

INFORMATION SHEET

ORDER R5-2012-__
WILDHURST VINEYARDS
WASTEWATER TREATMENT FACILITY
LAKE COUNTY

Wildhurst Vineyards owns and operates a wine processing facility located at 3495 Benson Lane, Kelseyville, Lake County. The facility was constructed in 1997. Activities at the winery include receiving, crushing, pressing, and fermentation of grapes, and bottling of wine. The Discharger is not currently regulated under Waste Discharge Requirements. The Discharger is currently discharging winery wastewater in a septic tank and leachfield system. Domestic wastewater is treated in separate septic tank and leachfield systems. Both systems are regulated under a Lake County Environmental Health Department permit.

The Discharger plans to increase annual wine production from 10,000 cases of wine and 137 tons of crushed grapes to 60,000 cases of wine and 1,200 tons of crushed grapes. The Discharger has no plans to build a distillery or a tasting room. The Discharger plans to discontinue use of the winery wastewater septic tank and leachfield system. The new wastewater treatment system will include a pre-treatment process to remove residual solids and aerated lined ponds for biological treatment. Treated wastewater will be land applied as irrigation water. The residual solid wastes such as grape pomace (skin, pulp, seeds, and stalks) will be collected and disced into the land application area (LAA) as a soil amendment.

Report of Waste Discharge Submittal

The Report of Waste Discharge (RWD) was submitted to allow an expansion of activities at the site. The Discharger submitted a RWD dated 12 July 2005 for treatment and land application of wastewater generated at the facility and an expansion that will allow increase grape crushing and fermentation. Additional information was submitted on 5 April 2007, 29 May 2007, 14 March 2008, 6 June 2008, 29 December 2008, and multiple dates in May 2011.

Wastewater Generation

Wastewater is generated from the crushing and pressing of the grapes and equipment and sanitation activities. Stormwater that falls on the winery and mixes with wastewater is treated as wastewater. Winery wastewater is typically high in total dissolved solids (TDS), fixed dissolved solids (FDS), biochemical oxygen demand (BOD), and nitrogen concentrations.

Process wastewater generated at the facility is approximately 0.72 Mgal per year. The highest wastewater flows are expected during grape crushing activities, September through October. The WDRs will allow a monthly maximum flow limit to the treatment ponds of 0.182 Mgal per month and an annual maximum flow limit of 1.13 Mgal of wastewater and/or stormwater mixtures.

The flow limit will allow the Discharger flexibility in managing wastewater application because in most months the wastewater generation will be less than the monthly maximum limit. The annual maximum flow limit is designed to control the total loading rate of LAA with waste constituents. The WDRs includes Discharge Prohibitions, Specifications, Effluent Limitations, and Land Application Area Requirements that will prevent nuisance conditions and/or overloading the land application areas.

Wastewater undergoes a pretreatment process to remove solids and then discharged into a series of aerated treatment ponds, Ponds No. 1 and 2, for biological treatment. The ponds will be double lined with 40-mil high density polyethylene liners with a leak detection system. The ponds will have the capacity to store treated wastewater for the months of November through March and allow wastewater land application during the growing season.

Land Application Areas

The Discharger has specified 30 acres of LAA. Currently the LAA is cropped as pear orchards, but some or all of the acreage may be converted to vineyards. Based on the water needs of pear orchards, the Discharger concludes that the treated wastewater will not meet crop's demands. The Discharger anticipates supplemental irrigation water, provided by the water supply well, for the growing season (April, May, June, July, August, September, and October). The water supply well is generally of good quality with respect to TDS concentrations.

The Discharger estimates 1,934 lbs of total nitrogen per year in the winery wastewater including the injected aqueous ammonia needed for pH control. The nitrogen loading rate is estimated to be 65 lb/ac/yr. Information obtained from *The Western Fertilizer Handbook* states the nitrogen crop uptake rate for pears and grapes is 85 lb/ac/yr and 125 lb/ac/yr, respectively. Cover crops were not identified in the RWD and therefore their nutrient uptake capacities are unknown.

Solids Disposal

Solid wastes from the wine processing activities, including pomace and diatomaceous earth (DE), will be collected and stored in water tight containers, for later application onto the LAA. The WDRs prohibit placing any pomace or DE associated with the winery on unpaved ground. Acceptable storage shall contain any leachate generated and prevent infiltration into the ground.

Baseline Groundwater Quality

The Discharger prepared a baseline groundwater quality assessment study prior to land application of treated wastewater. The study included the installation and sampling of three groundwater monitoring wells. Five monitoring events took place during December 2007 and November 2008.

Groundwater quality near the winery was found to be excessively hard, but generally of good quality with respect to TDS. Average Hardness (CaCO₃) values from MW-1, MW-2, and MW-3 samples were 844.8 Mg/L, 746.8 Mg/L, and 644.4 Mg/L, respectively. Average TDS values were 274 Mg/L, 224 Mg/L, and 250 Mg/L, respectively. High iron and magnesium concentrations were found in the groundwater samples. Electrical Conductivity (EC) data was not analyzed.

Due to the highly variable results for iron, magnesium and hardness, the Discharger sampled the wells on 13 April 2011. These results were consistent with the non-suspect results for iron and magnesium, indicating that the previous samples were not filtered prior to analysis.

The Discharger anticipates average monthly wastewater concentrations prior to land application as the following: 425 mg/L of BOD, 1,300 mg/L of TDS, and 40 mg/L of Total Nitrogen. The Discharger will need to blend with supplemental irrigation water to meet crop demands, and therefore will provide some dilution. In addition, crops planted in the LAA will take up some of the waste constituents in the wastewater. The WDRs requires groundwater monitoring to detect whether management of the LAA ensures no impacts to groundwater quality.

The WDRs requires the Discharger to submit a *Monitoring Well Installation Workplan*. This workplan will describe the proposed expansion of the monitoring well network and at a minimum, include two additional wells to monitor the groundwater downgradient of the existing industrial wastewater leach field and planned wastewater ponds, and between the ponds/LAA and Kelsey Creek.

Interim groundwater limitations were established until additional groundwater investigations have been completed. The interim limits were determined based on statistical analyses of the baseline groundwater data using a 0.025 critical t-score. These limits are effective immediately. The Discharger is required to submit a *Groundwater Quality Investigation Report* that will determine the final groundwater limitations. Background values shall be updated annually as described in the Monitoring and Reporting Program.

The groundwater supply well serving the winery was sampled in December 2005. Limited information was submitted in the RWD regarding the water supply well quality. Both Nitrate (NO₃) and Kjeldahl Nitrogen were reported as non detect. Typical detection values for Nitrate and Kjeldahl Nitrogen are 1.0 mg/L. TDS was found to be 180 mg/L.

Stormwater

Most of the winery process operations are located under covered areas to avoid stormwater mixing with the wastewater. There is a stormwater diversion system for the uncovered portion of the crush pad. The valve will remain open during the crushing and cleaning operations of the crush pad to convey wastewater to the treatment system. The valve will remain closed during all other times and uncontaminated stormwater runoff will infiltrate into the ground within the surrounding area. The WDRs requires the Discharger to complete and implement an *Operations and Maintenance Plan* that will describe detailed stormwater diversion system operation procedures.

The WDRs requires the Discharger to submit a Notice of Non-applicability or apply for coverage under the Order 97-03-DWG, *Discharge of Storm Water Associated with Industrial Activities*. The expansion of the winery will disturb one or more acres of soil and therefore, the

Discharger is required to submit a Notice of Intent for coverage under the *Construction Activities Storm Water General Permit* Order 2009-0009-DWQ.

Site Specific Conditions

The proposed treatment system will be located within the 100 year flood zone of Kelsey Creek, in Flood Zone AO (depth two feet). The WDRs requires the pond berms be two feet above the 100-year base flood elevations and designed and constructed to prevent inundation or washout due to floods with a 100-year frequency. The Discharger submitted a revised water balance that demonstrates that the ponds have adequate storage capacity with a two feet freeboard during a 100-year storm frequency.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage is to Kelsey Creek, which is a tributary to Clear Lake. 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 water supply, agricultural supply, industrial service supply, and industrial process supply.

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 treatment and control practices described herein provide commonly implemented treatment and control for the subject wastewater, and should prevent the discharge from creating a condition of pollution or possible nuisance, and maintain water quality. The following treatment and control practices will be implemented at the site:

- The wastewater will be treated using physical processes to reduce the residual solids.
- The wastewater will be treated using biological processes in the form of aerated ponds to reduce the BOD. The ponds are lined and equipped with a leak detection system. The WDRs require submittal of a *Wastewater Treatment System Completion and Construction Quality Assurance Report* that certifies the complete installation of the

wastewater treatment facility, specifically the liner installation and testing of the geomembrane seams for leaks.

- Approximately 30 acres of LAA will be available 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.
- This Order requires the Discharger to install a tailwater collection system that allows collection of runoff of the applied treated wastewater for reapplication and infiltration.
- Grape pomace will be collected in containers and disced into the LAA as a soil amendment. Any storage of pomace will be short term, less than 24 hours, and in an area equipped with means to contain any leachate generated and prevent any infiltration into the ground.
- This Order requires groundwater monitoring.

Groundwater monitoring has been conducted at the site. The current method of winery wastewater treatment is a septic tank and leachfield system, which is not protective of groundwater. The generated wastewater will not meet the crop demands, and therefore supplemental irrigation water is needed. The WDRs allows the Discharger to blend wastewater with supplemental irrigation water to meet crop demands. Effluent limitations were established as preventive measures to prevent groundwater degradation. In addition, this Order requires installation of additional monitoring wells; submittal of a *Groundwater Quality Investigation Report*, and an *Operations and Maintenance Plan* that includes a *Nutrient Management Plan*. Additionally, the new lined ponds and LAA must be completed and in use by 1 September 2012.

Title 27

This discharge is exempt from the requirements of *Consolidated Regulation for Treatment, Storage, Processing, or Disposal of Solid Waste*, as set forth in California Code of Regulations, title 27, section 20005 et seq. (hereafter Title 27). The exemption, pursuant to section 20090(b), 20090(f), and 20090(h) is based on the following:

- The operation of lined wastewater treatment and storage ponds, and the application of treated wastewater to the LAA is exempt based on section 20090(b). The Central Valley Regional Water Board has issued waste discharge requirements. This discharge is in compliance with the Basin Plan. The wastewater does not need to be managed according to California Code of Regulations, title 22, division 4.5, chapter 11, as a hazardous waste.
- Application of decomposable solids as a soil amendment to the LAA is exempt based on section 20090(f). The pomace/DE is nonhazardous. The waste constituents in pomace and/or DE are decomposable. Application to land is considered a best management practice. The practice allows the nutrients to slowly decompose, prevents odors or vector issues associated with composting pomace/DE, and improves soil tilth. The Central Valley Water Board has issued waste discharge requirements.

- Application of treated wastewater to the LAA is exempt based on section 20090(h): The application will result in additional waste treatment, water reuse, and nutrient recycling.

California Environmental Quality Act (CEQA)

A Mitigated Negative Declaration (MND) was approved by the Lake County Community Development Department on 26 June 2007 for the expansion of the facility per the provisions of CEQA. Compliance with this Order and the following mitigation measures from the MND listed below should mitigate the discharge and protect water quality.

<u>Issue Identification</u>	<u>Environmental Issue</u>	<u>Mitigation Requirements</u>
Item E.4	Violation of any water quality standard or waste discharge requirement.	If grading will occur over more than one acre of land, the permit holder shall submit Notice of Intent (NOI) to comply with the Construction General Permit with the Central Valley Water Board, along with a Storm Water Pollution Prevention Plan (SWPPP).
Item H.1.	Violation of any water quality standard or waste discharge requirement	Prior to wine production in excess of 10,000 cases of wine annually, the permit holder shall prepare a new Report of Waste Discharge to be reviewed and approved by the Central Valley Water Board.
Item H.2	Violation of any water quality standard or waste discharge requirement	Prior to abandonment of the septic system currently used for treatment of winery wastewater, the permit holder shall contact the Division of Environmental Health to insure the system is abandoned in accordance with Lake County On-site Septic Rule 1-80 (1) & (2).

A Minor Modification of Use Permit was approved by Lake County on 2 June 2008 to allow the replacement of the constructed wetlands with aeration ponds for winery wastewater treatment. A subsequent MND was approved on 9 November 2011 by Lake County to increase the LAA from 4.25 acres to 30 acres.

Effluent Limitations

Effluent limitations for treated and/or blended wastewater applied to land for biochemical oxygen demand (BOD), total dissolved solids (TDS) and total nitrogen are included in the WDRs.

Wastewater loading limits for the LAA are included for BOD. The BOD limit is intended to minimize the possibility of odors being generated by the land application. The BOD limit is 100 lb/ac/yr as a daily maximum.

The TDS limit is intended to minimize degradation of groundwater with respect to salinity. Supplemental irrigation water necessary to meet crop demands will provide dilution. Crops planted in the LAA will take up some of the waste constituents in the wastewater. The TDS limit is 1,300 mg/L as a monthly maximum.

The total nitrogen limit is based on the nitrogen uptake value of the proposed and existing crops harvested in the LAA (grapes and pear orchards). The nitrogen limit is 125 lb/ac/yr (grapes) and 85 lb/ac/yr (pears) as an annual average. Cover crops were not specified.

Treatment Technology and Control

Given the character of food processing wastewater, slow rate land treatment or secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable organic constituents.

Food processing wastewater typically contains nitrogen in concentrations greater than water quality objectives. Groundwater degradation by nitrogen can be controlled by an appropriate screening, settling, and slow rate land application with cropping activities when crops are harvested and removed from the land application area. The effectiveness varies, but generally best practicable treatment and control is able to control nitrogen degradation of groundwater at a concentration well below the water quality objectives. Pear orchards are currently harvested in the land application areas and will take up the nutrients in the wastewater.

Dissolved solids can pass through the treatment process and soil profile; effective control of such constituents relies primarily upon source control and pretreatment measures. If not managed carefully, long-term land discharge of food processing wastewater is likely to degrade groundwater with dissolved solids (as measured by FDS). Source control is an effective means to prevent groundwater degradation by FDS. The Discharger will implement a number of best practicable treatment and control measures to ensure minimal to no impacts on the groundwater including the following:

- Treatment ponds are lined.
- Crops are planted in the LAA and will take up some of the waste constituents in the treated wastewater;

- Pomace is collected in water tight containers that will contain generated leachate and prevent infiltration into the ground. Daily application of residual solids to the LAA further decreases the likelihood of groundwater impacts due to leachate.
- Operation of a stormwater diversion system for outdoor winery work areas prevents the likelihood of contaminated stormwater discharges.

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 the quality of the wastewater and the amount available for land application, the soil is expected to provide adequate buffering of acidic or basic wastewater.

Monitoring Requirements

Water Code section 13267 authorizes the Regional Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Water Code section 13268 authorizes assessment civil administrative liability where appropriate.

The Order requires monitoring of the 1) wastewater in the treatment pond, 2) discharges to the land application area, and 3) groundwater monitoring. The nearest water body, Clear Lake, has a total maximum daily limit (TMDL) for phosphorous, and therefore total phosphorous will be monitored in the effluent and in the groundwater.