

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2006-0037

WASTE DISCHARGE REQUIREMENTS
FOR
GUENOC WINERY, INC.
GUENOC WINERY
LAKE COUNTY

The California Regional Water Quality Control Board, Central Valley Region, (hereafter Regional Board) finds that:

1. Guenoc Winery, Inc. (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated 1 December 2004 with supplemental information submitted on 2 June 2005 and on 22 July 2005. Following a meeting with Regional Board staff, the Discharger submitted a revised RWD on 6 December 2005. Upon receipt of the tentative WDRs, the Discharger submitted additional revisions to the RWD on 4 April 2006.
2. Guenoc Winery is approximately two miles southeast of Middletown on Butts Canyon Road in Lake County (Assessors Parcel No. 014-310-006) in Section 4, T10N, R6W, MDB&M. The location of the winery and associated facilities is shown on Attachment A, which is attached hereto and made part of this Order by reference.

PREVIOUS WASTE DISCHARGE REQUIREMENTS

3. Waste Discharge Requirements (WDRs) Order No. R5-2003-0175 prescribes requirements for Guenoc Winery's land discharge of winery wastewater and was adopted by the Regional Board on 5 December 2003. The WDRs allow the discharge of up to 11,000 gallons per day (gpd) of winery wastewater to a series of five unlined evaporation/percolation ponds. From the ponds, the wastewater may be discharged to approximately seven acres of pastureland (Dedicated Disposal Area No. 1; DDA-1) or to 54 acres of pastureland (DDA-2).
4. WDRs Order No. R5-2003-0175 states that the discharges from the ponds and DDA-1 have polluted the underlying groundwater with salts and therefore the discharge is classified as "designated waste". The Order requires the Discharger to submit a number of reports and to complete improvements, such that by 1 November 2005 the Discharger would no longer be discharging designated waste to the ponds or to DDA-1. The Discharger has not complied with the schedule in the WDRs. The WDRs also required that the Discharger submit an Engineering Feasibility Study and Corrective Action Plan to address cleanup of the polluted groundwater. While the Discharger submitted a document with this title, it did not meet the requirements of the WDRs as it did not contain the required information and stated that there was no need to clean up the polluted groundwater. In addition, the Discharger never made the improvements to DDA-2 to allow disposal of wastewater to that pasture, thereby exacerbating the groundwater impacts to DDA-1.
5. Order No. R5-2003-0175 must be revised to reflect the Discharger's proposal to treat the waste and discharge it to a lined pond, followed by discharge to unlined ponds and then to the 54-acre

pasture. It is appropriate to prepare a companion Cease and Desist Order, as the Discharger will not be able to immediately comply with the limitations of this Order and because the Discharger must remediate its plume of polluted groundwater.

BACKGROUND

- 6. Activities at the winery facility include receiving, crushing and pressing of grapes; fermentation; processing into finished white and red wines; and distribution.
- 7. Wine production and wastewater flow rates have been changing at this facility. For example, the 2003 WDRs state that the Discharger will produce up to 130,000 cases of wine and generate approximately four million gallons of wastewater annually. The 2005 RWD states that the Discharger will produce 140,000 cases of wine but only generate 2.4 million gallons of wastewater. Monitoring data submitted by the Discharger shows that 2.2 million gallons of wastewater were generated in 2004, while 1.63 million gallons were generated in 2005.
- 8. During wine production, various chemicals can be used as either an additive, a fining agent, or as a cleaner/sanitizer. The approximate quantities of additives and chemicals used in the wine-making process at this winery are as follows:

<u>Additives/Chemical</u>	<u>Quantity</u>	<u>Units</u>
Chlorinated Trisodium Phosphate	550	Pounds per year
Citric Acid	2,400	Pounds per year
Sulfur Dioxide Gas	100	Pounds per year
Sodium Hydroxide	1,500	Pounds per year
Diatomaceous Earth Filter Powder	3,500	Pounds per year
Calcium Hypochlorite	20	Gallons per year

- 9. Domestic water used for winemaking processes (including sanitation, grape crushing, barrel and equipment rinsing, filtering, and bottling) is obtained from an onsite well. The well water is first ozonated before being pumped to the winery. A portion of water is then softened and pumped through a multimedia sand and carbon filter. The water is used for the following winery purposes:

<u>Water Usage</u>	<u>Purpose</u>	<u>Treatment Required</u>	<u>Percent Usage</u>
Ammonia condensers	Chillers, fermentation tanks	None	29%
Hot water	Floor and tank washing, sterilization	Sodium Chloride (Softening)	0.5%
Cold water	Kitchen, filling barrels, floor washing	None	70%
Wine tasting room	Restrooms, sinks	Sodium Chloride (Softening)	0.5%

- 10. The following table presents wastewater concentrations for selected constituents collected during the 2004 and 2005 crush period. The 2004 data represents eighteen sampling events conducted from 25 August through 1 October 2004. The 2005 data represents 24 sampling events (four times

per day over a six day period) from 25 October 2005 to 31 October 2005. It is noted that the RWD did not provide detection limits.

<u>Constituent</u>	<u>Units</u>	<u>2004 Crush Concentration Range</u>	<u>2005 Crush Concentration Range</u>
pH	pH units	6.6 - 7.6	3.8 - 6.8
Total Dissolved Solids (TDS)	mg/L	720 - 6,200	940 - 12,000
Total Suspended Solids (TSS)	mg/L	6.8 - 1,800	23 - 1,800
Biochemical Oxygen Demand	mg/L	410 - 15,000	1,700 - 9,000
Chemical Oxygen Demand	mg/L	290 - 22,000	Not Analyzed
Chloride	mg/L	18 - 81	11 - 40
Sulfate as SO ₄	mg/L	Non Detect to 350	Not Analyzed
Nitrate as NO ₃	mg/L	Non-Detect	Not Analyzed
Total Kjeldahl Nitrogen (TKN)	mg/L	12 - 42	Not Analyzed

A review of the above data shows that the TDS concentrations have increased dramatically, from a high of 6,200 mg/L in 2004 to a high of 12,000 mg/L in 2005, while the BOD concentrations have decreased, from a high of 15,000 mg/L in 2004 to a high of 9,000 mg/L in 2005.

11. The following table presents wastewater concentrations for selected constituents collected during the 2004 and 2005 non-crush period. Samples were collected once per month, except for specific conductivity, which was measured weekly.

<u>Constituent</u>	<u>Units</u>	<u>2004 Non-Crush Concentration Range</u>	<u>2005 Non-Crush Concentration Range</u>
pH ¹	pH units	7.16 - 9.64	6.5 - 10.03
Specific Conductivity	µmhos/cm	607 - 2,090	529 - 1,082
Total Dissolved Solids	mg/L	440 - 1,300	330 - 460
Total Suspended Solids	mg/L	Non-Detect - 120	Non-Detect - 13
Biochemical Oxygen Demand	mg/L	8 - 470	11 - 160
Sulfate as SO ₄	mg/L	1.6 - 66	2.7 - 13
Total Kjeldahl nitrogen	mg/L	3.6 - 31	2.1 - 95
Nitrate as NO ₃	mg/L	Non-Detect	Non-Detect

It is noted that TDS, BOD, and sulfate concentrations have decreased, while total Kjeldahl nitrogen and pH levels have increased.

PROPOSED WASTEWATER TREATMENT SYSTEM

12. The following table summarizes the design criteria described in the RWD as used for designing the upgraded waste treatment system, ponds, and disposal field.

<u>Parameter</u>	<u>Design Criteria</u>	<u>Unit</u>
Annual Wine Production	140,000	cases/year

Average Annual Discharge	2,378,518	gallons/year
Peak Daily Crush Discharge	16,500	gallons/day (gpd)
Average Daily Discharge	6,800	gallons/day (gpd)

13. Wastewater generated from winery processing activities (process/equipment cleaning, washdown operations, and evaporative cooling towers) will continue to be collected in a series of trench floor drains both at the crush pad and inside the winery building. The wastewater then flows via gravity from the winery facility to a 600-gallon concrete vault located in the parking lot. A 2004 inspection of the vault by the Discharger indicated that it had no visible leaks or structural problems. The RWD states that visual inspections of the vault will occur on an annual basis.
14. From the vault, the wastewater will be pumped to a rotary screen and then to a new Bioreactor where the wastewater will receive biological treatment. The pumps will include a duplex/alternating “on-cycle” design with an integrated alarm and a four-float control system. The Bioreactor will consist of aeration tanks designed to treat a flow of approximately 16,500 gpd with a BOD concentration of 9,000 mg/L to a discharge concentration of 200 mg/L. A clarifier attached to the final aeration tank will be used to settle out the waste activated sludge. A process flow diagram is shown as Attachment B, which is attached hereto and made part of this Order by reference.
15. The RWD states that a magnetic flow meter will be installed to measure winery process water flows.
16. Ammonium hydroxide, phosphoric acid, and sodium hydroxide will be stored onsite in 80-gallon self-contained tanks. These chemicals will be added as necessary via metering pumps to the first stage of the bioreactor to adjust the pH levels.
17. The RWD states that as of September 2005 the Discharger has been using surface water from nearby Lake Bordeaux for the ammonia condensers. This change has resulted in the reduction of water softening and allows the water to circulate through the condensers six to eight times rather than only once prior to discharge. The table below presents the concentrations of selected constituents in water samples collected from the ammonia condensers in November 2005:

<u>Constituents</u>	<u>Units</u>	<u>Ammonia Condenser</u>
pH	pH units	8.6
Total Dissolved Solids	mg/L	340
Total Suspended Solids	mg/L	13
Chloride	mg/L	17
Nitrate as Nitrogen	mg/L	<0.2
Total Kjeldahl Nitrogen	mg/L	6.3
Total Nitrogen	mg/L	6.3

18. The table below presents the design concentration ranges for the treated wastewater exiting the Bioreactor. The RWD does not describe how the Bioreactor will treat crush wastewater with a maximum TDS of 12,000 mg/L to an effluent with 900 mg/L TDS. However, because the RWD

was prepared by a registered professional engineer, staff will accept that the treatment system and/or other operational changes will result in an effluent with a TDS concentration of 900 mg/L. This Order sets Effluent Limits based on the design criteria listed below.

<u>Constituents</u>	<u>Units</u>	<u>Effluent Concentration</u>
pH	pH units	6.8 - 7.2
TDS	mg/L	700 - 900
TSS	mg/L	40 - 60
BOD	mg/L	140 - 180
Chloride	mg/L	14 - 16

19. The Discharger proposes that wastewater will be discharged from the Bioreactor into one new pond (Pond A), which will be designed and constructed to meet Title 27 requirements. The five existing ponds will be abandoned in place, and the new lined pond will be built within their footprint. The Discharger proposes to use soil and clay from the existing ponds to construct the new pond; however, this may not be appropriate if those materials contain elevated levels of salt constituents and their use could contribute to continued groundwater pollution. Because the Discharger has not yet submitted a Title 27 RWD for this new pond, the companion Cease and Desist Order requires the submittal of a RWD, which must include a design that complies with Title 27 and the storage capacity requirements of this Order.
20. The Discharger submitted an interim water balance for the wastewater treatment, storage, and disposal system. It assumes only two inputs to the Pond A: 2.38 million gallons of wastewater and 67 inches of precipitation per year. The water balance shows that there will be no percolation from the pond, and that wastewater will be disposed of onto 54 acres of cropland in accordance with Discharge Specification D.9. The water balance is appropriately conservative in that it assumes that rainfall will preclude disposal onto the cropland for three months each winter. With these assumptions, the water balance shows that wastewater pond will have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation for a 100-year return period, and maintain two feet of freeboard at all times. However, the design of the wastewater pond is still under discussion, and therefore the Cease and Desist Order requires the submittal of a final water balance based on the final pond design.
21. Pond A will be equipped with an on-demand aeration device. The Discharger proposes to maintain a minimum of four feet of water in Pond A to allow the aerator to operate year-round. Clean irrigation water will be added to the pond whenever the level drops below four feet. The interim water balance included this proposal showed that the bottom four feet of Pond A is not necessary to meet the storage requirements of this Order, and it is assumed that the final water balance will also include a constant four feet of wastewater in the pond.

DESIGNATED DISPOSAL AREA

22. The volume of wastewater generated at the winery is insufficient to meet the irrigation needs of the 54 acres of pastureland and therefore a substantial amount of clean irrigation water will be

required for the pasture. The RWD states that the wastewater stored in Pond A will be blended with clean irrigation water in a mixing box prior to application to DDA-2, and the blending will be at a rate sufficient to meet the effluent and loading limits of this Order. The blending of wastewater and clean irrigation water will dilute the wastewater to reduce the TDS and BOD concentrations such that the waste will no longer be classified as “designated” and therefore it may be applied to land under this Order.

23. As stated above, the wastewater in Pond A will be diluted prior to irrigation with surface water from Lake Bordeaux. The water will then be applied via an irrigation pump using flood irrigation methods to DDA-2 (as shown in Attachment C, which is attached hereto and made part of this Order by reference). Because the water balance shows that the volume of wastewater is insufficient to meet the irrigation needs of the entire 54 acres of pasture, it is appropriate to allow the wastewater to be diluted by the supplemental irrigation water immediately prior to irrigation.
24. The RWD states that both DDA-1 and DDA-2 will be utilized for wastewater disposal until the treatment system described herein has been installed. After that point, DDA-1 will no longer be used for disposal. This Order allows the Discharger to continue to irrigate DDA-1 with wastewater until 1 September 2006.
25. Order No. R5-2003-0175 required that certain improvements be completed at DDA-2 prior to application of wastewater. Although the RWD states that a berm has been constructed around DDA-2, no report has been submitted to verify this statement. Therefore, this Order requires the Discharger to submit a report showing that the berms surrounding DDA-2 have been installed and tailwater/runoff control systems are functional.
26. The RWD presents the anticipated concentration ranges of blended surface water and wastewater prior to irrigation of DDA-2:

<u>Constituents</u>	<u>Units</u>	<u>Concentration Range</u>
PH	pH units	6.8 – 7.2
Total Dissolved Solids	mg/L	350 – 450
Biochemical Oxygen Demand	mg/L	70 – 90
Chloride	mg/L	7 - 9
Total Kjeldahl Nitrogen	mg/L	2 – 5

27. Native grasses grown on the DDA-2 will be grazed by livestock. The Discharger does not anticipate that mechanical harvesting of the grasses will be necessary.
28. Staff’s conservative calculations of the potential impact from the discharge to DDA-2 (based on the concentrations listed in Finding No. 26) yields the loading rates in the table below. These rates are contrasted with the loading rates proposed by the Discharger in its RWD.

<u>Constituents</u>	<u>Units</u>	<u>Discharger's Proposed Loading Rate (lb/acre/yr)</u>	<u>Staff's Calculated Loading Rate (lb/acre/yr)</u>
BOD	mg/L	66	33
TDS	mg/L	329	165
TKN	mg/L	3.7	1.8
Chlorides	mg/L	6.6	3.3

29. These loading rate calculations show that the nitrogen in the wastewater is less than the grass crop demand on the designated disposal area based on a nitrogen demand of 200 lbs/acre/year for native grasses. Grazing livestock will add some additional nitrogen. However, given the application method and loading, groundwater should not be degraded by nitrogen.

30. The loading rate calculations also show that the application of winery wastewater to the 54.3 acre DDA-2 should not cause an increase in the salt (measured as specific conductivity, TDS, or chloride concentrations) in the underlying groundwater. The "total dissolved solids" component of the wastewater is composed of both volatile dissolved solids (VDS) and inorganic dissolved solids (IDS). The proportion of VDS to IDS in wastewater varies with the source, but usually 50% of the TDS in winery wastewater is in the volatile form. While the majority of the VDS will be removed by the Bioreactor and the aerated pond, the remainder should be removed by the soil microorganisms in a well-managed land application system. The calculated 165 lb/ac/year of TDS discharged to DDA-2 should mainly be composed of IDS. The Discharger maintains that the proposed loading rate for TDS should not degrade the underlying groundwater as the pasture crop will uptake salt constituents. Success is highly dependant upon operation of the Bioreactor, proper design and construction of the lined pond, and blending the wastewater with irrigation water. Accordingly, it is appropriate to establish effluent limits and to require groundwater monitoring to detect whether the wastes are managed such that the discharge to DDA-2 is protective of groundwater quality.

SOLID WASTE

31. Solid/semi-solid wastes such as pomace (skins, seeds, pulp, stems, etc. resulting from the grape crush), and wine settlement and filter cake media (bentonite and diatomaceous earth) are also generated by the processing operations. The pomace is temporarily stockpiled and composted within the boundaries DDA-2, and is then used as a fertilizer/soil amendment in the vineyards and other cultivated areas on the property.

32. The RWD states that the water softener will produce approximately four cubic feet of backwash brine per year, and that the waste will be hauled off-site for disposal. This Order requires that backwash brine be stored in a manner that will not impact water quality and that it be hauled offsite as needed to an approved facility.

33. The RWD states that the solids removed from the clarifier of the BioReactor and from the lined wastewater pond will be used as compost in DDA-2, and if necessary, hauled offsite to an approved septage receiving facility. It is estimated that on a yearly basis, 2,770 cubic feet of

Constituents	Units	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7 ¹
TDS	mg/L	160 – 250	910 – 1300	480 – 930	470 – 660	800 – 930	470 – 730	300 - 490
Specific Conductance	µmhos/cm	134 – 500	459 – 2490	192 – 1600	188 – 1174	961 – 1495	713– 1027	455 – 591
Calcium	mg/L	12 – 17	29 –38	18 - 67	52 - 80	45 – 50	34 – 65	35-41
Potassium	mg/L	<1.0 –2.3	<1.0 – 6.1	1.4 – 7.6	<1.0 – 3.1	<1.0 – 1.5	<1.0 – 4.9	3.1 – 4.9
Magnesium	mg/L	30 – 58	210 – 290	98 – 1200	82 – 120	160 – 190	65 – 81	28 – 37
Sodium	mg/L	12 – 23	31 – 79	11 – 100	6.4 – 9	16 – 18	34 – 40	22 – 64
Chloride	mg/L	8.1 – 26	120 – 220	8 – 160	9.2 – 18	72 – 110	12 – 130	11 - 16
PH	pH Units	7.02 – 8.66	7.06 – 7.61	6.98 –8.59	6.8 – 7.07	7.1 – 7.50	7.1- 7.61	7.47 – 8.0
TKN	mg/L	<1.0 – 2.1	<1.0 – 2.0	<1.0	<1.0 – 3.5	<1.0 – 3.4	<1.0 – 2.5	<1.0 – 1.7
Nitrate as N	mg/L	<0.2 – .54	<0.2 – 1.8	<0.2 – 3.6	<0.2 – 0.85	5.9 – 7.0	0.31 – 1.7	<0.2 –1.4
Sulfate as SO4	mg/L	8.1 – 16	17 – 34	45 – 220	22 – 130	27 – 48	24 – 40	33 - 140
Boron	mg/L	2.1 – 2.4	0.46 – 0.55	0.23 – 0.53	0.91 – 1.3	0.22 – 0.28	0.14 –0.18	0.052 -0.33
Iron	mg/L	<0.1 – 6.7	<1.0 – 4.1	<0.1 – 1.9	<0.1 – 12	0.61 – 3.6	<0.1 – 34	<0.10 - 0.64

¹Sample results from the first monitoring event (December 2004) are not included in the table as subsequent data shows that these are outliers and not representative of true groundwater conditions (i.e, the December 2004 sampling event shows that specific conductance, sodium, TDS, chloride, and sulfate were detected at concentrations significantly higher than subsequent sampling events).

39. The water quality limits used to implement applicable water quality objectives for the protection of beneficial uses of the groundwater for the constituents listed above are: 450 mg/L for TDS (agricultural water quality limit), 700 mg/L for specific conductance (agricultural water quality limit), 69 mg/L for sodium (primary MCL), 105 mg/L for chloride (agricultural water quality limit), 10 mg/L for nitrate-N (primary MCL), 250 mg/L for sulfate (primary MCL), 0.7 mg/L for boron (agricultural water quality limit), and 0.3 mg/L for iron (primary MCL).
40. A comparison of the pond and DDA-1 groundwater monitoring results with (a) background groundwater values (i.e, MW-7) and (b) with the above water quality limits shows that the discharge of waste has not just degraded groundwater but has also polluted groundwater. Groundwater has been polluted by TDS, specific conductance, magnesium, sodium, chloride, nitrate, sulfate, and iron. This is the same conclusion made in WDRs Order No. R5-2003-0175.
41. The existing groundwater monitoring wells were installed to characterize the groundwater underneath the ponds and DDA-1. Because the existing network will not measure the effects of the discharge to DDA-2, this Order requires that additional groundwater monitoring wells be installed and monitored within and around DDA-2.
42. Background groundwater quality, based on MW-7, is as follows: specific conductivity of 521 µmhos/cm, TDS of 383 mg/L, chloride of 14 mg/L, sulfate of 76 mg/L and total nitrogen of 1.4 mg/L. These values are average concentrations based on four quarters of monitoring data, which is not enough data to perform a true statistical analysis. Because the data from the initial sampling event at MW-7 is not representative of the groundwater conditions, these results were not included in the average. These background values will need to be re-evaluated and may be revised after the Discharger performs a minimum of eight quarters of groundwater sampling from MW-7 and determines final background concentrations using statistical methods.

43. The water supply well that serves the winery is screened from 325 to 365 feet bgs and is constructed with a 50-foot sanitary seal. As stated earlier, the supply water is treated using an ozone injection system and multimedia filtration. A groundwater sample was collected from the water supply well (after ozonation) in July 2003 and analyzed for several constituents. Water supply samples were also collected during a four-week period in October and November 2005. Results are as follows:

<u>Constituents</u>	<u>Units</u>	2003	2005
		<u>Water Supply Well</u>	<u>Water Supply Well</u>
pH	pH units	7.7	7.3 – 7.4
Specific Conductivity	μ mhos/cm	680	570 - 840
Total Dissolved Solids	mg/L	410	Not analyzed
Chloride	mg/L	7.7	5 - 26
Sodium	mg/L	33	Not analyzed
Sulfate as SO ₄	mg/L	80	Not analyzed
Nitrate as Nitrogen	mg/L	0.34	Not analyzed
Total Kjeldahl Nitrogen	mg/L	2.7	Not analyzed

SITE SPECIFIC CONDITIONS

44. The winery facility is near a hillside knoll above the wastewater ponds and the vineyards. Storm water is collected through drop inlets within the gravel parking lot and the grape unloading area. A drainage ditch located on the uphill side of Pond No. 1 is used to redirect surface water runoff away from the ponds.
45. Based on information obtained from the Soil Survey of Lake County, the soils underlying the wastewater ponds consist of Maxwell clay loam, Henneke-Montara Rock outcrop complex and Bressa-Millsholm loams. The Maxwell clay loam is a poorly drained alluvium. The Henneke-Montara Rock complex is an excessively drained soil formed in material weathered from serpentinitic rock, while the Bressa-Millsholm loam is a moderately deep and well drained soil formed from weathered sandstone.
46. Six test pits were excavated to depths ranging from 4.5 to 6 feet bgs within DDA-2 to evaluate the soil profile within this area. The soils encountered in the test pits consisted of low to medium plasticity silty sandy clay and clayey silt to 6-feet bgs. The upper 8 to 12-inches of the soil profile is characterized by a heavy root and organic zone.
47. The 100-year annual precipitation at Middletown, adjusted to Guenoc Ranch, is between 61.5 and 67 inches (extrapolated from two different weather stations in the area) with the highest rainfall (13.3 inches) occurring in January. An annual precipitation value of 67 inches was used as an input parameter in the water balance.
48. Evapotranspiration rates for the area range from 1.5 to 13.2 inches per month, with the highest rate occurring in July.

49. The facility is within the Upper Putah Creek Hydrologic Area (No. 512.30), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
50. Beginning in the summer of 2003, sanitary/domestic wastewater from the winery kitchen, winery restroom facilities, and a private residence is collected and disposed of separately from the process winery wastewater in an on-site sewage disposal system. This system is regulated by the Lake County Environmental Health Department.
51. A two acre pond west of the winery is used exclusively for fire suppression purposes and is not part of the winery wastewater collection system.

SPECIAL CONSIDERATIONS FOR HIGH STRENGTH ORGANIC WASTE

52. Excessive application of high-strength organic wastewater to designated disposal areas can create objectionable odors and degradation of the underlying groundwater by overloading the shallow soil profile and causing waste constituents (organic carbon, nitrate, other salts, and metals) to percolate below the effective treatment zone. Additionally, reducing conditions caused by the excessive application of degradable organic matter can mobilize iron and manganese from the soil to groundwater. However, because the Discharger is treating and diluting the wastewater prior to applying it to DDA-2, objectionable odors and degradation of the groundwater should not be a concern in the disposal area, if the discharge is properly managed.
53. According to *Pollution Abatement in the Fruit and Vegetable Industry*, published by the United States Environmental Protection Agency (US EPA Publication No. 625/3-77-0007) (hereafter *Pollution Abatement*), when applying food-processing wastewater to land for biological treatment, the loading of BOD₅ should not exceed 100 lbs/acre/day (as a cycle average) to prevent nuisance odors. This Order implements this recommendation.
54. Acidic and/or reducing soil conditions can be detrimental to land treatment system function, and may also cause groundwater degradation. If the buffering capacity of the soil is exceeded and soil pH decreases below 5 or the soil becomes reducing, naturally occurring metals (including iron and manganese) may dissolve and degrade underlying groundwater. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops. This Order implements this recommendation.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

55. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins, Fourth Edition* revised September 2004 (hereafter Basin Plan) designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Resources Control Board. Pursuant to §13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.

56. Surface water drainage is to Bucksnot Creek, which is a tributary to Putah Creek, which is tributary to Lake Berryessa.
57. The Basin Plan designates the beneficial uses of Lake Berryessa as municipal and domestic supply; agricultural supply; power generation; water contact recreation; noncontact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction and/or early development of warm freshwater aquatic organisms; and wildlife habitat.
58. The Basin Plan designates the beneficial uses of underlying groundwater as municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.
59. State Water Board Resolution No. 68-16 prohibits the degradation of groundwater quality unless it has been shown that:
 - a. The degradation is consistent with the maximum benefit to the people of the State;
 - b. The degradation will not unreasonably affect present and anticipated future beneficial uses;
 - c. The degradation does not cause exceedance of one or more water quality objectives; and
 - d. The discharger employs best practicable treatment and control to minimize degradation.

The Discharger has not provided the required demonstration pursuant to State Board Resolution No. 68-16 to be allowed to cause groundwater degradation, and therefore none is authorized.

WASTE CHARACTER AND WASTE MANAGEMENT UNIT CLASSIFICATION

60. Water Code Section 13173 defines “designated waste” to include “[n]on hazardous waste that consists of, or contains, pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations that exceed applicable water quality objectives or that could reasonably be expected to affect beneficial uses of waters of the state as contained in the appropriate state water quality control plan.”
61. Based on the data characterization summarized in the Findings of this Order, several of the individual waste streams and the combined waste stream from the Bioreactor is classified as designated waste due to the concentration of total dissolved solids and individual constituents that exceed limits implementing applicable water quality objectives. The waste may also be classified as designated due to the fact that it has already polluted groundwater. The Discharger plans to segregate the water softener brine and treat the remaining wastewater. While such changes will reduce the salinity of the waste stream, it will not be reduced enough to prevent designated waste from being discharged to land.
62. The Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste, as set forth in Title 27, California Code of Regulations (hereafter Title 27), Section 20240 states that waste management units shall be classified according to their ability to contain wastes, and that such classification shall consider the site-specific circumstances relating to the unit’s ability to protect water quality.

63. The Discharger's waste management system is subject to classification under Section 20240 at each point of release of waste constituents, including any structure where the waste is contained for conveyance, treatment, storage, or disposal. This includes floor drains, sumps, and any storage unit such as a tank or pond. The structure that defines each point of potential release must either be constructed to comply with Title 27 or be exempted from it.
64. Title 27, Section 20090(i) exempts fully enclosed units of limited aerial extent and of reliable structural integrity (e.g., aboveground tanks, reinforced concrete sumps, and stainless steel sumps). The wastewater sumps and the vault at the facility are constructed of reinforced concrete. The Bioreactor tanks are either steel or plastic tanks, and are designed and manufactured for that purpose. The indoor process equipment is housed in a roofed building with a reinforced concrete floor. All of these features are of limited aerial extent and provide structural integrity that qualifies them for exemption from the prescriptive standards and performance goals of Title 27. Containment of designated waste in the fully enclosed units described above is authorized under this Order provided that the units are operated and maintained to provide full and continuous containment for all designated waste.
65. The five unlined ponds are currently used to treat and dispose of liquid designated waste. However, pursuant to Section 20210 of Title 27, such waste can only be discharged to a Class I or Class II surface impoundment equipped with engineered lining and a leachate collection and recovery system. The Discharger has proposed to abandon the five existing ponds in place and to construct a new lined pond. Based on the effluent concentration of the wastewater, the depth to groundwater, and the quality of the background groundwater, the new pond must be designed and constructed to comply with Title 27.
66. The discharge of blended wastewater and irrigation water to DDA-2 is exempt from the requirements of Title 27. The exemption, pursuant to Section 20090(b), is based on the following:
 - a. The Regional Board is issuing waste discharge requirements,
 - b. The discharge complies with the Basin Plan, and
 - c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.
67. State regulations prescribe procedures for detecting and characterizing the impact of waste constituents from waste management units on groundwater are found in Title 27. The data analysis methods of Title 27 may be appropriate for determining whether the discharge complies with the groundwater protection requirements specified in this Order.
68. Data from monitoring wells MW-2 through MW-7 show that groundwater exceeds the Groundwater Limitations, and is in conflict with State Water Board Resolution No. 68-16. The quality of wastewater proposed to be discharged to the new Pond A exceeds water quality objectives for certain waste constituents. As found in the previous WDRs and reiterated in this Order, the data demonstrates that waste discharge to the ponds has caused violations of water quality objectives. In 2003, the discharge to the ponds was classified as a discharge of designated waste, and the Discharger was provided with a time schedule to line the pond per Title 27 or reduce the concentrations of the waste constituents entering the ponds such that designated waste

is no longer discharged. While the Discharger has submitted a RWD proposing treatment of the waste, the resulting effluent is still considered designated waste, due to constituent concentrations significantly in excess of applicable water quality objectives. As such, Pond A does not qualify for exemption from the requirements of Title 27 pursuant to Section 20090(b), because the discharge is not in compliance with the Basin Plan. The pond also lacks the structural integrity to qualify for exemption from Title 27 pursuant to Section 20090(i). Therefore, the new Pond A must be regulated under Title 27.

69. The discharge of waste has resulted in an exceedance of water quality objectives and groundwater limitations for groundwater, and therefore, pursuant to Section 13304 of the California Water Code, the Discharger must implement the cleanup and abatement procedures set forth in State Board Resolution No. 92-49.
70. Because the Discharger cannot immediately cease the discharge of designated waste in violation of this Order, and because groundwater monitoring shows that the Discharger cannot immediately comply with the Groundwater Limitations of this Order, it is appropriate to adopt a companion Cease and Desist Order that sets forth a scope and schedule for work that will bring the Discharger into compliance within a reasonable period.

OTHER REGULATORY CONSIDERATIONS

71. Section 13267(b) of California Water Code provides that: *“In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.”*

The technical reports required by this Order and the attached “Monitoring and Reporting Program No. ____” are necessary to assure compliance with these waste discharge requirements. The Discharger owns and operates the facility that discharges waste subject to this Order.

72. California Department of Water Resources standards for the construction and destruction of groundwater wells (hereafter DWR Well Standards), are described in *California Well Standards Bulletin 74-90* (June 1991) and *Water Well Standards: State of California Bulletin 94-81* (December 1981). These standards, and any more stringent standards adopted by the state or county pursuant to CWC section 13801, apply to all monitoring wells.
73. Federal regulations for storm water discharges were promulgated by the U.S. Environmental Protection Agency on 16 November 1990 (40 CFR Parts 122, 123, and 124). The State Board adopted Order No. 97-03-DWQ (General Permit No. CAS000001) specifying waste discharge requirements for discharges of storm water associated with industrial activities, and requiring

submittal of a Notice of Intent by all affected industrial dischargers. The Discharger has obtained coverage under General Permit No. CAS000001.

74. The action to update waste discharge requirements for Guenoc Winery, Inc. is exempt from the provisions of the California Environmental Quality Act, in accordance with Title 14, CCR, Section 15302 (c).
75. Pursuant to California Water Code Section 13263(g), discharge is a privilege, not a right, and adoption of this Order does not create a vested right to continue the discharge. Failure to provide best practicable treatment and control, preclude conditions that threaten pollution, degradation, or nuisance; and protect groundwater quality will be a sufficient reasons to enforce this Order, modify it, or revoke it and prohibit further discharge.

PUBLIC NOTICE

76. All the above and the supplemental information and details in the attached Information Sheet, incorporated by reference herein, were considered in establishing the following conditions of discharge.
77. The Discharger and interested agencies and persons were notified of the intent to prescribe WDRs for this discharge and provided an opportunity for a public hearing and an opportunity to submit their written views and recommendations.
78. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that pursuant to Sections 13263 and 13267 of the California Water Code, Order No. R5-2003-0175 is rescinded and Guenoc Winery, Inc., its agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted there under, shall comply with the following:

Note:

1. *Other prohibitions, conditions, definitions, and some methods of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.*
2. *Additional compliance requirements are set forth in Cease and Desist Order No. R5-2006-0038.*
3. *The Title 27 WDRs for Pond A will contain additional prohibition, specifications, and provisions. Upon adoption of that Order, any requirements contained in this Order which pertain specifically and only to the wastewater pond(s) will be superceded by the requirements in the Title 27 WDRs.*

A. Discharge Prohibitions:

1. Effective **1 July 2007**, the discharge of designated waste to any wastewater pond that is neither exempt from Title 27 nor designed, constructed, and permitted to comply with the prescriptive standards and performance goals of Title 27 is prohibited.
2. Discharge of wastes to surface waters or surface water drainage courses is prohibited.
3. Operation of a distillery at the facility is prohibited.
4. Bypass or overflow of untreated or partially treated waste is prohibited. As of **1 September 2006**, bypass of the Bioreactor is prohibited.
5. Discharge of waste classified as “hazardous,” as defined in Section 2521(a) of Title 23, CCR and Section 2510, et seq. (hereafter Chapter 15) is prohibited.
6. The discharge of winery wastewater to the domestic wastewater system is prohibited.
7. The discharge of domestic waste to the process wastewater treatment system is prohibited.
8. Discharge of wastewater to DDA-1 after **1 September 2006** is prohibited.
9. The disposal of water softener backwash brine to the winery wastewater treatment system or the domestic wastewater system is prohibited.
10. Discharge of sludge from the Bioreactor or from the wastewater ponds to DDA-2 is prohibited unless the Discharger submits, and the Executive Officer approves, the report described in Provision No. G.1.a.
11. Land application of wastewater to any field that does not have a fully functional tailwater return and runoff control system is prohibited.

B. Discharge Specifications:

1. The monthly average discharge of wastewater from the Bioreactor into Pond A during the non-crush season shall be approximately 6,800 gpd. Higher monthly average flows are allowed during the crush season (generally August through October), as long as the total yearly flow does not exceed 2,380,000 gallons.
2. Effective **1 October 2006** the Bioreactor described in Finding Nos. 14 and 18 shall be installed and fully functional. As of this date, wastewater shall be treated in the Bioreactor prior to discharge to any pond.
3. Disposal of effluent shall be confined to the wastewater pond(s) and to DDA-2 as allowed by this Order and the Cease and Desist Order. Prior to 1 September 2006, wastewater may also be discharged to DDA-1.

4. Neither the treatment nor the discharge shall cause a condition of nuisance or pollution as defined by the California Water Code, Section 13050.
5. The discharge shall not cause the degradation of any water supply.
6. No waste constituent shall be released or discharged, or placed where it will be released or discharged, in a concentration or in a mass that causes violation of the Groundwater Limitations.
7. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
8. As a means of discerning compliance with Discharge Specification No. 7, the dissolved oxygen content in the upper zone (one foot) of all five wastewater ponds shall not be less than 1.0 mg/L.
9. Public contact with wastewater shall be precluded or controlled through such means as fences and signs, or acceptable alternatives.
10. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
11. The wastewater treatment system and designated disposal area(s) shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
12. The wastewater treatment, storage, and land application system shall have sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation. Design seasonal precipitation shall be based on total annual precipitation using a return period of 100 years, distributed monthly in accordance with historical rainfall patterns. Additional storage requirements may be prescribed for Pond A in the Title 27 WDRs.
13. The freeboard in the wastewater ponds shall never be less than two feet as measured vertically from the water surface to the lowest point of overflow.
14. By **1 November** of each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. 12 and No. 13.
15. The ponds shall be managed to prevent the breeding of mosquitoes and other vectors. In particular,
 - a. Erosion control measures shall be implemented to minimize small coves and irregularities around the perimeter of the waste surface.
 - b. Weeds within and around the perimeter of the pond shall be minimized through control of water depth, harvesting, and/or herbicides.

c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

16. If the annual vault inspection (required in the Monitoring and Reporting Program) finds that wastewater is leaking from the vault, then within **30 days** of such determination, the Discharger shall make all repairs necessary to prevent such leakage.

C. Effluent Limitations:

Wastewater discharged to Pond A (or the existing wastewater ponds prior to construction of Pond A) and to DDA-2 shall not exceed the following *monthly average effluent limits*, or any lower limits necessary to comply with the Groundwater Limitations:

<u>Constituent</u>	<u>Units</u>	<u>Discharge to Pond A</u>	<u>Discharge to DDA-2¹</u>
Biochemical Oxygen Demand	mg/L	180	90
Total Dissolved Solids	mg/L	900	450
Total Suspended Solids	mg/L	60	50
Total Kjeldahl nitrogen	mg/L	10	5
pH	mg/L	6.8 - 7.2	6.8 - 7.2
Chloride	mg/L	18	2.6

¹ Measured as the blended wastewater and supplemental irrigation water.

D. Designated Disposal Area Requirements:

1. Wastewater may only be used to irrigate pasture (DDA-1 or DDA-2) as long as the Discharger complies with Discharge Specification No. D.9 and with the staff's calculated loading rates listed in Finding No. 28.
2. Hydraulic loading of wastewater and supplemental fresh water to the disposal areas shall be at rates designed to minimize percolation of waste constituents below the evaporative zone, except as needed to promote surface soil chemistry that is consistent with sustainable agricultural land uses.
3. Crops shall be grown on the designated disposal areas. Crops shall be selected based on nutrient uptake capacity, tolerance of anticipated soil conditions, water needs, and evapotranspiration rates. All crops shall either be grazed or they shall be harvested and removed from the irrigation areas at least once per year.
4. The maximum BOD₅ loading to each land application area irrigation check shall not exceed any of the following:
 - a. 200 lbs/ac on any single day;

- b. 100 lbs/ac as a cycle average; and
- c. The daily and cycle loading rate that ensures compliance with Discharge Specifications B.4 and B.7 and with the Groundwater Limitations.

Loading calculations shall be performed as specified in the attached Monitoring and Reporting Program No. R5-2006-0037, which is a part of this Order.

- 5. The irrigation system shall be designed and managed to ensure even application of wastewater over each check or field.
- 6. Discharge of process wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the designated disposal area.
- 7. Irrigation of wastewater using spray irrigation methods is prohibited when wind velocities exceed 30 mph.
- 8. Application of wastewater shall only occur where checks are graded to provide uniform water distribution, minimize ponding, and provide complete tailwater control.
- 9. Irrigation with wastewater shall not be performed within 24 hours before a predicted precipitation event, during precipitation, or within 24 hours after any precipitation event, nor shall it be performed when ground is saturated.
- 10. Hydraulic loading of process wastewater and irrigation water shall be at reasonable agronomic rates designed to maximize uptake and breakdown of waste constituents in the root zone and minimize the percolation of waste constituents below the root zone.
- 11. The resulting effect of the wastewater discharge on the soil pH shall not exceed the buffering capacity of the soil profile.
- 12. Wastewater conveyance lines shall be clearly marked as such. Process wastewater controllers, valves, etc. shall be affixed with reclaimed water warning signs, and these and quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only. If wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable water supply.
- 13. No physical connection shall exist between wastewater piping and any domestic water supply or other domestic/industrial supply well without an air gap or approved reduced pressure device.
- 14. Public contact with wastewater shall be precluded through such means as fences, signs, and irrigation management practices. Signs with proper wording of sufficient size shall be placed at areas of access and around the perimeter of the designated disposal areas to alert the public of the use of wastewater.

15. The designated disposal areas shall be managed to prevent breeding of mosquitoes and other vectors. In particular:
 - a. There shall be no standing water on the irrigation parcel areas 24 hours after effluent application to a parcel ceases;
 - b. Ditches must be maintained essentially free of emergent, marginal, and floating vegetation, and;
 - c. Low pressure and unpressurized pipelines and ditches accessible to mosquitoes shall not be used to store effluent.
16. A 50-foot buffer zone shall be maintained between any watercourse and the wetted area produced during irrigation used for process wastewater effluent disposal.
17. A 100-foot buffer zone shall be maintained between any spring, domestic well or irrigation well and the wetted area produced during irrigation used for process wastewater effluent disposal.

E. Solids/Sludge Disposal Requirements:

1. Water softener backwash brine shall be stored in a manner that will not impact the underlying groundwater, and must be periodically hauled off-site for disposal at an appropriately permitted facility.
2. Collected screenings, sludge, and other solids removed from winery wastewater shall be disposed of in a manner approved by the Executive Officer, and consistent with *Consolidated Regulations of Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005 et seq.
3. Winery sludge and other solids shall be removed from the process equipment, sumps, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Winery solids drying operations, if any, shall be designed and operated to prevent leachate generation.
4. Storage and disposal of domestic wastewater sludge (septage) shall comply with existing Federal, State, and local laws and regulations, including permitting requirements and technical standards.
5. Sludge and other solids shall be removed from the wastewater ponds on an as needed to ensure optimal operation and adequate hydraulic capacity. Sludge and solids removal shall be accomplished in a manner that ensures the continued integrity of liners and leachate collection systems. Sludge shall be hauled by an authorized carrier.
6. Any proposed change in solids use or disposal practice from a previously approved practice shall be reported to the Executive Officer at least 90 days in advance of the change.

F. Interim Groundwater Limitations:

The discharge of wastewater shall not cause underlying groundwater to contain waste constituents in concentrations greater than background water quality, as set forth below. These values will be re-evaluated and may be revised after the Discharger submits the *Background Groundwater Quality Determination Report* proposing final background concentrations using appropriate statistical methods.

<u>Constituent</u>	<u>Units</u>	<u>Concentration</u>
Electrical conductivity	mg/L	525
Total dissolved solids	mg/L	385
Chloride	mg/L	14
Sulfate	mg/L	80
Total nitrogen	mg/L	2

G. Provisions:

1. The following reports shall be submitted pursuant to Section 13267 of the California Water Code and shall be prepared as described in Provision G.2.
 - a. At least **90 days** before the Discharger wishes to apply sludge from the Bioreactor and/or wastewater ponds to DDA-2, it must submit a *Waste Loading Report* describing the total nutrient and salt loading onto DDA-2 and whether the addition of the sludge will cause a violation of the Groundwater Limitations. The report shall consider the nutrients and salts contained in the fertilizer, liquid wastewater, pomace, and irrigation water applied to DDA-2 and shall clearly show the incremental increase attributable to the sludge.
 - b. By **1 July 2006**, the Discharger shall submit a *Groundwater Monitoring Well Installation Workplan*. The workplan shall describe the proposed installation of groundwater monitoring wells within and around DDA-2 to adequately characterize the groundwater quality within and downgradient of the disposal area. Every monitoring well shall be constructed to yield representative samples from the uppermost layer of the uppermost aquifer and to comply with applicable well standards. The workplan shall be consistent with, and include the items listed in, the first section of Attachment D, which is attached hereto and made part of this Order by reference.
 - c. By **1 September 2006**, the Discharger shall submit a *DDA-2 Modification Report* that shows that the berms surrounding DDA-2 have been installed and tailwater/runoff control systems are functional such that discharge of wastewater will comply with this Order.
 - d. By **1 December 2006**, the Discharger shall submit and implement an *Operation and Management Plan* (O&M Plan) that addresses operation of the wastewater treatment and disposal facility. At a minimum, the O&M Plan will describe (a) the daily operation and maintenance of the treatment system, (b) the practices used to treat the wastewater within limits specified in this Order, (c) the locations of the designated disposal areas, and procedures used for the disposal of wastewater to these areas to

prevent excessive BOD, nitrogen, and salt over the loading limits specified in this Order, (d) procedures to be used to determine when the valves at the bottom end of DDA-2 may be opened to allow storm water to run off the fields, (e) the locations of flow and effluent sampling points, (f) quality control sampling procedures necessary to obtain representative samples, (g) practices used to maintain the designated disposal areas, and (h) the locations of the solid waste storage and disposal areas, methods of disposal, and the daily practices associated with the disposal of the solid waste. A copy of the O&M Plan shall be kept at the facility for reference by operating personnel and they shall be familiar with its contents.

- e. By **1 December 2006**, the Discharger shall submit a *Groundwater Monitoring Well Installation Report* that describes the installation of groundwater monitoring wells and contains the items found in the second section of Attachment D.
 - f. By **1 March 2007**, the Discharger shall submit a *Background Groundwater Quality Determination Report*. For each groundwater monitoring parameter/constituent identified in the Monitoring and Reporting Program, the report shall present a summary of monitoring data, a calculation of the concentration in background monitoring well(s), and a comparison of background groundwater quality to that in wells used to monitor the facility. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), and shall be based on data from at least eight consecutive quarterly groundwater monitoring events from MW-7, beginning with the first quarter of 2005.
2. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code §6735, 7835, and 7835.1. To demonstrate compliance with §415 and 3065 of Title 16, CCR, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.
 3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2006-0037, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
 4. The Discharger shall comply with the "Standard Provisions and Reporting Requirements for Waste Discharge Requirements", dated 1 March 1991, which are attached hereto and by reference a part of this Order. This attachment and its individual paragraphs are commonly referenced as "Standard Provision(s)."
 5. In the event of any change in control or ownership of the facility or land disposal areas, the Discharger must notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under this Order, the succeeding owner or operator must apply in writing to the

Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, the name and address and telephone number of the persons responsible for contact with the Regional Board, and a statement. The statement shall comply with the signatory paragraph of Standard Provision B.3 and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code. Transfer shall be approved or disapproved by the Executive Officer.

6. The Discharger shall submit to the Regional Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specific schedule date and task. If noncompliance is reported, then the Discharger shall state the reasons for noncompliance and shall provide a schedule to come into compliance.
7. The Discharger shall report to the Regional Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to §313 of the "Emergency Planning and Community Right to Know Act of 1986."
8. The Discharger shall report promptly to the Board any material change or proposed change in the character, location, or volume of the discharge.
9. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Regional Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or recession of this Order.
10. A copy of this Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
11. The Regional Board will review this Order periodically and will revise requirements when necessary.

I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 5 May 2006.

PAMELA C. CREEDON, Executive Officer

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2006-0037
GUENOC WINERY, INC.
GUENOC WINERY
LAKE COUNTY

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GJC/WSW:19-May-06

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2006-0037

FOR
GUENOC WINERY, INC
GUENOC WINERY
LAKE COUNTY

This monitoring and reporting program (MRP) incorporates requirements for monitoring of the industrial process wastewater and groundwater. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

All wastewater samples should be representative of the volume and nature of the discharge. The time, date, and location of each sample shall be recorded on the sample chain of custody form. Field test instruments (such as pH and dissolved oxygen) may be used provided that:

1. The operator is trained in the proper use and maintenance of the instrument;
2. The instruments are field calibrated prior to each use;
3. Instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of this MRP.

VAULT MONITORING

At least once per year, the Discharger shall inspect the 600-gallon concrete vault in the parking lot for visible leaks or structural problems. The inspection results shall be described in the annual report.

BIOREACTOR INFLUENT MONITORING

Upon adoption of this Order, process wastewater samples shall be collected prior to entering the wastewater ponds. Once the Bioreactor is constructed and operational, process wastewater samples shall be collected prior to entering the Bioreactor. Monitoring shall include at least the following:

<u>Constituents</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
BOD ₅ ²	mg/L	Grab	Monthly	Monthly

¹Five-day, 20° Celsius Biochemical Oxygen Demand.

BIOREACTOR EFFLUENT MONITORING

Upon adoption of this order, effluent samples shall be collected from storage pond No. 4. Once the Bioreactor is constructed and operational, samples shall be collected of the treated wastewater exiting the Bioreactor system, prior to discharge into the pond(s). Flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day. Effluent

monitoring shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow	Gallons	Metered	Continuous ¹	Monthly
pH	pH units	Grab	Weekly	Monthly
Total Suspended Solids	mg/L	Grab	Monthly ³	Monthly
BOD ₅ ²	mg/L	Grab	Monthly ³	Monthly
Nitrates as Nitrogen	mg/L	Grab	Monthly ³	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly ³	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly ³	Monthly
Sulfate	mg/L	Grab	Monthly ³	Monthly
Chloride	mg/L	Grab	Monthly ³	Monthly

¹Continuous monitoring requires daily meter reading or automated data collection.

²Five-day, 20° Celsius Biochemical Oxygen Demand.

³ Weekly for the first three months of operation, and then monthly thereafter.

POND MONITORING

Samples shall be collected from an established sampling station located in an area that will provide a sample representative of the water in the pond(s). Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet. Monitoring of each pond shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Dissolved Oxygen ¹	mg/L	Grab	Weekly	Monthly
Freeboard	feet (±0.1)	Measurement	Weekly	Monthly
Odors	--	Observation	Weekly	Monthly
Berm Seepage ²	NA	Observation	Weekly	Monthly

¹ Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

² Containment levees shall be observed for signs of seepage or surfacing water along the exterior toe of the levees. If surfacing water is found, then a sample shall be collected and tested for total dissolved solids.

DISCHARGE TO DESIGNATED DISPOSAL AREA MONITORING

The following monitoring is required for any month in which wastewater is discharged from the pond(s) to a dedicated disposal area. If no discharge took place during that month, then the monitoring report shall so state. Wastewater samples shall be collected after the junction box that allows mixing with the irrigation water from Lake Bordeaux, and prior to discharge to the designated disposal area

(DDA-1 or DDA-2). Samples shall be representative of the mixture of wastewater and irrigation water. Flow monitoring shall take place as described below. Effluent monitoring shall include at a minimum the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency¹</u>	<u>Reporting Frequency¹</u>
Flow from Pond	Gallons	Metered	Continuous ²	Monthly
Flow of irrigation water	Gallons	Metered	Continuous ²	Monthly
Total flow to DDA	Gallons	Calculated ³	Continuous ²	Monthly
Dilution rate	Calculated	Calculated	Daily	Monthly
pH	pH units	Grab	Weekly	Monthly
Specific Conductivity	µmhos/cm	Grab	Monthly	Monthly
BOD ₅ ¹	mg/L	Grab	Monthly	Monthly
Nitrates as Nitrogen	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Sulfate	mg/L	Grab	Monthly	Monthly

¹ Samples only need be collected during the irrigation season. If irrigation does not occur during a reporting period, the monitoring report shall so state.

² Continuous monitoring requires daily meter reading or automated data collection.

³ Sum of flow from pond plus flow of irrigation water

DESIGNATED DISPOSAL AREA MONITORING

A. Daily Pre-Application Inspections

The Discharger shall inspect the land application areas at least **once daily** prior to and during irrigation events, and observations from those inspections shall be documented for inclusion in the monthly monitoring reports. If no irrigation with wastewater takes place during a given month, then the monthly monitoring report shall so state and the above monitoring is not necessary. The following items shall be documented for each check or field to be irrigated on that day:

- a. Evidence of erosion;
- b. Containment berm condition;
- c. Condition of each standpipe and flow control valve (if applicable);
- d. Proper use of valves;
- e. Soil saturation;
- f. Ponding;
- g. Tailwater ditches and potential runoff to off-site areas;
- h. Potential and actual discharge to surface waters;
- i. Odors that have the potential to be objectionable at or beyond the property boundary; and
- j. Insects.

Temperature, wind direction and relative strength, and other relevant field conditions shall also be observed and recorded. The notations shall also document any corrective actions taken based on

observations made. A copy of entries made in the log during each month shall be submitted as part of the Monthly Monitoring Report.

B. Routine Monitoring

Monitoring shall be conducted daily during the period in which wastewater is discharged to the designated disposal areas. If no discharge takes place during a particular month then the monthly monitoring report shall so state and the following monitoring is not required. The Discharger shall perform the following routine monitoring and loading calculations, and shall present the data in the Monthly and Annual Monitoring Reports.

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency¹</u>	<u>Reporting Frequency¹</u>
Local Rainfall	inches	Measurement	Daily	Monthly
Acreage Applied ²	acres	Calculated	Daily	Monthly
Application Rate	gal/acre/day	Calculated	Daily	Monthly
Total Nitrogen Loading Rate ³	lbs/acre/month ⁴	Calculated	Monthly	Monthly
Total Dissolved Solids Loading Rate	lbs/acre/month ⁴	Calculated	Monthly	Monthly
BOD ₅ Loading Rate	lbs/acre/day ⁵	Calculated	Monthly	Monthly

¹Monitoring is only necessary during the irrigation season. If irrigation does not occur during a reporting period, the monitoring report shall so state.

²Designated Disposal Area(s) in use shall be identified by name or number and the acreage provided. If a portion of an area is used, then the acreage shall be estimated.

³Total nitrogen applied from all sources, including fertilizers and supplemental irrigation water if used.

⁴Report monthly total and cumulative annual to date.

⁵Report 7-day average and maximum daily loading.

SOLIDS MONITORING

The Discharger shall record and report monthly the quantity, disposal location, and method of disposal of solids disposed of during the processing season, as well as during the off-season, if applicable. If solid waste is shipped offsite, then a description of the quantity of each type of waste shipped offsite and the location of the disposal area(s) shall be included with the report.

GROUNDWATER MONITORING

This monitoring program applies to the existing seven wells shown on Attachment C of the WDRs and the future wells installed at DDA-2. Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for review and approval. Once installed, all new wells shall be added to the MRP and shall be sampled and analyzed according to the schedule below.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged of at least three well volumes or until temperature, pH, and electrical conductivity have stabilized. Depth to

groundwater shall be measured to the nearest 0.01 feet. Samples shall be collected and analyzed using standard EPA methods or the latest edition of *Standard Methods*. Groundwater monitoring shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Depth to Groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation ¹	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	degrees	Calculated	Quarterly	Quarterly
pH	std.	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Kjeldahl Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Volatile Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Sulfate	mg/L	Grab	Quarterly	Quarterly
Standard Minerals ²	mg/L	Grab	Annually	Annually

¹Groundwater elevation shall be determined based on depth-to-water measurements from a surveyed measuring point elevation on the well.

²Standard Minerals shall include the following: boron, calcium, iron, magnesium, potassium, sodium, chloride, manganese, phosphorus, total alkalinity (including alkalinity series), and hardness.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Professional Geologist and signed/stamped by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Results of the Bioreactor influent, Bioreactor effluent, pond, discharge to designated disposal area, designated disposal area, and solids disposal monitoring. Data shall be presented in tabular format;
2. If wastewater was applied to a designated disposal area during the month, then daily pre-

irrigation inspection reports;

3. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements;
4. If requested by staff, copies of laboratory analytical report(s);
5. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program;
6. The total pounds of total dissolved solids (year to date) that have been applied to the designated disposal area(s), as calculated from the sum of the monthly loadings;
7. The total pounds of nitrogen in fertilizer applied to the designated disposal area(s) application area for the month; and
8. The total wastewater flow (year to date).

B. Quarterly Report

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st) and may be combined with the monthly report. The Quarterly Report shall include the following:

1. Results of the groundwater monitoring;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations and discussion of seasonal trends if any;
4. A narrative discussion of the analytical results for all groundwater locations monitored including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
5. A comparison of the monitoring data to the groundwater limitations and an explanation of any violation of those requirements;
6. Summary data tables of historical and current water table elevations and analytical results;
7. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours

referenced to mean sea level datum; and

8. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

An Annual Report shall be prepared as the December monthly monitoring report. The Annual Report will include all monitoring data required in the monthly and quarterly schedule. The Annual Report shall be submitted to the Regional Board by **1 February** each year. In addition to the data normally presented, the Annual Report shall include the following:

1. The contents of the regular monthly and quarterly monitoring report for the last month and quarter of the year, respectively;
2. If requested by staff, tabular and graphical summaries of all data collected during the year;
3. Results of the annual effluent and groundwater monitoring;
4. Results of the annual vault inspection, and if any repair work was undertaken, a description of the work;
5. Tabular and graphical summaries of historical monthly total loading rates for water (hydraulic loading in gallons and inches), BOD, total nitrogen, and total dissolved solids;
6. The total wastewater flow for the year;
7. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation in terms of odor control and groundwater protection, including consideration of application management practices (i.e.: waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices), soil profile monitoring data and groundwater monitoring data;
8. A summary of the quantity of solid waste (lees, stems, pomace, etc.) generated and disposed of both on and off the site;
9. An evaluation of the groundwater quality beneath the ponds and the designated disposal area(s);
10. Estimated flows for the next calendar year;
11. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements; and
12. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the discharger, or the discharger's authorized agent, under penalty of perjury, that to the best of the signer's knowledge the report is true, accurate and complete.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

5 May 2006
(Date)

INFORMATION SHEET

ORDER NO. R5-2006-0037
GUENOC WINERY, INC.
GUENOC WINERY
LAKE COUNTY

Guenoc Winery, Inc. (Discharger) owns and operates the Guenoc Winery, which is approximately two miles southeast of Middletown on Butts Canyon Road in Lake County. Activities at the winery facility include receiving, crushing and pressing of grapes; fermentation; processing into finished white and red wines; and distribution. The winery produces approximately 140,000 cases per year for export and local sale.

The previous Waste Discharge Requirements (WDRs) are not adequate because the Discharger submitted a Report of Waste Discharge (RWD) as required by Provision No. G.3.h. The RWD was to either (a) contain a design for a pond liner system and land treatment unit that complies with Title 27 and a timeline that shows compliance or (b) contain a technical report demonstrating what has been and will be done to modify the waste stream so that background water quality will be maintained or limited to degradation consistent with State Board Resolution No. 68-16. In addition, the Discharger has continued to impact groundwater with salt constituents and has not submitted an adequate Engineering Feasibility Study (EFS) and Corrective Action Plan (CAP) as required by Provision Nos. G.3.j.a and G.3.j.b of the WDRs. The EFS is to assess the feasibility and effectiveness of various remedial options to return salt impacted groundwater to background levels as measured in the background monitoring well. The CAP is to propose the best remedy selected from the EFS to return salt impacted groundwater to background levels. The Discharger now proposes to modify the treatment and disposal method, as described below, but has not yet addressed groundwater remediation.

Domestic water used for winemaking processes (including sanitation, grape crushing, barrel and equipment rinsing, filtering, and bottling) is obtained from an onsite well. The well water is first ozonated before being pumped to the winery. Surface water from nearby Lake Bordeaux is used for the ammonia condensers for fermentation purposes. A portion of this water that is softened is pumped through a multimedia sand and carbon filter. The backwash water from this filtering system will be temporarily stored and then hauled offsite by a licensed hauler. This Order requires that the backwash water be placed into an aboveground tank or equivalent prior to disposal.

The Discharger estimates a maximum daily process wastewater flow rate of approximately 16,500 gallons per day (gpd) during the peak grape processing period (crush). This Order allows for an approximate monthly average flow of 6,800 gpd with higher monthly flows allowed during the crush season (typically August through October), as long as the total yearly flow does not exceed 2,380,000 gallons.

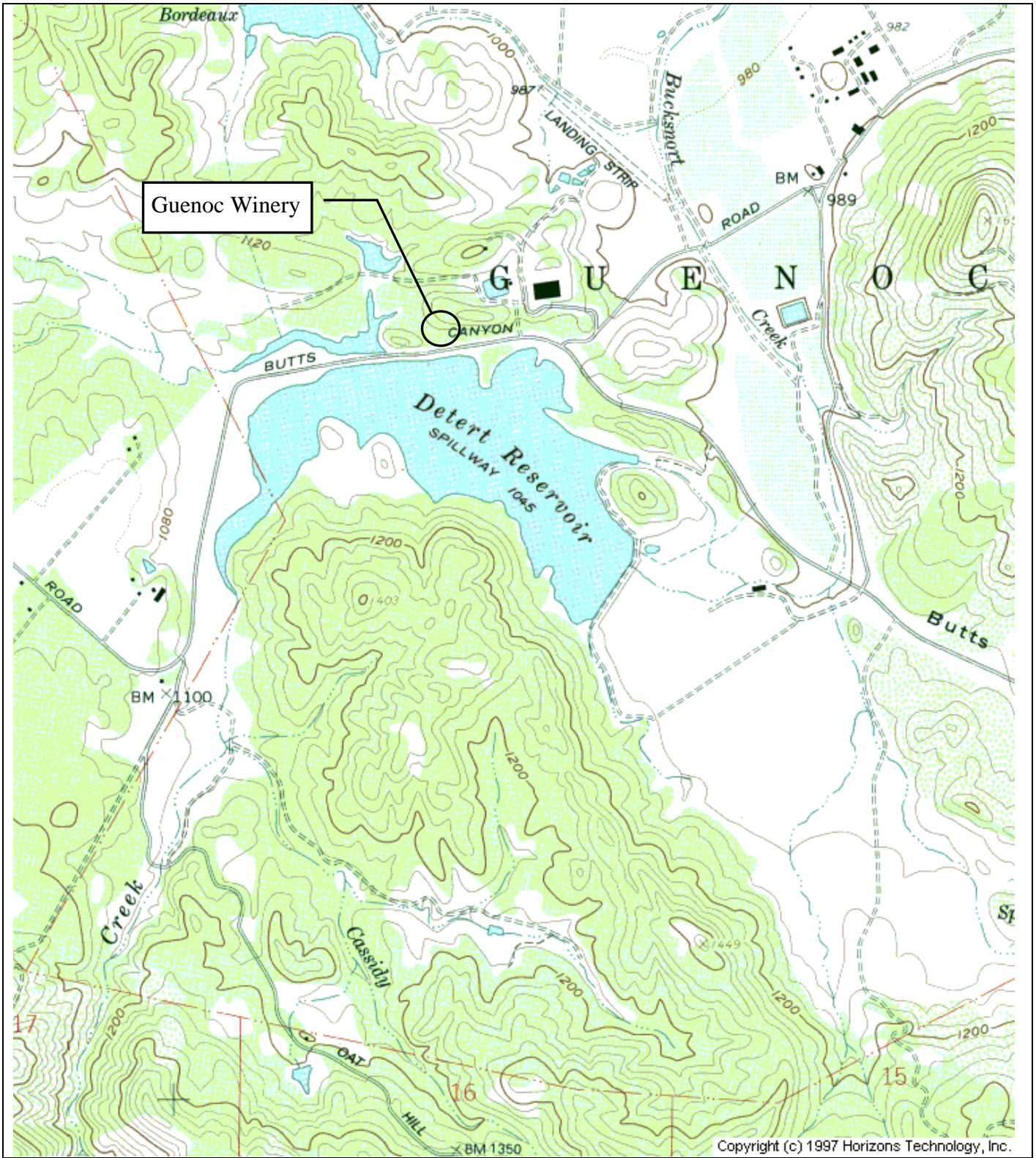
Wastewater generated from winery processing activities (process/equipment cleaning, washdown operations, and evaporative cooling towers) is collected in a series of trench floor drains both at the crush pad and inside the winery building. The wastewater then flows via gravity from the winery facility to a 600-gallon concrete vault. From the vault, the wastewater will be pumped to a rotary screen and then to a Bioreactor where the wastewater will receive biological treatment. The Bioreactor will consist of aeration tanks designed to treat a flow of approximately 16,500 gallons per day (gpd) with a BOD concentration of 9,000 mg/L to a discharge concentration of 200 mg/L. A clarifier attached to the final aeration tank will be used to settle out the waste activated sludge. From the tank, the wastewater will be discharged to a lined storage pond. The Discharger proposes to abandon in place the existing five unlined ponds and construct a wastewater pond that will meet Title 27 requirements. The wastewater in the pond will be

blended with clean surface water from Lake Bordeaux in a mixing box prior to being applied to 54 acres of pastureland (Dedicated Disposal Area 2; DDA-2). The volume of wastewater produced by the winery is insufficient to irrigate the entire pasture area, and therefore a substantial volume of clean water will be mixed with the wastewater. Tailwater will be prevented from leaving this area by berms constructed around the designated disposal area.

The quarterly groundwater monitoring results show that the discharge of waste to the five unlined ponds and to DDA-1 has polluted the underlying groundwater with salt constituents. DDA-1 consists of seven acres of pastureland that has historically been used as the wastewater disposal area. This Order states that wastewater may no longer be applied to DDA-1 after 1 September 2006. Even with the improved treatment from the Bioreactor, the discharge to the pond must still be classified as a discharge of designated waste because the TDS of the effluent entering the lined pond will be 900 mg/L while the background groundwater TDS concentration is 383 mg/L. Groundwater is very shallow and at times it rises to within the five unlined ponds; therefore, the discharge of the effluent into the unlined ponds must be considered a direct discharge to groundwater. However, because the unlined ponds will be abandoned and a lined pond will be constructed per Title 27 requirements, the hydraulic connection between the effluent and groundwater will no longer occur. Due to dilution with surface water from Lake Bordeaux, the discharge to DDA-2 is not classified as designated waste. Because the Discharger cannot immediately comply with the effluent and groundwater limitations of this Order, staff have prepared a companion Cease and Desist (C&D) Order.

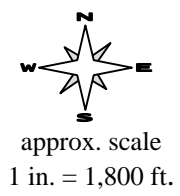
The C&D Order requires the Discharger to submit a Report of Waste Discharge (RWD) containing a design for a lined pond that meets the performance and prescriptive standards of Title 27. This pond must be constructed and operational by 1 July 2007. In addition, the C&D Order requires the Discharger to install and operate the Bioreactor by 1 October 2006, and to submit a report certifying that the treatment system has been built as described in the WDRs. The WDRs require the Discharger to install additional groundwater monitoring wells within and around DDA-2, and to determine final background groundwater quality by 1 March 2007. In addition, the WDRs require the Discharger to prepare and submit an Operations and Maintenance Plan. The WDRs also requires an extensive monitoring and reporting program, which includes the process wastewater, ponds, designated disposal area, solids, and groundwater.

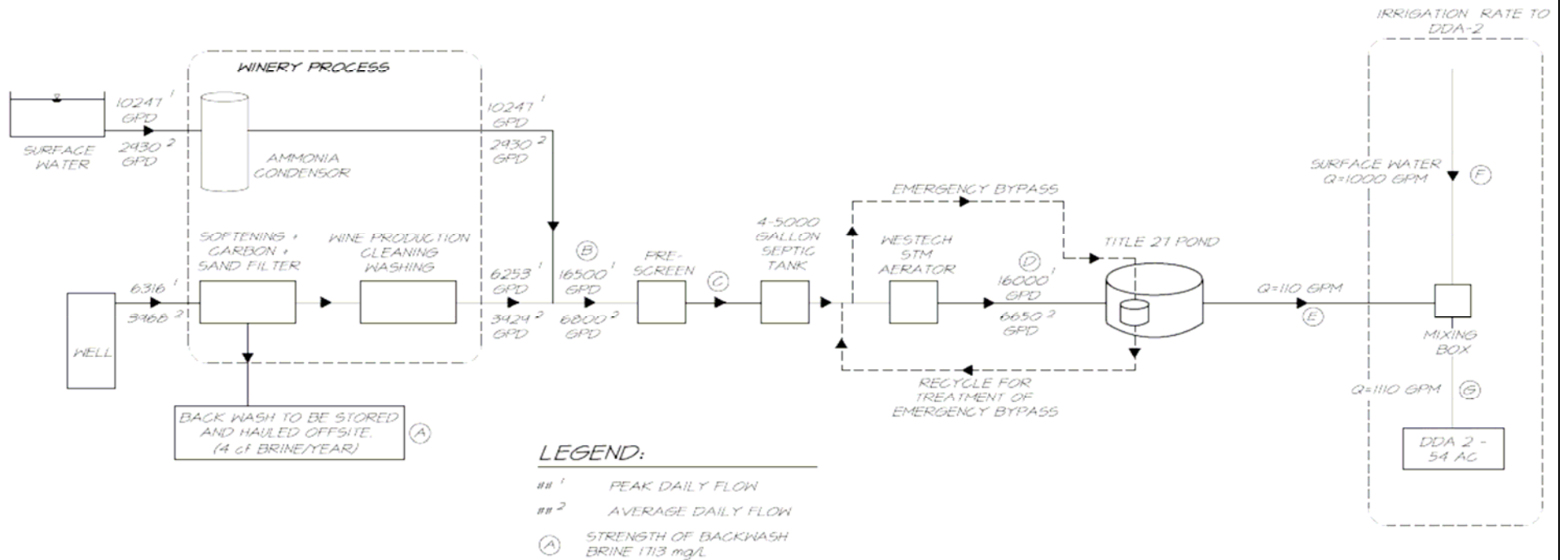
Surface water drainage is to Bucksnot Creek, which is a tributary to Putah Creek, which is tributary to Lake Berryessa.



Drawing Reference:
U.S.G.S
TOPOGRAPHIC MAP
DETERT RESERVOIR
QUAD
7.5 MINUTE QUAD

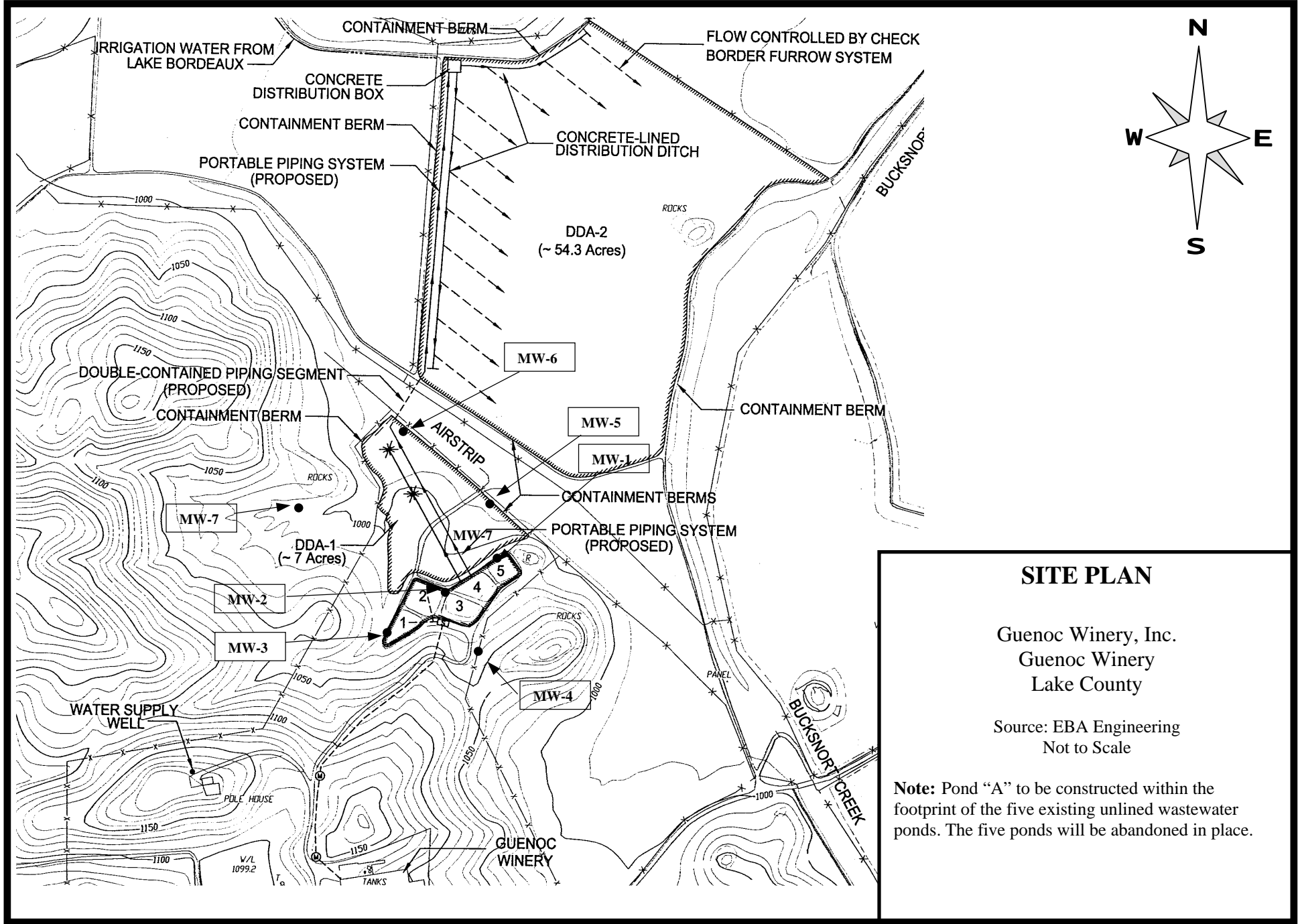
SITE LOCATION MAP
Guenoc Winery, Inc.
Guenoc Winery
Lake County





DRAWING REFERENCE:
Riechers Spence Associates, Inc.

WASTEWATER TREATMENT SYSTEM SCHEMATIC
GUENOC WINERY, INC.
GUENOC WINERY
LAKE COUNTY





Dan Skopec
Acting Secretary

California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair



Arnold Schwarzenegger
Governor

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ORDER NO. R5-2006-0037

ATTACHMENT D

REQUIREMENTS FOR

MONITORING WELL INSTALLATION WORKPLANS AND

MONITORING WELL INSTALLATION REPORTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing, at a minimum, the information listed in Section 1, below. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a well installation report which includes the information contained in Section 2, below. All workplans and reports must be prepared under the direction of, and signed by, a registered geologist or civil engineer licensed by the State of California.

SECTION 1 - Monitoring Well Installation Workplan and Groundwater Sampling and Analysis Plan

The monitoring well installation workplan shall contain the following minimum information:

A. General Information:

- Purpose of the well installation project
- Brief description of local geologic and hydrogeologic conditions
- Proposed monitoring well locations and rationale for well locations
- Topographic map showing facility location, roads, and surface water bodies
- Large scaled site map showing all existing on-site wells, proposed wells, surface drainage courses, surface water bodies, buildings, waste handling facilities, utilities, and major physical and man-made features

B. Drilling Details:

- On-site supervision of drilling and well installation activities
- Description of drilling equipment and techniques
- Equipment decontamination procedures
- Soil sampling intervals (if appropriate) and logging methods

C. Monitoring Well Design (in narrative and/or graphic form):

- Diagram of proposed well construction details
 - Borehole diameter
 - Casing and screen material, diameter, and centralizer spacing (if needed)
 - Type of well caps (bottom cap either screw on or secured with stainless steel screws)
 - Anticipated depth of well, length of well casing, and length and position of perforated interval

California Environmental Protection Agency

- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Anticipated screen slot size and filter pack

D. Well Development (not to be performed until at least 48 hours after sanitary seal placement):

Method of development to be used (i.e., surge, bail, pump, etc.)

Parameters to be monitored during development and record keeping technique

Method of determining when development is complete

Disposal of development water

E. Well Survey (precision of vertical survey data shall be at least 0.01 foot):

Identify the Licensed Land Surveyor or Civil Engineer that will perform the survey

Datum for survey measurements

List well features to be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

F. Schedule for Completion of Work

G. **Appendix: Groundwater Sampling and Analysis Plan (SAP)**

The Groundwater SAP shall be included as an appendix to the workplan, and shall be utilized as a guidance document that is referred to by individuals responsible for conducting groundwater monitoring and sampling activities.

Provide a detailed written description of standard operating procedures for the following:

- Equipment to be used during sampling
- Equipment decontamination procedures
- Water level measurement procedures
- Well purging (include a discussion of procedures to follow if three casing volumes cannot be purged)
- Monitoring and record keeping during water level measurement and well purging (include copies of record keeping logs to be used)
- Purge water disposal
- Analytical methods and required reporting limits
- Sample containers and preservatives
- Sampling
 - General sampling techniques
 - Record keeping during sampling (include copies of record keeping logs to be used)
 - QA/QC samples
- Chain of Custody
- Sample handling and transport

SECTION 2 - Monitoring Well Installation Report

The monitoring well installation report must provide the information listed below. In addition, the report must also clearly identify, describe, and justify any deviations from the approved workplan.

A. General Information:

Purpose of the well installation project

Brief description of local geologic and hydrogeologic conditions encountered during installation of the wells

Number of monitoring wells installed and copies of County Well Construction Permits

Topographic map showing facility location, roads, surface water bodies

Scaled site map showing all previously existing wells, newly installed wells, surface water bodies, buildings, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details (in narrative and/or graphic form):

On-site supervision of drilling and well installation activities

Drilling contractor and driller's name

Description of drilling equipment and techniques

Equipment decontamination procedures

Soil sampling intervals and logging methods

Well boring log

- Well boring number and date drilled
- Borehole diameter and total depth
- Total depth of open hole (same as total depth drilled if no caving or back-grouting occurs)
- Depth to first encountered groundwater and stabilized groundwater depth
- Detailed description of soils encountered, using the Unified Soil Classification System

C. Well Construction Details (in narrative and/or graphic form):

Well construction diagram, including:

- Monitoring well number and date constructed
- Casing and screen material, diameter, and centralizer spacing (if needed)
- Length of well casing, and length and position of perforated interval
- Thickness, position and composition of surface seal, sanitary seal, and sand pack
- Type of well caps (bottom cap either screw on or secured with stainless steel screws)

E. Well Development:

Date(s) and method of development

How well development completion was determined

Volume of water purged from well and method of development water disposal

Field notes from well development should be included in report

F. Well Survey (survey the top rim of the well casing with the cap removed):

Identify the coordinate system and datum for survey measurements

Describe the measuring points (i.e. ground surface, top of casing, etc.)

Present the well survey report data in a table

Include the Registered Engineer or Licensed Surveyor's report and field notes in appendix