CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2010-0108

WASTE DISCHARGE REQUIREMENTS
FOR
SAGE CANYON, LLC
SOMERSTON WINERY
NAPA COUNTY

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

1. Sage Canyon, LLC (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated 26 February 2009 for treatment and land application of wastewater generated at its new wine processing and storage facility known as Somerston Winery. The Discharger submitted additional information on 24 August 2009 and 28 August 2009 in response to the Central Valley Water Board's Incomplete Report of Waste Discharge letter dated 9 June 2009. In the 7 April 2010, *Somerston Winery RWD Response to Comments* was submitted by DJH Engineering (DJH) of Placerville on behalf of the Discharger, proposing a different treatment and storage system. Meetings to discuss the Discharger's proposal were held on 1 March, 15 June and 29 June 2010. DJH submitted further supplemental information to the Central Valley Water Board in June 2010.
2. Somerston Winery is located on a 1,625 acre ranch at 3450 Sage County Road (also referred to as E. Highway 128), St. Helena in Napa County (Assessor's Parcel No. 025-270-023 and 026). There are 205 acres of vineyards. The Discharger plans to irrigate 104 acres of vineyards with treated wastewater. The winery and land application areas are within a portion of Township 8 North; Range 4 West, MDB&M. The location of the facility is shown on Attachment A, which is attached hereto and is made part of the Order by reference.
3. The Discharger owns the property where the facility is located. The winery will be a full crushing and bottling facility with an annual production of 150,000 gallons of wine by crushing approximately 909 tons of grapes.
4. The winery will include a tasting room with a commercial kitchen.
5. Domestic wastewater will be segregated from the winery wastewater and treated with a septic tank and a leach field system regulated by the Napa County Environmental Management Department.

PROPOSED FACILITY

6. The Discharger is proposing a new winery facility that will generate wastewater and residual solids. The treatment process consists of physical and biological processes that will reduce the solids and biochemical oxygen demand (BOD) of the wastewater.

A process flow diagram of the Somerston Winery is shown in Attachment B, which is attached hereto and is made part of the Order by reference. The following are the proposed activities planned:

a. The winery will generate approximately 1.2 million gallons (Mgal) of process wastewater per year (based on eight gallons of wastewater per one gallon of wine produced).

b. The wastewater treatment process includes an influent pumping station, rotary screen, equalization tank, pH adjustment system, self-cleaning fine screen, contact tank, heat exchanger, anaerobic filters, effluent pumping station, final filtration process, and barn pumping station.

c. Treated wastewater will be pumped to a storage tank for distribution to the vineyards through the existing irrigation system.

7. A water softener is planned for the winery facility.

8. The Land Application Area (LAAs) is comprised of approximately 104 acres (in vines). A site location map depicting the location of the LAAs is shown on Attachment C, which is attached hereto and made part of the Order by reference.

WASTEWATER SYSTEM

9. The following winemaking operations and processes are anticipated to generate wastewater and residual solids: water softener regeneration, crushing, fermentation, pressing, bulk wine storage, barrel storage, spillage, equipment cleaning, screening of process wastewater stream, and accumulated solid settlement at tank bottoms.

a. Brine flush water generated from the water softener will be stored separately from the winery process wastewater and transported offsite for proper disposal.

b. All other winery wastewater will be processed in the wastewater treatment system.

10. Winery wastewater is collected in a gravity floor drain system that feeds into an influent pumping station.

11. The wastewater treatment system will include the following components:

a. Process wastewater is collected in the influent pump station and pumped to an elevated rotary screen. The elevated screen will provide the necessary gradient to allow wastewater to flow by gravity into the equalization tank. Solids from the rotary screen are discharged into a bin for direct disposal in the vineyards as a soil amendment or hauled offsite for proper disposal. Liquid collected in the bin will be reintroduced into the treatment system for additional treatment.

b. A 13,650 gallon equalization tank will allow a constant flow feed to the anaerobic filters.

c. From the equalization tank, wastewater is pumped through a pH adjustment system. The pH adjustment is provided by an injection of acid and/or potassium hydroxide. An inline pipeline mixer provides the chemical mixing. The pH control

system will automatically direct the feed system to change the chemical feed rate to obtain the desired pH range of 6.5 – 7.5. A sample port will be located prior to the fine screening process to monitor the actual adjusted pH.

d. After the pH neutralization process, the wastewater is pumped through an inline filter, contact tank, heat exchanger, and anaerobic filter.

   i. The inline filter provides additional screening for the protection of the heat exchanger.

   ii. The contact tank provides the required residence time for the chemical mixture prior to the heat exchanger.

   iii. The heat exchanger will heat the wastewater to 95 – 100 degrees Fahrenheit prior to the anaerobic filter.

   iv. The anaerobic filters are up-flow biofilters, consisting of two 8,050 gallon tanks filled with random plastic media. The media will provide surface area for beneficial bacteria growth and consume the organic matter in the wastewater. Each tank will be provided with a drain to remove solids and a vent that will include a catalytic convertor for treating the off gases (including methane, carbon dioxide, and some hydrogen sulfide) from the system. A gas pilot burner will be operated continuously for those times when gas is produced.

e. Final filtration will be provided by a spin disk automatic backwash granular filter after the anaerobic process. This will polish the treated wastewater and make it suitable for direct application to the drip irrigation system. Final effluent will be pumped uphill to the storage tank.

f. The storage tank will have a 100,000 gallon capacity. From the tank, effluent will be distributed to the vineyards through the existing irrigation system.

g. Backwash water from the filters and drainage from the treatment processes will drain into the barn pumping station, to be reintroduced into the treatment system for additional treatment.

12. The maximum daily process wastewater flow is 15,000 gallons per day (gpd). The maximum annual process wastewater flow is 1.2 Mgal per year.

13. The estimated monthly wastewater flow rates shown below were based on the revised water balance submitted by the Discharger on 25 August 2010.

Month	Units	Monthly Flow
January	gallons	48,000
February	gallons	37,000
March	gallons	41,000
April	gallons	84,000
May	gallons	96,000
June	gallons	102,000
July	gallons	138,000
August	gallons	145,000

Month	Units	Monthly Flow
September	gallons	150,000
October	gallons	155,000
November	gallons	120,000
December	gallons	84,000
Total	gallons	1,200,000

14. The Discharger has estimated effluent quality and these values are presented in the table below.

Constituents	Units	Concentrations
Electric Conductivity (EC)	umhos/cm	810
Total Dissolved Solids (TDS)	mg/L	510
Sodium	mg/L	5.7
Chloride	mg/L	5.7
Nitrogen	mg/L	<1
Potassium	mg/L	303
Magnesium	mg/L	<1.0
Calcium	mg/L	<0.5

15. The Discharger will use a number of chemicals in the wine-making, processing, cleaning, and sanitation processes at the facility. The future chemicals to be used at the facility are shown in the table below.

Chemical	Chemical Use	Annual
Non Chlorinated KOH Based Cleaner (Chem 440K)[1]	Crush equipment, fermentation and bulk wine tank cleaning	390 pounds
Citric Acid, $C_6H_8O_7$	Crush equipment, fermentation and bulk wine tank cleaning	140 pounds
Peracetic Acid, $C_2H_40_3$	Crush equipment and fermentation tank cleaning	270 gallons
Caustic Potash, KOH	Metal descale cleaning	45 pounds
Sulfur Dioxide, SO_2	Bulk wine tank cleaning	20 pounds
Ozone, O_3	Barrel cleaning	995 pounds

[1] Manufactured by California Soda Company, Oakland California

SOURCE CONTROL

16. Future wastewater quality at the Somerston Winery has been estimated based on typical wastewater quality at similar sized wineries. After implementing source control measures and after crop nutrient uptake, the Discharger anticipates treated wastewater with a TDS concentration of 510 mg/L. The RWD describes the following Best Practicable Treatment and Control (BPTC) measures that have been incorporated into the design of the facility:

a. Replacement of chemicals with more environmentally acceptable substitutes:

   i. Replacement of sodium chloride with potassium chloride for the water softener. The ion exchange process will exchange potassium for magnesium and calcium in the water supply.

   ii. Replacement of sodium hydroxide with potassium hydroxide. Using a potassium-based cleaner rather than a sodium-based cleaner can reduce the amount of TDS that reaches groundwater because plants in the LAAs can take up potassium as a plant nutrient.

   iii. Peracetic acid (PAA) will be used. PAA breaks down to acetic acid, water, and oxygen; it will contribute to alkalinity in the wastewater, but does not contribute sodium, phosphate, or other salts to the wastewater.

b. The water softener regeneration brine will be collected and temporarily stored in a storage tank separate from the winery process wastewater. The brine solution will be collected and transported offsite for disposal by a local septic waste disposal company.

c. Cover crops consist of a variety of native and planted grasses in the LAAs and will take up some of the waste constituents in the treated wastewater.

d. Each process wastewater pump station will be fitted with dual unit capability such that the system will continue to operate at capacity with one unit out of service.

e. In the event of a facility wide power failure, power will be provided for the entire facility from a backup generator.

WATER BALANCE

17. A water balance specific for this design was submitted on 12 June 2010 for the wastewater treatment, storage, and land application system. An irrigation plan was submitted on 29 June 2010. A revised water balance was submitted on 25 August 2010. The Discharger states the following:

    a. The water balance was based on an annual wastewater discharge of 1.2 Mgal and a total of 104 acres of LAAs.

    b. Irrigation during the months of November and December will simply use up the wastewater generated during those months,

    c. Short dry periods during the winter months will allow some irrigation,

    d. Historical crop irrigation data shows that no irrigation is necessary during the months of November, December, January and February,

    e. Irrigation will occur during November and December but limited to an application rate of 2 gallons per hour per plant or 280,000 gallons per month,

    f. A minimum of 10,000 gallons will be left in the storage tank for recycling back into the treatment process,

g. The storage tank has the capacity to store all of the treated wastewater for the months of January, February, and March.

18. The Discharge's water balance shows no land application of treated wastewater during the months of January and February. Under certain climatic conditions, limited application may be practiced during these months.

19. The Discharger does not anticipate any contributions of major sources to monthly discharge volumes such as stormwater run-on, any inflow or infiltration from the collection system, or accumulations of rain from a 100-year annual precipitation. All winemaking processes take place within the winery building. Treated wastewater is stored in an enclosed tank. Rainfall simply displaces the ability to irrigate the crop with wastewater.

20. The Discharger does not anticipate any stormwater mixing with wastewater and has submitted a Notice of Non-Applicability (NONA) for compliance with the Industrial Activities No. 97-03-DWQ Storm Water General Permit.

21. Stormwater runoff in the areas surrounding the proposed pretreatment area and winery site improvements will be directed away from the proposed improvements into rock-lined, grass-lined and/or storm water culverts with rock energy dissipaters constructed at the outfall of each conveyance structure.

22. Stormwater runoff from the existing and proposed buildings will be collected and conveyed away from the buildings in storm drain pipes and outlet into a drainage ditch with a rock energy dissipater constructed at the outfall of the storm drain pipe. The drainage ditch flows into Soda Creek and ultimately into Lake Berryessa.

23. Associated with the construction of the new winery building, there is an active Storm Water Pollution Prevent Plan (SWPPP) and Notice of Intent on file (WDID# 228C353570). A revised SWPPP will be submitted to include the construction activities associated with the wastewater pretreatment area and conversion of the existing agricultural building to a winery.

LAND APPLICATION SYSTEM

24. Seven LAAs are available for wastewater application with usable land application acreage totaling 104 acres planted with grape vines. The location of the LAA is presented on Attachment C. A summary of the LAAs is presented below:

LAA	Acreage
Deerhound Vineyards	25.3
Falcon Vineyards	3.1
Celestial Vineyards	10.5
Gauntlet Vineyards	21.7
Julia Vineyards	9.6

LAA	Acreage
Ariel Vineyards	14.8
Kelso Vineyards	19.3
Total	104.3

25. Treated wastewater will be applied by drip system. Pipe conveyance of the treated wastewater to the LAAs are provided on Attachments D, E, and F, which are attached hereto and is made part of the Order by reference. Irrigation operations will be controlled by a work order system, issued by the winemaking and vineyard managers. Work orders will specify irrigation application rates and designate the specific LAAs to receive them. The irrigation pump will be controlled by a timer, allowing the required amount of treated water to be used for irrigation operations and preventing applications in excess of the planned amount. Irrigation operations will be manned at all times.

26. Sprinkler irrigation, supplied by raw irrigation water, is provided on the valley floor for frost protection. Sprinklers are on timers that prevent over application and subsequent runoff. Irrigation with treated wastewater will be through drip system.

27. On an annual average basis, treated wastewater will provide approximately 6.9 percent of the total irrigation supply. The annual irrigation need of the vines and cover crops is approximately 13.0 Mgal. The Discharger anticipates mixing treated wastewater with supplemental irrigation water on an as needed basis during the months of March, April, May, June, July, August, September, October, November and December. Supplemental irrigation water will be supplied from six water sources including four reservoirs, a sump, and a surface water right from the nearby Soda Creek. The Discharger states that irrigation during the months of November through February will be dependant upon the amount of rainfall received during the year. The Order requires the Discharger to submit a *Nutrient Management Plan* to evaluate the nutrient load and irrigation demand for each land application area and develop and implement pollution prevention management practices to restrict nutrient loading that which is necessary for the specified crop.

28. Cover crops are maintained throughout the vineyard that will minimize the migration of constituents applied to the soil surface. Cover crops have not been specified in the RWD and their irrigation and nutrient demand is therefore unknown. The Order requires the Discharger to include in its *Nutrient Management Plan* a description of the cover crops and its nutrient uptake capacity.

29. The vine crops are expected to remove a portion of the dissolved solids found in the wastewater that will be beneficial to the improvement of the physical properties of the soil and that are essential for plant growth. The RWD and supplemental information submitted by the Discharger stated the following:

a. Utilizing BPTC measures, TDS concentrations will increase with the addition of potassium. The net application of potassium to the vineyards is estimated to be 24.5 lb/ac/yr. The vines are expected to remove a portion of the potassium, resulting in a TDS concentration less than 390 mg/L. Vines and orchard grass can take up approximately 195 lb/ac/yr and 375 lb/ac/yr of potassium, respectively, based on information obtained from *The Western Fertilizer Handbook*.

b. Low concentrations of nitrogen (less than 5 mg/L or less than 1 lb/ac/yr) are anticipated in the wastewater. Based on information obtained from *The Western Fertilizer Handbook*, vines and orchard grass can take up approximately 125 lb/ac/yr and 300 lb/ac/yr of nitrogen, respectively.

30. TDS is composed of both Volatile Solids (VDS) and Fixed Dissolved Solids (FDS). The proportion of VDS to FDS in wastewater varies with the source, but 50 percent of the TDS in winery wastewater may be in the volatile form. The VDS can be biologically treated by soil microorganisms in a well-managed wastewater treatment and land application system and when wastewater is not over-applied. The Order requires the Discharger to submit a *Site Specific Conditions Workplan and Report* to determine the amount of FDS that crops grown in the LAAs will take up in order to evaluate potential degradation.

SOLID WASTE

31. The organic solid wastes generated in the winemaking process consist of pomace (skins, pulp, seeds, and stems) and lees (solids remaining in the unfermented juice and sediment remaining after fermentation). Pomace will be collected in storage bins at the rotary screen. Pomace will be used as a soils condition and supplemental nutrient source to be disced into the vineyards on a daily basis, weather permitting or collected and hauled offsite to an approved disposal or reclamation facility. The lees will be collected onsite and transported to an offsite facility for wine recovery.

32. Solids production is estimated to be 375 tons/year based on the ultimate manufacturing capacity of 150,000 gallons of wine.

GROUND AND SURFACE WATER CONDITIONS

33. Groundwater conditions have been investigated and are limited based on a compilation of ground and surface water analytical data presented in the *Waste Discharge Report, Geology and Hydrogeology* (*Geology and Hydrogeology*) dated 4 August 2009 submitted by Youngdahl Consulting Group, Inc. in El Dorado Hills (Youngdahl) on behalf of the Discharger.

34. The winery is served by a production or supply well called C-1, drilled into a deeper, fractured rock aquifier located on a ridgeline in the eastern corner of the property. The location of well C-1 is presented on Attachment C. Well depth or well construction characteristics were not provided by the Discharger. A water softener will be used to treat the well water prior to use in the winery. The production well was sampled on

19 December 2007 and 20 July 2009. Well water quality is presented in the table below:

Constituent	Units	Concentration 12/19/07	Concentration 7/20/09	WQO
Alkalinity, $CaCO_3$	mg/L	520	510	*
Bicarbonate, HCO_3 (ppb)	mg/L	630	620	*
Boron	mg/L	0.14	0.1	0.7[1]
Calcium	mg/L	1.7	1.3	*
Carbonate[3], CO_3	mg/L	6.0	6.0	*
Chloride	mg/L	6.2	5.2	106[1]
Iron[3,4]	µg/L	0.05	0.08	0.3[2]
Lead[3]	mg/L	5.0	5.0	0.2[2]
Magnesium	mg/L	120	1000	*
Manganese[3]	mg/L	0.005	0.005	0.05
Nitrate[3]	mg/L	2.0	2.0	*
Sodium	mg/L	3.2	2.8	69[1]
TDS	mg/L	510	510	450[1]

WQO denotes Water Quality Objective.
* denotes no value listed for this constituent in the Water Quality Goals.
1 Agricultural Water Quality Level.
2 Primary Maximum Contaminate Level.
3 Non detect, reporting limits shown.
4 Filtered sample.

35. The winery vineyards are irrigated by the following six water sources.

    a. Charlie 1 and Charlie 2 are reservoirs in the north central portions of the canyon located east of the Deerhound Vineyard.

    b. Big Dam is a reservoir in the northerly canyon located north of the Deerhound Vineyard.

    c. Sump is located just below Charlie 1 and was built to collect shallow groundwater located between the Deerhound Vineyard and Charlie 1 Reservoir. A well pump was placed in the sump to create a pumping sump.

    d. J&J is a reservoir located southeast of the Julia Vineyard and used to irrigate Kelso and Ariel Vineyards.

    e. Area 51 is a surface water right take-out from Soda Creek to irrigate Kelso and Ariel Vineyards. Area 51 pumps from the surface streams and is only viable in the spring.

36. Groundwater conditions were estimated based on a single surface water (SW-1) and groundwater (SW-2) sample collected by Youngdahl and a compilation of analytical data from samples collected in four sampling events from 27 May 2005 to 9 July 2009.

The samples were collected from six surface water locations and one shallow groundwater well (SW-2). Sample locations are shown on Attachment C.

a. Surface and groundwater samples collected 9 July 2009 are presented below.

Constituent	Units	Charlie 2 (SW-1)	Well in Field 70-SB (SW-2)	WQO
Chloride	mg/L	14	9.2	106[1]
Ammonia	mg/L	0.10	0.10[2]	*
Nitrite as N	mg/L	0.10[2]	0.10[2]	*
Nitrate	mg/L	0.50[2]	8.2	*
Total Kjeldahl Nitrogen	mg/L	0.37	0.70	*
Sodium	mg/L	17	20	69[1]
TDS	mg/L	480	390	450[1]
Total Coliform	MPN/100	>1600	<1.8	0
BOD	mg/L	4.6	3.6	*

WQO denotes Water Quality Objective. * denotes no value is listed for this constituent in the Water Quality Goals.
[1] Agricultural Water Quality Level.
[2] Non detect, reporting limit shown.

b. Surface water samples collected 6 May 2009 are presented below.

Constituent	Units	J&J	Sump	Big Dam	Charlie 1	Charlie 2	Area 51	WQO
Calcium	meq/L	0.54	1.44	0.97	0.67	0.92	1.65	*
Magnesium	meq/L	3.38	8.62	5.39	8.83	6.37	7.38	*
Sodium	meq/L	0.3	0.7	0.6	0.4	0.6	1.1	69[1]
Carbonate + Bicarbonate	meq/L	4.2	9.9	5.9	9.2	6.8	8.4	*
Boron	mg/L	0.09	0.13	0.22	0.04	0.40	0.51	0.7[1]
Nitrate	mg/L	0.1	0.7	0.6	0.4	0.6	1.1	*
Iron	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	5.0[2]
Manganese	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.2[2]
pH	ph units	7.8	7.5	7.8	8.0	7.8	7.8	

WQO denotes Water Quality Objective.* denotes no value is listed for this constituent in the Water Quality Goals.
[1] Agricultural Water Quality Level.
[2] Primary Maximum Contaminant Level.

c. Surface water samples collected 27 May 2005 are presented below.

Constituent	Units	Charlie 1	Charlie 2	Sump	Big Dam	WQO[1]
Calcium	meq/L	0.5	0.7	1.5	1.5	*
Magnesium	meq/L	9.5	10.1	8.9	10.3	*
Sodium	meq/L	0.3	0.4	0.6	0.7	69[1]
Carbonate + Bicarbonate	meq/L	10.2	10.9	10.5	11.5	*

Constituent	Units	Charlie 1	Charlie 2	Sump	Big Dam	WQO[1]
Boron	mg/L	<0.01	<0.01	0.03	0.04	0.7[1]
Nitrate	mg/L	0.3	0.4	0.3	0.5	*
Iron	mg/L	0.11	0.12	0.09	0.05	5.0[2]
Manganese	mg/L	0.03	0.03	0.08	0.01	0.2[2]
pH	ph units	8.7	8.7	8.3	8.7	

WQO denotes Water Quality Objective.* denotes no value is listed for this constituent in the Water Quality Goals.
[1] Agricultural Water Quality Level.
[2] Primary Maximum Contaminant Level.

d. Irrigation Water Source Salinity Data per supplemental data submitted by the Discharger on 24 June 2010

Water Source	EC, umhos/cm	TDS, mg/L
Big Dam	540	346
Charlie 1	750	480
Charlie 2	620	397
Sump	880	563
J&J	370	237
Area 51	800	512
Average	660	422

37. Surface samples show evidence of evaporation and concentration for TDS. Review of the groundwater data presented above indicate that the levels of the analyzed constituents in both the surface and groundwater samples currently meet the agricultural water quality goals, except in the case of coliform bacteria and TDS.

    a. The analysis of the surface water sample collected on 9 July 2009 indicated 1,600 MPN/100 ml for total coliform. No coliform bacteria were detected in the groundwater sample collected on that same day.

    b. TDS concentrations sampled from the winery's production well was 510 mg/L. Samples SW-1 from reservoir Charlie 2 and SW-2 taken from a shallow monitoring well were 480 mg/L and 390 mg/L, respectively. Lake Berryessa has a 205 mg/L average TDS concentration.

38. The *Geology and Hydrogeology* report submitted by Youngdahl, stated the following:

    a. Groundwater depth; gradient; and flow direction is highly variable across the site based on the shallow depth to bedrock and the tightly constrained alluvial channels characteristic of this region.

    b. Groundwater characteristics at any given location are strongly influenced by seasonal rainfall, slope gradient, local permeability, and rock fracture orientations.

    c. Groundwater resources are recharged by seasonal rainfall.

    d. The shallow groundwater can be expected to drain out of the steeper slope areas and collect in the alluvial basins.

e. Test pit excavations in the alluvial channel show the near-surface solids to be composed of layers of silty sand interbedded with seams of fat clay. It is likely that the shallow groundwater in the alluvial channels is dissected horizontally by locally impermeable aquatards, rather than occurring in a continuous aquifer.

39. Youngdahl does not assert that there is no groundwater or no shallow groundwater or that the presence of groundwater is seasonal. Youngdahl does state in a letter dated 22 June 2010, that the Great Valley Sequence rocks underlying the area of the vineyards in Soda Valley are unlikely to contain significant groundwater resources. The alluvium of Soda Valley contains very limited groundwater that most likely occurs in isolated pockets of porous materials bounded by low permeability sediments.

40. The Discharger states that there is no known groundwater table within the canyon floor or producing supply wells except for areas with springs and shallow flows and therefore requests to waive the groundwater monitoring requirement. The Order requires the Discharger to submit a *Site Specific Conditions Workplan and Report* to present the protocol and methodology for the ongoing verification of the absence of groundwater and the Discharger's antidegradation assertions.

SITE SPECIFIC CONDITIONS

41. Land use in the vicinity of the site consists of vineyards within a large area of native vegetation. The winery is located within the Coast Range Geomorphic Province consisting of a sequence of northwest-trending mountains and valleys, aligned with and adjacent to the California coastline.

    a. The predominant geologic formation in the area is the Lower Cretaceous-Upper Jurrassic Great Valley Sequence, composed of deep marine sediments and turbidite sequences originally deposited off the western margin of the continental shelf. Also found in the region is the Franciscan Formation, a heterogeneous assemblage of oceanic and terrigenous rock units. Field observations of the bedrock exposures at the subject property indicate that the eastern portion of the property is underlain by the Great Valley sequences, with sedimentary beds dipping steeply to the southwest. The bedrock exposures of the Great Valley Sequence were observed to be composed of very closely fractured, moderately to highly weathered beds of gray, fine-grained silts, sands, and clays.

    b. The flat valley floors are composed of silty sands in excess of 80 inches thick. The majority of the steep western edge of the site is composed of silty sand, and the steep eastern edge is composed of clayey sands and silt, both 10 to 20 inches thick. The intermediate slope areas between the valley and the steep ridges are generally composed of fat clay from 10 to15 inches thick and clayey sands and silts from 20 to 40 inches thick.

42. The winery facility is not located within the Federal Emergency Management Agency (FEMA) 100-year flood zone.

43. Based on the Napa County Road and Street Standards, USDA Soil Survey of Napa County for the City of Napa, and the California Climate Data Archive, the mean annual

rainfall is approximately 40.0 inches, the 100-year return annual precipitation is 62.4 inches, and the annual evaporation is 61.61 inches. Information was based on the Saint Helena NE, Station No. E30 7649 00.

OTHER CONSIDERATIONS FOR FOOD PROCESSING WASTE

44. Excessive application of food processing wastewater to land application areas can create objectionable odors, soil conditions that are harmful to crops, and degradation of underlying groundwater by overloading the shallow soil profile and causing waste constituents (organic carbon, nitrate, other salts, and metals) to percolate below the root zone. It is reasonable to expect some attenuation of various waste constituents that percolate below the root zone within the vadose (unsaturated) zone. Specifically, excess nitrogen can be mineralized and denitrified by soil microorganisms, organic constituents (measured as both BOD and volatile dissolved solids) can be oxidized, and some salinity species will undergo cation exchange with clay minerals, effectively immobilizing them.

45. Loading of BOD should be limited to prevent nuisance conditions. The maximum BOD loading rate that can be applied to land without creating nuisance conditions can vary significantly depending on the operation of the treatment and land application system. *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*), cites BOD loading rates in the range of 36 lbs/acre/day to 600 lbs/acre/day but indicates the loading rates can be even higher under certain conditions. BOD loading rates cannot cause a nuisance.

46. Acidic and/or reducing soil conditions can be detrimental to land treatment system function, and may cause groundwater degradation if the buffering capacity of the soil is exceeded. If soil pH decreases below 5 and the soil remains in a reducing state for prolonged periods, naturally occurring metals (including iron and manganese) could dissolve and degrade underlying groundwater. In practice, prolonged reducing conditions may not occur because: a) the annual cycle of lowered pH during loading with either wastewater or fertilizer is followed by pH recovery during cropping and organic matter cycling and; b) the dose and rest cycling for wastewater application either in spreading basins or using irrigation creates alternate anoxic and aerobic conditions. *Pollution Abatement* recommends that water applied to crops have a pH within 6.4 to 8.4 to protect crops. The soils and underlying groundwater are expected to adequately buffer the discharge.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

47. The *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins,* Fourth Edition (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 Section 13263(a) of the California

Water Code (CWC), waste discharge requirements (WDRs) must implement the Basin Plan.

48. Surface water drainage is to an unnamed creek and Soda Creek that merge together near the easterly end of the property and intersects Capell Creek, a tributary to Lake Berryessa. The facility is within the Lake Berryessa Hydrologic Subarea (No 512.21), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.

49. The beneficial uses of Lake Berryessa are municipal and domestic supply, agricultural supply; water contact recreation; non-contact water recreation; warm freshwater habitat; cold freshwater habitat; spawning, reproduction, and/or early development; and wildlife habitat.

50. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.

51. State Water Resources Control Board (State Board) Resolution No. 68-16 (the Antidegradation Policy) requires that the Regional Water Board, in regulating the discharge of waste, must maintain the high quality of waters of the state until it is demonstrated that any change in quality will be consistent with maximum benefit to the people of the state, will not unreasonably affect beneficial uses, and will not result in water quality less than that described in the Regional Water Board's policies (e.g., quality that exceeds water quality objectives). Resolution No. 68-16 also requires that waste discharged to high quality waters be required to meet WDRs that will result in the best practicable treatment or control of the discharge. Resolution 68-16 prohibits degradation of groundwater quality as it existed in 1968, or at any time thereafter that groundwater quality was better than in 1968, other than degradation that was previously authorized. An antidegradation analysis is required for a new discharge and an increase in volume or concentration of waste.

52. The winery is a new facility with construction anticipated to be complete in time for the 2010 grape crush. Groundwater investigation provided limited characterization over a limited part of the facility from a single shallow groundwater monitoring well. Supplemental surface water grab samples representing the current irrigation water source adjacent to the land application areas were also analyzed. Surface and groundwater quality were found to be within water quality objectives, except in the case of coliform bacteria and TDS. Coliform bacteria were present in the one grab surface water sample and it appears to be an isolated case. The current irrigation source water is from the on-site surface water impoundments and had an average TDS concentration of 422 mg/L with a range from 237 mg/L to 563 mg/L. The single groundwater sample had a TDS concentration of 390 mg/L. TDS concentrations found in the winery supply well which is used for making the wine and not irrigation was 510 mg/L, higher than the water quality objectives. Limited degradation of high-quality groundwater by some of the typical waste constituents released with discharge from a winery (after effective source control, treatment, and control) is consistent with maximum benefit to the people of the State at appropriate sites. When allowed, the degree of degradation permitted depends upon many factors (e.g., background water quality, the waste constituent, the beneficial uses and water quality objectives, management practices, source control measures, and waste constituent treatability).

The Discharger will utilize a treatment process consisting of physical and biological processes to reduce the residual solids and BOD found in winery wastewater. The anaerobic filter tanks filled with plastic media provides a surface area beneficial for bacterial growth and the consumption of the organic matter found in the wastewater. Each tank will be provided with a vent that will treat the off gases including methane, carbon dioxide, and some hydrogen sulfide from the system. The Discharger will practice BPTC measures with respect to salinity issues as described in the Order. The Order imposes effluent limitations and limits land application of wastewater and nitrogen to the agronomic demands of the vineyard. Wastewater application loading rates shall be based on the concentration of waste constituents added to the soil that is approximately equal to the concentrations expected to be taken up by the vines or cover crop.

The Discharger expects the facility to provide 8 year-round, 2 part-time, and 2 seasonal jobs. Prohibiting discharges pending completion of the new facility could eliminate some or all of the jobs. In addition, it is reasonable to assume that the facility provides an economic benefit to equipment suppliers and transportation companies. Economic prosperity of valley communities and associated industry is of maximum benefit to the people of the State, and therefore sufficient reason to accommodate growth and limited groundwater degradation provided terms of the Basin Plan are met.

The use of winery wastewater to irrigate crops in place of surface or ground water supplies is a benefit to the people of the State. The Order establishes requirements to ensure the discharge will not unreasonably threaten present and anticipated beneficial uses or result in groundwater quality that exceeds water quality objectives set forth in the Basin Plan. The Order establishes effluent limitations on BOD, TDS, and total nitrogen that are protective of the beneficial uses of the underlying groundwater and requires the Discharger to submit a *Nutrient Management Plan* and *Site Specific Conditions Workplan and Report* to confirm compliance with the requirements of the Order and quantify any impacts on the underlying groundwater quality. Based on the existing record, the discharge is consistent with the antidegradation provisions of Resolution 68-16.

53. Based on the threat and complexity of the discharge, the facility is determined to be classified 2-B as defined below:

    a. Category 2 threat to water quality, defined as, “Those discharges of waste that could impair the designated beneficial uses of the receiving water, cause short term violation of water quality objectives, cause secondary drinking water standards to be violated, or cause a nuisance.”

    b. Category B complexity, defined as, “Any discharger not included above that has physical, chemical, or biological treatment systems (except for septic systems with subsurface disposal) or any Class 2 or Class 3 waste management units.”

54. California Water Code Section 13267(b) 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 the Order and the attached Monitoring and Reporting Program No. R5-2010-0108 is necessary to assure compliance with these WDRs. The Discharger owns and operates the facility that generates the waste subject to the Order.

55. State regulations that 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 terms for protection of groundwater specified in the Order.

56. California Department of Water Resources standards for the construction and destruction of groundwater wells is 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.

57. The discharge meets the criteria for an exemption from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in Title 27, CCR, Division 2, Subdivision 1, Section 20005, et seq., (Title 27), based upon the following.

    a. The Regional Water Board has issued waste discharge requirements,

    b. The discharge is in compliance with the Basin Plan. Studies submitted by the Discharger conclude that compliance with effluent limits and management practices in these WDRs will achieve compliance with the Basin Plan. As this facility does not currently exist as proposed in the Order, wastewater characterization and management practices were developed based upon similar sized wineries and best professional judgment. Groundwater quality was characterized over a limited part of the facility with data from a single shallow groundwater monitoring well. Supplemental surface water grab samples representative of the irrigation water sources were analyzed. The Discharger proposes to use treated wastewater that is of better quality than the existing irrigation water.

        i. The Discharger has prepared an Antidegradation Analysis. Based on the proposed anaerobic treatment process, BPTC measures as specified in the Order, and the nutrient uptake capacity of the vines, TDS concentration in the treated wastewater is anticipated to be less than 390 mg/L.

ii. The Discharger will have a total of 104 acres of LAAs available for irrigation with treated wastewater.

iii. The Discharger is required to implement source control in the winery, as described in the Order which will minimize the salinity of the discharge.

iv. The Discharger is required to submit a *Nutrient Management Plan*.

v. The Discharger is required to submit a *Site Specific Conditions Workplan and Report.*

c. The wastewater does not need to be managed according to Title 22 CCR, Division 4.5, and Chapter 11, as a hazardous waste.

58. 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 filed a *Notice of Non-Applicability of Coverage under the NPDES General Permit for Discharges of Stormwater* 13 August 2009.

59. A Mitigated Negative Declaration (MND) was approved by the Napa County Conservation, Development & Planning Department on 21 December 2007 for the construction of the winery facility to include an aerated wastewater treatment pond per the provisions of the California Environmental Quality Act (CEQA). Mitigation measures related to water quality are described below. Compliance with the Order's Prohibitions, Effluent Limitations, and Groundwater Limitations will mitigate the discharge and protect water quality. The following mitigation measures were identified.

a. The Discharger shall submit to the County of Napa Public Works Department a pre and post construction Storm Water Pollutant Elimination Permit for review, approval, and monitoring.

b. The Discharger shall submit a grading plan that includes erosion control measures for the temporary and final cave spoil location.

60. An Addendum to the MND was approved by the Napa County Conservation, Development & Planning Department on 21 June 2010 for the installation of a pretreatment facility and 100,000 gallon above ground storage tank in lieu of an aerated wastewater treatment pond.

61. Pursuant to CWC Section 13263(g), discharge is a privilege, not a right, and adoption of the Order does not create a vested right to continue the discharge.

PUBLIC NOTICE

62. 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.

63. 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.

64. In a public meeting, all comments pertaining to the discharge were heard and considered.

IT IS HEREBY ORDERED that pursuant to Section 13263 and 13267 of the California Water Code, Sage Canyon LLC, 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: Other prohibitions, conditions, definitions, and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated 1 March 1991.

A. Discharge Prohibitions:

1. Discharge of wastes, including irrigation tailwater, to surface waters or surface water drainage courses is prohibited.
2. Bypass or overflow of untreated or partially treated wastewater is prohibited.
3. Discharge of waste classified as "hazardous," defined in Section 20164 of Title 27, CCR, or "designated," as defined in Section 13173 of the CWC, is prohibited.
4. The discharge of wastewater in a manner other than as described in the Order is prohibited.
5. The discharge of treated wastewater other than to the approved LAAs as identified in the Order is prohibited.
6. The discharge of domestic wastewater to the winery wastewater treatment system is prohibited.
7. The discharge of winery wastewater to a domestic wastewater treatment system (septic system) is prohibited.
8. Discharge of stormwater not consistent with the procedures described in the Order, or more stringent measures if developed and adopted by the State or Central Valley Water Board, is prohibited.
9. The discharge of brine flush water generated from the water softener to the LAAs is prohibited.

B. Discharge Specifications:

1. The wastewater discharge to the LAAs shall not exceed 280,000 gallons per month. In addition, the annual wastewater discharge to the LAAs shall not exceed 1.2 Mgal.
2. Neither the treatment nor the discharge of wastewater shall cause a nuisance or condition of pollution as defined by the CWC, Section 13050.
3. The discharge shall not cause the degradation of any groundwater.
4. No wastewater 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.
5. Wastewater in excess of existing storage during a large flood event may be tanked and held for later onsite treatment and use as irrigation water.
6. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. No physical connection shall exist between wastewater piping and any domestic water supply, domestic/industrial supply well, irrigation water pipeline, or irrigation canal without an air gap or approved reduced pressure device.
9. The wastewater treatment and land application system shall have sufficient capacity to accommodate wastewater flow and 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.
10. Storage of pomace on areas not equipped with means to prevent leachate generation and infiltration into the ground is prohibited.
11. Pomace shall not be stored on unpaved ground. Acceptable alternatives include storage on paved areas that are equipped with liquid collection systems or other alternatives that prevent generation of leachate, such as roofed areas or use of agricultural bags for well-drained materials.

C. Effluent Limitations:

1. Treated wastewater applied to land shall not exceed the following effluent limits, or other limits necessary to ensure compliance with the Groundwater Limitations.

Constituent	Units	Daily Maximum	Monthly Maximum	Annual Average
Biochemical Oxygen Demand	lbs/ac/day	300	NA	NA
Total Dissolved Solids	mg/L	NA	1,500	1,000
Total Nitrogen	lbs/ac/year	NA	NA	125

NA denotes Not Applicable.

2. Wastewater applied to the LAA shall not have a pH of less than 4.5 or greater than 10.0.

D. Land Application Area Requirements:

1. The discharge shall be distributed uniformly on adequate acreage in compliance with the Discharge Specifications and Effluent Limitations.
2. Crops shall be grown on the LAAs. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, consumptive use of water, and irrigation requirements. Cropping activities shall be sufficient to take up the nitrogen applied, and crops shall be harvested and removed from the land at least on an annual basis.
3. Discharge of treated wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the approved LAAs. Treated wastewater application using sprinklers or drip irrigation is acceptable if the discharge complies with all requirements of the Order.
4. Hydraulic loading of treated wastewater and irrigation water shall be at reasonable agronomic rates designed to minimize the potential impact to groundwater quality by percolation of wastewater and irrigation water below the root zone (i.e., deep percolation).
5. Wastewater conveyance lines shall be clearly marked as such. Wastewater controllers, valves, etc. shall be affixed with reclaimed water warning signs; quick couplers and sprinkler heads shall be of a type, or secured in such a manner, that permits operation by authorized personnel only.
6. Irrigation systems shall be labeled as containing reclaimed wastewater. If treated wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable/irrigation water supply.
7. Application of treated wastewater to the LAAs using sprinkler irrigation is prohibited when wind velocities exceed 30 miles per hour.
8. Public contact with wastewater shall be precluded through such means as fences, signs, and/or irrigation management practices. Signs with proper wording of sufficient size shall be placed at areas of access and around the perimeter of the LAAs to alert the public of the presence of wastewater.
9. The LAAs shall be managed to prevent breeding of mosquitoes. More specifically:
    a. All applied irrigation water must infiltrate completely within 24 hours.
    b. Ditches not serving as wildlife habitat should be maintained free of emergent, marginal, and floating vegetation.
    c. Low pressure pipelines, unpressurized pipelines, and ditches that are accessible to mosquitoes shall not be used to store wastewater.

10. The application of treated wastewater to the LAAs shall comply with the following setback requirements:

Setback Definition	Minimum Irrigation Setback (feet)
Edge of land application area[2] to public property boundary (e.g. street)	50[1]
Edge of land application area[2] to any surface watercourse	50[3]
Edge of land application area[2] to any properties with an occupied residence	50
Edge of land application area[2] to any industrial or irrigation well	50[3]
Edge of land application area[2] to domestic well	100[3]

[1] Additional setbacks may be needed to comply with other requirements of the Order.
[2] As defined by the wetted area produced during irrigation.
[3] Unless otherwise approved by the Executive Officer.

11. Discharges to LAAs shall be managed to minimize both erosion and runoff from the irrigated area.

12. The resulting effect of the wastewater discharge on the soil pH shall not exceed the buffering capacity of the soil profile and shall not cause significant mobilization of soil constituents such as iron and manganese.

13. The Discharger may not discharge effluent to the LAAs within 24 hours of a predicted storm event, during periods of precipitation, and for at least 24 hours after cessation of precipitation, or when soils are saturated.

14. All applied wastewater must infiltrate before the next irrigation event using wastewater and there shall be no pooling or ponding of irrigated wastewater.

E. Solids/Sludge Disposal Requirements:

1. Collected screenings and other solids removed from winery wastewater shall be disposed of in a manner that is consistent with Title 27, Division 2, Subdivision 1 of the CCR and approved by the Executive Officer.

2. Winery sludge and other solids shall be removed from sumps, screens, tanks, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Winery solids drying operations, if any, shall be designed and operated to minimize leachate generation and prevent the infiltration of leachate into the subsurface. .

3. 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. Groundwater Limitations:

1. Effective immediately as groundwater limitation, the discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations statistically greater than existing background water quality or water

quality objectives. Background groundwater quality shall be established using the methods proposed in the *Site Specific Conditions Workplan* and approved by the Executive Officer. Background values must be updated annually as described in the MRP. The groundwater quality objectives are presented below:

Constituent	Units	Limitation
Boron	mg/L	0.7
Chloride	mg/L	106
Iron	mg/L	0.3
Manganese	mg/L	0.05
Sodium	mg/L	69
TDS	mg/L	450[1]
Total Nitrogen	mg/L	10
Nitrate (as N)	mg/L	10
Ammonia (as NH_4)	mg/L	1.5
Bromoform	µg/L	4
Bromodichloromethane	µg/L	0.27
Chloroform	µg/L	1.1
Dibromochloromethane	µg/L	0.37

[1] A cumulative impact limit that accounts for several dissolved constituents in addition to those listed here separately [e.g., alkalinity (carbonate and bicarbonate), calcium, hardness, phosphate, and potassium].

G. Provisions:

1. All of the following reports shall be submitted pursuant to CWC Section 13267, and prepared by a California registered professional as described in Provision G.2.

   a. **Within 60 days of completion of the proposed process wastewater management system and at least 30days prior to the disposal of applying any wastewater to land**, 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 the Order, (c) the locations of the LAAs, irrigation protocols for the LAAs, practices used to maintain the LAAs, and management practices to prevent excessive BOD, nitrogen, or dissolved solids loading of LAAs, (d) the locations of flow and effluent sampling points, (e) quality control sampling procedures necessary to obtain representative samples, (f) the locations of solid waste disposal areas, methods of disposal, and the daily practices associated with the disposal of solid waste, (g) means to secure the LAAs and control wastewater or stormwater from discharging offsite (i.e., installation of fencing or notification signs, installation of berms to prevent runoff, configuration of checks to control application rates), (h) planning for potential response to natural disasters, (i) institutional controls such as Best Management Practices (BMPs), (j) Standard Operating Procedures (SOPs), (k) specific procedures to ensure that

contaminated stormwater is discharged to the wastewater treatment system and clean stormwater is managed as part of the facility's Storm Water Prevention Pollution Plan, and (l) employee orientation and training. 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.

b. By **1 April 2011**, the Discharger shall submit and implement a *Nutrient Management Plan* that demonstrates compliance with the Order. The plan shall evaluate the nutrient load and irrigation demand for each LAAs and develop and implement pollution prevention management practices to restrict nutrient loading to that which is necessary for the specified crop. The workplan shall include, but not be limited to, identifying appropriate protocols for application of any supplemental fertilizer and a description of the harvested and cover crops including their nutrient uptake capacities.

c. By **1 June 2011**, the Discharger shall submit and implement a *Site Specific Conditions Workplan* that shall present the protocol and methodology for the ongoing verification of the absence of groundwater and the Discharger's antidegradation assertions. The workplan shall also describe an alternative method of verifying that irrigation with treated wastewater will not cause degradation of the underlying groundwater and/or an overload of nutrients in excess of the planted crops uptake capacity using identified site specific data. The workplan shall determine the constituents that may cause degradation and the amount of TDS, FDS, and nitrogen that crops grown in the LAAs will take up in order to prevent or mitigate potential degradation. The study shall be completed over a number of process and growing seasons and propose site specific objectives for each constituent in the applied wastewater with the potential to cause degradation.

d By **15 February 2016**, the Discharger shall submit a *Site Specific Conditions Report* that provides the results of the *Site Specific Conditions Workplan.* The report shall present and summarize all data taken and analyzed to verify the absence of groundwater and the Discharger's antidegradation assertions. The report shall include a description and rationale of the selected monitoring protocol to verify compliance with the Order, and a summary of all data taken and analyzed to confirm irrigation with treated wastewater has not degraded groundwater and limits "storage" of waste constituents in the soil for long-term sustainability. The report shall present a summary of the dissolved solids and nitrogen loading rates of the wastewater applied to the specific LAAs for the duration of the study. The report shall describe the pollution prevention management practices that have been implemented to restrict nutrient loading to that is necessary for the specified crop.

2. In accordance with California Business and Professions Code Sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. All technical reports specified herein that

contain workplans, that describe the conduct of investigations and studies, or that contain technical conclusions and recommendations concerning engineering and geology, shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal.

3. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2010-0108, which is part of the 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 the 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 wastewater disposal areas, the Discharger must notify the succeeding owner or operator of the existence of the Order by letter, a copy of which shall be immediately forwarded to this office. To assume operation as Discharger under the 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 Central Valley Water 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 the 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 Central Valley Water Board on or before each compliance report due date the specified document, or if appropriate, a written report detailing compliance or noncompliance with the specified 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 Central Valley Water 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 Section 313 of the “Emergency Planning and Community Right to Know Act of 1986.”

8. The Discharger shall report promptly to the Central Valley Water Board any material change or proposed change in the character, location, or volume of the discharge.

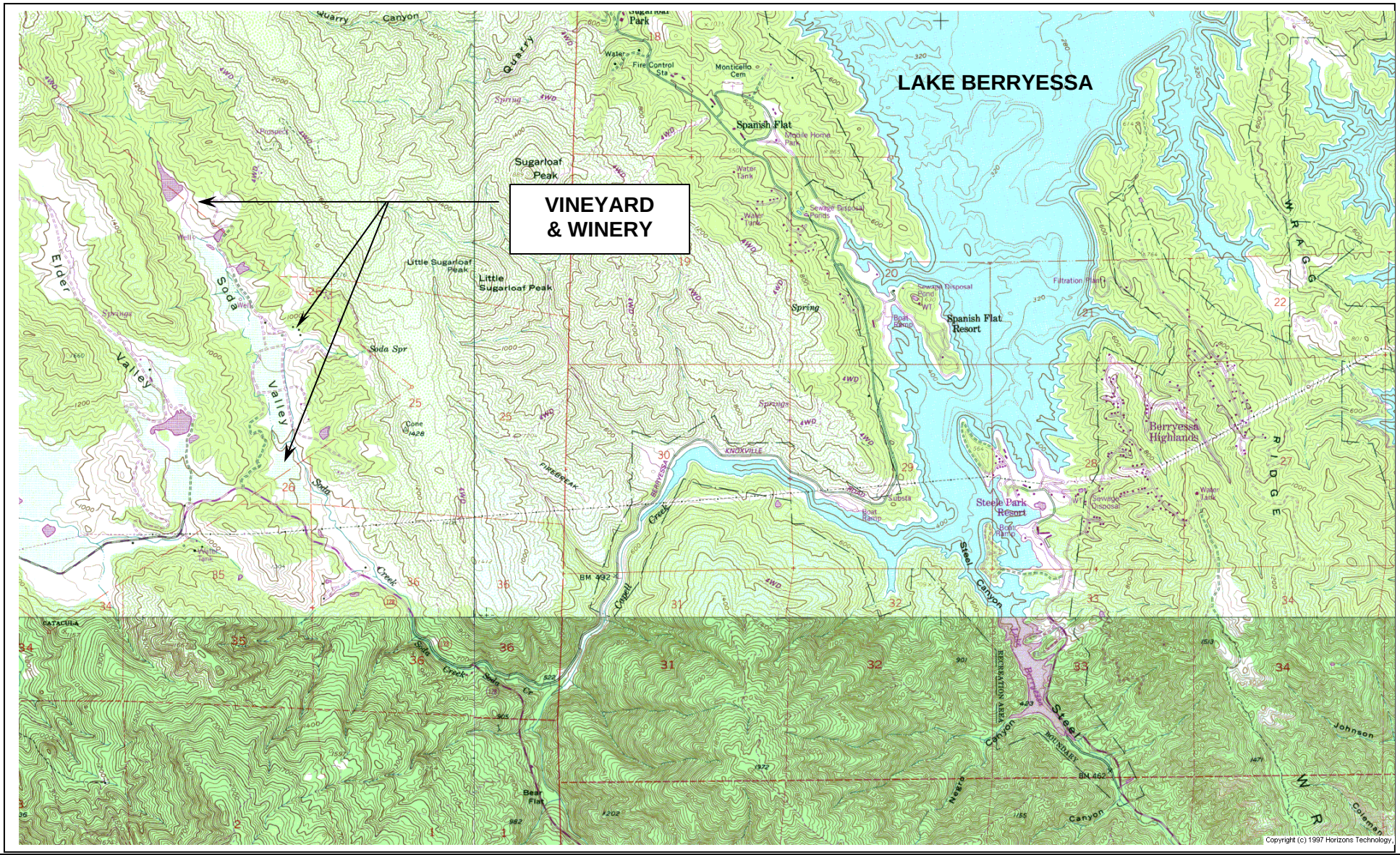
9. The Discharger must comply with all conditions of the Order, including timely submittal of technical and monitoring reports as directed by the Executive Officer. Violations may result in enforcement action, including Central Valley Water Board or court orders requiring corrective action or imposing civil monetary liability, or in revision or rescission of the Order.

10. A copy of the Order shall be kept at the discharge facility for reference by operating personnel. Key operating personnel shall be familiar with its contents.
11. The Central Valley Water Board will review the Order periodically and will revise requirements when necessary.

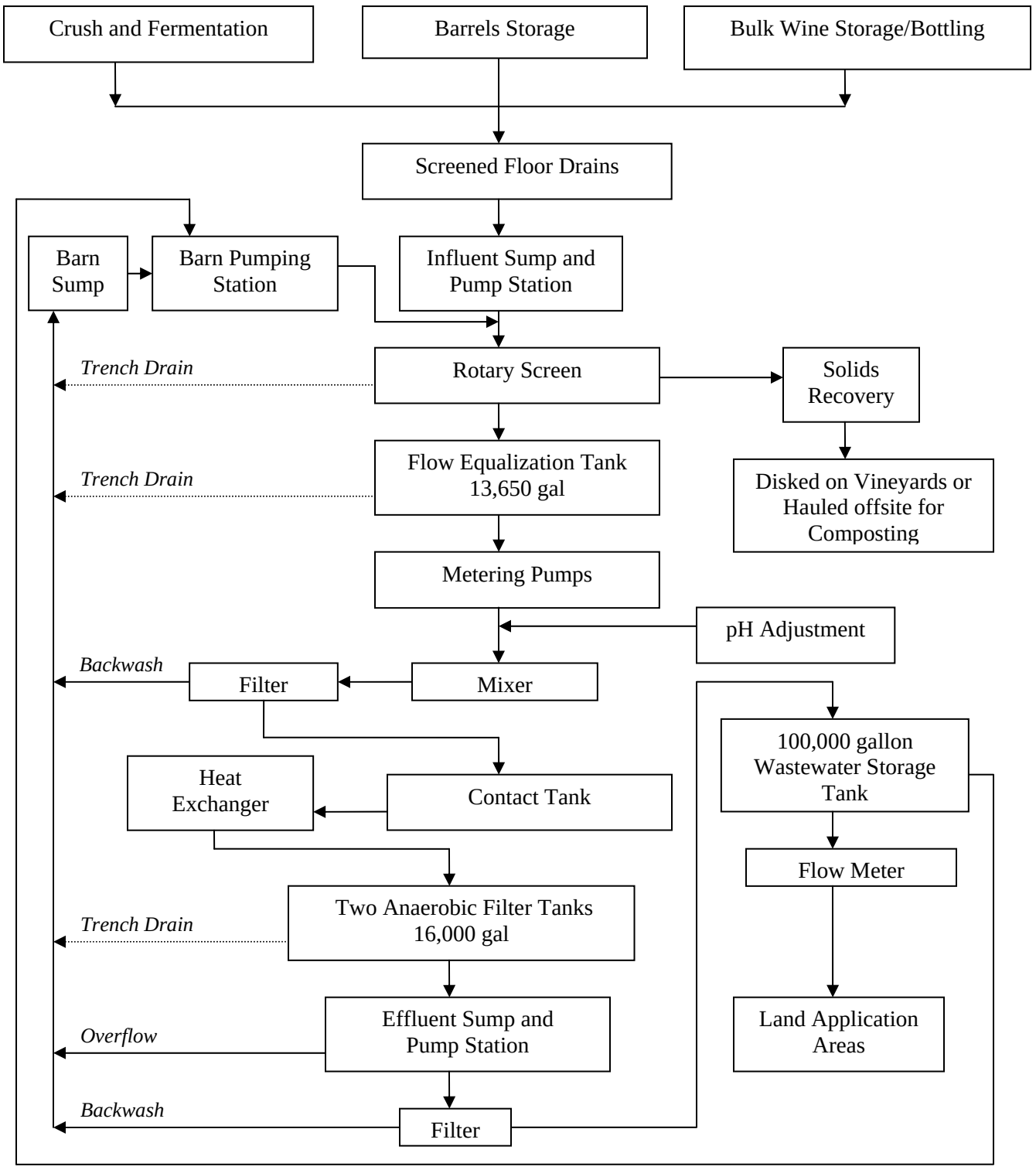
I, PAMELA C. CREEDON, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on 23 September 2010.

Original signed by Ken Landau for

PAMELA C. CREEDON, Executive Officer

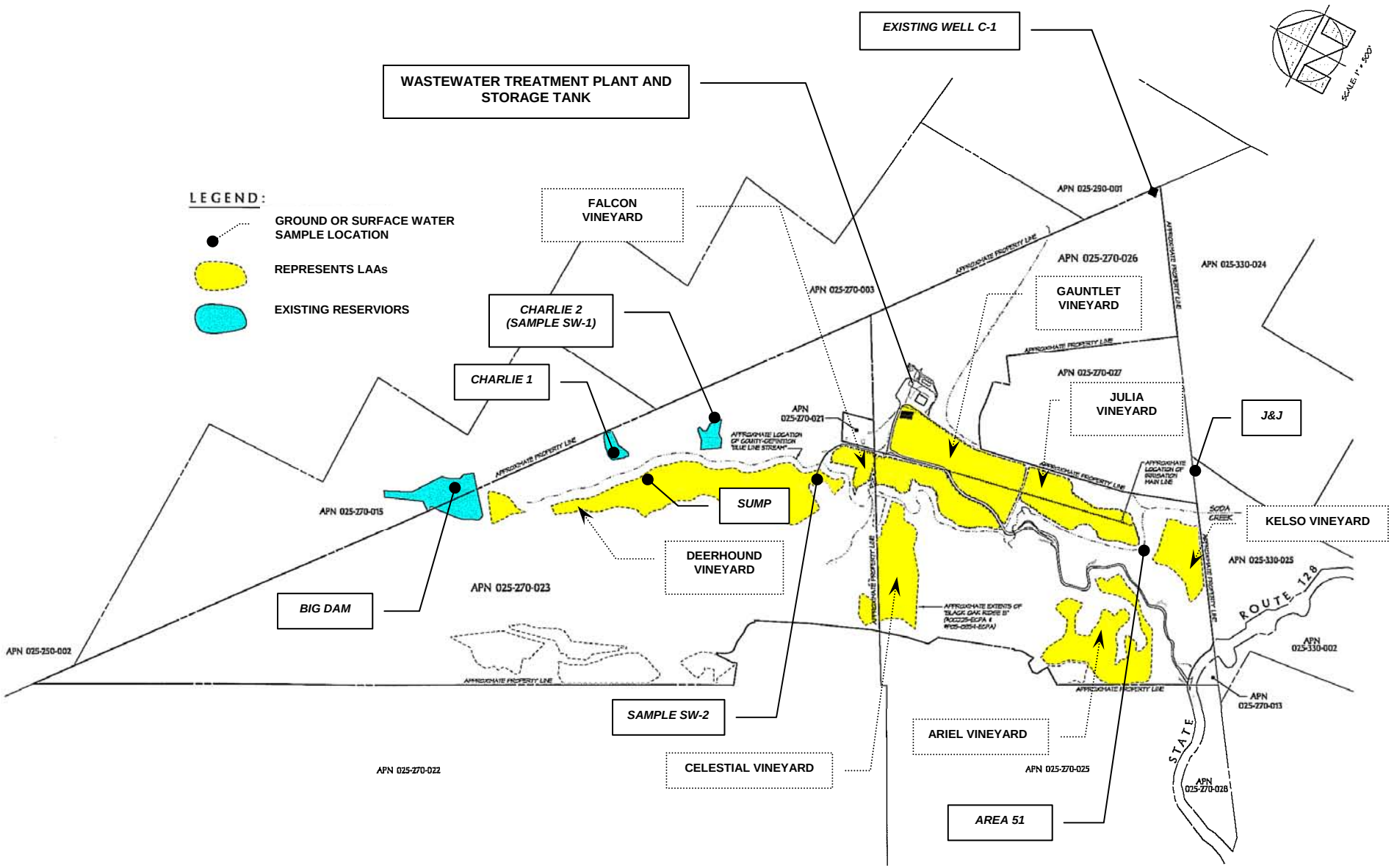


Approximate Scale 	Drawing Reference: U.S.G.S. Chiles Valley Quadrangle TOPOGRAPHIC MAP 7.5 MINUTE QUAD	**VICINITY MAP** SOMMERSTON WINERY 3450 SAGE CANYON ROAD ST. HELENA, CA 94574

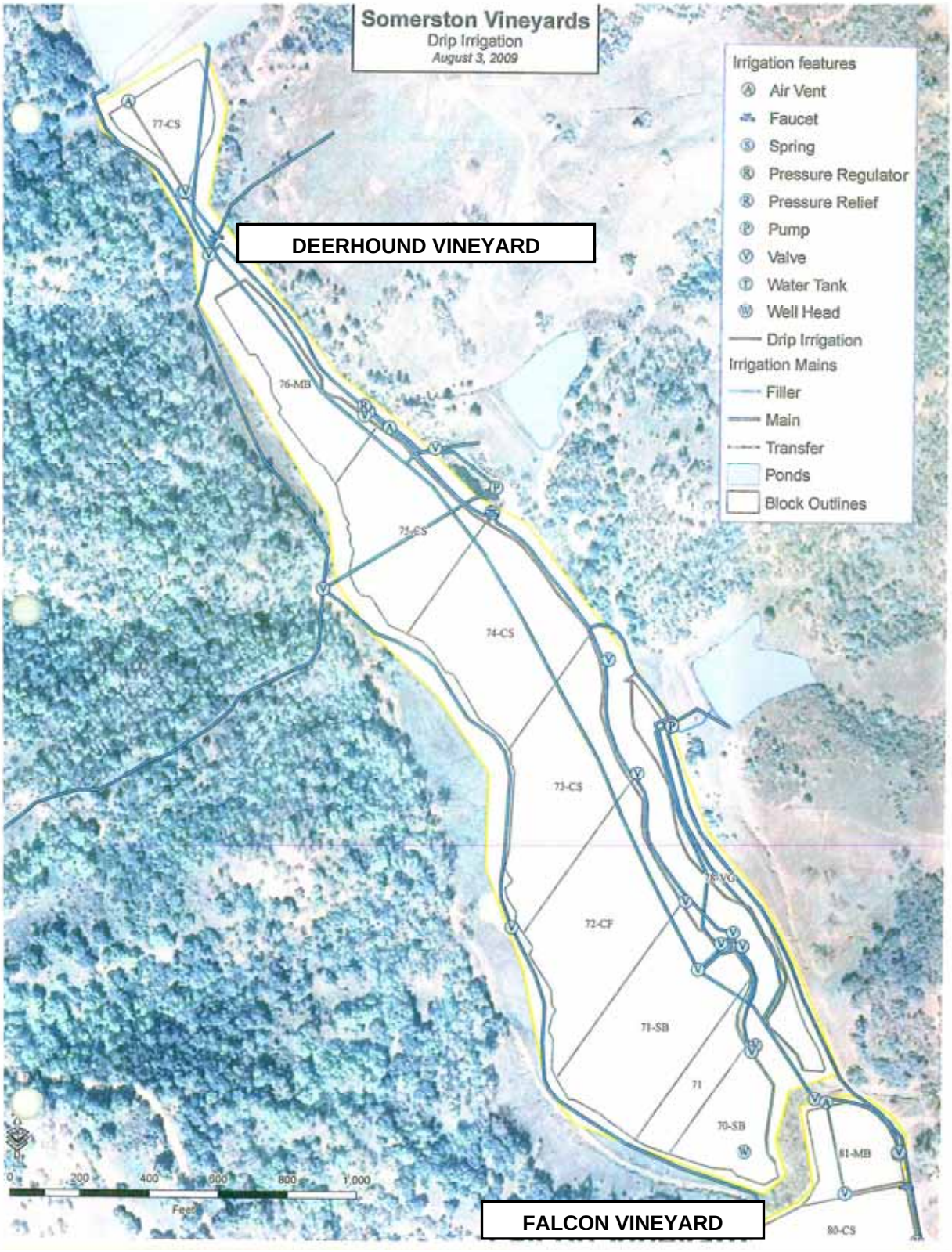


Drawing Reference:
DJH ENGINEERING

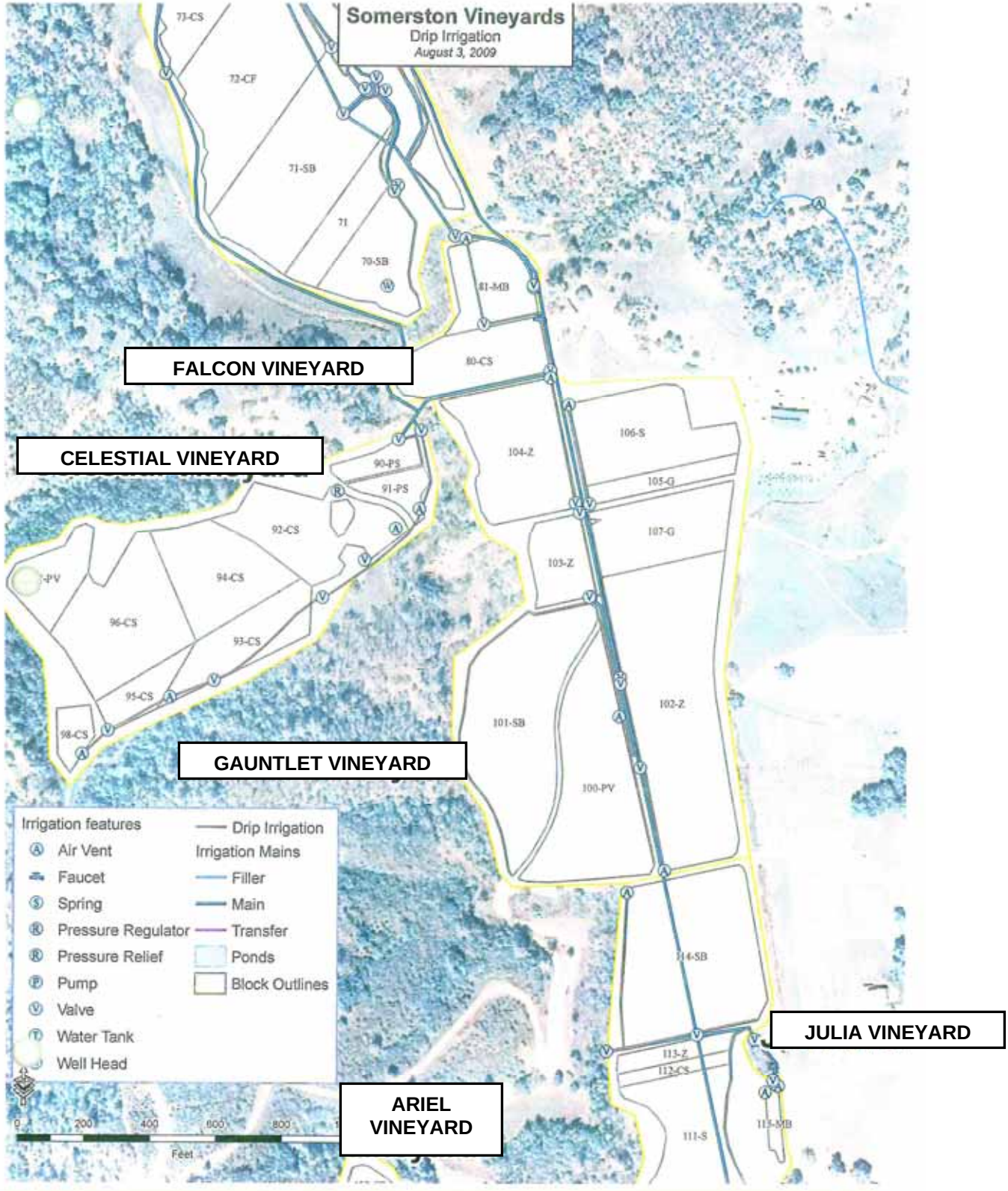
PROCESS FLOW DIAGRAM
SOMERSTON WINERY
3450 SAGE CANYON ROAD
ST. HELENA, CA 94574



Approximate Scale Not to Scale	Drawing Reference: DJH ENGINEERING	**SITE LOCATION PLAN** SOMERSTON WINERY 3450 SAGE CANYON ROAD ST. HELENA, CA 94574



Drawing Reference: DJH ENGINEERING	**IRRIGATION DRAWINGS 1 of 3** SOMERSTON WINERY 3450 SAGE CANYON ROAD ST. HELENA, CA 94574	N W E S Not to scale



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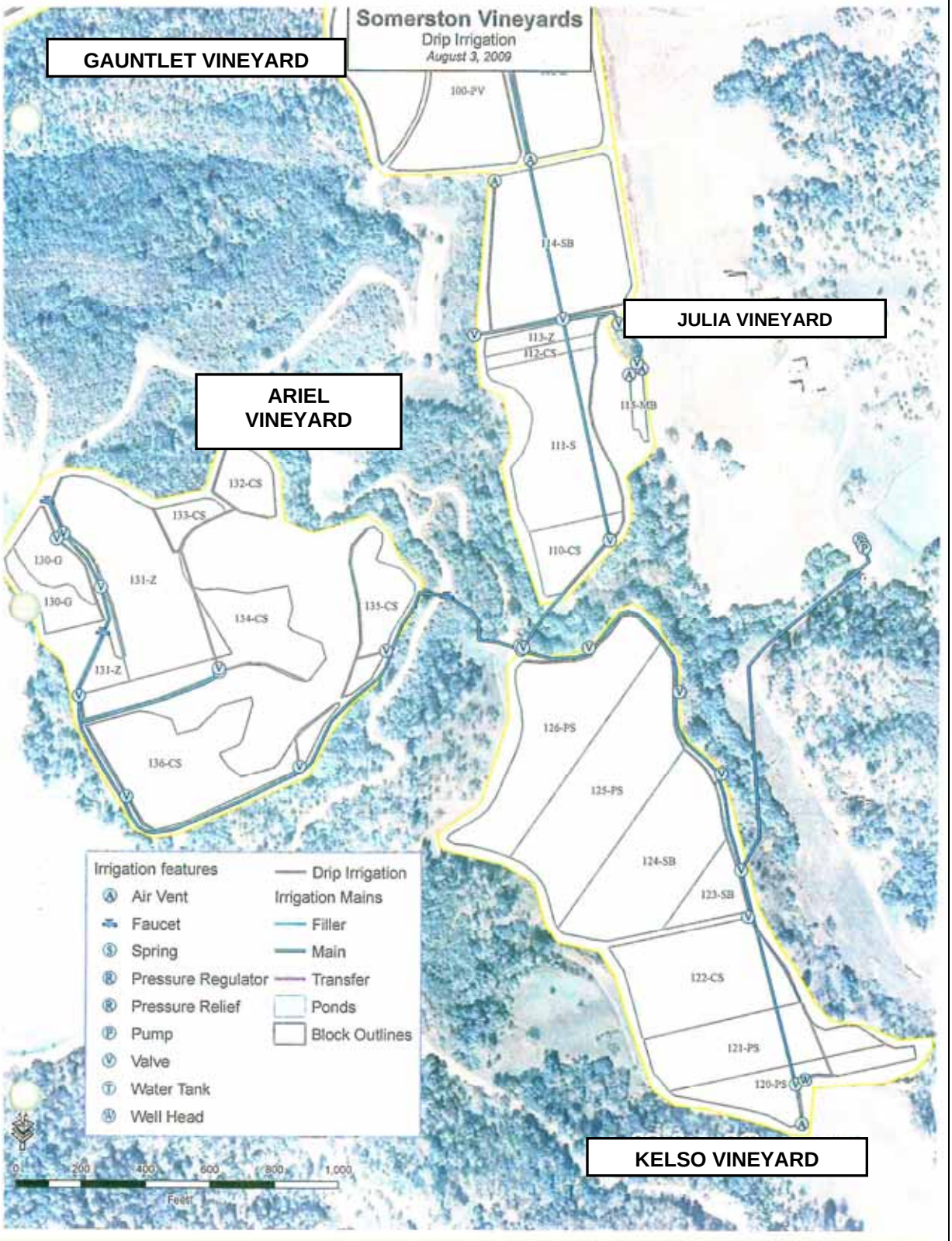

Drawing Reference: DJH ENGINEERING	**IRRIGATION DRAWINGS 3 of 3** SOMERSTON WINERY 3450 SAGE CANYON ROAD ST. HELENA, CA 94574	N W E S Not to scale

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2010-0108

FOR
SAGE CANYON, LLC
SOMERSTON WINERY
NAPA COUNTY

This Monitoring and Reporting Program (MRP) incorporates requirements for monitoring of the wine production, wastewater effluent, land application areas, water softener brine and solids. 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 grab sample shall be recorded on the sample chain of custody form. Winery wastewater flow monitoring shall be conducted continuously using a flow meter and shall be reported in cumulative gallons per day.

Field test instruments (such as pH and dissolved oxygen) may be used provided that:

1. The operator is trained in the proper use 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.

WINE PRODUCTION

The following wine production data shall be reported in the annual report:

Constituents	Units
Wine Production	Gallons per Year
Wine Production	Cases per Year
Grapes Crushed	Tons per Year

EFFLUENT MONITORING

Process wastewater samples shall be collected prior to discharge to the land application areas. Effluent monitoring from the process wastewater system shall include at least the following:

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Flow	gallons	Continuous	Daily[1]	Monthly
Total Flow [1]	gallons	Continuous	Totalizer[1]	Monthly
pH	Std. Units	Grab	Monthly	Monthly

Constituents	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Electrical Conductivity	umhos/cm	Grab	Weekly	Monthly
Biochemical Oxygen Demand	mg/L	Grab	Monthly	Monthly
Nitrate as N	mg/L	Grab	Monthly	Monthly
Total Nitrogen as N	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids (TDS)	mg/L	Grab	Monthly	Monthly
Fixed Dissolved Solids (FDS)	mg/L	Grab	Monthly	Monthly
Sodium	mg/L	Grab	Monthly	Monthly
Chloride	mg/L	Grab	Monthly	Monthly
Standard Minerals[2]	mg/L	Grab	Quarterly	Quarterly

[1] Continuous monitoring requires daily meter reading or automated data collection using a meter equipped with a totalizer. Total flow means the cumulative total for the calendar year.

[2] Standard minerals include the following: boron, calcium, iron, magnesium, manganese, potassium, sulfate, total alkalinity (including alkalinity series), and hardness.

LAND APPLICATION AREA MONITORING

The Discharger shall monitor process wastewater discharged from the storage tank for irrigation to the land application area. Monitoring shall be conducted **daily during irrigation with wastewater** and the results shall be included in the monthly monitoring report. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions shall be noted in the report. Loading rates for the land application areas shall be calculated. Monitoring of the land application areas shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Wastewater Flow [2]	Gallons	Continuous[1]	Daily	Monthly
Supplemental Irrigation Flow	Gallons	Continuous[1]	Daily	Monthly
Local Rainfall	Inches	Measurement	Daily	Monthly
Acreage Applied[3]	Acres	Calculated	Daily	Monthly
Application Rate	gal/acre·day	Calculated	Daily	Monthly
BOD Loading Rate	lbs/acre·day	Calculated	Daily	Monthly
Total Nitrogen Loading Rate [4]	lbs/acre·month [5]	Calculated	Monthly	Monthly
Total Nitrogen Concentration[4]	Mg/L[5]	Calculated	Monthly	Monthly/Annual
TDS Loading Rate	lbs/acre·month [5]	Calculated	Monthly	Monthly
FDS Loading Rate	lbs/acre·month [5]	Calculated	Monthly	Monthly
Crop Removal Mass	pounds	Measured	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 and shall define the volume of wastewater discharged to the land application areas from the wastewater storage tank.

[3] Land Application Area(s) in use shall be identified by name and the acreage provided. If a portion of an area is used, then the acreage shall be estimated.

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

[5] Report monthly total and cumulative annual to date.

At least **once per week** when wastewater is being applied to the land application areas, the entire application area shall be inspected to identify any equipment malfunction or other circumstance that might allow irrigation runoff to leave the area and/or create ponding conditions that violate the Waste Discharge Requirements. A log of these inspections shall be kept at the facility and be submitted with the monthly monitoring reports. If wastewater was not applied to the land application area, then the monthly monitoring reports shall so state.

WATER SOFTENER BRINE MONITORING

If generated, the Discharger shall record and report monthly the quantity of liquid waste (water softening ion exchange regeneration brine, wine treatment ion exchange regeneration brine, etc.) generated, the day the liquid waste was hauled offsite, the identified hauler, and description of the disposal location for the material. If not generated, a statement stating so.

SOLIDS MONITORING

The Discharger shall record and report monthly the quantity, drying location, storage location, 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 during the reporting period, then an estimated amount and location of disposal shall be reported in the monthly report and the hauler identified.

The storage of any pomace shall be described. The description shall include the material stored, approximate amount stored, location of storage, and measures implemented to prevent leachate generation or control and dispose of any leachate that is generated.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent monitoring), 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 professional engineer or geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Monthly reports shall be submitted to the Regional Board by the **1st day of the second month** following the end of the reporting period (i.e. the January monthly report is due by 1 March). The monthly reports shall include the following:

1. Results of effluent, land application area, water softener brine and solids monitoring;

2. A comparison of monitoring data to the discharge specifications and effluent limitations, disclosure of any violations of the WDRs, and an explanation of any violation of those requirements. Data shall be presented in tabular format. The annual average concentration for FDS in treated wastewater shall be calculated. The calculations shall include the following:

   i. On a month to month basis, beginning each year in January, the simple arithmetic average value shall be calculated. (The sum of all the concentration data shall be divided by the number of months data was collected). If for any reason, more than one data point is available for any month, that data shall be averaged before use in the running average calculation. No data shall be excluded from the calculation without a written explanation from the analytical laboratory.

3. For the months of March, June, September, and December, the monthly reports shall include the results of the quarterly monitoring of effluent (standard minerals analysis).

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 cumulative volume of wastewater generated during the year to date;

7. The total pounds of TDS and FDS (year to date) that have been applied to the land application areas, as calculated from the sum of monthly loadings; and

8. The total pounds of nitrogen (year to date, from all sources including fertilizer) applied to the land application area as calculated from the sum of monthly loadings.

9. A summary of the quantity of solid waste (stems, pomace, crops removed, etc.) generated and disposed of off-site.

C. Annual Report

Annual Report shall be prepared as the December monthly monitoring report. 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. An antidegradation evaluation that confirms the Discharger's assertions of no degradation of the environment. The annual report shall contain at a minimum the following: identify winery constituents of concern and evaluate the effectiveness of the treatment process and BPTC measures currently in place to reduce the constituents of concern; include actual loading rates for TDS and nitrogen applied to the land application areas confirming compliance with the Order; discuss cropping activities (to include but not limited to nutrient uptake capacity, consumptive use of water and irrigation requirements, evapotranspiration rates, and appropriate protocol for the application of any supplemental fertilizer); include a nitrogen balance to demonstrate that the amount of land application areas is protective of groundwater quality, ensures adequate nutrient loading, and prevents nitrogen concentrations from exceeding background groundwater quality; describe irrigation protocols and demonstrate control of

the land applied wastewater such that it does not pool or course off the Discharger's property; and include the monthly application concentration values of the blended wastewater and supplemental irrigation water prior to irrigation. This report shall verify, in the absence of a groundwater monitoring network, the Discharger's initial antidegradation assertions that irrigation with treated wastewater to the land application areas is protective of groundwater quality.

2. The contents of a regular December monthly monitoring report.

3. The contents of the regular quarterly monitoring of effluent (standard minerals analysis) for the last quarter of the year.

4. Annual wine production quantities for the year.

5. Tabular and graphical summaries of all data collected during the year.

6. Tabular and graphical summaries of historical monthly total loading rates for wastewater generation, process water used for irrigation (hydraulic loading in gallons/acre and inches), total nitrogen, TDS, and FDS.

7. A comprehensive evaluation of the effectiveness of the past year's wastewater application operation in terms of odor control and groundwater protection beneath the land application areas, including consideration of application management practices (e.g.: waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices).

8. A summary of the vegetative material (crops) removed from the land application areas. The summary shall include harvest dates, crop type, disposal area, and estimated ash content of the harvest.

9. A summary of the quantity of solid waste (lees, stems, pomace, etc.) generated and disposed of off-site.

10. Updated background groundwater values based on data collected for the *Site Specific Conditions Report.* A comparison of the background groundwater concentration and annual average effluent FDS concentrations as described in the Monthly Monitoring Reports Item A.2.i.

11. A description of source control methods that have been implemented in the calendar year.

12. Estimated flows for the next calendar year.

13. 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.

14. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring

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: Original signed by Ken Landau for
PAMELA C. CREEDON, Executive Officer

23 September 2010
(Date)