Solving Winery Wastewater Challenges in Small/Medium-Sized Wineries

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The WestOne Group LTD

DEPARTMENT OF ECOLOGY
State of Washington
West One Group Winery
West One Group Winery
General Winery Permit

• Washington's first Winery General Permit regulates discharges of process wastewater from wineries to land, groundwater, and wastewater treatment plants. No surface water discharges are allowed under this permit.

• The permit was issued on May 17, 2018, goes into effect on July 1, 2019, and expires on July 1, 2024.
Wineries in Washington State

According to the Washington State Wine Commission, the number of Washington winemaking facilities increased by 23.8% from 2009 to 2013. Likewise, wine produced in Washington increased from just under two million cases in 1994 to 14.8 million cases in 2013.
Water Used

The conversion of grapes into wine is a multi-step process that uses a significant amount of water. The average facility uses about:

- Eleven hundred (1,100) gallons of water per ton of grapes.
- Six (6) gallons of water for every one (1) gallon of wine produced.
Wastewater Calculation

• 14.8 million cases in 2013
• Standard bottle of wine is 750 milliliters (ml), meaning a case of 12 bottles contains 9 liters, or 2.378 gallons per case.
Wastewater Calculation Continued

- 6 gallons wastewater per gallon of wine produced \( \times \) 2.3 gallons of wine per case \( \times \) 14.8 million cases produced.
- 204 million gallons of wastewater
West One Group Winery

Highest flows will be during the crush season

• Average Flow 1,283 gpd
• Peak Flow 3,207 gpd
Crush Pad
Wastewater Options

- Land treatment
- Groundwater infiltration
- Discharge to a Wastewater treatment plants
Industrial Reuse

• 90.46.160 Industrial reuse water—Permit.

• (1) The permit to use industrial reuse water shall be the permit issued under chapter 90.48 RCW to the owner of the plant that is the source of the industrial process water, who may then distribute the water according to provisions in the permit governing the location, rate, water quality, and purpose. In cases where the department of ecology determines that a proposed use may pose a significant risk to public health, the department shall refer the permit application to the department of health for review and consultation.

• (2) The owner of the industrial plant who obtains a permit under this section has the exclusive right to the use of any industrial reuse water generated from the plant and to the distribution of such water.
# Industrial Reuse

<table>
<thead>
<tr>
<th></th>
<th>Monthly Average</th>
<th>Weekly Average</th>
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</thead>
<tbody>
<tr>
<td><strong>Total Nitrogen</strong></td>
<td>10 mg/L</td>
<td>15 mg/L</td>
</tr>
<tr>
<td><strong>BOD5</strong></td>
<td>30 mg/L</td>
<td>45 mg/L</td>
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<tr>
<td><strong>TSS</strong></td>
<td>30 mg/L</td>
<td>45 mg/L</td>
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<tr>
<td><strong>pH</strong></td>
<td>Minimum 6 s.u.</td>
<td>Maximum 9 s.u.</td>
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<tr>
<td><strong>Total Coliform</strong></td>
<td>7-Day Median 2.2 MPN/100 mL or CFU/100 mL</td>
<td>Sample Maximum 23 MPN/mL or CFU/mL</td>
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</tbody>
</table>
Beneficial Use - Irrigation
Treatment Plans
IMBR

- 16 inch diameter
- 4.5 feet tall
- 150 pounds of inoculated media
- Bacteria immobilized within inert porous media
Treatment System
Treatment Plans

- Exhaust Fan
- Backwash Process from Winery Bldg.
- Air Release
- Pressure Tank
- DCV Assy.
- Ultraviolet Disinfection Units
- Ultra Filter
- Chemical Feed
- Backwash Booster Pump
- Back Pressure Valve -/50
Questions?