

## INFORMATION SHEET

ORDER NO. R5-2009-\_\_\_\_\_  
BARREL TEN QUARTER CIRCLE LAND COMPANY  
BARREL TEN QUARTER CIRCLE, ESCALON CELLARS  
SAN JOAQUIN COUNTY

Barrel Ten Quarter Circle, Escalon Cellars owns and operates a winery at 21801 Highway 120, Escalon, San Joaquin County. A winery has existed at the facility since the 1890's. The facility is presently operated as a non-distilling, non-crushing, non-fermenting wine finishing and storage facility. No bottling or packaging of wine is presently performed at the facility. However, the Discharger has decided to resume grape crushing and fermenting. Historically, the previous operators of the facility crushed grapes, fermented wine, distilled spirits, and bottled products. The Discharger is not proposing to resume distilling or bottling activities.

### Previous Enforcement Activities

Cease and Desist Order (CDO) No. R5-2003-0012 was adopted on 31 January 2003 in response to groundwater quality degradation beneath the Land Application Areas (LAAs). CDO No. R5-2003-0012 was rescinded and replaced by CDO No. R5-2003-0125 on 5 September 2003 after the Discharger purchased the facility. The revised CDO changed the due dates for several of the technical reports that were required of the previous owner. The Discharger was planning to change the winery operations and therefore sought a technical report schedule change.

The Discharger was allowed time to perform studies and design a wastewater system that would halt the continuing groundwater degradation. The Discharger performed the studies and submitted a Report of Waste Discharge (RWD). But the system is not protective of groundwater quality. However, additional studies have been proposed to better determine effluent and LAA loading limits. Revised WDRs were prepared to update the WDRs for the facility and allow the Discharger to perform technical studies to determine protective effluent standards and design/construct improvements at the facility.

### RWD Submittal

The Discharger submitted an RWD dated 28 January 2005 for treatment and land application of wastewater generated at its wine processing and storage facility. The RWD was required by CDO No. R5-2003-0125. The Discharger submitted RWD amendments on 19 September 2005 and 26 May 2006, and additional information was submitted on 25 April 2007 and 30 May 2007. A third RWD amendment was submitted on 10 November 2008. The RWD proposed significant changes in the facility operations, including new wastewater treatment systems, an increase in wine production, and a reduction of LAA acreage.

### Wastewater Generation

Wastewater is, or will be, generated in tank cleaning and sanitation activities, boiler blowdown, ion exchange regeneration brine, clean-in-place system waste products, wine ion exchange treatment, and cooling system condensate. The Discharger has limited wastewater storage capacity. Therefore, all wastewater generated must be discharged soon after generation.

Wastewater flow rates are anticipated to vary from approximately 85,000 to 160,000 gallons per day. Winery wastewater is typically high in total dissolved solids, fixed dissolved solids, biochemical oxygen demand, and nitrogen concentrations. WDRs Order No. 91-223 allowed a monthly average dry weather flow rate of 1.4 million gallons per day (gpd); CDO R5-2003-0125 changed the flow limits and imposed lower flow limits. CDO R5-2003-0125 allowed a monthly average discharge of 140,000 gpd except in the months of August through October when 450,000 gpd is allowed. The tentative WDRs allow a monthly average maximum flow limit of 160,000 gallons per day and an annual total of 48,000,000 gallons of wastewater/ stormwater mixtures. The flow limit is based on the hydraulic capacity of the LAAs but as described below, the loading rate for Fixed Dissolved Solids (FDS) likely exceeds the LAAs uptake capacity.

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 average limit. The total flow limit is designed to control the total loading rate of the land application area with waste constituents. The Order includes Discharge Prohibitions, Specifications, Effluent Limitations, and Land Application Area Requirements that will prevent nuisance conditions and/or overloading the land application areas.

#### Land Application Areas

Wastewater is collected in the Process Water Sump (PW Sump) and applied to LAAs. Historically, 108 acres of LAAs were available at the facility; as part of the facility expansion significant acreage was permanently switched to other uses and is no longer available for wastewater application. Presently, 69.5 acres is available for wastewater application.

A new 8.3 acre tailwater basin was constructed in the land application areas. The basin was constructed prior to revising the Waste Discharge Requirements (WDRs) for the facility; it is not lined and therefore may not be protective of groundwater quality.

The Discharger has proposed a Crop Uptake and Assimilative Capacity (CUAC) study to determine loading rates that will not result in continued groundwater degradation. However, the FDS loading rate greatly exceeds published crop uptake rates. The FDS loading rate is estimated to be 2,769 lbs/ac•year. The Discharger can grow any crop on the LAAs they choose, but no crop takes up the amount of FDS that is presently being applied. Significant reductions in FDS loading rate may be required to protect groundwater quality. The Discharger plans to determine the acceptable loading rate and perform source control as needed to protect groundwater.

Nitrogen compounds are not expected to degrade groundwater quality because the proposed nitrogen loading rate is less than the likely crop uptake rate. The nitrogen loading rate is estimated to be 107 lbs/ac•year; the nitrogen crop uptake rate is estimated to be 225 lbs/ac•year. Uptake of nitrogen should not pose a problem for the Discharger unless the character of the wastewater changes in the future or higher loading rates occur.

Because wastewater will not provide adequate water to meet the crop demand, supplemental water will be applied to the LAA. A connection to the San Joaquin Irrigation District pipeline has been constructed to provide supplemental irrigation water and the tailwater basin will be used to store the water upon delivery through the irrigation canal. The Discharger has not provided analytical data on the supplemental irrigation water quality.

### Stormwater

Most of the facility is exposed to the elements so when precipitation falls, it is collected with any wastewater that is being generated. Stormwater discharges to the same sump (PW Sump) as wastewater through the same collection system. The wastewater/stormwater mixture is pumped to the LAAs. The Discharger has proposed an unlined stormwater basin in a portion of a former land application area that will also be converted to grape truck parking. The Discharger has described operational procedures that are designed to prevent wastewater from being discharged to the basin. The procedures consist of computer control of the discharge location, an electrical conductivity meter to distinguish wastewater from stormwater, and equipment intended to improve the first flush of wastewater constituents from the PW Sump. The equipment and procedures to minimize wastewater discharge to the stormwater basin will be described in the Stormwater Pollution Prevention Plan (SWPPP). The plan must be approved by staff and authorization to proceed must be received from the Executive Officer before using the proposed stormwater basin. Testing of the stormwater system capabilities is expected until the 2009/2010 winter season.

The Monitoring and Reporting Program requires monitoring of the stormwater basin so the effectiveness of the SWPPP will be verified through regular sampling.

### Background Groundwater Quality

The Discharger has investigated on- and off-site groundwater quality by installing groundwater monitoring wells, and cone penetration tests. Groundwater quality at the winery has been degraded for electrical conductivity, total dissolved solids, calcium, magnesium, sodium, sulfate, chloride, hardness, bicarbonate, and alkalinity. The degradation is the result of waste application at the facility.

The investigation revealed that a nearby dairy (G&H Dairy, 16996 Sexton Road) appears to have also impacted groundwater quality, but the winery wastewater has also increased the degradation beyond that which is apparently from the dairy activities. The determination of background groundwater quality at the facility is complicated by the presence and activities of the dairy. The dairy applies dairy wastewater on LAAs that are located to the west, north, and east of the winery facility and LAAs.

The northern area of the winery consists of the 48 acre and 10 acre LAAs, and 8.3 acre Tailwater Basin. The northern area of the site is best characterized by the groundwater quality of Well MW-6, as cited in Finding No. 47. Groundwater quality is considered to likely be

impacted by upgradient waste application areas as well as wastewater percolating from the on-site LAAs.

The southern portion of the winery consists of the remainder of the facility. The groundwater in the southern area has not been as significantly impacted by waste application activities from off-site. The southern portion of the site is best characterized by the groundwater quality of Well MW-1. Groundwater quality in Well MW-1 is listed in Finding No. 47.

The Discharger may use the statistical methods found in Title 27 to develop background values. Background values must be updated annually as described in the MRP. The background groundwater concentrations will be used in preparation of a Facility Upgrade Workplan, a Facility Improvement Report, and possibly to revise the effluent limits at a future Regional Water Board public meeting.

### Solids Disposal

Pomace and diatomaceous earth (DE) will be drained on a paved area equipped with drains that will collect leachate or stormwater. The WDRs prohibit placing pomace or other solid waste associated with the winery on unpaved ground because of the possibility wastewater leaching from the piles or of stormwater mobilizing wastewater constituents. The Discharger will have to dispose of pomace and diatomaceous earth at off-site areas because there is not adequate LAAs at the facility.

### Effluent Limitations

An effluent limitation for FDS is included in the WDRs. Consistent with the Salinity Guidance Memo available on the Regional Board's webpage (<http://www.waterboards.ca.gov/centralvalley/cv-salts/progs-polic-rpts/salt-2007-guide-mem.pdf>), interim limits were established. The limits will provide some protection of groundwater quality while the Discharger prepares the Facility Upgrade Workplan. The final effluent limits may be higher or lower than presented in the WDRs depending upon the determinations of the technical reports, Regional Water Board staff, and the Regional Water Board. The approach allows the Discharger to continue operating while improvements are designed and constructed.

Wastewater loading limits for the LAAs are included for Biochemical Oxygen Demand (BOD). The BOD limit is intended to minimize the possibility of odors being generated by the land application. The BOD limits are 500 lbs/ac•day as a cycle loading rate.

### Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water from the facility is to the South San Joaquin Irrigation Canal, tributary to Lone Tree Creek and the San Joaquin River in the Sacramento San Joaquin Delta. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley*

*Region, Fourth Edition* (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. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic and municipal supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

### Antidegradation

The antidegradation directives of State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation Policy" require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan.

Resolution 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Regional Board to evaluate and fully characterizes:

- All waste constituents to be discharged;
- The background quality of the uppermost layer of the uppermost aquifer;
- The background quality of other waters that may be affected;
- The underlying hydrogeologic conditions;
- Waste treatment and control measures;
- How treatment and control measures are justified as best practicable treatment and control;
- The extent the discharge will impact the quality of each aquifer; and
- The expected degree of degradation below water quality objectives.

In allowing a discharge, the Regional Board must comply with CWC Section 13263 in setting appropriate conditions. The Regional Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Regional Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity. An antidegradation evaluation is required as part of the Facility Upgrade Workplan.

Groundwater monitoring has been conducted at the site and groundwater quality has been degraded. The proposed Order establishes effluent limitations to control degradation while wastewater treatment and needed source control is implemented.

### 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. But slow rate treatment may not control all waste constituents such as FDS.

Food processing wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. 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.

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 TDS and EC). Source control is an effective means to prevent groundwater degradation with FDS.

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. However, soil is expected to provide adequate buffering of acidic or basic wastewater.

### Title 27

Title 27, CCR, Section 20005 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable under Title 27 regulations.

The discharge of wastewater and the operation of storage facilities associated with a wastewater application can be allowed without requiring compliance with Title 27 only if groundwater degradation complies with the Basin Plan, Resolution No. 68-16 (Antidegradation Policy), and does not violate any water quality objectives.

### Monitoring Requirements

Section 13267 of the CWC 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. Section 13268 of the CWC authorizes assessment civil administrative liability where appropriate.

The proposed Order includes influent, tailwater basin, stormwater basin, land application area, solids, and groundwater monitoring. In order to adequately characterize wastewater, the Discharger is required to monitor for BOD, pH nitrogen compounds, dissolved solids (TDS and FDS), sodium, chloride, and standard minerals. To ensure that the tailwater basin and stormwater basin do not create nuisance conditions, the Discharger is required to monitor freeboard and dissolved oxygen weekly.

The Title 27 zero leakage protection strategy relies heavily on extensive groundwater monitoring to increase a discharger's awareness of, and accountability for, compliance with the prescriptive and performance standards. With wastewater applied to land, monitoring takes on even greater importance. The proposed Order includes monitoring of wastewater quality, application rates, and groundwater quality.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive land application of food processing wastewater occurs. It is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under Water Code Section 13267.

The Discharger must monitor groundwater for wastewater constituents expected to be present in the discharge, capable of reaching groundwater, and violating groundwater limitations if treatment, control, and environmental attenuation prove to be inadequate. Background groundwater quality is characterized but the statistical determination of background quality has not been formalized. The Order requires that determination.

### Reopener

The conditions of discharge in the proposed Orders were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. Additional information must be developed and documented by the Discharger as required by schedules set forth in the proposed Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible and that could involve substantial cost. It may be appropriate to reopen the Orders if applicable laws and regulations

INFORMATION SHEET

-8-

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change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Orders. The CWC requires that waste discharge requirements implement all applicable requirements.

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