

Preparing for the Winery Waste Discharge Requirements

Requires change of mindset - need to focus on:

- Know where your water goes...flow volume drives monitoring, and application rates to disposal
- “Before the pipe” is key - while conserving water, reducing flow so concentration goes up
- Side streaming (source control) such as lees, solids collection
- Housekeeping - solids
- This is new for most SDS wineries

Tier Determination: Based on flow and drives monitoring, sampling, and system limits

- Do you know your tier (which is based on w-water flow)? If you have no w-water flow meter, and calculate on water in, landscape water would skew this. Do you have monthly data, and how far back (5 years typically required)? Note that flow meters are required for Tiers 3 and 4

Table 1. Tier Determination	
Tier	Facility process water flow ⁽¹⁾ (gal/yr)
Exempt	<10,000
Tier 1	10,000 – 30,000
Tier 2	30,001 – 300,000
Tier 3	300,001 – 1,000,000
Tier 4	1,000,001 – 15,000,000

(1) Process water flow shall be measured directly via a flowmeter or, for Tier 1 and Tier 2 facilities only, may be calculated using an accurate alternative method (e.g., assumed equal to facility source water use, determined from a storage tank water balance). The regional water board may specify a required flow measurement method for the facility.

Napa Green Wineries

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WASTEWATER FLOW METERS

- Wastewater flow meters are required by the Regional Water Quality Control Board for wineries in the Tier 3 category (300,001 GPY winery process wastewater) and above. **Napa Green recommends that all wineries track wastewater flows – also provides another method to track water efficiency in terms of water in, to water out.**
- For wastewater flows, the meter will need to collect winery effluent flow measurements **after screening** and at a point in the system where process water, including any process water generated from outdoor processing areas, discharges from the winery, but before treatment in a pond, land application area, or subsurface disposal system.
- Flows will need to be measured in Gallons/Day, either in continuous measurement, or daily flows
- Consult with your disposal system service/installation company for the best location, after any screening equipment, to capture all process wastewater flow.
- Due to the nature of wastewater and the contaminants, avoid a meter with flow tube internal elements such as a turbine or disc meter. The preferred meter is a magnetic flow meter or a “magmeter” that has no in-pipe elements. These will require power, though some are available with battery powered electronic digital readouts. Be careful with these; if the batteries fail, some meters will lose their readings
- Magmeters have no internal elements and flow is sensed via a magnetic pickup embedded in the body of the meter. These are usually the most accurate and are the best option for wastewater flow measurement. Make sure the materials of construction for the meters are compatible with the nature of your wastewater.

WASTEWATER FLOW METERS- installation notes

- Magmeters range in price from \$1000 to \$6000, based on pipe size, connection, and readout features. Be sure to consider power and communication needs. An example of meter types and cost:
<https://www.instrumart.com/categories/4139/magmeters>
- Be sure to allow enough space between fittings (elbows) for the meter. Mag meters require less straight run (2 diameters upstream and 1 diameter downstream). Check the meter manufacturer data.
- Place the meter in a piping location that will always be full of water.
- Chemical feed points should be downstream of the meter to avoid corrosion
- Place the meter in a location that is easily accessible to read, or if you are going to wireless, allow for proper power, conduit, wiring and assure communication links
- Magmeters will have a local digital display that can be read on site or provide a signal to a remote readout.
- Protect these from sunlight as that will make the meter readouts turn opaque and become difficult to read.
- Note: For Tier 1 and 2, flows can be estimated from water usage meters. However, be sure to separate process water vs. landscape water to not over-estimate flows
- As an alternative, you can install a time clock on the wastewater pump. After you test the drawdown volume over time, you can use this to estimate flows

Key points from the regulations

- ii. Source control – Within **90 days** of NOA issuance, isolate water softener regeneration brine and properly dispose of offsite instead of to the process water system.
- iii. Solids management – Within **180 days** of NOA issuance, implement solids management practices to screen, filter, or otherwise minimize the amount of process solids discharged to the process water systems.
- iv. Sodium substitution – Within **180 days** of NOA issuance, replace sodium-based chemicals with potassium-based or other non-sodium-based chemicals unless technologically or economically infeasible.
- v. Chemical reduction – Within **180 days** of NOA issuance, implement measures to minimize chemical use, such as recovering and reusing chemical solutions.

Water Conservation Practices – Best Practices

- Know your water usage and trend your water and wastewater meter data
- Use water meter data and visual inspections to detect and eliminate leaks
- Have documented Standard Operating Procedures for tank, barrel, and hose cleaning. Verify that the wash and rinse times are adequate to achieve cleanliness needs and not excessive

Barrel Cleaning

- Consider steam for cleaning
- Verify rinse times, water temperature and nozzle pressure are adequate, but not excessive for barrel cleaning needs

Tank cleaning

- Use chemicals that can minimize or eliminate rinses and rinse times
- If you have intermediate rinses (between clean and neutralization step, consider reducing or eliminating those
- Have a tank/pump cart for tank cleaning that allows for reuse of chemicals
- Combine hose cleaning with tank cleaning

Hose Downs/Nozzles

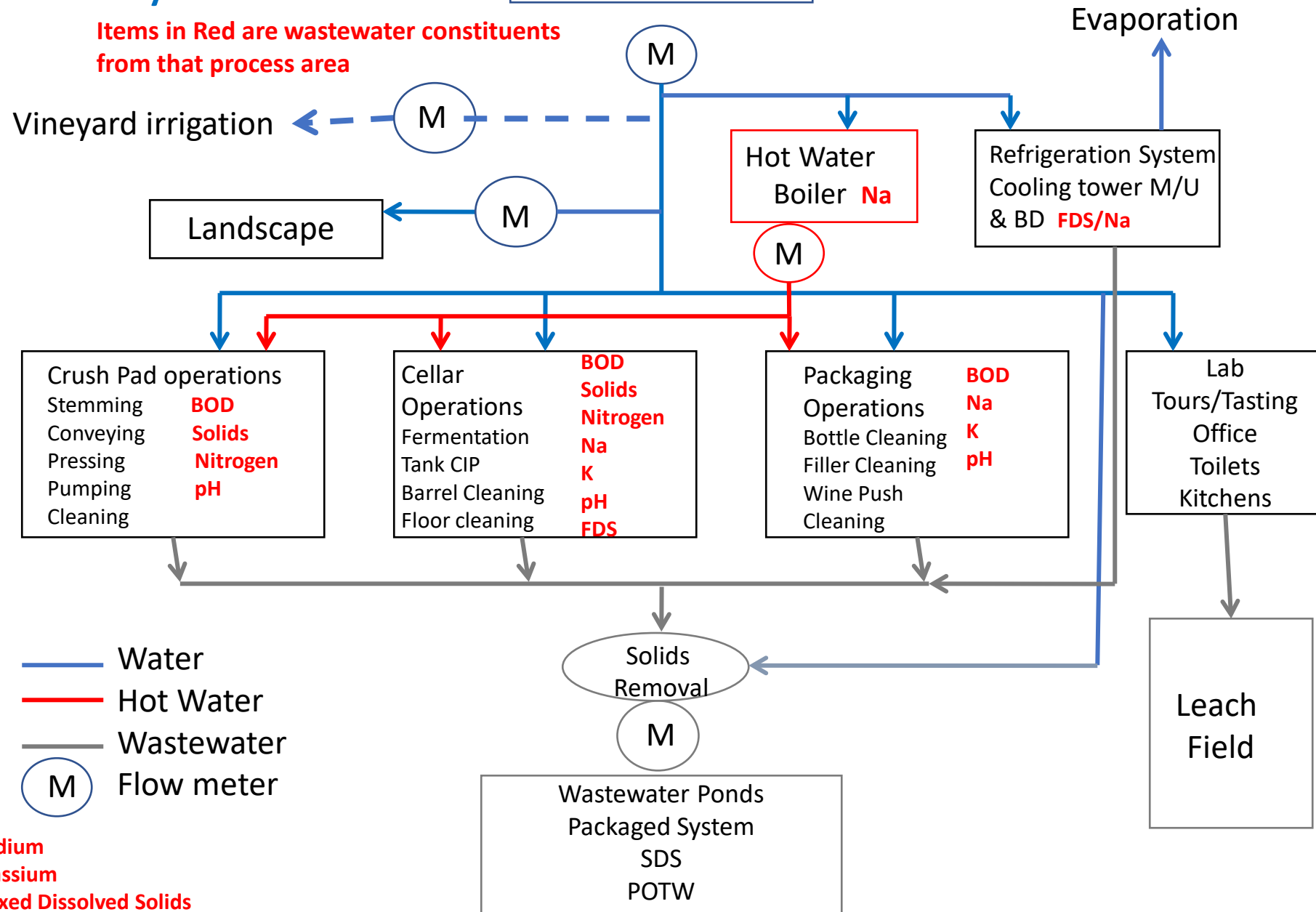
- All cellar hoses should have spring loaded shutoff nozzles
- Use High pressure low-flow pressure washers for cleaning
- Sweep floors of debris and collect solids prior to hose down
- **Cooling tower/Evaporative condenser blowdown**
 - Have an automated conductivity-based blowdown controller
 - Verify blowdown conductivity settings are not set too low driving excessive make makeup and blowdown flows
 - Conduct regular inspections for “stuck” blowdown or makeup valves

Winery Water Process Flow

Source: PTW/Well

FDS

Items in Red are wastewater constituents from that process area



Disposal—Irrigation/Evaporation/leach/Haul off site

How to minimize concentration of Na, K, N, BOD, solids and FDS sources - **Best Practices**

- Do you reclaim/reuse cleaning chemicals? Is this in your SOP? Do you have the right equipment?
- What cleaning chemicals used – are they K or Na based? Replace sodium chemicals with Potassium (K)-based
- Are Quaternary ammonium compounds / cleaning agents used?
- Are you Collecting lees for pickup @ tanks & barrel (including tartrates) instead of discharging to process waste?
- Do you have solids screening? If so, how are the washdown sprays monitored?
- If you have floor/slab drain screens, how do you clean buildup, and dispose of the solids?
- Solids at harvest: How do you store, is runoff contained, keep out of drains? Do you use a low-flow/high-pressure washer for cleaning?
- Dry sweep floors prior to hose down
- On wine transfer / hose rinses how do you minimize product to waste? Do you use pipe pigs?
- Do you use ammonia for wastewater pH control?

Softeners Best Practices

Discharge of water softener brine is prohibited.

- ii. Source control – Within **90 days** of NOA issuance, isolate water softener regeneration brine and properly dispose of offsite instead of to the process water system.

Have you tested your source water - do you need softening? Hard water does drive hot water heater fouling, staining, chemical mixing

- Reduce hot water temperature to reduce water heater scaling
- Have water heaters descaled regularly with annual service
- Softener Regeneration/brine rinses – controlled by time or demand (flow)? Have you verified this? Consider demand-based regeneration.
- Verify that softeners are not “stuck” and bypassing water
- Verify that softeners and exchange media are in good condition

Reverse osmosis or Nano filtration can be an option for low hardness, but reject flows can contribute to FDS at discharge but not add to them as those solids were in the source. You will need to add a hot water storage tank if adding RO. R.O. units do not run well in start/stop such as for instantaneous water heaters and some R.O. requires softeners.

Can use Potassium based salts, but all water softener regeneration brine must be isolated. Potassium brine can be 4x higher in cost than sodium brines and would impact FDS as well.

Collecting flows/Disposal of brine:

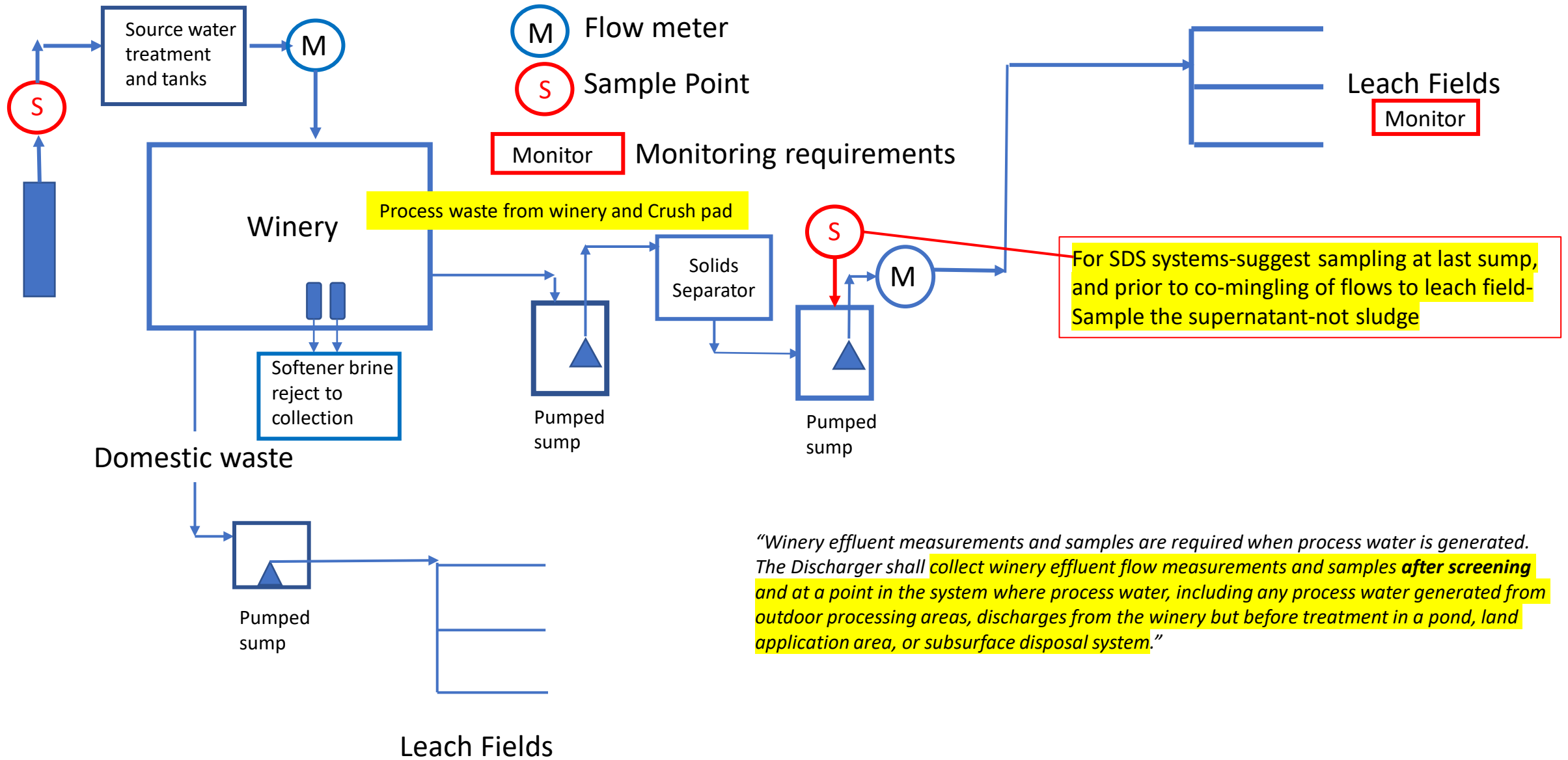
Typically, +/- 5% of incoming water flow is rejected in brine regeneration depending on hardness

- Can you do Cylinder Changeout instead of regen on site?
- How do you collect rinses - in a tank? Tank size based on flows?
- Rinse reclaim (Culligan system) can reduce brine usage but will not eliminate it
- Hold and haul and evaporation are disposal options

WDR Questions to Consider for Subsurface Disposal

- If you have a leach system *per new WDR regulations*:
 - *The annual total process water discharge flow from the winery, including process water generated from outdoor processing areas, and measured prior to treatment (e.g., before discharged to a pond, LAA, or SDS) shall not exceed the permitted process water design flow stated in the facility NOA*
 - *Daily discharge flow to the subsurface disposal area shall not exceed one gallon per square foot of discharge trench per day (1 gal/sq-ft/d), except as stipulated in the Technical Provisions section for updating an existing SDS.*
 - *The Discharger shall monitor the treated SDS effluent. The treated SDS effluent shall be measured prior to discharge to the subsurface disposal area and shall not exceed total nitrogen of 10 mg/L, BOD of 300 mg/L, and TSS of 330 mg/L as a rolling average of the three most recent samples.*
- Option for SDS systems that do not want to meet the Nitrogen Limits to apply for NOI: “Conduct groundwater monitoring as specified in the MRP using an onsite monitoring well network designed to assess the potential impact of discharging process water to the SDS in lieu of meeting the SDS nitrogen effluent limit.”

Wastewater Flow Map showing Flow, Sampling and Monitoring—SDS systems (Leach Fields)



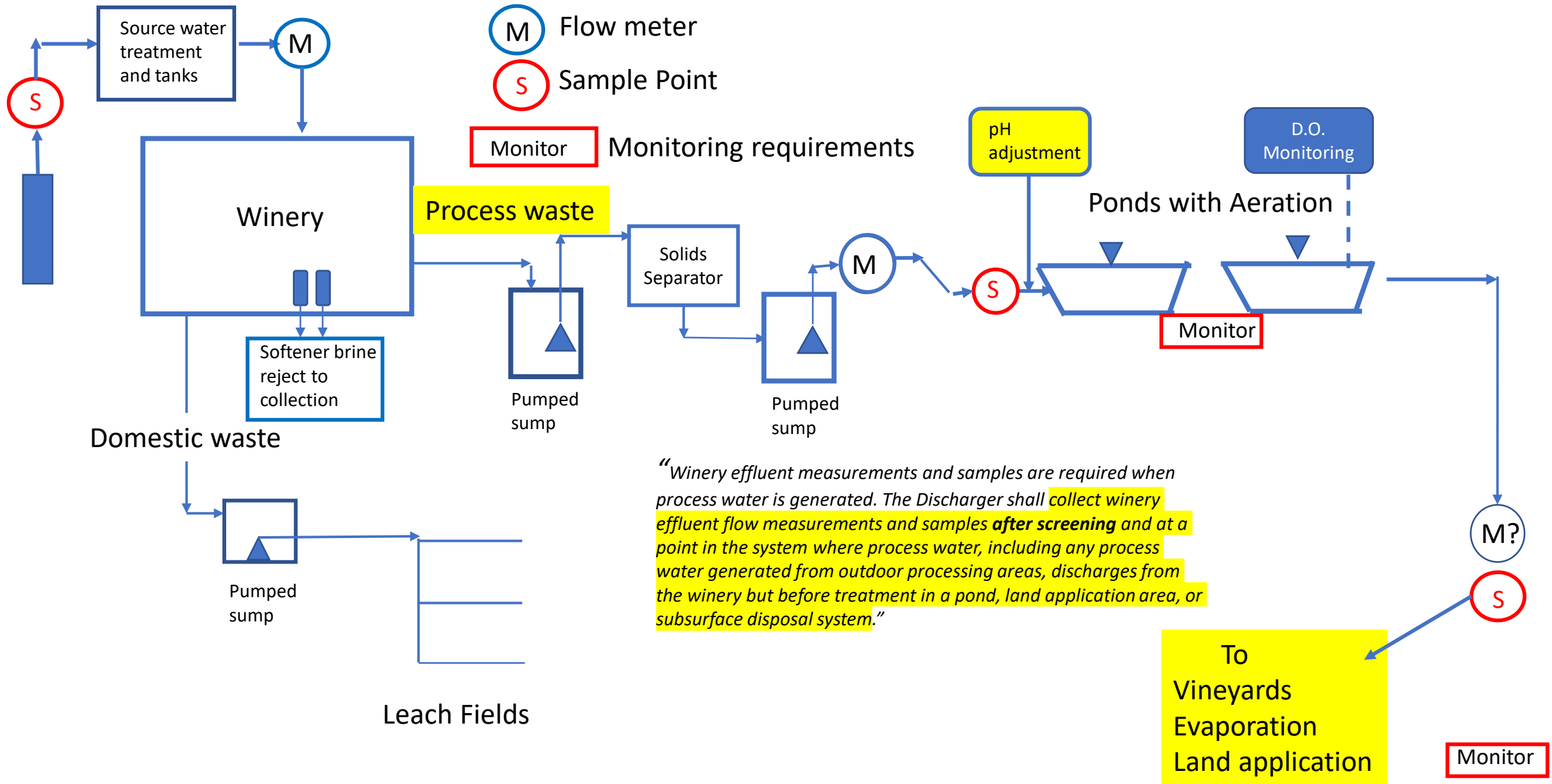
WDR Questions to Consider for Wastewater Ponds

- If you have ponds *per new WDR regulations*
 - *The annual total process water discharge flow from the winery, including process water generated from outdoor processing areas, and measured prior to treatment (e.g., before discharged to a pond, LAA, or SDS) shall not exceed the permitted process water design flow stated in the facility NOA*
 - *Average BOD loading to the LAA shall not exceed 100 lb./ac/d over the course of any discharge cycle (i.e., irrigation cycle). BOD loading shall be determined using a moving average of the three most recent BOD process water sample results.*
 - *Application of waste constituents to the LAA shall be at agronomic rates as demonstrated with an annual nitrogen balance for the plants grown at the LAA. Nitrogen application rates shall not exceed the crop agronomic rate as defined in this General Order*

Agronomic rate

The rate of application of nutrients in amounts necessary to satisfy the plant nutrient demand (crop uptake) while minimizing the movement of nutrients below the plant root zone, considering the crop, soil, climate, irrigation method and efficiency, leaching fraction, and factors that impact plant available nitrogen (e.g., nitrogen loss from denitrification, volatilization, and soil storage). Application at an agronomic rate must account for nutrient loading from all sources, e.g., process water, supplemental water, process solids, fertilizers, compost, and soil amendments.

Wastewater Flow Map showing Flow, Sampling and Monitoring for ponds



Sampling: Time to get started

What existing sampling/monitoring are you doing now? What sampling/measurements do you do in house?

- The only analysis that can be performed in-house *and* reported is pH, D.O. and E.C. All other monitoring must be performed by an accredited Lab (ELAP)
- Has winery tested well source water for FDS? *The FDS threshold (measured in mg/L) is equal to the annual average FDS concentration (measured in mg/L) of the facility source water plus 320 mg/L*
- This is also good time to check your hardness

Start now to see where you are:

- Do you have a laboratory that you use?
- Do you have identified sampling points?
- Where / how do you sample (i.e. on SDS systems: sludge levels, supernatant)?
- Who does it - need to follow Chain of Custody
- Frequency, type of sample (Grab vs. flow weighted) depends on Tier level
- Testing lab options such as: (need to consider location and travel time)
 - Alpha Analytical
 - Caltest

Know Your Waste Treatment System

On SDS: How often serviced?

- How often are tanks pumped out, system serviced? Is leach system for domestic separate from process system? *Discharge of commingled process water and domestic wastewater to an SDS is prohibited, except as stipulated in the Technical Provisions section for addressing an existing commingled system*
- Do you have the plans for your leach system, design limits, showing layout sidewall and trench dimensions, pipe sizing, pumps and sumps?

On ponds: Do you have DO / pH monitoring in place? Is aerator control based on D.O.?

- How old are the ponds - do you have the construction plans?
- Do you have design limits and flow information?
- Are the ponds lined or un-lined? *There are specific requirements for pond liners and their conditions, as well as restrictions for discharges to unlined ponds. Unlined ponds will require liners after a period of time*

If you don't have the plans, you can possibly get this information from the County Website for plans submitted for permitting:

[Electronic Document Retrieval](https://www.countyofnapa.org/2474/Electronic-Document-Retrieval): <https://www.countyofnapa.org/2474/Electronic-Document-Retrieval>

You can get help with finding the APN ([MBAP \(mptsweb.com\)](https://mptsweb.com)) if you don't know it.

The screenshot shows a web browser window displaying the Napa County Electronic Document Retrieval page. The browser's address bar shows the URL <https://www.countyofnapa.org/2474/Electronic-Document-Retrieval>. The website has a dark blue header with the Napa County logo and a search bar. Below the header is a navigation menu with links for Government, Departments, Residents, Business, and Emergency. The main content area is titled "Electronic Document Retrieval" and includes a section for the Department of Planning, Building & Environmental Services. This section provides instructions on how to search for documents, including a list of document types and a search window. A sidebar on the left contains a list of links for various services, and a "Live Chat" button is visible on the right. The Windows taskbar at the bottom shows the time as 4:40 PM on 11/23/2021.

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Electronic Document Retrieval

Department of Planning, Building & Environmental Services

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- For best results, please read the following information prior to performing your search:
- We are in the process of digitizing our records and the results displayed may not be the complete record. If you believe there are additional documents related to your search, please call 707-253-4885 for assistance or email us at PBESRecords@countyofnapa.org with the parcel number and specific information that you were unable to find online.
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Assessor's Parcel Number (APN)

Don't know your APN? View the [Assessor's Parcel Data](#) page.

NAPA COUNTY

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Hold and Haul: Most common disposal point is the East Bay Municipal Utility District (EBMUD) plant in Oakland

EBMUD accepts a variety of winery production by-products:

- Wine & Juice Products
- Barrel Wash Water
- Wine Lees
- Process Wastewater Screenings
- Pond Sludge
- Cooling Tower Blowdown
- Water Softener Concentrate
- Ion Exchange Reject
- Boiler Blowdown
- Acid / Caustic Rinse Water

FY 2021 Rates for Resource Recovery Material Treatment

<u>Material Type</u>	<u>Rate</u>
Septage	\$0.07/gal
Fats, Oil and Grease	\$0.09/gal
Process Water	\$0.05/gal
Brine	<u>Variable with Total Dissolved Solids (TDS)</u> \$0.05/gal < 50,000 mg/L TDS \$0.06/gal 50,001 - 100,000 mg/L TDS \$0.09/gal > 100,000 mg/L TDS
Sludge	<u>Variable with % Total Solids (TS)</u> \$0.06/gal up to 3% TS plus \$0.005/gal per % TS for TS between 3% to 20%
Clean Liquid Food Waste Slurry(3)	<u>Variable with % Total Solids (TS)</u> \$0.04/gal up to 3% TS plus \$0.005/gal per % TS for TS between 3% to 20%
Liquid Organic Material	\$0.05/gal
Protein Material	\$0.09/gal
Solid Organic Material	\$30/ton - \$75/ton
Permit Fee	\$350 (per year)

Some FAQ's on Hold and Haul to EBMUD

Can loads from different wineries be comingled with other winery wastes?

Each winery location should have a different MAP completed by the hauler. **EBMUD does not allow comingling of loads.** The only exceptions we have are septage waste from multiple locations and FOG from multiple restaurants/grease traps. Even if the wineries are from the same company and generate brine waste through the same processes, this can be an issue if one location accidentally contaminates the load with a harmful pollutant and we suspend permit, then prohibiting all brine disposal from all locations.

How is volume recorded?

Each tanker that comes into EBMUD is registered into our system by nameplate capacity and license plate #. **We charge the full capacity of the tanker** because we allow drivers to washout the full tanker with our hoses, sometimes getting more wastewater than the tanker holds. It may be worthwhile ensuring the storage tank is full or larger than what the tanker can hold to ensure the tanker is always full.

Does each batch to be picked up need to be tested?

Only the first batch needs to be tested. All other loads for remainder of the permit (1-5 years) do not need to be tested as long as the characteristics have not changed or some significant change in the way the wastewater is generated.

Is there a fee for each batch, beyond the cost/gallon?

No additional fee or tax. Just the cost per gallon times the capacity of the tanker.

Brine Rates:

https://www.ebmud.com/files/3316/0915/6333/FY_2021_Rates_for_Resource_Recovery_Material_Treatment.pdf

EBMUD Resource Recovery Site: <https://www.ebmud.com/wastewater/commercial-waste/trucked-waste/>

Note-approved haulers are listed on the website. Verify that the hauler is also approved by the County of Napa

EBMUD Contact: Mortay Mendoza | Wastewater Control Representative
O: 510.287.1632 | RRwaste@ebmud.com

Questions?

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