 | 6 | 160 |
| | | | |
| | | | |

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

| From ft. | To ft. | Slot size |
|---|---|---|
| 100 | 220 | .040 |
| | | |
| | | |

(9) WELL SEAL:
Was surface sanitary seal provided? Yes [X] No [ ] If yes, to depth 20 ft.
Were strata sealed against pollution? Yes [ ] No [X] Interval ft.
Method of sealing grout

(10) WATER LEVELS:
Depth of first water, if known 80 ft.
Standing level after well completion 54 ft.

(11) WELL TESTS:
Was well test made? Yes [X] No [ ] If yes, by whom? driller
Type of test Pump [ ] Bailer [ ] Air lift [X]
Depth to water at start of test 54 ft. At end of test 180 ft
Discharge 30 gal/min after 1 hours Water temperature
Chemical analysis made? Yes [ ] No [X] If yes, by whom?
Was electric log made? Yes [ ] No [X] If yes, attach copy to this report

Work started 8-11 19 84 Completed 8-14 19 84

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

SIGNED (Well Driller)
NAME Doshier & Gregson Drilling, Inc. (Person, firm, or corporation) (Typed or printed)
Address 5365 Napa-Vallejo Highway
City Vallejo Zip 94589-9679
License No. 294001 Date of this report 8-17-84

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

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

File Original with DWR WELL #6

Page 1 of 1

Owner's Well Number

Date Work Began 04/12/2016 Date Work Ended 4/23/2016

Local Permit Agency Napa County Planning, Building & Environmental Serives

Permit Number E16-00056 Permit Date 3/31/06

State of California

# Well Completion Report

*Refer to Instruction Pamphlet*

**No. e0313175**

DWR Use Only – Do Not Fill In

State Well Number/Site Number

N W

Latitude Longitude

APN/TRS/Other

## Geologic Log

**Orientation** ◉ Vertical ○ Horizontal ○ Angle Specify

Drilling Method Direct Rotary Drilling Fluid Bentonite mud

| Depth from Surface Feet | to Feet | Description Describe material, grain size, color, etc |
|---|---|---|
| 0 | 10 | Top soil. |
| 10 | 80 | Brown clay and mixed gravel. |
| 80 | 240 | 10% Brown clay with hard black rock solid. |
| 240 | 250 | Fractured rock. |
| 250 | 360 | Hard black rock. |
| 360 | 460 | 85% White volcanic ash. |
| | | |
| | | |
| | | |
| | | |
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| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | * * * * *CONTINUED CASING LIST * * * * * * * |
| 220 | 240 | 12 Blank F480 PVC .316 6.625 |
| 240 | 260 | 12 Screen F480 PVC .316 6.625 Milled Slots 0.032 |
| 260 | 280 | 12 Blank F480 PVC .316 6.625 |
| 280 | 300 | 12 Screen F480 PVC .316 6.625 Milled Slots 0.032 |
| 300 | 320 | 12 Blank F480 PVC .316 6.625 |
| 320 | 340 | 12 Screen F480 PVC .316 6.625 Milled Slots 0.032 |
| 340 | 360 | 12 Blank F480 PVC .316 6.625 |
| 360 | 400 | 12 Screen F480 PVC .316 6.625 Milled Slots 0.032 |
| 400 | 420 | 12 Blank F480 PVC .316 6.625 |
| 420 | 440 | 12 Screen F480 PVC .316 6.625Milled Slots 0.032 |
| | | |
| | | |

Total Depth of Boring 460 Feet

Total Depth of Completed Well 440 Feet

## Well Owner

Name Balacci Family Vineyards

Mailing Address 6256 Silverado Trail

City Napa State CA Zip 94558

## Well Location

Address 6236 Silverado Trail

City Napa County Napa

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

Datum Dec. Lat. Dec. Long.

APN Book 031- Page 230- Parcel 006-000

Township Range Section

## Location Sketch

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

North


Illustrate or describe distance of well from roads, buildings, fences, rivers, etc. and attach a map. Use additional paper if necessary. **Please be accurate and complete.**

## Activity

◉ New Well
○ Modification/Repair
○ Deepen
○ Other
○ Destroy
Describe procedures and materials under "GEOLOGIC LOG"

## Planned Uses

◉ Water Supply
☑ Domestic ☐ Public
☐ Irrigation ☐ Industrial
○ Cathodic Protection
○ Dewatering
○ Heat Exchange
○ Injection
○ Monitoring
○ Remediation
○ Sparging
○ Test Well
○ Vapor Extraction
○ Other

## Water Level and Yield of Completed Well

Depth to first water 70 (Feet below surface)

Depth to Static Water Level 90 (Feet) Date Measured 04/23/2016

Estimated Yield * 30 (GPM) Test Type Air Lift

Test Length 6.0 (Hours) Total Drawdown 230 (Feet)

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

## Casings

| Depth from Surface Feet | to Feet | Borehole Diameter (Inches) | Type | Material | Wall Thickness (Inches) | Outside Diameter (Inches) | Screen Type | Slot Size if Any (Inches) |
|---|---|---|---|---|---|---|---|---|
| 0 | 100 | 12 | Blank | F480 PVC | .316 | 6.625 | | |
| 100 | 140 | 12 | Screen | F480 PVC | .316 | 6.625 | Milled Slots | 0.032 |
| 140 | 160 | 12 | Blank | F480 PVC | .316 | 6.625 | | |
| 160 | 180 | 12 | Screen | F480 PVC | .316 | 6.625 | Milled Slots | 0.032 |
| 180 | 200 | 12 | Blank | F480 PVC | .316 | 6.625 | | |
| 200 | 220 | 12 | Screen | F480 PVC | .316 | 6.625 | Milled Slots | 0.032 |

## Annular Material

| Depth from Surface Feet | to Feet | Fill | Description |
|---|---|---|---|
| 0 | 25 | Cement | |
| 25 | 70 | Bentonite | |
| 70 | 440 | 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

878 El Centro Ave. Napa CA 94558
Address City State Zip

Signed
C-57 Licensed Water Well Contractor

6-13-2016 396352
Date Signed C-57 License Number

DWR 188 REV. 1/2006

IF ADDITIONAL SPACE IS NEEDED, USE NEXT CONSECUTIVELY NUMBERED FORM

Contact:
Gina Giacone
gina@summit-sr.com
(707) 636-9162


**SUMMIT ENGINEERING, INC.**
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Santa Rosa, CA 95403
707 527-0775
sfo@summit-sr.com