

WATER SYSTEM FEASIBILITY STUDY FOR A REGULATED WATER SYSTEM

KRUPP BROTHERS WINERY NAPA COUNTY, CA

Prepared for:

Krupp Brothers Winery
3150 Silverado Trail
Napa, CA 94558



#4111005.0

Revised April 22, 2014

Revised December, 15, 2011

October 10, 2011

TECHNICAL CAPACITY

System Description

The proposed Krupp Brothers Winery is located at 3150 Silverado Trail, Napa, approximately 2-miles north of Trancas Street. Previously the site was a residence and vineyard, The existing well on site will serve the proposed 50,000 gallon per year winery, existing residence and vineyard.

The annual water usage is estimated to be 4.83 acre-feet (1,600,000 gallons). See attached Phase 1 Water Availability Analysis.

The current system source is an existing Class I well. The well permit and well completion reports document the well as being an 8-inch cased steel to a depth of 491-ft, and a 50-ft annular seal of 3-inch grout. Water is currently filtered through a 5-micron filter and treated by ultra-violet light. No additional biological or chemical treatment will be performed on the well water unless quarterly testing results deem this treatment is necessary. Additionally, it is not anticipated that the water will be treated for hardness. The well water will be stored in a proposed +/- 10,000 gallon tank. A separate tank will be installed for firewater and irrigation. Firewater storage volume will be separated from the irrigation water by mechanical means. Separate pumps will supply the domestic water, irrigation water and fire water. See the Use Permit-Utility Plan, attachment, for system layout.

Projected Water Demand

Based on the calculated annual water demand of 1,574,000 gallons, the daily average demand is 4,312 gallons. Peak daily demand is estimated at 8,624 gallons per day being 200% of average daily demand.

Water Supply Capacity

The existing water source is capable of supporting the proposed peak daily demand of 10,000-gal/day. A well test performed by Doshier and Gregson Drilling, Inc demonstrates the well can supply 60-gal/min. Well test results are on file at Napa County.

$$60\text{gpm} * 1440\text{min/day} = 86,400\text{gal/day} \geq 10,000\text{gallons (peak daily demand)}$$

Source Adequacy

The current well has a 50-ft seal with a 3-inch annular seal to comply with Napa County Code 13.12.270 as a Class IB well. The Application and Permit to Construct a Water Well document outlines the well construction and inspection by the Department of Environmental Management. Application and Permit are on file at Napa County.

Water Quality

Water sampling will be conducted prior to operation of the system. Water quality is expected to meet or exceed all requirements of Chapter 15 of Title 22, California Code of Regulations (CCR).

MANAGERIAL

General

The owner of the water system will be the property owner of the parcel. The costs of operation will be covered in the winery operation costs. The owner will also hold the responsibility of water system manager for the property.

Operation and Maintenance

The following is a summary of the required Operations and Maintenance schedule:

Tasks	Frequency	Action
System Water Level	Daily	Visual Inspection
System Pressure and Conveyance	Daily	Visual Inspection
Water Tanks	Quarterly	Visual Inspection
Manually Operate Valves and Pumps	Quarterly	Operation
Water Quality Test & Reporting	Quarterly	Unit Samples Taken & Reported to Napa Co.

A certified distribution operator or treatment operator (T1 level or above) as specified by Chapter 13 of Title 22 CCR contracted by the owner will be responsible for system repairs.

Monitoring and Testing

Water quality testing will be conducted to comply with Chapter 15 of Title 22 of CCR. Samples will be taken to Caltest or approved laboratory for testing.

FINANCIAL

Below is a brief summary of the system's annual estimated financial capacity:

Power: \$2,000

Maintenance: \$3,500

Water Quality Testing: \$1,500

Total: \$7,000

Projected Annual Gross Revenue: \$6,300,000 (Based on 21,000 cases at \$300/case)

Annual Operating Costs: \$5,040,000 (at 20% profit)

Percent of Total Operating Costs: 0.14%



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Director

WATER AVAILABILITY ANALYSIS - PHASE ONE STUDY

Introduction: As an applicant for a permit with Napa County, It has been determined that Chapter 13.15 of the Napa County Code is applicable to approval of your permit. One step of the permit process is to adequately evaluate the amount of water your project will use and the potential impact your application might have on the static groundwater levels within your neighborhood. The public works department requires that a Phase 1 Water Availability Analysis (WAA) be included with your application. The purpose of this form is to assist you in the preparation of this analysis. You may present the analysis in an alternative form so long as it substantially includes the information required below. Please include any calculations you may have to support your estimates.

The reason for the WAA is for you, the applicant, to inform us, to the best of your ability, what changes in water use will occur on your property as a result of an approval of your permit application. By examining the attached guidelines and filling in the blanks, you will provide the information we require to evaluate potential impacts to static water levels of neighboring wells.

Step #1:

Provide a map and site plan of your parcel(s). The map should be an 8-1/2"x11" reproduction of a USGS quad sheet (1:24,000 scale) with your parcel outlined on the map. Include on the map the nearest neighboring well. The site plan should be an 8-1/2"x11" site plan of your parcel(s) with the locations of all structures, gardens, vineyards, etc in which well water will be used. If more than one water source is available, indicate the interconnecting piping from the subject well to the areas of use. Attach these two sheets to your application. If multiple parcels are involved, clearly show the parcels from which the fair share calculation will be based and properly identify the assessor's parcel numbers for these parcels. Identify all existing or proposed wells

Step #2: Determine total parcel acreage and water allotment factor. If your project spans multiple parcels, please fill a separate form for each parcel.

Determine the allowable water allotment for your parcels:

Parcel Location Factors

The allowable allotment of water is based on the location of your parcel. There are 3 different location classifications. Valley floor areas include all locations that are within the Napa Valley, Pope Valley and Carneros Region, except for areas specified as groundwater deficient areas. Groundwater deficient areas are areas that have been determined by the public works department as having a history of problems with groundwater. All other areas are classified as Mountain Areas.

Please underline your location classification below (Public Works can assist you in determining your classification if necessary):

Valley Floor	1.0 acre feet per acre per year
Mountain Areas	0.5 acre feet per acre per year
MST Groundwater Deficient Area	0.3 acre feet per acre per year

Assessor's Parcel Number(s)	Parcel Size (A)	Parcel Location Factor (B)	Allowable Water Allotment (A) X (B)
039-610-006	13.23	1.0	13.23

Step #3:

Using the guidelines in Attachment A, tabulate the existing and projected future water usage on the parcel(s) in acre-feet per year (af/yr). Transfer the information from the guidelines to the table below.

EXISTING USE:		PROPOSED USE:	
Residential	0.75 af/yr	Residential	0.75 af/yr
Farm Labor Dwelling	af/yr	Farm Labor Dwelling	af/yr
Winery	af/yr	Winery	1.33 af/yr
Commercial	af/yr	Commercial	f/yr
Vineyard*	3.85 af/yr	Vineyard*	2.75 af/yr
Other Agriculture	af/yr	Other Agriculture	af/yr
Landscaping	af/yr	Landscaping	af/yr
Other Usage (List Separately):		Other Usage (List Separately):	
_____	af/yr	_____	af/yr
_____	af/yr	_____	af/yr
_____	af/yr	_____	af/yr

TOTAL:	4.6 af/yr	TOTAL:	4.83 af/yr	TOTAL:
	1,499,000 gallons"	TOTAL:	1,574,000 gallons"	

Is the proposed use less than the existing usage? Yes No Equal

Step #4:

Provide any other information that may be significant to this analysis. For example, any calculations supporting your estimates, well test information including draw down over time, historical water data, visual observations of water levels, well drilling information, changes in neighboring land uses, the usage if other water sources such as city water or reservoirs, the timing of the development, etc. Use additional sheets if necessary.

The proposed area of vineyard is 5.5 acres (See attached exhibit). The water use factor assigned to the vineyard area is 0.5 acre-feet per acre per year, per "Attachment A: Estimated Water Use Guidelines". Heat and frost protection is provided by an existing fan system.

Up to an additional 0.75 ac/ft of recycled process wastewater could be used for beneficial vineyard irrigation. This volume is not taken into account in the Napa County analysis.

Conclusion: Congratulations! Just sign the form and you are done! Public works staff will now compare your projected future water usage with a threshold of use as determined for your parcel(s) size, location, topography, rainfall, soil types, historical water data for your area, and other hydrogeologic information. They will use the above information to evaluate if your proposed project will have a detrimental effect on groundwater levels and/or neighboring well levels. Should that evaluation result in a determination that your project may adversely impact neighboring water levels, a phase two water analysis may be required. You will be advised of such a decision.

Signature:  Date: 4/26/14 Phone: 707 252-3301

WATER AVAILABILITY ANALYSIS - PHASE ONE STUDY

Attachment A: Estimated Water Use Guidelines

Typical Water Use Guidelines:

Primary Residence	0.5 to 0.75 acre-feet per year (includes some landscaping)
Secondary Residence	0.20 to 0.30 acre-feet per year
Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year

Non-Residential Guidelines:

Agricultural:

Vineyards

Irrigation only	0.2 to 0.5 acre-feet per acre per year
Heat Protection	0.25 acre feet per acre per year
Frost Protection	0.25 acre feet per acre per year

Farm Labor Dwelling	0.06 to 0.10 acre-feet per person per year
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Irrigated Pasture	4.0 acre-feet per acre per year
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Orchards	4.0 acre-feet per acre per year
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Livestock (sheep or cows)	0.01 acre-feet per acre per year
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Winery:

Process Water	2.15 acre-feet per 100,000 gal. of wine
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Domestic and Landscaping	0.50 acre-feet per 100,000 gal. of wine
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Industrial:

Food Processing	31.0 acre-feet per employee per year
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Printing/Publishing	0.60 acre-feet per employee per year
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Commercial:

Office Space	0.01 acre-feet per employee per year
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Warehouse	0.05 acre-feet per employee per year
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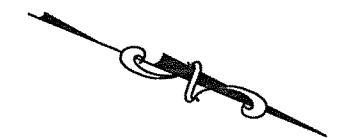
KRUPP BROTHERS WINERY VINEYARD AREA EXHIBIT



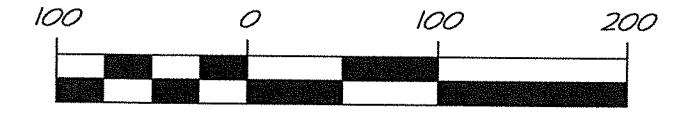
VINEYARD AREA
0.5 ACRES

VINEYARD AREA
5.0 ACRES

 TOTAL VINEYARD AREA FOR
IRRIGATION = 5.5 ACRES



GRAPHIC SCALE



(IN FEET)
1 inch = 100 FT

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