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Via email to: maxine.cottrell@waterboards.ca.gov

**Additional Comments— Tentative WDRs for Bronco Wine Company, Stanislaus County**

This letter amends my 6 August 2020 letter transmitting my comments on the 4 June 2020 “Tentative Revision to Waste Discharge Requirements Order 96-247 for Bronco Wine Company, Stanislaus County” (Tentative Order).

**BOD Mass Loading Rates.** The Tentative Order prescribes an irrigation cycle average BOD mass loading limit of 300 lb/ac/day (D.1 Mass Loading Limitation). It does not, however, prescribe an instantaneous BOD mass loading limit.

Many individual Waste Discharge Requirements (WDR) Orders for wine and food processing discharges in the Central Valley Region, as well as in other regions, prescribe an average BOD mass loading limit of **100 lb/ac/day** and an instantaneous BOD mass loading limit of **300 lb/ac/day**. Further the State Water Quality Control Board’s tentative “General Waste Discharge Requirements for Winery Process Water” also prescribes these two limits (Effluent Limitations B.2 and B.3). There is insufficient empirical evidence and analysis to support a conclusion that average and instantaneous BOD loading limits of 100 and 300 lb/ac/day, respectively, are adequately protective of groundwater. And, in my expert opinion, these limits do not and never will reflect the implementation of **best practicable** treatment or control. Yet, when they are widely prescribed in many individual WDR Orders, and as proposed in the State Board’s tentative General Winery Order, they are important tools for leveling the economic playing field for California’s wine and food processing dischargers. **Accordingly, I strongly recommend the Tentative Order reduce its maximum irrigation cycle average BOD mass loading limit from 300 to 100 lb/ac/day, and prescribe a maximum instantaneous (day of application) BOD mass loading limit of 300 lb/ac/day.**

**Wastewater Monitoring Effluent Monitoring.** The Tentative Order’s Monitoring and Reporting Program (MRP), 2<sup>nd</sup> paragraph, states, in part, that: “All samples shall be representative of the volume and nature of the discharge or matrix of material sampled.” As currently written, the Wastewater Effluent Monitoring section requires wastewater samples be obtained from the outlet of the wastewater storage tank and be “representative of the wastewater quality that is sent to the percolation ponds or is applied to the LAAs.” I concur with this requirement and emphasize that is necessary to monitor the quality of wastewater **before** it may be blended with groundwater or high-quality surface water prior to discharge

to the LAAs. Accurate monitoring of wastewater quality is essential for determining compliance with the Tentative Order's Effluent Limitation C.1 for TDS (1200 mg/L flow weighted annual average) and for its mass loading limits for BOD and for Total Nitrogen.

**Soil Monitoring.** The Tentative Order's MRP should require the Discharger to monitor soils in its LAA and infiltration basins, and in nearby areas representing background conditions. Soil monitoring provides data essential to assess the extent to which applied waste constituents are accumulating in the soil profile (compared to background). Excessive accumulations of applied waste constituents (e.g., nitrogen, total organic carbon) may leach to and threaten groundwater quality.

In a nutshell, the carbon dioxide gas generated by the decomposition of organic carbon is dissolved in soil pore water, creating carbonic acid, which dissolves calcium and magnesium in the soil, which, along with the bicarbonate alkalinity created in the process, leach to the groundwater. That is why when organic loading is excessive, you'll see significantly higher concentrations in groundwater of calcium and magnesium (hardness) and bicarbonate alkalinity, which all contribute to TDS. This is why it is necessary to monitor total organic carbon in soil affected by the discharge.

The discharge may also adversely impact soil pH and buffering capacity. Careful management of both is necessary for optimal biological decomposition of applied waste constituents as well as for crop health.

The discharge of winery and food processing wastewater to land for passive soil treatment, crop nutrient uptake, and ultimate disposal to groundwater is fraught with complexity. It is a veritable "black box" that is poorly understood and difficult to regulate. To glimpse inside the black box to assess whether it is operating properly, it is necessary to periodically monitor soils of not only the LAA and infiltration basins, but also of nearby soils that are representative of the discharge area.

Accordingly, I recommend the Tentative Order's MRP include the following soil monitoring requirement, which I adapted from the MRP for WDR Order No. R5-2015-004 for E. & J. Gallo Winery, Fresno Winery.

## **SOIL MONITORING**

The Discharger shall establish, with the concurrence of Central Valley Water Board staff, at least five representative soil profile monitoring locations within the LAA, at least two within the infiltration basins, and at least two representative background locations (i.e., areas that historically have not received process wastewater). The Discharger shall submit a map to the Central Valley Water Board with the identified sample locations no fewer than **60 days** prior to the first soil sampling event following adoption of this Order.

The soil profiles in these locations shall be sampled at three depths: 2, 4, and 6 feet below ground surface. The samples shall be collected at least annually (in October for LAA sample locations and, as appropriate, other times of the year when infiltration basins are dry). Collected samples shall be analyzed for the constituents specified in the following table:

**Table # Soil Monitoring Constituents and Parameters**

<b>Constituent/Parameter</b>	<b>Units</b>
Soil pH	pH units
Buffer pH	mg/kg as CaCO <sub>3</sub>
Sodium	mg/kg
Chloride	mg/kg
Nitrate as nitrogen	mg/kg
Total Kjeldahl Nitrogen	mg/kg
Total Organic Carbon	mg/kg

Thank you for the opportunity to submit these additional comments.



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