**ATTACHMENT C**

**NOTICE OF INTENT INSTRUCTIONS**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

**SAN FRANCISCO BAY REGION**

For the General Waste Discharge Requirements for

Discharges of Winery Waste to Land Within the San Francisco Bay Region

Order No. R2-2017-XXXX

**ATTACHMENT CONTENTS**

**Attachment C** Notice of Intent Instructions

**Attachment C-1** Pre-Enrollment Required Assessments and Plans

**Attachment C-2** Hydraulic Loading Rate Guidance

**Attachment C-3** Pond Infiltration and Water Balance Guidance

**GENERAL**

The purpose of the Notice of Intent (NOI) is to summarize the required planning and design of winery wastewater treatment and disposal systems to comply with this Order.

Factors that influence the treatment, use, and disposal of the wastewater generated onsite include, but are not limited to, wastewater volume, land area, soils, depth to groundwater, and distance from receiving water bodies. Information supporting the design of the wastewater treatment and land discharge systems must be submitted to the Regional Water Board in the NOI package.

The NOI form constitutes one element of the NOI Package, which are required for obtaining coverage under the Order. The other components of the NOI Package are listed at the end of these instructions. On the NOI form, fill in all applicable information. If an item is not applicable, state "NA." If information is not known, state "unknown." Some items are given as answer options with check‑mark boxes. Check all applicable answers.

With discharges to land, it is necessary to consider the interrelation between the discharge characteristics, the wastewater treatment capacity and limitations, the available storage, and the receiving soil and groundwater capacity and limitations. A limiting factor in one area (such as the land area available for discharge) necessitates an increased capacity in another (such as treatment and storage).

**INSTRUCTIONS FOR SUBMITTAL OF YOUR NOTICE OF INTENT PACKAGE**

The Order covers facilities in three tiers (**Section G** instructions). Each facility will fall into one of the three tiers. Depending on which Tier applies to your Facility, these instructions indicate which information you are required to provide.

1. **DISCHARGER (OWNER) INFORMATION**

If the Discharger is different than the owner of the land where the facility or discharges are located, then both the Discharger and the owner must be identified. Provide complete proper address where correspondence such as legal documents may be delivered.

1. **FACILITY INFORMATION**

Include the following information about the physical location of the facility:

* Street address or a description of the facility location (e.g., 1234 5th Street, or northwest corner of 1st Street and X Avenue).
* Contact person, phone number, and email address.
* County and Assessor’s Parcel Number (APN) of the facility property. If the facility and discharge areas encompass more than one property parcel, identify the APN of each parcel.
* Watershed, by name of nearest surface water body (e.g., river, stream, creek, lake, etc.). The watershed can be determined via the Environmental Protection Agency online mapping website Watershed Assessment, Tracking, and Environmental Results System (WATERS), which can be accessed at <http://www2.epa.gov/waterdata/waters-watershed-assessment-tracking-environmental-results-system>
* Latitude and longitude of the main entrance doorway of the facility, and the basis of the latitude and longitude values given (e.g., USGS map, Google Maps, GPS type).

1. **OPERATOR INFORMATION**

Wastewater treatment systems shall be operated and maintained by a qualified professional service provider or certified wastewater treatment plant operators who are experienced in and knowledgeable of the wastewater system’s design and proper operation. Operator pertains to the winery wastewater and domestic wastewater treatment systems. Additional information on the State Water Resources Control Board Wastewater Operator Certification Program is accessible online at <http://www.swrcb.ca.gov/water_issues/programs/operator_certification/operator_certification.shtml>.

# BILLING ADDRESS

Dischargers regulated under all Waste Discharge Requirements (WDRs), including this Order, are required to pay fees on an annual basis. Provide a complete mailing address where the annual fee invoice can be delivered.

# REASON FOR FILING

All wineries discharging to land within unsewered areas of the San Francisco Bay Regional Water Board’s jurisdiction are required to obtain coverage under this Order.

1. **WASTE DISCHARGE REQUIREMENTS ORDER STATUS**

Provide information about existing WDRs under which the facility is currently regulated

Indicate the current regulatory status of your facility:

* Currently has individual WDRs from the Regional Water Board.
* Currently has a permit through your County.
* Currently has no permit, but has submitted a Report of Waste Discharge (ROWD) to the Regional Water Board in the past (provide a copy if available).
* Currently has no permit and has not submitted a ROWD to the Regional Water Board in the past.

1. **TIER QUALIFICATION**

The Order sets a tiered approach for the regulation and management of discharges of winery wastewater to land. Identify your tier in the following manner:

1. Wineries discharging less than 1,500 gallons per day (gpd) monthly average of winery waste during crush season and 1,500 gpd daily maximum during non-crush season are covered under Tier 1.
2. Dischargers with facilities under qualified County oversight by an authorized County are covered under Tier 3. Refer to the maps on the following website to determine whether your winery is located in a County Oversight county (insert web link).
3. All other facilities are covered under Tier 2.

Additional requirements may apply if your winery is located within an area of nitrate‑impacted groundwater. In Alameda County, the areas of known nitrate-impacted groundwater are also referred to as Areas of Concern. To determine whether your winery is located within an Area of Concern, refer to **Figures 3** through **5** in **Attachment J** of the Order and on the following website [insert web link].

1. **Eligibility for reduced fee for Environmental Stewardship recognition**. Wineries with advanced treatment and that participate in the Certified California Sustainable Winegrowing Program, or have been awarded the Sustainability in Practice Certification, may qualify for a reduced fee under this Order. Additional information on the programs is accessible online at <http://www.sustainablewinegrowing.org/> and <http://www.sipcertified.org/>, respectively.

Advanced wastewater treatment is treatment of wastewater that goes beyond the secondary or biological water treatment stage and includes the removal of nutrients and a high percentage of suspended solids. Advanced treatment technologies can be extensions of conventional secondary biological treatment to further stabilize oxygen-demanding substances in the wastewater, or to remove nitrogen and phosphorus. Advanced treatment may also involve physical-chemical separation techniques such as adsorption, flocculation/precipitation, membranes for advanced filtration, ion exchange, and reverse osmosis. [[1]](#footnote-2)

1. **INDUSTRIAL STORM WATER PERMIT**

If your facility is covered under the Industrial Stormwater General Permit, provide the WDID and indicate the level of permit coverage. If your facility does not have Industrial Stormwater General Permit coverage, provide a copy of your engineer-certified Notice of Non‑applicability (NONA) report. The Industrial Stormwater Permit and associated guidance documents are available online at <http://www.waterboards.ca.gov/water_issues/programs/stormwater/industrial.shtml>.

1. **EXISTING PERMITS - OTHER AGENCIES**

Provide information about permits issued by agencies other than the Regional or State Water Boards for the winery uses or for the wastewater treatment and discharge system.

1. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

(Tier 2 and Tier 3 discharging greater than 1,500 gpd)

If the winery is an existing facility and is not proposing to expand, or it has submitted a Report of Waste Discharge to the Regional Water Board as of the adoption date of this Order (December 13, 2017), or is enrolled under Tier 1 or Tier 3 and discharges less than 1,500 gpd, submittal of CEQA documentation is not required. If that is the case, state ‘existing winery’ or Tier 1 in this section. For all other applicants, CEQA or documentation of a CEQA exemption is required. Submit the completed CEQA document or draft if the Water Board is the lead agency.

1. **FACILITY USES and PRODUCTION CAPACITY**

Provide the following information on the facility uses and production capacity:

1. Uses of the winery facility proposed, or permitted by applicable local land-use permit(s) issued.
2. Annual wine production volume in gallons and annual grape crush quantity in tons.
3. Typical crush period, both months during which crush occurs, and total duration of crush activities.
4. **WASTEWATER FLOWS and DESIGN FLOWS**

Provide information about the existing or anticipated (if the facility is new and has not yet initiated operation) winery and domestic (if applicable) wastewater flows, and design flows during crush and non-crush periods for the wastewater treatment and discharge systems.

The **Design Average Flow** is the average of the daily flow expressed as a volume per unit time.

The **Design Maximum Day Flow** is the design maximum day flow is the largest volume of flow to be received during a continuous 24-hour period expressed as a volume per unit time.

1. **DISCHARGE WATER QUALITY**

Provide a water quality characterization of the quality of the final treated wastewater that is or will be discharged to land. Include, at a minimum, values for the following water quality parameters:

1. Biochemical oxygen demand (BOD5) [[2]](#footnote-3)
2. Total suspended solids (TSS)
3. Total dissolved solids (TDS). This analysis may include but is not limited to general or standard minerals analyses, sodium and electrical conductivity (EC).
4. Chloride
5. Dissolved oxygen (DO)
6. Total nitrogen and nitrate
7. pH

Indicate whether the water quality values were determined by sampling of the treated wastewater conducted at the winery.

1. **WASTEWATER TREATMENT AND DISCHARGE SYSTEMS**

Provide a complete description of the winery wastewater treatment, storage, and discharge systems. A complete description must be attached and shall include all unit processes and equipment, design and operating capacities, operation and maintenance procedures, and schedule. The wastewater treatment, storage, and discharge system components information listed below are included as guidance in preparing the wastewater system description. The list is not necessarily comprehensive and information other than that listed may be necessary or appropriate.

Show all components on accurately scaled and labeled drawings, plan views, and elevation views, as appropriate.

**NOI Form Section N.1. Pretreatment**

* Chemicals used for pH control
* Type and material of screen or filter used for removing solids
* Type or method used to determine flow rate
* Capacity of flow equalization tank

**NOI Form Section N.2. Primary Treatment**

**N.2a. Proprietary Manufactured Treatment Unit**

* Type
* Manufacturer
* Model
* Wastewater treatment system design capacity

**N.2b. Septic Tank**

* Material
* Dimensions
* Design Capacity (gallons)
* Design Detention Time (days or hours)
* Number of chambers and respective volumes
* Number and type of access ports (dimensions, risers, depth below surface)
* Effluent Filter, yes/no, if yes, type

**N.2c. Ponds**

* Purpose (treatment, storage)
* Type (aerobic, facultative, anaerobic)
* Dimensions - length, width, depth (feet), internal berm slope
* Total Volume (gallons)
* Volume w/ two feet freeboard remaining (gallons)
* Aerators - number of units, type, horsepower, oxygen transfer capacity, operating schedule
* Inlet and outlet equipment or methods (pipes, valves, pumps)

**N.2d. Storage and Pump Tank**

* Material
* Dimensions
* Design Capacity (gallons): Reserve/emergency storage capacity
* Number of pumps, types and pumping capacities (gallons per minute under design pressure)
* Number and type of access ports
* Filters or screens
* Control systems (operating, monitoring and alarm systems)

**NOI Form Section N.6. Hydraulic loading rate calculations** - The discharge area must be evaluated to determine the feasibility of the site for land disposal of wastewater. In the NOI Technical Report, provide the hydraulic loading rate calculations, including water balance and storage volume calculations in support of determining site suitability. Refer to **Attachment C-2** for hydraulic loading rate calculation methodologies. If another method is used, provide the method, data, and calculations used.

**NOI Form Section N.6. Organic Loading Rate Calculations** – In the NOI Technical Report, provide the organic loading rate calculations. The mass of biochemical oxygen demand (BOD) applied to the discharge areas on a daily basis over the duration of the cycle period shall be calculated Refer to **Section G.1** of the Monitoring and Reporting Program (**Attachment A**) for possible methodology for calculating the organic loading rate. If another method is used, provide the method, data, and calculations used.

**NOI Form Section N.7. Surface Disposal:**

* Total Area (acres or square feet)
* Discharge method - spray, drip, flood irrigation
* Design Capacity (gallons per day)
* Land slope
* Vegetation
* Disposal area uses (grass field, pasture, crops…)
* Fencing and access
* Drainage system
* Runoff control methods
* Management parameters or constraints

**NOI Form Section N.8.** **Subsurface discharge** of wastewater. The Discharger shall address the following in the design of the subsurface wastewater discharge system:

1. Flow equalization
2. Biochemical oxygen demand loading
3. Seasonal loading
4. Variations in seasonal activity
5. Solids generation and removal
6. pH neutralization
7. Operation and maintenance

* Type
* Design Capacity
* Replacement Area (at least 100%)
* Soil description
* Seasonal high groundwater elevation points of control or monitoring
* County Permit (type or title, date of issue)

**NOI Form Section N.10.** **NOI Technical Report - Pond Infiltration and Water Balance.**

All wineries using ponds shall conduct a pond infiltration and water balance to demonstrate compliance with 10**‑**year wet weather design standard for each pond**.** Refer to **Attachment C-3** for additional pond infiltration and water balance guidance.

**NOI Form Section N.13.** **NOI Technical Report - Solids Management Plan**

In addition to providing information on the type and method of winery processing solid waste, all Dischargers that land apply winery processing solids shall submit a facility‑specific Solids Management Plan with the NOI Package. The Solids Management Plan shall address all solids generated by the facility, including wine-making byproducts and pond dredging solids if the facility uses ponds for storage or treatment.

1. If accumulated sludge is proposed to be used as an agronomic addition to fields, the solids management plan shall contain, at a minimum, the following information:
2. Description of the winery processing solids, including the volume and percent solids.
3. Description of chemical and physical characteristics of the sludge, including results from a one-time sampling event resulting in analytical tests of representative composite samples of the solids. The analysis shall include total nitrogen, arsenic, copper, lead, and nickel.

If the winery is new, the results of the analysis may be submitted following the first crush season.

1. A statement verifying that neither hazardous waste nor domestic waste has been, is being, or will be discharged to the ponds.
2. A description of the proposed land application area and application methods. The description shall include the following:
3. Site plan drawing that is a scaled or a dimensioned plan view drawing of the area that includes land topography, property boundaries, application area boundaries, water bodies, water supply wells, and other relevant site features;
4. Net acreage of the winery waste solids application area;
5. Crops to be grown thereupon if applicable;
6. Calculations showing that the winery waste solids will be applied at agronomic rates based on nutrient uptake of the crop,
7. Methods of application, and
8. Time schedule of proposed activities.
9. **GROUNDWATER USES AND INFORMATION**

Provide information about groundwater uses at the facility, and in the vicinity of the discharges (within 100 feet of the discharge areas). For all wells at the facility used for water supply or for monitoring ground water levels or quality, provide the following information:

1. well use or purpose
2. total depth (feet of depth below ground surface)
3. screened depth (total length of screened section and depths below ground surface of top and bottom of the screened section)
4. age or date of well construction
5. identification (well name or code)

Groundwater elevation and water quality data may be available online through the State Water Resources Control Board GeoTracker Groundwater Ambient Monitoring and Assessment (GAMA) database accessible at http://geotracker.waterboards.ca.gov/gama/.

1. SOIL INFORMATION

Provide information about the characteristics of the soils in the area of the discharge systems. Relevant information is typically obtained from soil profile descriptions or soil boring logs. At a minimum, provide information obtained from a published area-wide (County) Soil Survey. Soil information can be accessed online at <http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>. Tier 1 Dischargers can provide just the Soil Survey data.

Factors that shall be considered when determining the wastewater loading rate to land include the a) hydraulic capacity of the discharge area (used to determine the soil’s ability to accept and renovate pretreated wastewater), b) soil infiltration rate for wastewater, and c) wastewater treatment requirements. Higher levels of treatment or lower hydraulic loading may be required for high strength wastewater and/or to overcome site limitations.

Indicate whether the soil water storage capacity was obtained from soil survey reports based on mapped soil type or direct measurement.

**NOI Form Section P** - Discharge Area Soil Assessment.

At least one profile hole per soil type must be included in the evaluation. The applicant shall use soil borings, where appropriate, for enhancement of the profile hole determinations. The profile holes utilized in the site evaluation must be no more than five feet deep, or to the first continuous lateral lithic contact.

1. The evaluation shall include the following information:
2. total depth of the profile hole, and
3. horizon descriptions, which shall include
4. depth of the horizon
5. soil texture
6. soil structure
7. soil color
8. presence of mottling
9. percent coarse fragments
10. hydrologic soil group
11. active and/or potential water bearing zones
12. boundary descriptions (soil horizons)

The soil evaluation shall be performed by a licensed professional geologist or engineer, or certified soil scientist.

1. **NOTICE OF INTENT PACKAGE COMPONENTS:**
2. **LOCATION MAP**

Provide a map or accurately scaled and labeled drawing showing the location of the discharge facility in the context of the general vicinity. Show at least one mile beyond the property boundaries of the facility. Identify the facility and nearby towns or major roads, sufficient for a person to locate and access the facility.

1. **FACILITY SITE PLAN** **OR MAP**

Provide a map or accurately scaled and labeled drawing showing a plan view of the facility. Include land topography, other land features, natural or constructed, such as roads, buildings, property boundaries, drainage systems, water bodies and wells. Include and identify all major wastewater system components described in the NOI. More than one drawing may be provided.

1. **WASTEWATER FLOW AND TREATMENT DIAGRAM**

Provide a diagram illustrating the flow of wastewater throughout the wastewater management system. Include wastewater sources, collection, treatment, storage, ponds, and distribution and disposal systems. Identify major components of the systems and points of control or monitoring. The diagram may be a flow chart or schematic drawing of the system(s).

1. **WATER MASS BALANCE (Tier 2 and Tier 3 discharging less than 1,500 gpd)**

A water mass balance for the land disposal method must be provided to assure that sufficient storage and disposal capacity is available at all times under all operational conditions, including design flows and incident or collected rainfall, for a wet weather season with rainfall equivalent to at least a once in ten year return frequency.

1. **NOTICE OF INTENT FORM**

The Notice of Intent Form serves as an application for enrollment under the Order and is one component of the Notice of Intent Package. The Notice of Intent Form and instructions are included in **Attachments B** and **C** of the Order.

1. **NOTICE OF INTENT TECHNICAL REPORT**

The Notice of Intent Technical Report substantiates the information presented in the Notice of Intent (NOI) and the Notice of Intent Package. The extent of the content of these submittals shall be in reasonable relationship to the production size and discharge quantity of the winery. The NOI Technical Report shall contain the following assessments and plans:

1. Wastewater Management Plan, the development of which is informed by the following NOI Package components:
2. Hydraulic Loading Rate Calculations
3. Discharge Area Soil Assessment
4. Solids Management Plan
5. Operation and Management Plan (not applicable to Tier 1 or Tier 3 discharging less than 1,500 gpd))
6. Nitrogen Assessment, only submitted with the NOI Technical Report for dischargers within a discharge area overlaying nitrate impacted groundwater area plume.

A Pond Infiltration and Water Balance is applicable only to facilities that use ponds for storage or treatment. Submit the Pond Infiltration and Water Balance within **6 months** following issuance of Discharge Authorization Letter.

1. **APPLICATION FEE**
2. **CEQA COMPLIANCE (Tiers 2 and 3 discharging greater than 1,500 gpd)**
3. DOMESTIC WASTEWATER SYSTEM

Provide a description of the means by which domestic wastewater (sanitary sewage) generated at the facility is managed. The description shall include the type of wastewater system, design flow, components and their capacities, points of control or monitoring, and age or date of construction. The description shall also include identification of applicable permits issued or pending from the Regional Water Board or local government agency for the system.

1. **CERTIFICATION**

The certification statement must be completed. The person certifying this NOI must meet the signatory requirements stated in **Provision VI.5.l.** of the Order.

**REGIONAL WATER BOARD CONTACT INFORMATION**

The completed NOI Package can be submitted to the Regional Water Board via a) mail or b) as electronic files in PDF and in spreadsheet (when applicable) format via email.

1. Regional Water Board office location and mailing address:

California Regional Water Quality Control Board, San Francisco Bay Region

**Attention: Watershed Management Division, Wineries**

**1515 Clay Street, Suite 1400**

**Oakland, California 94612-1482**

1. **Electronic Reporting Format**. Electronic files can submitted to the Regional Water Board via the centralized email address and to the Regional Water Board staff listed below.

**Email:** [**WDR.monitoring@waterboards.ca.gov**](mailto:WDR.monitoring@waterboards.ca.gov)

Send a copy of the email notification to the following Regional Water Board staff:

Melissa Gunter: **Melissa.Gunter@waterboards.ca.gov**

Blair Allen: **Blair.Allen@waterboards.ca.gov**

If you have questions or need further assistance with the NOI, call the Regional Water Board and ask for a staff person in the Watershed Management Division who works with wineries.

Regional Water Board main office telephone number: (510) 622-2300

Regional Water Board main web site: http://waterboards.ca.gov/sanfranciscobay/

General Waste Discharge Requirements for Discharges of Winery Waste to Land website:

<http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/on_site_wastewater_treatment_systems.shtml>

**ATTACHMENT C-1**

**PRE-ENROLLMENT REQUIRED ASSESSMENTS AND PLANS**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD**

**SAN FRANCISCO BAY REGION**

For the General Waste Discharge Requirements for

Discharges of Winery Waste to Land Within the San Francisco Bay Region

Order No. R2-2017-Xxx

Prior to submittal of the Notice of Intent Package, the following assessments and plans shall be prepared under the direction of qualified professional(s) as further described in each section below. The extent of the content of these submittals shall be in reasonable relationship to the production size and discharge quantity of the winery.

1. Wastewater Management Plan, the development of which is informed by the following NOI Package components:
   1. Hydraulic Loading Rate Calculations
   2. Discharge Area Soil Assessment
2. Solids Management Plan
3. Operation and Management Plan
4. Nitrogen Assessment and Management Plan, applicable only to dischargers within a discharge area overlaying nitrate-impacted groundwater areas

A Pond Infiltration and Water Balance is applicable only to facilities that use ponds for storage or treatment. Submit the Pond Infiltration and Water Balance within **6 months** following issuance of Discharge Authorization Letter.

1. **Wastewater Management Plan**
2. All Dischargers shall submit a facility-specific Wastewater Management Plan with the NOI Package. The Wastewater Management Plan is the comprehensive evaluation of the wastewater treatment and discharge systems that ensure effluent limitations are met. The discharge area must be evaluated to determine the feasibility of the site for land disposal of wastewater. The site assessment data and results shall be included in a Wastewater Management Plan that must be submitted with the NOI Package (**Attachment B,** instructions provided in **Attachment C**).
3. Dischargers that are discharging to the land surface or subsurface shall provide the following information with the NOI Package as part of the Wastewater Management Plan regarding disposal operations:
4. Discharge area or acres irrigated;
5. Design application rate in acre-feet/area/year;
6. Design application frequency in hours per day and days per week;
7. Design total nitrogen loading rate in pounds nitrogen/acre/ year;
8. Slope of the discharge area;
9. Irrigation efficiency (Provide an estimate. Applies to irrigation only);
10. Describe the application method and equipment (e.g., row irrigation, spray irrigation using a center pivot sprinkler system, or leachfield);
11. Provide a water balance and storage volume calculation; and
12. If the Discharger is discharging the wastewater to a discharge area that has a crop, including or other than grapes, the Discharger shall determine and report to the Regional Water Board the Nitrogen Groundwater Pollution Hazard Index via the online tool accessible via <http://ciwr.ucanr.edu/Tools/Nitrogen_Hazard_Index/>.
13. **Hydraulic Loading Rate Calculations**
14. Factors that shall be considered when determining the wastewater loading rate to land include the a) hydraulic capacity of the discharge area (used to determine the soil’s ability to accept and renovate pretreated wastewater), b) soil infiltration rate for wastewater, c) depth to groundwater, and d) wastewater treatment requirements or effluent water quality. Higher levels of treatment or lower hydraulic loading may be required for high strength wastewater and/or to overcome site limitations.
15. Each discharger shall conduct a hydraulic loading rate evaluation, which shall be submitted as a part of the NOI Package (**Attachment B**, instructions **Attachment C). Attachment C-2** contains guidance on hydraulic loading rates. If a methodology in **Attachment C-2** is not applied, an explanation of the assessment method, data, and calculations supporting the determination of the hydraulic loading design rate must be submitted with the NOI Package. The hydraulic loading shall inform the Wastewater Management Plan, which is also a required component of the NOI Package.
16. For new or expanding facilities, the Discharger shall base the design hydraulic loading rate on the saturated vertical hydraulic conductivity test results for the site and hydraulic loading rates based on soil morphology.
17. Following wastewater loading, the land shall be rested to provide time to allow decomposition of the organic pollutants in the effluent by the soil organisms, decomposition of the organic solids on the ground surface, and the reaeration of the soil column.

The intermittent application of the wastewater ensures that aerobic conditions are maintained and that the biological growths, which can reduce its percolative capacity, are controlled by the drying out periods. The discharge of wastewater shall be applied in doses or intermittent application of wastewater. The application period may range from a few hours for overland flow systems to a few days for soil aquifer treatment systems.

The operator shall ensure that the discharge area does not receive more than its design flow each day. The wastewater application dosing frequency shall be submitted to the Regional Water Board with the NOI Package.

1. The maximum soil water storage capacity[[3]](#footnote-4) of the site between the land surface in the discharge area and five feet depth shall not be exceeded for a single event.[[4]](#footnote-5) Soil water storage capacity can be obtained from soil survey reports based on mapped soil type or direct measurement.
2. The flow of winery process wastewater discharged to the treatment system(s) shall not exceed the hydraulic or organic loading capacities of the system(s), which capacities shall be clearly stated in the NOI Package.
3. **Discharge Area Soil Assessment**
4. All facilities shall conduct and submit with the NOI Package a soils evaluation to identify the soils associated with the facility’s discharge area. The purpose of the Soil Assessment is to inform the facility on the appropriate selection, sizing, and placement of the discharge area. The Soil Assessment is a precursor to the Wastewater Management Plan, which is also a required component of the NOI Package.
5. At least one profile hole per soil type must be included in the evaluation. The applicant shall use soil borings, where appropriate, for enhancement of the profile hole determinations. The profile holes utilized in the site evaluation must be no more than five feet deep, or to the first continuous lateral lithic contact.
6. The evaluation shall include the following information:
7. total depth of the profile hole, and
8. horizon descriptions, which shall include
9. depth of the horizon
10. soil texture
11. soil structure
12. soil color
13. presence of mottling
14. percent coarse fragments
15. hydrologic soil group
16. active and/or potential water bearing zones
17. boundary descriptions (soil horizons)
18. The soil evaluation shall be performed by a licensed professional geologist or engineer, or certified soil scientist.
19. **Solids Management Plan**
20. All Dischargers shall submit a facility-specific Solids Management Plan with the NOI Package. The solids management plan shall address all solids generated by the facility, including wine-making byproducts and pond dredging solids if the facility uses ponds for storage or treatment.
21. If accumulated sludge is proposed to be used as an agronomic addition to fields, the solids management plan shall contain, at a minimum, the following information:
22. Description of the sludge to be removed from the pond, including the volume and percent solids of the sludge.
23. Description of chemical and physical characteristics of the sludge, including results from a one-time sampling event resulting in analytical tests of representative composite samples of the solids. The analysis shall include total nitrogen, arsenic, copper, lead, and nickel.

If the winery is new, the results of the analysis may be submitted following the first crush season.

1. A statement verifying that neither hazardous waste nor domestic waste has been, is being, or will be discharged to the ponds.
2. A description of the proposed land application area and application methods. The description shall include the following:
3. Site plan drawing that is a scaled or a dimensioned plan view drawing of the area that includes land topography, property boundaries, application area boundaries, water bodies, water supply wells, and other relevant site features;
4. Net acreage of the winery waste solids application area;
5. Crops to be grown thereupon if applicable;
6. Calculations showing that the winery waste solids will be applied at agronomic rates based on nutrient uptake of the crop,
7. Methods of application, and
8. Time schedule of proposed activities.
9. **Operation and Management Plan**

An Operation and Maintenance (O&M) Program is needed to ensure that all aspects of the wastewater system are properly operated and maintained. The submittal of an O&M Program does not apply to facilities in Tier 1 or Tier 3 that discharge less than 1,500 gps. The O&M Program must include, but is not limited to, the following:

1. Descriptions of all wastewater system components and equipment,
2. Site plans that are accurately dimensioned and identify the locations of all components and relevant site features (buildings, wells, roads, etc.),
3. Strategies and procedures recommended for system operations in accordance with system designs and discharge requirements,
4. Procedures and criteria for process control monitoring,
5. Maintenance activities necessary to ensure continuous proper operation for the wastewater system, and
6. Persons responsible for operation and maintenance of the wastewater systems and how these persons can be contacted.
7. **Nitrogen Assessment and Management Plan**

A Nitrogen Assessment and Management Plan (Nitrogen Assessment) shall be prepared in the following circumstances:

1. Dischargers with a discharge area overlying a groundwater area for which nitrate is identified as a constituent of concern shall prepare and implement a Nitrogen Assessment that, at a minimum, includes the information listed in **Attachment F**. The Nitrogen Assessment shall be maintained at the winery.
2. Facilities region-wide shall prepare a nitrogen assessment if the facility exceeds the nitrate Numeric Action Level **three times** during a 12-month period.
3. The Nitrogen Assessment shall be certified in one of the following ways:

* Self-certified by the Discharger or representative thereof who attends a California Department of Food and Agriculture or comparable training program for nitrogen plan certification.[[5]](#footnote-6) The Discharger or representative of the Discharger shall retain written documentation of their attendance in the training program; or
* Self-certified by the Discharger that the plan adheres to a site-specific recommendation from the Natural Resources Conservation Service (NRCS)[[6]](#footnote-7) or the University of California Cooperative Extension. The Discharger shall retain written documentation of the recommendation; or
* Certified by a nitrogen management plan specialist such as Professional Soil Scientists, Professional Agronomists, Crop Advisors certified by the American Society of Agronomy,[[7]](#footnote-8) or Technical Service Providers certified in nutrient management in California by the NRCS; or
* Certified by a licensed geologist, certified professional soil scientist or agronomist, or professional engineer.

ATTACHMENT C-2

**HYDRAULIC LOADING RATE GUIDANCE**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

**SAN FRANCISCO BAY REGION**

For the General Waste Discharge Requirements for

Discharges of Winery Waste to Land Within the San Francisco Bay Region

Order No. R2-2017-XXXX

This document is intended to provide general guidance on approaches and methods for determining the hydraulic loading rate of wastewater to land. It is not to be construed as an endorsement of any particular method or an exhaustive list of options.

**General**

Hydraulic loading rates or wastewater infiltration rate define the rate wastewater enters the soil. Appropriate hydraulic loading rates of the wastewater to land are necessary to ensure that the soil is not continually saturated and that the soil conditions are conducive to providing additional treatment of the winery wastewater. A rate of application of wastewater to land must be determined that will not cause inundation or over-application of the site which will promote runoff or inadequate treatment of the wastewater applied.

Factors that are considered to determine the wastewater loading rate to land include the a) hydraulic capacity of the discharge area, b) soil infiltration rate for wastewater, c) water quality and d) wastewater treatment methods. An integrated approach for assessment of the hydraulic loading rate based on soil type and wastewater quality is recommended. Hydraulic loading is based on a water balance that includes precipitation, infiltration rate, evapotranspiration, soil storage capabilities, and subsoil permeability.

For subsurface disposal of treated wastewater, percolation test results and soil characteristics such as soil structure, texture, bulk density, and clay mineralogy may be assessed in conjunction with wastewater quality and treatment requirements when determining the hydraulic loading rate.

The Discharger shall implement one of the following hydraulic loading approaches included in this Appendix for the discharge of treated winery wastewater to land.

If an alternative approach is currently being implemented at the facility,

1. **Submit the hydraulic loading rates during crush and non-crush season and a description of the methodology used to determine the site‑specific hydraulic loading rates with the Notice of Intent package to the Regional Water Board.**
2. **Include visual inspection results that indicate whether wastewater is ponding intermittently or continuously in the discharge area.**

If the facility is a new facility, submit the design hydraulic loading rate proposed for the crush and non‑crush seasons with the Notice of Intent package to the Regional Water Board.

**Hydraulic Loading Rate Determination Options**

**Option 1: Select a hydraulic loading rate based on application rate for surface disposal via irrigation and vertical hydraulic conductivity if subsurface disposal.**

**Surface Disposal - Irrigation**

Limit the application rate for slow rate infiltration systems (spray irrigation) to a maximum of 2 inches per week.

**Subsurface Disposal of Winery Processing Wastewater – Onsite Wastewater Treatment Systems**

Unsaturated soil conditions can be achieved by hydraulic design if the design hydraulic loading rate is limited to a small fraction of the soil’s saturated hydraulic conductivity and intermittent dosing[[8]](#footnote-9). For subsurface disposal via an onsite wastewater treatment system, the hydraulic loading rate should be based upon **4 to 10% of the soil saturated vertical hydraulic conductivity**.

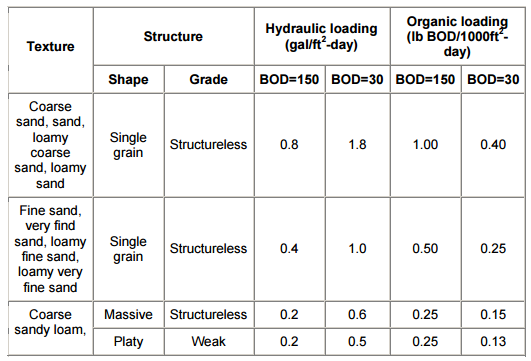
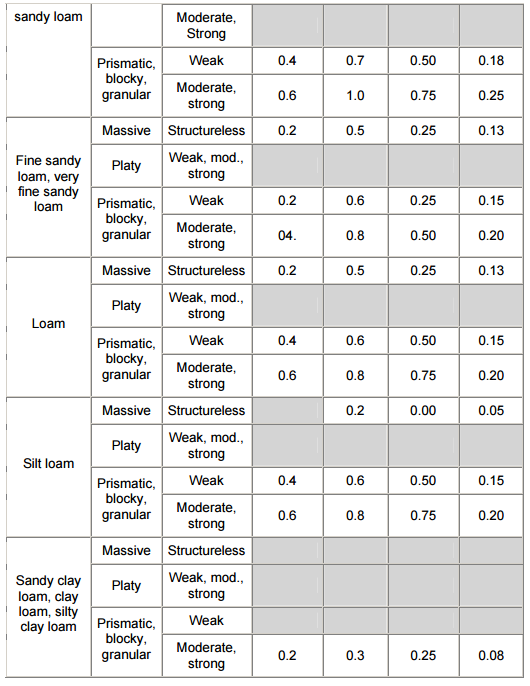
**Subsurface Disposal of Combined Domestic and Winery Processing Wastewater –**

**Onsite Wastewater Treatment Systems**

The hydraulic loading rate from an onsite wastewater treatment system discharging a combination of pretreated domestic and winery processing wastewater via subsurface methods shall range from 0.4 to 2.0 gallons per day per square feet (gpd/ft2).[[9]](#footnote-10)

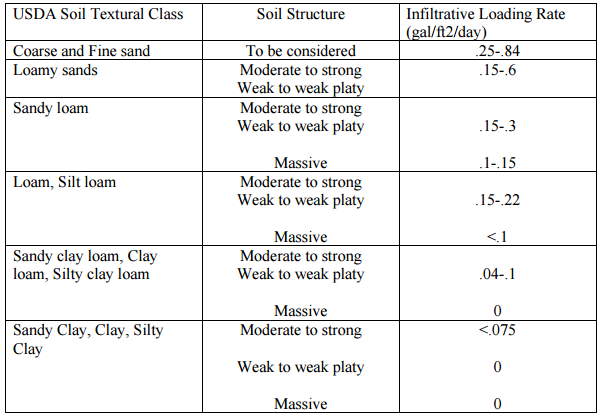
The soil saturated vertical hydraulic conductivity can be determined by accessing either of the following online resources:

1. University of California Davis Soil Web, <http://www.casoilresource.lawr.ucdavis.edu/gmap/>
2. Natural Resources Conservation Service Web Soil Survey, http://www.websoilsurvey.sc.egov.usda.gov

**Option 2: Hydraulic and organic loading rates for sizing infiltration surfaces[[10]](#footnote-11)**

**0.4**

**Option 3: Select a hydraulic loading rate range based on soil texture and structure[[11]](#footnote-12)**



**Supplemental Hydraulic Loading Resources**

The following publications contain additional information on determining hydraulic loading rates:

1. Brown and Caldwell and Kennedy/ Jenks Consultants. (March 14, 2007). Manual of Good Practice for Land Application of Food Processing/Rinse Water. Prepared for the California League of Food Processors. Chapters 7 and 12.

The publication is accessible online at <http://clfp.com/documents/Manualofgoodpractice/CLFP%20Manual_COMPLETE_FINAL_3-14-07%20(2).pdf>

1. U.S. Environmental Protection Agency. (September 2006). Process Design Manual. Land Treatment of Municipal Wastewater Effluents. Chapters 10 and 11.

The publication is accessible online at <http://bit.ly/2ibETfn>.

ATTACHMENT C-3

**POND INFILTRATION AND WATER BALANCE GUIDANCE**

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

**SAN FRANCISCO BAY REGION**

For the General Waste Discharge Requirements for

Discharges of Winery Waste to Land Within the San Francisco Bay Region

Order No. R2-2017-Xxx

**Pond Infiltration and Water Balance**

A pond infiltration assessment and water balance shall be prepared by all Dischargers to assess the level of leakage from each pond into the groundwater below.

## Which wineries are required to perform this study

All wineries using ponds shall conduct a pond infiltration and water balance study for each pond.

# When to submit the study to the Regional Water Board

The Pond Infiltration and Water Balance Study shall be completed within **6 months** of a facility obtaining coverage under the Order.

## What it helps you do or understand

A pond infiltration and water balance assessment is required for all existing ponds to assess level of leakage from the pond into the groundwater below. All new ponds shall be sited, designed, constructed, and operated to ensure that the wastewater contained in the ponds is effectively separated from underlying groundwater. The water containment portions of the pond (pond bottom and sides below operating water levels) shall be lined with a synthetic liner, suitable clay soils, or compacted so that percolation of water into subsurface soils has a rate of not more than 1 x 10-6 centimeters/second.

# Steps and Instructions

* + - 1. In addition to a pond water balance, seepage from unlined ponds can be determined by conducting in-place field permeability tests of the pond bottom soils. If permeability tests are conducted on the soils underlying the ponds, the depth of groundwater below the pond shall also be reported since local groundwater fluctuations can have a significant impact on seepage rates, especially if groundwater mounding has occurred beneath the pond. Additional information on pond sealing and seepage rates is located in chapter 4.3 of the Environmental Protection Agency’s Principles of Design and Operations of Wastewater Treatment Pond Systems for Plant Operators, Engineers, and Managers.[[12]](#footnote-13)
      2. To conduct a simplified pond water balance, calculate the pond inputs and outputs and compare to changes in pond depth. Monitor the water level in the pond over a period of time and compare it to inputs (rain and effluent) and outputs (evaporation). Other pond inputs may consist of runoff from the land basin and groundwater inflow. Pond outputs may consist of diversions out of the water body and groundwater flow from the pond.
      3. Conducting a pond water balance in the summer when inputs are minimal may make it simpler. Report the results of a water balance using the methodology below or a comparable approach. An example pond water balance methodology is stated below.

The following information is needed:

1. Pond surface area
2. Evaporation rate in the area of the pond
3. Rainfall in in the area of the pond

The monthly evaporation rate can be obtained from <http://www.wrcc.dri.edu/htmlfiles/westevap.final.html#CALIFORNIA> and/or

<http://www.dynsystem.com/netstorm/docs/NWS34EvapTables.pdf>.

**Note:** Water evaporates faster from a Class A Pan than from a large water surface such as a pond. When using Class A Pan evaporation rates, multiply by a correction factor of 0.75 to better approximate evaporation losses.

The input from rainfall can be obtained from an onsite rain gauge or access rainfall data for the nearest city at the U.S. Climate Data website at <http://www.usclimatedata.com/climate/united-states/3174> or other comparable online rainfall database.

A flow meter or comparable flow measurement methodology will be required to determine the quantity of wastewater discharged into the pond. To convert from gallons to cubic feet (ft3) divide by 7.48.

To calculate changes in pond depth measure the increase or decrease in pond level in feet during the monitoring period. Multiply by the water surface area (in square feet (ft2)) to find the total increase or decrease in wastewater volume in the pond (in ft3).

Compare the final value to the permit required maximum infiltration rate of 1 x 10-6 centimeter/second.

**Example:**

* Pond level, inputs, and outputs monitored for one month in December.
* Pond surface area = 2,150 ft2
* If the pond surface area is in acres, convert to square feet by multiplying acres by 43,560.

Evaporation rate = 1.5 inches/month

If the evaporation rate is provided as the Class A Pan rate, multiply by a correction factor of 0.75.

* Rainfall = 2.56 inches/month (divide by 12 to express in feet) = 0.21 feet/month
* Effluent = 25,000 gallons (divide by 7.48 to express in cubic feet) = 3,342 ft3
* Pond level decreased by 2.0 feet (if measured in inches, divide inches by 12 to express in feet)

|  |  |
| --- | --- |
| **Outputs** | **Inputs** |
| ***Evaporation losses:*** | ***Rainfall inputs:*** |
| 1.5 inches ÷ 12 = 0.125 feet | 2.56 inches ÷ 12 = 0.21 feet |
| 0.125 feet x pond surface of 2,150 ft2 = 269 ft3 | 0.21 feet x pond surface of 2,150 ft2 = 451.5 ft3 |
| **Total outputs = 269 ft3** |  |
|  | ***Wastewater effluent:*** |
|  | 25,000 gallons = 3,342 ft3 |
|  | **Total inputs** = Rainfall input + Wastewater input = **3,793.5 ft3** |
| **Inputs - Outputs =** 3,793.5 ft3 - 269 ft3 = **3,524.5 ft3** | |
| **Pond level change:** |  |
| Volume = pond surface area x change in pond level | |
| Volume = 2,150 ft2 x 2.0 ft |  |
| **Pond Volume Decrease = 4,300 ft3** |  |

1. *Compare the pond volume change to the difference between the inputs and outputs value.*

The pond volume decreased by 4,300 ft3 rather than the expected 3,524.5 ft3. This indicates that approximately 775.5 ft3 of wastewater discharged from the pond to the ground during the month.

1. *Compare the amount discharged to land from the pond to the maximum infiltration rate of 1 x 10-6 centimeter/second required in the Order.*

If the pond volume decreased more than the expected value, indicating a discharge to land from the pond, then determine the rate of discharge from the pond by dividing the amount of wastewater that leaked from the pond by the surface area of the pond and then convert to the same units as the Order requirement (centimeter/second).

775.5 ft3 ÷ 2,150 ft2 = 0.36 feet per month

Divide the result by the number of days in the month used for the rainfall and evaporation data.

0.36 feet / month ÷ 31 days = 0.0116 feet per day

Multiply by a conversion factor of 0.000353 to convert feet per day to centimeter per second, which is also expressed as centimeter / second.

0.0116 feet per day 0.000353 = 4.1 10-6 centimeter / second

**Conclusion:**

The pond volume decreased by 4,300 ft3 rather than the expected 3,524.5 ft3.

This indicates that the pond potentially discharged approximately 775.5 ft3 of wastewater to land during the month.

This discharge volume across a unit area of the pond is approximately

4.1 × 10-6 centimeter / second.

Therefore, conclude that the pond leaked more wastewater than the allowable maximum rate of 1 x 10-6 centimeter / second.

Notes:

* Area can be measured in square feet or square meters.
* ft2 denotes square feet
* Volume = surface area (ft2) x average depth (ft)
* Change in pond level (ft) = difference between outputs and inputs (ft3) divided by pond surface area (ft2).

Conversions:

* 1 cubic foot = 7.48 gallons
* 1 acre = 43,560 square feet
* 1 foot = 30.48 centimeters

1. Advanced wastewater treatment definition from the EPA Primer for Municipal Wastewater Treatment. EPA 832-R-04-001. (September 2004). pg. 17. Accessible online at <https://www.epa.gov/sites/production/files/2015-09/documents/primer.pdf>. [↑](#footnote-ref-2)
2. The test for biochemical oxygen demand is a bioassay procedure that measures the oxygen consumed by bacteria from the decomposition of organic matter. A bioassay is measurement of the concentration of a substance by its effect on living cells or tissues. The standard incubation test period for BOD is 5 days and is referenced as BOD5. [↑](#footnote-ref-3)
3. Soil water storage capacity is the total amount of water stored in the soil within the plant’s root zone. Additional information on determining the soil water storage is accessible at <http://irrigationtoolbox.com/ReferenceDocuments/Extension/BCExtension/619000-1.pdf> and in the 2007 Manual of Good Practice for Land Application of Food Processing/Rinse Water, which is accessible at <http://clfp.com/documents/Manualofgoodpractice/CLFP%20Manual_COMPLETE_FINAL_3-14-07%20(2).pdf>. [↑](#footnote-ref-4)
4. Source: Wine Institute, Kennedy/Jenks Consultants. 2004. *Land Application of Winery Stillage and Non-Stillage Process Water: Study Results and Proposed Guidelines*. Chapter 5. [↑](#footnote-ref-5)
5. Additional information on the California Department of Food and Agriculture training and certification on nutrient management plans can be accessed online at https://www.cdfa.ca.gov/oefi/nutrientmanagement/plans.html. [↑](#footnote-ref-6)
6. The Natural Resources Conservation Service provides additional information on the certification requirements for preparing a nutrient management plan at http://www.nrcs.usda.gov/wps/portal/nrcs/detail/ca/technical/ecoscience/nutrient/?cid=nrcs144p2\_064073. [↑](#footnote-ref-7)
7. The California Certified Crop Advisors provide advice to growers on crop management and act as a resource to help implement nutrient management plans. The American Society of Agronomy provides nutrient management certification programs. Additional resources can be accessed online at <http://cacca.org/> and <https://www.agronomy.org/certifications>, respectively. [↑](#footnote-ref-8)
8. Source: Siegrist, R., Lowe, K.., Geza, M., & McCray, J. Soil Treatment Units Used for Effluent Infiltration and Purification within Onsite Wastewater Systems: Science and Technology Highlights.

   www.epa-pictaural.com/media/wwater12/paper/robertSiegrist.pdf. [↑](#footnote-ref-9)
9. Source: U.S. Environmental Protection Agency. 1980. Onsite Wastewater Treatment and Disposal Systems: Design Manual. EPA 625/1-80-012. U.S. EPA, Cincinnati, OH. P. 211-215. [↑](#footnote-ref-10)
10. Source: Adapted from EPA’s 2002 Onsite Wastewater Treatment Systems Manual, Jerry Tyler [↑](#footnote-ref-11)
11. Source: Manual for Land Application of Treated Sewage and Industrial Waste. A Guide to Site Selection, System Design, and Permitting Requirements. 362-2000-009. Pennsylvania Department of Environmental Protection. [↑](#footnote-ref-12)
12. The Environmental Protection Agency’s *Principles of Design and Operations of Wastewater Treatment Pond Systems for Plant Operators, Engineers, and Managers* (2011) is accessible online at <https://www.epa.gov/nutrient-policy-data/principles-design-and-operations-wastewater-treatment-pond-systems-plant>. [↑](#footnote-ref-13)