

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

ORDER NO. R5-2004-0035

WASTE DISCHARGE REQUIREMENTS
FOR
RODNEY AND GAYLA SCHATZ
MOKELUMNE RIM VINEYARDS
SAN JOAQUIN COUNTY

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

1. Rodney and Gayla Schatz dba Mokelumne Rim Vineyards (hereafter Discharger) submitted a Report of Waste Discharge (RWD) dated February 2002 for the treatment and disposal of winery waste.
2. The Discharger's winery and tasting facility is at 6200 E. Peltier Road, Acampo (Assessors Parcel No. 058-020-05) in Section 16, T3N, R6E, MDB&M. The location of the winery is presented on Attachment A, which is attached hereto and made part of this Order by reference.

BACKGROUND

3. Activities at the winery facility include receiving, crushing, and pressing of grapes; fermentation; processing into finished wines; and distribution. Presently, no bottling is occurring at the facility. When bottling will be performed at the site, a contract service will be employed to minimize the amount of wastewater generated from bottling activities.
4. The winery is being constructed in phases with an anticipated 3,000 tons of grapes to be crushed at ultimate build out. The winery crushed 1,000 tons of grapes in 2002, and 2,000 tons of grapes in 2003. Presently the facility is only producing bulk wine and is not bottling; at the anticipated full crush activity of 3,000 tons per year, if all the wine were bottled, the amount would equal nearly 208,000 cases.
5. 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 at this winery are as follows:

<u>Additives/Chemical</u>	<u>Quantity</u>	<u>Units</u>
Guardquat 126	4	Gallons per year
404-X Chlorinated Cleaner	30	Pounds per year
Citric Acid	200	Pounds per year
Sulfur Dioxide Liquefied Gas	25	Pounds per year
Sodium Hydroxide	5	Pounds per year
Hydrochloric Acid	1	Liters per year
Sulfuric Acid	6	Liters per year
Diatomaceous Earth Filter Powder	300	Pounds per year
Trisodium Phosphate	Unknown	Pounds per year

6. Because process wastewater monitoring data for the Discharger's winery is not yet available, typical winery wastewater data are presented below. Constituent concentrations are the highest during the crush season, and are typically in the following ranges:

<u>Compound</u>	<u>Units</u>	<u>Concentration Range</u> ¹
pH	pH units	2.5 – 9.5
Dissolved Oxygen	mg/L	0.5 – 8.5
Biochemical Oxygen Demand (BOD ₅) ²	mg/L	500 – 12,000
Chemical Oxygen Demand (COD)	mg/L	800 – 15,000
Grease	mg/L	5 – 30
Settleable Solids	mg/L	25 – 100
Nonfilterable Residue	mg/L	40 – 800
Volatile Suspended Solids	mg/L	150 – 700
Total Dissolved Solids (TDS)	mg/L	80 – 2,900
Nitrogen	mg/L	1 – 40
Nitrate (as Nitrate)	mg/L	0.5 – 4.8
Phosphorous	mg/L	1 – 10
Sodium	mg/L	35 – 200
Alkalinity (CaCO ₃)	mg/L	40 – 730
Chloride	mg/L	3 – 250
Sulfate	mg/L	10 - 75

¹ Typical chemical analyses of winery wastewater from Summit Engineering, Process Wastewater Management System, Design Criteria and Calculations, 9 July 2001.

² Five-day, 20° Celsius Biochemical Oxygen Demand

WASTEWATER TREATMENT SYSTEM

7. Wastewater generated from winery processing activities (process/equipment cleaning, washdown operations, and bottling) is collected in floor drains and then is screened and is currently either discharged directly to the land application area or treated in an aerated storage pond. A schematic of the wastewater system is provided in Attachment B, which is attached hereto and made part of this Order by reference. This Order prohibits further direct land discharge of partially treated wastewater.
8. The wastewater storage pond as described in the RWD was designed to provide approximately 347,000 gallons of storage. The Discharger did not construct the pond as designed. Based on an inspection, staff estimates that approximately 226,000 gallons of storage is available. Because the constructed pond is smaller than the designed pond, the facility may have inadequate storage capacity. The RWD did not provide any information on the permeability of the soil underlying the pond.
9. The RWD contains a water balance for the wastewater treatment, storage, and land application system. The water balance was based on an annual wastewater discharge of 1,650,000 gallons and

100-year annual return rainfall amounts. The water balance shows that the wastewater pond has sufficient capacity to accommodate allowable wastewater flow and design seasonal precipitation for a 100-year return period. However, the wastewater pond was not constructed consistent with the RWD design, and therefore the Discharger must provide an updated water balance.

10. The RWD describes an aerated wastewater storage pond; however, staff's inspection found that the pond is not equipped with aerators. Because the Discharger must control nuisance odors, addition of aerators in the pond may be required. In addition, treatment in the wastewater pond may not be adequate to meet the effluent limitations contained in this Order without the use of aerators.

LAND APPLICATION SYSTEM

11. Currently, wastewater is applied to land either from the pond or directly from the winery after screening. This arrangement allows poorly treated wastewater to be applied to land. This Order requires the Discharger to treat all industrial wastewater in the wastewater pond prior to land application.
12. The land application area consists of 35 acres of vineyard. Crops will be harvested from the land application area.
13. Wastewater will be applied by flood irrigation. Because the crop irrigation needs exceed the amount of wastewater that will be applied, the land application area will also receive supplemental irrigation water. The ratio of supplemental irrigation water to process wastewater will vary through the year from approximately 7:1 to 75:1. The wastewater and supplemental irrigation systems are completely separate, so cross contamination between systems is unlikely.
14. In order to prevent the potential off-site discharge of stormwater mixed with wastewater, this Order prohibits irrigation with wastewater 24 hours before, during, or 24 hours after a rain event, or when soils are saturated.
15. Using the most restrictive infiltration value published for the soil type (2 in/hr), the land application area (35 acres), and a safety factor recommended by the U.S. Environmental Protection Agency for land treatment systems, the estimated peak flow reported in the RWD (30,000 gal/day) is less than 2 percent of the available hydraulic capacity of the land application area.
16. The RWD assumed continued discharge of untreated wastewater would be allowed. Because that process is prohibited by this Order, staff developed the following loading rates for maximum production (3,000 tons crushed per year).

<u>Compound</u>	<u>Concentration (mg/L)¹</u>	<u>Loading Rate (lbs/acre/year)²</u>
BOD	0-380	45
Total Nitrogen	40	16
TDS	2,000	805

¹ BOD concentration from page 6 of 7, Section 3, February 2002 RWD, Summit Engineering.

² Loading rate assumes 1.69 million gallons of wastewater, treated in wastewater pond with pond performance as described in reference above.

17. The RWD states wastewater nitrogen loading of the land application area will be approximately 16 lbs/ac•year. The loading rate derived from wastewater application is well below the crop uptake rate of 125 lbs/ac•year. The BOD annual loading rate is acceptable but individual applications must be managed to prevent overloading the land area that can result in nuisance odors and groundwater degradation. The total dissolved solid loading rate is a concern; this Order requires preparation of a *Salinity Reduction Study* to evaluate means to reduce the dissolved solids loading of the land application area. It is also appropriate to require the Discharger to install groundwater monitoring wells, and if impacts are identified, to take steps to prevent groundwater degradation.

SOLID WASTE

18. Solid/semi-solid wastes such as pomace (skins, seeds, pulp, stems, etc. resulting from the grape crush) and filter cake media (bentonite and diatomaceous earth) are also generated by the processing operations. Such solid/semi-solid wastes are segregated from the process wastewater stream by cleanup processes (sweeping materials from floor drains) or by screens in the floor drains. Solids are placed in the land application area as fertilizer/soil amendment.

GROUNDWATER CONDITIONS

19. No groundwater monitoring wells exist on the property. An active agricultural well does exist on the property but no information on the well depth or screen interval is available. The well location is presented on Attachment C. Water quality in the well was sampled on 2 April 2001. The water quality results were:

<u>Constituent</u>	<u>Units</u>	<u>Concentration</u>
Nitrate (as N)	mg/L	3.9
Total Kjeldahl Nitrogen	mg/L	ND (5.0)
Total Dissolved Solids	mg/L	352
PH	Std. Unit	7.2

ND denotes Not Detected, detection limit shown in parentheses.

20. Groundwater exists approximately 65 feet below the ground surface, according to the San Joaquin County Flood Control and Water Conservation District 1999 Groundwater Elevation Map, which was included in the RWD. A spring 1999 groundwater elevation map prepared by the same agency indicates that groundwater flows to the north/northeast. Groundwater flow direction may be influenced by groundwater extraction or replenishment activities in the surrounding area.

SITE SPECIFIC CONDITIONS

21. The site topography relatively is flat. Surficial soils consist of Tokay fine sandy loam or Acampo sandy loam. Both soil types possess moderately rapid permeability (2 to 6 inches per hour) based on the Soil Survey of San Joaquin County.

22. Average annual rainfall for the Lodi area is 17.43 in/year; the 100-year return annual total rainfall is 31.16 in/year; evapotranspiration rates for the Lodi area is 52.09 in/year.
23. The facility is within the Lower Mokelumne Hydrologic Area (No. 531.20), as depicted on interagency hydrologic maps prepared by the Department of Water Resources in August 1986.
24. The site is located outside the 100-year flood zone.
25. Domestic wastewater is disposed of separately from the process winery wastewater in an on-site sewage disposal system. This system is regulated by the San Joaquin County Environmental Health Department.

BASIN PLAN, BENEFICIAL USES, AND REGULATORY CONSIDERATIONS

26. 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 §13263(a) of the California Water Code (CWC), waste discharge requirements must implement the Basin Plan.
27. Surface water drainage in the area is to the Mokelumne River, downstream of Camanche Reservoir.
28. The beneficial uses of the Mokelumne River from Camanche Reservoir to the Delta are agricultural supply; water contact recreation; noncontact water recreation; warm freshwater habitat, cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.
29. The beneficial uses of underlying groundwater are municipal and domestic water supply, agricultural supply, industrial service supply, and industrial process supply.
30. State Water Resources Control Board (State Board) Resolution No. 68-16 (the Antidegradation Policy) requires that the 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 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 waste discharge requirements, which will result in the best practicable treatment or control of the discharge.
31. The Discharger has not submitted any information showing that it should be allowed to degrade the groundwater as described in State Board Resolution No. 68-16, and therefore no degradation is allowed. This discharge of waste should not degrade surface water or groundwater quality. The waste will be applied to land at agronomic rates. This Order establishes effluent limitations that are protective of the beneficial uses of the underlying groundwater, requires a salinity source reduction study, and requires the sampling of groundwater monitoring wells to assure that the discharge of waste is not impacting the underlying groundwater. Based on the result of the

scheduled tasks, this Order may be reopened to reconsider effluent limitations and other requirements to comply with Resolution 68-16.

32. Application of the winery wastewater to the land application area 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 often 50-percent of the TDS in winery wastewater is in the volatile form. These volatile dissolved solids are biologically treated in a pond or a well managed land application system and do not reach groundwater. Therefore, of the 352 pounds of TDS in the wastewater applied per acre in the land application area, a portion is expected to be in the inorganic fraction. Because plants can take up to 2,000 pounds of salt/acre-year, the Discharger maintains that the proposed loading rate should not degrade the underlying groundwater. However, success is highly dependent on wastewater management and the blending of irrigation water. Accordingly, groundwater monitoring is appropriate to detect whether management of the land application area ensures that groundwater degradation does not occur.
33. 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. R5-2004-0035” are necessary to assure compliance with these Waste Discharge Requirements (WDRs). The Discharger owns and operates the facility that generates the waste subject to this Order.

34. 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.
35. 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. While the wastewater treatment facility is exempt from 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 this Order.
36. 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 not yet obtained coverage under General Permit No. CAS000001, and is required to do so.

37. On 12 July 2000, in accordance with the California Environmental Quality Act (Title 14, CCR, section 15261 et seq.), the San Joaquin County Planning Commission approved a Negative Declaration for the R&G Shatz Farm winery. No mitigation measures related to water quality were included in the approval of the Negative Declaration. However, the Prohibitions, Effluent Limitations, and Groundwater Limitations of this Order should mitigate the discharge and protect water quality.
38. The discharge of wastewater 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.
39. 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.

PUBLIC NOTICE

40. 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.
41. 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.
42. 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, Rodney and Gayla Schatz dba Mokelumne Rim Vineyards, their 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 some methods 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 to surface waters or surface water drainage courses is prohibited.
2. Operation of a distillery at the facility is prohibited.
3. Bypass or overflow of untreated or partially treated waste is prohibited.
4. Discharge of waste classified as 'hazardous,' defined in Section 20164 of Title 27, CCR, or 'designated,' as defined in Section 13173 of the California Water Code, is prohibited.
5. The discharge of winery wastewater to the domestic wastewater system is prohibited.
6. The discharge of domestic waste to the process wastewater treatment system is prohibited.
7. Discharge of wastewater to other than the land application area shown on Attachment C is prohibited.

B. Discharge Specifications:

1. The wastewater discharge shall not exceed 2,000 gallons per day (gpd) as a monthly average, except during crush season (September through November) when the limit shall be 5,000 gpd as a monthly average. The annual volume of wastewater discharged shall not exceed 1,650,000 gallons.
2. Neither the treatment nor the discharge shall cause a condition of nuisance or pollution as defined by the CWC, §13050.
3. The discharge shall not cause the degradation of any water supply.
4. 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.
5. Objectionable odors originating at this facility shall not be perceivable beyond the limits of the property owned by the Discharger.
6. As a means of discerning compliance with Discharge Specification No. 5, the dissolved oxygen content in the upper zone (one foot) of the wastewater storage pond shall not be less than 1.0 mg/L.
7. The Discharger shall operate all systems and equipment to maximize treatment of wastewater and optimize the quality of the discharge.
8. As described in Discharge Prohibition A.3, no wastewater shall be discharged with partial treatment. All industrial wastewater discharged at the facility must be treated in the wastewater pond prior to discharge to the cropland.
9. The wastewater pond shall not have a pH of less than 6.5 or greater than 8.5.

10. The pond shall be managed to prevent the breeding of mosquitoes. In particular,
 - a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the waste surface.
 - b. Weeds 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.
11. 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.
12. The wastewater treatment and land application system shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods with a 100-year return frequency.
13. The freeboard in the pond shall never be less than two feet, as measured vertically from the water surface to the lowest point of overflow.
14. The wastewater treatment, storage, 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.
15. On or about **15 October** each year, available pond storage capacity shall at least equal the volume necessary to comply with Discharge Specifications No. 13 and No. 14.

C. Effluent Limitations:

1. Wastewater discharged from the storage pond to the Land Application Area shall not exceed the following monthly average effluent limits, or such concentrations as the Discharger determines necessary to ensure compliance with the Groundwater Limitations:

<u>Constituent</u>	<u>Units</u>	<u>Crush Season Concentration</u>	<u>Non-Crush Season Concentration</u>
BOD	mg/L	400	200
Total Dissolved Solids	mg/L	2,000	2,000
Total Nitrogen	mg/L	40	40

2. Wastewater discharged to the land application area shall not have a pH of less than 6.5 or greater than 8.4.

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. Wastewater shall not be applied to the land application area 24 hours before a predicted precipitation event, during precipitation, or within 24 hours after any precipitation event, nor shall it be applied when ground is saturated.
3. Crops shall be grown on the land application areas. Crops shall be selected based on nutrient uptake capacity, tolerance to high soil moisture conditions, and consumptive use of water and irrigation requirements. Cropping activities shall be sufficient to take up all the nitrogen applied.
4. Discharge of process wastewater, including runoff, spray or droplets from the irrigation system, shall not occur outside the boundaries of the land application area. The RWD described wastewater application using flood irrigation, however, sprinkler or drip application is acceptable if the discharge complies with all requirements of this Order.
5. 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 (i.e., deep percolation).
6. 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.
7. Irrigation systems shall be labeled as containing reclaimed wastewater. If wastewater and irrigation water utilize the same pipeline, then backflow prevention devices shall be installed to protect the potable water supply.
8. Application of wastewater to the land application area using sprinkler irrigation is prohibited when wind velocities exceed 30 mph.
9. 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 land application areas to alert the public of the use of wastewater.
10. The land application areas shall be managed to prevent breeding of mosquitoes. In particular:
 - a. All 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, and;
 - c. Low pressure pipelines, unpressurized pipelines, and ditches accessible to mosquitoes shall not be used to store wastewater.
11. A 50-foot buffer zone shall be maintained between any watercourse and the wetted area produced during irrigation used for process wastewater application.

12. A 50-foot buffer zone shall be maintained between any domestic or irrigation well and the wetted area produced during process wastewater application.
13. Discharges to land application areas shall be managed to minimize both erosion and runoff from the irrigated area.
14. 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.
15. Application of wastewater to the land application areas via flood irrigation shall only occur on furrows graded so as to achieve uniform distribution, minimize ponding and provide for tailwater control. Furrow runs shall be no longer and slopes shall be no greater than what permits reasonably uniform infiltration and maximum practical irrigation efficiency. The minimum furrow slope shall not be less than 0.2 percent.
16. Wastewater application areas shall be allowed to dry for at least 72 hours from the end of wastewater application.
17. There shall be no standing water in the land application areas 24 hours after wastewater is applied, except during periods of heavy rains sustained over two or more consecutive days.

E. Solids/Sludge Disposal Requirements:

1. Collected screenings, sludge, 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 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.
3. 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.
4. Sludge and other solids shall be removed from septic tanks as needed to ensure optimal operation and adequate hydraulic capacity. A duly authorized carrier shall haul sludge, septage, and domestic wastewater.
5. 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:

The discharge, in combination with other sources, shall not cause underlying groundwater to contain waste constituents in concentrations greater than background water quality.

G. Provisions:

1. All of the following reports shall be submitted pursuant to §13267 of the CWC.
 - a. By **19 April 2004**, the Discharger shall either apply for coverage or submit a Notice of Non Applicability for Order No. 97-03-DWQ, Discharges of Storm Water Associated With Industrial Activities.
 - b. By **17 June 2004**, the Discharger shall submit a *Water Balance and Treatment Report* that includes (1) an evaluation of the wastewater pond size and (2) an evaluation of the need to install aerators in the pond. If the pond does not contain adequate storage capacity, the report shall include a design and proposed schedule for increasing the storage capacity. The pond must be sized to contain wastewater and stormwater using 100-year return annual total rainfall amounts distributed monthly in accordance with historical trends. The report shall clearly show whether aerators are necessary to meet the Effluent Limits, dissolved oxygen limit, and prevent nuisance odors. If an aerator(s) is necessary, the aerator(s) shall be installed no later than **1 September 2004**. The report shall be prepared under the direction of an engineer or geologist registered to practice in California pursuant to California Business and Professions Code §6735, 7835, and 7835.1.
 - c. By **17 June 2004**, the Discharger shall submit a *Groundwater Well Installation Workplan* and a *Groundwater Sampling and Analysis Workplan* prepared in accordance with, and including the items listed in, Sections 1.0 and 2.0 of Attachment D: *Monitoring Well Installation Workplan and Monitoring Well Installation Report of Results*. The workplan shall propose the installation of groundwater monitoring wells to monitor the groundwater upgradient and downgradient of the pond and land application area. All wells shall be designed to yield samples representative of the uppermost portion of the first aquifer. The workplan shall also specify proposed sampling techniques designed to ensure that representative samples of sufficient volume are obtained and analyzed. The workplan shall be prepared by or under the direction of an engineer or geologist registered to practice in California pursuant to California Business and Professions Code §6735, 7835, and 7835.1.
 - d. By **13 July 2004**, the Discharger shall submit a *Land Application Area Improvement Report* that shows that a containment berm (or equivalent) exists surrounding the land application area.
 - e. By **13 July 2004**, the Discharger shall submit and implement an *Operation and Management Plan (O&M Plan)* that addresses operation of the wastewater treatment and land application 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) define the land application area, and procedures used for the application of wastewater to these areas to prevent excessive BOD, nitrogen, and dissolved solids application loading rates, (d) the locations of flow and effluent sampling points, (e) quality control sampling procedures necessary to obtain representative samples, (f) maintenance of the land application areas, and (g) the locations of the solid waste 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.

- f. By **15 September 2004**, the Discharger shall submit (a) a *Groundwater Well Installation Report of Results* that contains the information in Section 3 of Attachment D and (b) if the report required in Provision No. G.1.f states that an aerator(s) is necessary, then an *Aerator Installation Report of Results*. The report shall be prepared by or under the direction of an engineer or geologist registered to practice in California pursuant to California Business and Professions Code §6735, 7835, and 7835.1.
- g. By **5 April 2005**, the Discharger shall submit and implement a workplan for a *Salinity Reduction Study*. The study shall look at all aspects of winery waste and shall investigate methods to reduce the concentration of dissolved solids in the wastewater. At a minimum, the salinity reduction report shall include a discussion of the winemaking chemicals, cleaning and sterilization procedures, vineyard practices, and salinity monitoring.
- h. By **15 December 2005**, the Discharger shall submit a *Background Groundwater Quality Study Report*. For each groundwater monitoring parameter/constituent identified in the MRP, the report shall present a summary of monitoring data, calculation of the concentration in background monitoring wells, and a comparison of background groundwater quality to that in wells used to monitor the pond and land application areas. Determination of background quality shall be made using the methods described in Title 27, Section 20415(e)(10), or equivalent, and shall be based on data from at least four consecutive quarterly (or more frequent) groundwater monitoring events. For each monitoring parameter/constituent, the report shall compare measured concentrations for compliance monitoring wells with the calculated background concentration. The report shall be prepared by or under the direction of an engineer or geologist registered to practice in California pursuant to California Business and Professions Code §6735, 7835, and 7835.1.

If the *Background Groundwater Quality Study Report* shows that the wastewater discharge has impacted, or is likely to impact groundwater quality, then upon request by the Executive Officer the Discharger shall submit *Groundwater Mitigation Plan* which shall evaluate contaminant control alternatives, describe a preferred alternative, and proposed a timeline to meet the Groundwater Limitations of this Order. The selected contaminant control alternative must comply with State Water Resources Control Board Resolution No. 68-16 and be consistent with the most recent Basin Plan.

2. The Discharger shall comply with the Monitoring and Reporting Program No. R5-2004-0035, which is part of this Order, and any revisions thereto as ordered by the Executive Officer.
3. 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)."

4. In the event of any change in control or ownership of land or waste discharge facilities described herein, the Discharger shall 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.
5. 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.
6. 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."
7. If the Discharger can demonstrate to the satisfaction of the Executive Officer that higher nitrogen loadings than those specified in this Order will not cause or contribute to cause waste constituents to leach into and degrade underlying groundwater, or cause any other violation of the terms and conditions of this Order, then this Order may be reopened for consideration of revision of nitrogen loading limits. The demonstration shall include the submittal of a technical report that describes, at a minimum, the results of a field demonstration project conducted on similar soil types as those in the land application area(s) and using similar wastewater as that described in the Findings
8. If the Discharger can demonstrate to the satisfaction of the Executive Officer that higher BOD loadings than those specified in this Order will not cause or contribute to cause waste constituents to leach into and degrade underlying groundwater, or cause any other violation of the terms and conditions of this Order, then this Order may be reopened for consideration of revision of BOD loading limits. The demonstration shall include the submittal of a technical report that describes, at a minimum, the results of a field demonstration project conducted on similar soil types as those in the land application area(s) and using similar wastewater as that described in the Findings.
9. The Discharger shall report promptly to the Board any material change or proposed change in the character, location, or volume of the discharge.
10. The Discharger must comply with all conditions of this Order, including timely submittal of technical and monitoring reports as directed by this Order and by the Executive Officer pursuant to Section 13267 of the California Water Code. 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.
11. 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.

12. The Regional Board will review this Order periodically and will revise requirements when necessary.

I, THOMAS R. PINKOS, 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 19 March 2004.

THOMAS R. PINKOS, Executive Officer

TRO: 3/19/04

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2004-0035

FOR
RODNEY AND GAYLA SCHATZ
MOKELUMNE RIM VINEYARDS
SAN JOAQUIN COUNTY

This monitoring and reporting program (MRP) incorporates requirements for monitoring of the process wastewater, wastewater storage pond, the land application area, solid waste, 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 grab sample shall be recorded on the sample chain of custody form. Process 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.

INFLUENT MONITORING

Process wastewater samples shall be collected prior to entering the wastewater storage pond. Influent monitoring for the process wastewater system 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>
Flow	gallons	Continuous	Daily ¹	Monthly
BOD ₅ ²	mg/L	Grab	Monthly	Monthly

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

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

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 wastewater storage pond. 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 the 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
PH	pH Units	Grab	Weekly	Monthly
Odors	--	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.

EFFLUENT MONITORING

Process wastewater samples shall be collected downstream of the irrigation pump prior to land application or to mixing with supplemental irrigation water. 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>
PH	pH units	Grab	Weekly	Monthly
BOD ₅ ¹	mg/L	Grab	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab	Monthly	Monthly
Volatile Dissolved Solids	mg/L	Grab	Monthly	Monthly
Sulfate	mg/L	Grab	Monthly	Monthly

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

LAND APPLICATION AREA MONITORING

The Discharger shall monitor process wastewater discharged for irrigation to the land application area. Monitoring shall be conducted **daily during operation** 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:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Wastewater Flow ¹	Gallons	Continuous ¹	Daily	Monthly
Supplemental Irrigation Flow	Gallons	Continuous ¹	Daily	Monthly
Local Rainfall	Inches	Measurement	Daily	Monthly
Acreage Applied ²	Acres	Calculated	Daily	Monthly
Application Rate	gal/acre•day	Calculated	Daily	Monthly
BOD Loading Rate	lbs/acre•month	Calculated	Daily	Monthly
Total Nitrogen Loading Rate ³	lbs/acre•month ⁴	Calculated	Monthly	Monthly
TDS Loading Rate	lbs/acre•month ⁴	Calculated	Monthly	Monthly

¹ Continuous monitoring requires daily meter reading or automated data collection and shall define the volume of wastewater discharged to the land application area from the wastewater pond.

- ² Land Application 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.
- ³ Total nitrogen applied from all sources, including fertilizers and supplemental irrigation water if used.
- ⁴ 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.

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 an estimated amount and location of disposal shall be reported in the monthly report and the hauler identified.

GROUNDWATER MONITORING

Groundwater monitoring shall commence with the fourth quarter 2004. Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Board for approval. Once installed, all new wells shall be added to the monitoring network and shall be sampled and analyzed according to the schedule below. All samples shall be collected using approved EPA methods. Water table elevations shall be calculated to determine groundwater gradient and direction of flow.

Prior to sampling, the groundwater elevations shall be measured and the wells shall be purged at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Depth to groundwater shall be measured to the nearest 0.01 feet. Groundwater 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 Frequency⁴</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	pH units	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
Standard Minerals ^{2,3}	mg/L	Grab	Annual	Annual

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

- ² Standard Minerals shall include at least the following compounds: boron, calcium, iron, magnesium, potassium, sodium, chloride, sulfate, total alkalinity (including alkalinity series), and hardness
- ³ Standard Minerals shall be analyzed in the fourth quarter of the year.
- ⁴ Beginning with the fourth quarter, 2004.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., influent monitoring, groundwater monitoring well, 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 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). Monthly reports for the months of March, June, September, and December may be submitted as part of the Quarterly Monitoring Report, if desired. The monthly reports shall include the following:

1. Results of influent, pond, effluent, land application area, and solids monitoring;
2. A comparison of monitoring data to the discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format;
3. If requested by staff, copies of laboratory analytical report(s);
4. A calibration log verifying calibration of all hand held monitoring instruments and devices used to comply with the prescribed monitoring program;
5. The cumulative volume of wastewater generated during the year to date;
6. The total pounds of total dissolved solids (year to date) that have been applied to the land application area, as calculated from the sum of monthly loadings; and
7. 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.

B. Quarterly Report

Beginning with the fourth quarter 2004, 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 Regional Board by the **1st day of**

the second month after the quarter (i.e. the January-March quarter is due by May 1st) each year. The Quarterly Report shall include the following:

1. Results of 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, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, 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 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

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. The contents of a regular December monthly monitoring report;
2. The contents of the regular quarterly monitoring report for the last quarter of the year;
3. If requested by staff, tabular and graphical summaries of all data collected during the year;
4. Tabular and graphical summaries of historical monthly total loading rates for wastewater generation, process water used for irrigation (hydraulic loading in gallons and inches), total nitrogen, and total dissolved solids.

5. 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), and groundwater monitoring data;
6. A summary of the quantity of solid waste (lees, stems, pomace, etc) generated and disposed of both on and off the site;
7. An evaluation of the groundwater quality beneath the land application area;
8. Estimated flows for the next calendar year;
9. 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
10. 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: _____
THOMAS R. PINKOS, Executive Officer

19 March 2004

(Date)

TRO: 3/19/04

INFORMATION SHEET

ORDER NO. R5-2004-0035
RODNEY AND GAYLA SCHATZ
MOKELUMNE RIM VINEYARDS
SAN JOAQUIN COUNTY

Rodney and Gayla Schatz operate Mokelumne Rim Vineyards at 6200 E. Peltier Road, Acampo. The Discharger developed the winery in 2000. At full build-out, the winery will process approximately 3,000 tons of grapes annually to produce approximately 495,000 gallons of wine.

Wastewater is generated in tank cleaning, grape crushing, and equipment/floor cleaning. A mobile contract wine bottling service is used to bottle the wine; therefore, bottling activities will not generate a high strength waste stream. Domestic wastewater is discharged to a septic tank and leachfield system. The domestic system is regulated by the San Joaquin County Environmental Health Department.

Process wastewater treatment consists of collection of wastewater in floor drains with screens, biological treatment in a pond, and land application. Historically, some wastewater was screened and applied directly to 35 acres of vineyard. This Order prohibits discharge of partially treated wastewater. All wastewater must be treated in the wastewater pond. The wastewater does not meet the crop demand for irrigation; therefore supplemental irrigation water will also be applied to the land area. The wastewater pond is not equipped with aerators to maintain dissolved oxygen concentration at minimum concentrations. This Order requires that the Discharger evaluate the need to install aerators to maintain dissolved oxygen concentrations, prevent nuisance odors, and provide adequate treatment of the wastewater. Biological treatment in the pond is likely to reduce total nitrogen concentrations and volatile dissolved solids resulting in a lower concentration of TDS discharged to the land application area.

The water balance estimates the maximum daily process wastewater flow rate at 5,000 gallons per day (gpd) during the peak grape processing period, with estimated peak daily process flow rates during the off-season of approximately 2,000 gpd. The water balance also assumes that a maximum of 1,650,000 gallons of wastewater will be produced per year. The pond described in the RWD would provide 347,000 gallons of storage; however, the pond was not built as designed. Actual storage at the facility is estimated by staff to be approximately 226,000 gallons. Because the constructed pond is smaller than the designed pond, the facility may have inadequate storage capacity. This Order requires reevaluation of the pond and a design to correct a deficiency if one exists.

It is anticipated that the cropping activities in the land application area will utilize all the nitrogen applied in the wastewater. Dissolved solids in the wastewater are a concern based on the size of the land application area and cropping activities. This Order requires preparation of a Salinity Reduction Study to reduce the concentration of dissolved solids in the discharge. Groundwater monitoring is appropriate to ensure that groundwater quality degradation does not take place, as dissolved solids also exist in the supplemental irrigation water and any fertilizer applied to the vineyard.

These WDRs establish wastewater effluent concentration limits, and require submittal of an industrial stormwater application, water balance report, installation of groundwater monitoring wells, preparation of an operation and maintenance plan, preparation of a salinity reduction study, and regular monitoring of wastewater and groundwater quality.

Surface water drainage in the area is to the Mokelumne River.



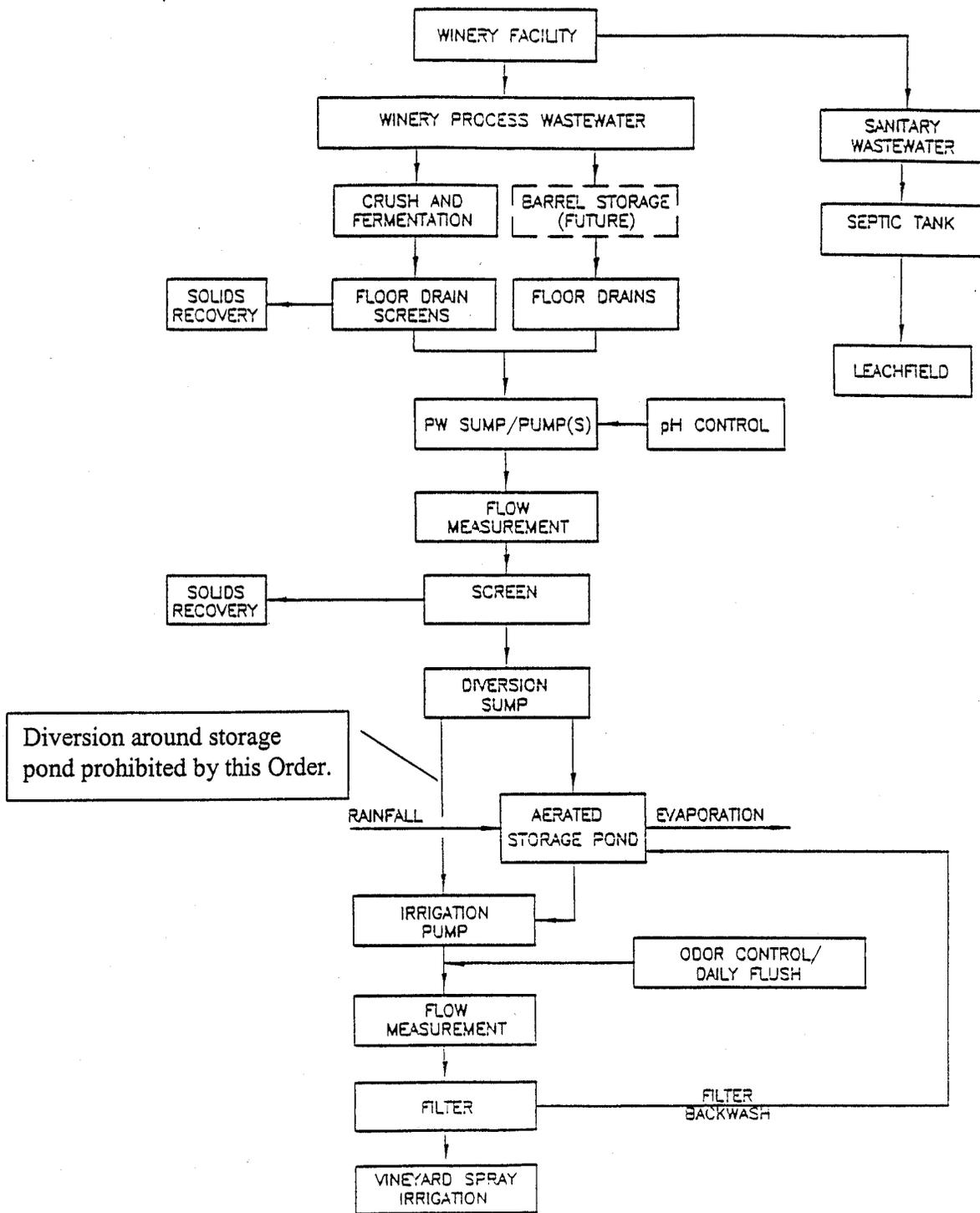
Drawing Reference:

USGS Topographic Map
Lodi North, California

SITE LOCATION MAP

MOKELUMNE RIM WINERY
6200 E. PELTIER ROAD
ACAMPO, SAN JOAQUIN COUNTY



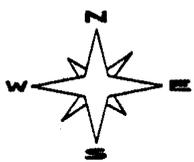
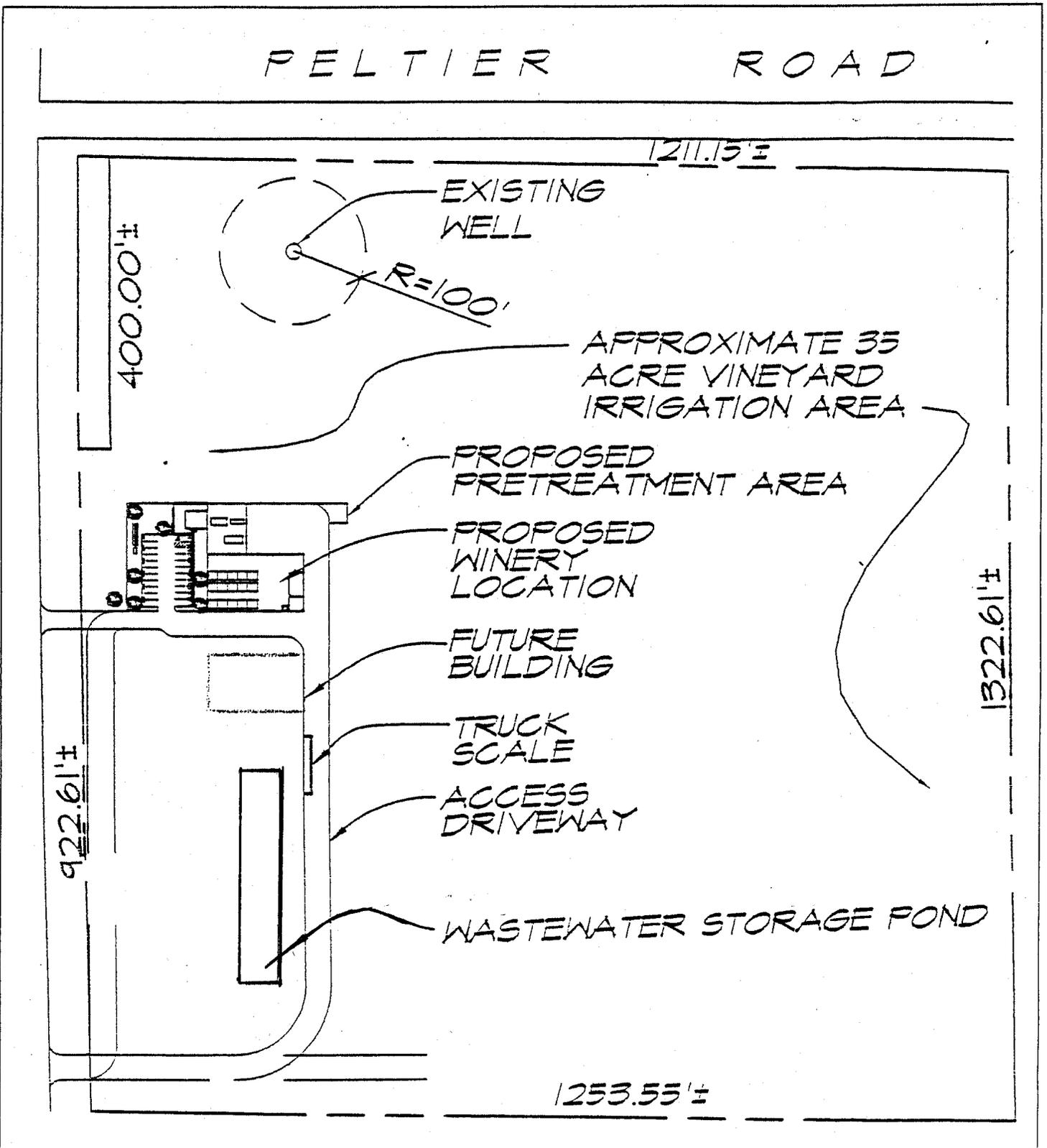


Drawing Reference:

Summit Engineering
 Report of Waste
 Discharge, Sheet 1 of 1
 February 2002

WASTEWATER TREATMENT SYSTEM SCHEMATIC

MOKELUMNE RIM WINERY
 6200 E. PELTIER ROAD
 ACAMPO, SAN JOAQUIN COUNTY



SITE PLAN

MOKELUMNE RIM WINERY
6200 E. PELTIER ROAD
ACAMPO, SAN JOAQUIN COUNTY

Drawing Reference:

Summit Engineering
Report of Waste Discharge, Sheet 1 of 1
February 2002



California Regional Water Quality Control Board

Central Valley Region



Robert Schneider, Chair

Terry Tamminen
Secretary for
Environmental Protection

Arnold Schwarzenegger
Governor

Sacramento Main Office
Internet Address: <http://www.swrcb.ca.gov/~rwqcb5>
11020 Sun Center Drive, #200, Rancho Cordova, CA 95670-6114
Phone (916) 464-3291 • FAX (916) 464-4780

ATTACHMENT D

ORDER NO. R5-2004-0035

ITEMS TO BE INCLUDED IN A

MONITORING WELL INSTALLATION WORKPLAN AND A

MONITORING WELL INSTALLATION REPORT OF RESULTS

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing the minimum listed information. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be signed by a registered geologist, certified engineering geologist, or civil engineer registered or certified by the State of California.

SECTION 1 - Monitoring Well Installation Workplan

A. General Information:

- Purpose of well installation project
- Copies of County Well Construction Permits (to be submitted after workplan review)
- Monitoring well locations and rationale
- Survey details
- Equipment decontamination procedures
- Health and safety plan
- Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Drilling Details:

- Describe drilling technique
- Sampling intervals, and logging methods
- Cuttings storage and disposal

C. Monitoring Well Design:

- Casing diameter and centralizer spacing (if needed)
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of proposed well construction details
- Type of well cap, bottom cap either screw on or secured with stainless steel screws
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

California Environmental Protection Agency



Order No. R5-2004-0035

Monitoring Well Installation Workplan

Monitoring Well Installation Report

D. Well Development:

Require a minimum of 48 hours prior to development activities

Method of development to be used

Method of determining when development is complete

Parameters to be monitored during development

Method of development water storage and disposal

E. Well Survey:

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

Describe what well features will be surveyed (i.e. top of casing, horizontal and vertical coordinates, etc.)

Vertical accuracy shall be to at least 0.01 foot

F. Soil Sampling (if applicable):

Analyses to be run and methods

Sample containers, collection method, and preservation method

Table describing sample volumes, sample containers, preservation agents, and hold times

Intervals at which soil samples are to be collected

Number of soil samples to be analyzed and rationale

Location of soil samples and rationale

QA/QC procedures

G. Proposed time schedule for work.

SECTION 2 – Groundwater Sampling and Analysis Plan

A. General Information:

Purpose of well sampling

Site Location

Monitoring well locations

Monitoring well construction details including elevation, well depth, casing material and size, and screen interval

Equipment decontamination procedures

Health and safety plan

Topographic map showing any existing wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.

B. Water Level Measurement:

Ground surface elevation at each monitoring well shall be within 0.01 foot.

Method and time of water level measurement shall be specified

Water level in well shall be allowed to equilibrate prior to measuring the depth to water

C. Well Sampling:

Well purging method and amount of purge water, purge water storage

Sample containers, collection method, and preservation method

Table describing sample volumes, sample containers, preservation agents, and hold times

Order No. R5-2004-0035

Monitoring Well Installation Workplan

Monitoring Well Installation Report

Identification of analytical laboratory

Chain of custody procedures

QA/QC procedures

SECTION 3 - Monitoring Well Installation Report of Results

A. Well Construction:

Number and depth of wells drilled

Date(s) wells drilled and completed

Description of drilling and construction

Locations relative to facility features such as buildings, storage ponds, waste piles, etc.

A well construction diagram for each well must be included in the report, and should contain the following details:

Drilling Contractor and driller name

Depth of open hole (same as total depth drilled if no caving occurs)

Method and materials of grouting excess borehole

Footage of hole collapsed

Length of slotted casing installed

Depth of bottom of casing

Depth to top of sand pack

Thickness of sand pack

Depth to top of bentonite seal

Thickness of bentonite seal

Thickness of concrete grout

Boring diameter

Casing diameter

Casing material

Size of perforations

Number of bags of sand

Well elevation at top of casing

Depth to ground water

Date of water level measurement

Monitoring well number

Date drilled

Location

B. Well Development:

Date(s) of development of each well

Method of development

Volume of water purged from well

How well development completion was determined

Method of effluent disposal

Field notes from well development should be included in report.

C. Well Survey:

ATTACHMENT D

Order No. R5-2004-0035

Monitoring Well Installation Workplan

Monitoring Well Installation Report

Identify the coordinate system or reference points

Survey the well casing with the cap removed (horizontal and vertical coordinates)

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

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

Present the well survey report data in a table

D. Soil Sampling (if applicable):

Date(s) of sampling

Sample collection, handling, and preservation method

Sample identification

Analytical methods used

Laboratory analytical data sheets