NapaSan

COLLECTION · TREATMENT · RECOVERY · REUSE

Best Management Practices *for*

Non-Commercial Wineries and Breweries

Water Use for Wine and Beer Making

Nearly every step of the wine and beer making process requires the use of water. Reducing the amount of water used also reduces the amount of wastewater produced, and decreases the costs associated with water use and wastewater treatment.

Best management practices for non-commercial wineries and breweries include water saving techniques and reuse opportunities, as well as pollution prevention techniques. The following steps can be used to develop a sustainable water management strategy:

- Establish a water management program.
- Monitor and assess the amount and quality of water used and discharged.
- ~~Train employees and d~~Develop water management and conservation incentives.
- Continuously improve your water management system.

Pollution Prevention

Wastewater from wine and beer making can be surprisingly strong, creating special challenges for wastewater treatment plants. The most concentrated waste is produced during the relatively short wine harvest season. For many wineries/breweries, implementing these pollution prevention measures can reduce process wastewater volumes and pollutant loadings.

- Clean sump screens daily to help reduce suspended solids loading in wastewater discharges.
- Sweep or squeegee the floor instead of using water; dispose of collected materials in the trash rather than down the drain.
- Place screens over floor drains and drainage channels to prevent skins and seeds from entering the process drain.
- Allow lees and bentonite to settle in tanks and separate from the process water prior to discharge to the sanitary sewer. These solids can be composted or sent to the sanitary landfill for final disposal.
- Use acids with low biochemical oxygen demand (BOD). Investigate replacing citric acid with inorganic acids such as phosphoric, nitric acid, or $KHSO_4$.
- Use potassium-based cleaning products instead of sodium-based. Potassium is less harmful than sodium in the wastewater treatment process.
- Ozone clean-in-place (CIP) systems can eliminate the use of chemicals such as chlorine that can be wastewater pollutants.
- Use chemicals such as paracetic acid for cleaning, which eliminates the need for rinsing and does not contribute to total dissolved solids in wastewater.

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Water Conservation

Water use can be reduced throughout the wine/beer making process, and the best way to start is to measure current water usage. Most wineries/breweries underestimate their water use by 60%! Installing water meters at all water sources (i.e. hose stations) can give you information about baseline water use.

With water use assessments in hand, compare water used to industry standards (generally considered to be 6 gallons wastewater per gallon of wine produced for Napa Valley, and up to 20 gallons per gallon of beer) and determine where conservation practices can be implemented or improved using specific devices or operations to obtain optimum efficiency.

Housekeeping

- Pre-clean equipment with brooms/brushes before hoses are used.
- Dry-sweep spills where possible using brooms, scrubbers and squeegees, and dispose of collected material in the trash. This reduces both water use and the organic load of wastewater.
- Use pressure washers during cleanup operations, when cleaning with water is necessary. These washers emit a high-pressure, low volume spray.
- For hand-held washing operations, use pistol-grip, water-efficient nozzles with an automatic shut-off.
- Reuse the water from barrel leak-testing, which can use significant amounts of water.

Standard Operating Procedures

- Minimize the number of tank transfers - fewer wine transfers mean less tank washing.
- In-line floatation eliminates a tank transfer, reducing the use of cleaning water.
- The use of cross-flow microfiltration can reduce filter membrane clogging, thus reducing the need for frequent cleanings.
- In-tank blending avoids the need for additional tank cleaning.

Tank & Barrel Cleaning

- Recycle the final rinse to begin primary cleaning of next tank/barrel.
- Replace spray balls with high-pressure, low-volume rotating sprayers to reduce the amount of water needed.
- Adopt clean-in-place, automated tank/barrel washing systems.
- Capture, filter and reuse cleaning solutions.
- Use SO_2 gas or sulfur wicks for sanitation in place of water.