

INFORMATION SHEET

ORDER R5-2013-___
DELICATO VINEYARDS, INC.
DELICATO FAMILY VINEYARDS
WASTEWATER TREATMENT AND LAND BASED DISCHARGE
SAN JOAQUIN COUNTY

Facility Description

Delicato Vineyards, Inc., (“Discharger”) owns and operates a winery located at 12001 S. Highway 99, Manteca, in San Joaquin County. The facility comprises approximately 140 acres of vineyards, several administrative and wine production buildings, two unlined shallow wastewater ponds used as pumping sumps, and 23 acres of uncropped Land Application Areas (LAAs) for the discharge of winery wastewater. The property has been used for a variety of winery operations since 1924. Order 96-077, adopted by the Central Valley Water Board on 22 March 1996, prescribes waste discharge requirements for the facility. On 19 March 2010, a Report of Waste Discharge (RWD) was submitted to allow an increase of wastewater treatment and land application as a result of planned expansion of winery production activities at the facility. The Discharger submitted an amended RWD on 29 February 2012, and additional information in October and November 2012.

Winery activities include receiving and shipping grape juice and/or wine, crushing and bottling activities, and distribution in bulk containers. Wastewater is generated from grape processing activities, tank and floor cleaning, and equipment maintenance activities (e.g. water softening regeneration, cooling tower, and boiler blowdown). Stormwater intercepted by paved areas of the facility is collected in three wastewater sumps. Winery wastewater is typically high in total dissolved solids (TDS), fixed dissolved solids (FDS), and biochemical oxygen demand (BOD). Domestic wastewater at the facility is discharged to septic tanks and leachfield areas.

Current Wastewater Process and Land Application Areas

The winery operates year-round, with maximum wastewater discharge occurring during the crush season of September through November. The facility currently crushes approximately 140,000 tons of grapes annually. The Discharger is planning to increase winery production in three phases to ultimately crush up to 200,000 tons of grapes annually. Each phase of the expansion will correspond to an increase of approximately 20,000 tons of fruit per year.

The facility currently does not have a process wastewater treatment system. Wine processing generates wastewater that includes a mixture of organic material comprised of wine, grape skins, seeds, and stems. Additional wastewater components include additives and chemicals such as caustic soda, sulfurous acid, sodium hypochlorite, soda ash, and diatomaceous earth (DE), which are used during grape processing or as part of equipment sanitizing activities.

Wastewater is currently collected in a gravity drain system that directs water into three sumps within the winery facility. The sumps then drain to two unlined ponds before the water is discharged to 23 acres of uncropped LAAs. Because the majority of the facility is exposed to the elements, storm water that falls on processing areas of the winery is collected in the wastewater sump system and is then transferred to the two unlined ponds before it is discharged with wastewater to the LAAs.

Order 96-077 allows a maximum daily wastewater flow of up to 0.325 million gallons per day (MGD), which equates to a total annual flow of 119 million gallons per year (MGY). The Discharger currently discharges approximately 0.153 MGD (56 MGY) and proposes to further expand winery operations, increasing daily wastewater discharge to 0.197 MGD (72 MGY).

Wastewater Characterization and Salinity Reduction Efforts

Wastewater discharge activities have been monitored since 2001 in accordance with Revised MRP 96-077. Wastewater constituent concentrations are highly variable depending on the season and operations being conducted at the winery. These data indicate that the Discharger's salinity reduction efforts have reduced FDS concentrations from an average mean concentration of 687 milligrams per Liter (mg/L) in 2002 to 451 mg/L in 2011. In contrast, BOD concentrations have fluctuated, and increased from 3,766 mg/L in 2002 to 4,231 mg/L in 2011.

As part of a planned increase in winery production, the Discharger is improving wastewater handling and disposal operations. An expanded wastewater system will include the collection and filtration of process wastewater, residual solids, and storm water from winery operations into two 0.25 million gallon lined aeration ponds for flow equalization. Storm water collected from work areas within winery operations will also be routed to the two aeration ponds. Water collected in the aeration ponds will be discharged to 130 acres of LAAs consisting of 107 acres of vineyards and 23 acres which will be double-cropped. Supplemental irrigation water provided will be added as needed by the South San Joaquin Irrigation District.

Cleanup and Abatement Order R5-2004-0705 (CAO) was issued on 27 April 2004, in response to groundwater degradation at the facility. The 2004 CAO required that the Discharger identify and describe potential wastewater and salinity reduction, reuse, recycling, and treatment opportunities. The 2012 RWD stated that some salinity source reduction efforts had been implemented, but effluent monitoring concentrations since 2002 had not indicated a significant reduction in salinity. Therefore, this Order requires that the Discharger complete a post-source control salinity reduction evaluation to quantify the benefits achieved by salinity reduction measures previously implemented and provide a feasibility analysis of additional reduction measures.

The Discharger is implementing salinity source control and reduction measures as part of increasing winery production activities. This Order requires that the Discharger complete a post-source control salinity reduction evaluation to quantify the benefits achieved by salinity reduction efforts previously implemented and provide a feasibility analysis of additional reduction measures if salinity reduction has not been achieved.

Groundwater Quality

The Discharger currently maintains a network of six shallow-interval groundwater monitoring wells at and around the winery facility. The existing monitoring wells are located at strategic locations to provide water quality data from upgradient, cross-gradient, and downgradient of process areas and LAAs. Groundwater consistently flows to the north-northeast.

Average concentrations of wastewater constituents in the upgradient/background monitoring wells show that background groundwater quality is spatially variable and has likely been degraded by agricultural land use upgradient of the site. Average TDS concentrations in the upgradient groundwater monitoring wells range from 169 mg/L to 777 mg/l, as opposed to 1,663 mg/L in monitoring wells downgradient of the current LAAs. This indicates that previous and current discharge has caused an exceedance of water quality objectives and has resulted in groundwater pollution.

Based on the planned modifications to the wastewater management system and expanded LAAs, groundwater quality with respect to TDS is expected to improve over time, but it is not possible to predict the level of improvement that can be achieved or when it might occur. Therefore, this Order sets a groundwater limitation for TDS that prohibits any statistically significant increase in TDS and includes a time schedule in the Provisions that requires the Discharger to implement and evaluate the effectiveness of additional salinity reduction measures implemented to date. If the required improvements do not result in significantly improving groundwater quality, the Discharger will be required to implement additional treatment or control as necessary to bring the discharge into compliance with the Basin Plan water quality objective. The Discharger is also required to evaluate existing and potential future local agricultural uses of groundwater to support determination of a site-specific water quality objective that is protective of all beneficial uses.

Basin Plan, Beneficial Uses, and Regulatory Considerations

The facility is located within the San Joaquin Valley Floor Hydrologic Unit (535.10). Regional surface drainage is to the northwest towards Lone Tree Creek, which drains to French Camp Slough and eventually to the San Joaquin River. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition for The Sacramento River Basin and the San Joaquin River Basin* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. The receiving water for this discharge is groundwater. The applicable beneficial uses of groundwater are municipal and domestic supply; agricultural supply;

industrial process supply; hydropower generation; water contact recreation; non-contact recreation; warm freshwater habitat; cold freshwater habitat; migration of aquatic organisms; spawning, reproduction, and/or early development; and wildlife habitat.

Antidegradation

State Water Resources Control Board (State Board) Resolution 68-16 (the Antidegradation Policy) allows the degradation of groundwater quality if the Central Valley Water Board determines that:

- The degradation is consistent with the maximum benefit to the people of the State.
- The degradation will not unreasonably affect present and anticipated future beneficial uses.
- The degradation does not cause exceedance of one or more water quality objectives.
- The discharger employs best practicable treatment and control to minimize degradation.

The following treatment and control practices will be implemented at the site:

- Collected wastewater from three winery sumps will be treated using mechanical processes to reduce residual solids.
- Wastewater flows will be equalized in two lined ponds using aerators prior to discharge to LAAs. The ponds will be equipped with a leak detection system.
- Approximately 107 acres of vineyards and 23 acres of cropped land will be used as LAAs for the application of treated wastewater. Crops planted in the LAA will take up the waste constituents found in the wastewater. This Order limits land application of nitrogen to agronomic rates.
- Winery sludge and other solids will be removed from sumps, screens, wastewater ponds, etc. as needed to ensure optimal operation and adequate hydraulic capacity. Waste solids will be composted or hauled off-site for reuse or disposal to a permitted disposal facility.
- This Order requires periodic groundwater and wastewater effluent monitoring.

The WDRs allows the Discharger to blend wastewater with supplemental irrigation water to meet LAA crop demands. Effluent limitations were established to prevent further groundwater degradation. Because the Discharger has not quantified the salinity reduction achieved to date, the WDRs also requires the Discharger complete a post-source control salinity reduction evaluation to quantify the benefits achieved by salinity reduction measures previously implemented and provide a feasibility analysis of additional reduction measures.

Source control is an effective means to prevent groundwater degradation by FDS. The Discharger will implement the following treatment or control measures:

- Two HDPE-lined aeration ponds will be constructed;
- Seasonal crops planted in 23 acres of cropped LAAs and 103 acres of vineyard LAAs will take up some of the waste constituents in the treated wastewater; and
- Waste solids (i.e. pomace, diatomaceous earth and other residual or separable waste solids associated with the winemaking process) will be separated and hauled off-site for recycling or disposal.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Overloading the land application areas is preventable. Based on wastewater quality, the soil is expected to provide adequate buffering of acidic or basic wastewater.

Flow and Effluent Limitations

Effectively immediately, discharge from winery sumps #1, #2, and #4 to the existing 23 acres of LAAs shall not exceed 0.27 million gallons per calendar month. In addition, the wastewater discharge shall not exceed an annual total of 56 million gallons of wastewater and/or storm water mixtures per calendar year. Wastewater discharge limits for the LAAs include a daily maximum loading rate BOD limit of 285 lb/ac/yr, an annual flow-weighted FDS concentration average of 750 mg/L, and annual average of 500 lbs/ac/year of total nitrogen.

The allowable annual flow limit can be increased to 72 million gallons upon the construction of two lined aeration ponds and preparation of the modified 130 acres of LAAs, and approval by the Executive Officer. Effective 1 September 2013, wastewater discharge limits for the LAAs will include a daily maximum loading rate BOD limit of 285 lb/ac/yr and an average annual flow-weighted FDS concentration average of 620 mg/L. Supplemental irrigation water will be used to meet crop demands and to provide dilution.

Groundwater Limitations

Effective immediately, the discharge shall not cause a statistically significant increase in waste constituent concentrations in any compliance monitoring wells. Compliance with this requirement will be determined based on an approved intrawell statistical analysis comparing the well to historic data collected from each well location rather than referring to an upgradient well. Updated values must be calculated annually as described in the MRP.

The Order requires quarterly groundwater monitoring and reporting, and submittal of an annual report. The annual report will include a comprehensive evaluation of the effectiveness of the past year's wastewater application operations in terms of odor control and groundwater protection, including consideration of application management practices (e.g., waste constituent and hydraulic loadings, application cycles, drying times, and cropping practices), and groundwater monitoring data. The annual report will also include tabular and graphical summaries of total loading rates for BOD, total nitrogen, and fixed dissolved solids, a description of salinity control methods implemented in the calendar year and a quantification of the reductions achieved as compared to previous years, and 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.