

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2013-_____

FOR
LAKE BERRYESSA RESORT IMPROVEMENT DISTRICT
LAKE BERRYESSA WASTEWATER TREATMENT FACILITY
NAPA COUNTY

This Monitoring and Reporting Program (MRP) presents requirements for monitoring influent, effluent, ponds, land application areas, groundwater, sludge, and water supply. This MRP is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer.

Central Valley Water Board staff shall approve specific sampling locations prior to any sampling activities. All samples shall be representative of the volume and nature of the discharge. The time, date, and location of each grab sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to measure pH and dissolved oxygen) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are calibrated prior to each monitoring event;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the "Reporting" section of the MRP.

INFLUENT MONITORING

Influent samples shall be representative of the wastewater prior to treatment. Influent monitoring shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow ¹	gpd	Continuous Meter	Daily	Monthly
Average Daily Flow ²	gpd	Calculated	Daily	Monthly
BOD ₅ ³	mg/L	Grab	Monthly	Monthly

¹ Flow represents the daily flow rate.

² As determined by the total flow during the calendar month divided by the number of days in the month.

³ BOD denotes 5-day Biochemical Oxygen Demand.

UNDISINFECTED EFFLUENT MONITORING

Undisinfected effluent samples shall be collected immediately downstream of Pond 4 before discharge into the storage ponds and shall be representative of the volume and nature of the discharge. Effluent monitoring shall include at least the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
BOD ₅	mg/L	Grab/Composite ¹	Monthly	Monthly
Total Dissolved Solids	mg/L	Grab/Composite ¹	Monthly	Monthly
Sodium	mg/L	Grab/Composite ¹	Monthly	Monthly
Chloride	mg/L	Grab/Composite ¹	Monthly	Monthly
Nitrate as Nitrogen	mg/L	Grab/Composite ¹	Monthly	Monthly
Total Kjeldahl Nitrogen	mg/L	Grab/Composite ¹	Monthly	Monthly
Standard Minerals ²	mg/L	Grab/Composite ¹	Annually	Annually

¹ Indicates samples may be collected by composite sampler or grab method.

² Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, magnesium, potassium, sulfate, iron, manganese, total alkalinity (including alkalinity series), and hardness. Samples for metals shall be filtered prior to digestion, preservation, and analysis.

DISINFECTED EFFLUENT MONITORING

During periods of land application to the spray fields, disinfected effluent samples shall be collected immediately downstream of the chlorine contact tank before the effluent is applied to the land application areas. Effluent samples shall be representative of the disinfected treated wastewater after full chlorine contact has been achieved. At a minimum, effluent monitoring shall include the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Total Coliform Organisms ¹	MPN/100 mL	Grab	Weekly	Monthly
Chlorine Residual	mg/L	Grab	Daily ²	Monthly
Chloroform	mg/L	Grab	Annually	Annually

¹ Using a minimum of 15 tubes or three dilutions.

² Samples collected 5 days per week.

POND MONITORING

Samples shall be collected from an established sampling station located in an area that will provide a sample representative of the wastewater in each pond. Freeboard shall be measured vertically from the surface of the pond water to the lowest elevation of the surrounding berm and shall be measured to the nearest 0.1 feet. Monitoring of all ponds shall include, at a minimum, the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
pH	Standard	Grab	Weekly	Monthly
Dissolved Oxygen ¹	mg/L	Grab	Weekly	Monthly
Freeboard	0.1 feet	Measurement	Weekly	Monthly
Berm condition ²	--	Observation	Monthly	Monthly
Odors ³	--	Observation	Weekly	Monthly

¹ Samples shall be collected at a depth of one foot from each pond in use, opposite the inlet. Samples shall be collected between 0700 and 0900 hours.

² Containment berms shall be observed for signs of seepage or surfacing water along the exterior toe of the berms. If surfacing water is found, then a sample shall be collected and tested for total coliform organisms and total dissolved solids.

³ The presence of strong or unusual odors shall be reported.

LAND APPLICATION AREA MONITORING

Monitoring of the land application areas (LAAs) shall be conducted **daily** during effluent application, and the results shall be included in the monthly monitoring report. All land application areas (including spray fields and oak tree mitigation areas) shall be inspected following an effluent application event to identify any equipment malfunction or other circumstance that might allow the wastewater to runoff the land application areas and/or create ponding conditions that violate the Waste Discharge Requirements. Evidence of erosion, saturation, wastewater runoff, or the presence of nuisance conditions shall be noted in the report. A log of these inspections as well as any public complaints of runoff shall be kept at the facility and made available for review upon request. The monthly report shall clearly state whether or not the LAAs were used during that month.

Effluent monitoring results shall be used in calculations to determine loading rates at the LAAs. Monitoring of the LAAs shall include the following:

<u>Constituent</u>	<u>Units</u>	<u>Type of Sample</u>	<u>Sampling Frequency</u>	<u>Reporting Frequency</u>
Flow to each LAAs	gallons	Continuous	Daily	Monthly
Local Rainfall	inches	Observation ¹	Daily	Monthly
Acreage Applied ²	acres	Calculated	Daily	Monthly
Water Application Rate ³	gal/acre/day	Calculated	Daily	Monthly

¹ Rainfall data collected from the weather station that is nearest to the LAAs or a properly maintained on-site rain gauge.

² Land application areas shall be identified.

³ For each of the land application area.

GROUNDWATER MONITORING

Prior to construction and/or sampling of any groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Water Board for review and approval. Once installed, all new wells shall be added to the compliance monitoring network. The following table lists all existing monitoring wells and designates the purpose of each well.

MW-1 ² MW-2 ¹ MW-3 ² MW-4 ² MW-5 ³ MW-6 ³ MW-7 ¹

¹ Background well not used for compliance monitoring.

² Compliance well.

³ Existing well not suitable for use as a compliance well. Existing well shall be monitored only for groundwater elevation and gradient direction.

Prior to sampling, depth to groundwater shall be measured in each monitoring well to the nearest 0.01 feet. Groundwater elevations shall then be calculated to determine groundwater gradient and flow direction.

Low or no-purge sampling methods are acceptable, if described in an approved Sampling and Analysis Plan. Otherwise, each well shall be purged of at least three casing volumes until temperature, pH, and electrical conductivity have stabilized. Samples shall be collected and analyzed using standard EPA methods. Except as noted in the table above, groundwater monitoring shall include, at a minimum, the following:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Depth to Groundwater	0.01 feet	Measurement	Quarterly	Quarterly
Groundwater Elevation ¹	0.01 feet	Calculated	Quarterly	Quarterly
Gradient	feet/feet	Calculated	Quarterly	Quarterly
Gradient Direction	degrees	Calculated	Quarterly	Quarterly
pH	pH units	Grab	Quarterly	Quarterly
Total Dissolved Solids	mg/L	Grab	Quarterly	Quarterly
Chloride	mg/L	Grab	Quarterly	Quarterly
Sodium	mg/L	Grab	Quarterly	Quarterly
Nitrate as Nitrogen	mg/L	Grab	Quarterly	Quarterly
Total Coliform Organisms ²	MPN/100 mL	Grab	Quarterly	Quarterly
Chloroform	mg/L	Grab	Annually	Annually
Standard Minerals ³	mg/L	Grab	Annually	Annually

¹ Groundwater elevation shall be determined based on depth-to-water measurements using a surveyed measuring point elevation on the well and a surveyed reference elevation.

² Using a minimum of 15 tubes or three dilutions.

³ Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, iron, manganese, magnesium, potassium, sulfate, total alkalinity (including alkalinity series), and hardness. Samples for metals shall be filtered prior to digestion, preservation, and analysis.

SLUDGE MONITORING

A composite sample of digested sludge shall be collected at least once per year when sludge is removed from the wastewater treatment system for disposal in accordance with EPA's POTW Sludge Sampling and Analysis Guidance Document, August 1989, and analyzed for cadmium, copper, nickel, chromium, lead, and zinc.

The Discharger shall keep records regarding sludge generated by the treatment processes, including any analytical test results; the quantity of sludge removed for disposal; the quantity of sludge removed from the ponds and temporarily stored onsite; and steps taken to prevent nuisance conditions. Records shall be stored onsite and available for review during inspections. If sludge is transported off-site for disposal, then the Discharger shall submit records identifying the hauling company, the amount of sludge transported, the date removed from the facility, the disposal facility name and address, and copies of all analytical data required by the entity accepting the water. These records shall be submitted as part of the Annual Monitoring Report.

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following for each water source used during the previous year. As an alternative to annual water supply monitoring, the Discharger may submit results of the most current Department of Public Health Consumer Confidence Report.

<u>Constituents</u>	<u>Units</u>	<u>Sampling Frequency</u>
pH	Std. Unit	Annually
Total Dissolved Solids	mg/L	Annually
Standard Minerals ¹	mg/L	Annually

¹ Standard Minerals shall include, at a minimum, the following elements/compounds: boron, calcium, chloride, iron, magnesium, manganese, nitrogen, potassium, sodium, sulfate, total alkalinity (including alkalinity series), and hardness.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, pond, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Water Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Professional Geologist and signed by the registered professional.

A. Monthly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in monthly monitoring reports. Monthly reports shall be submitted to the Regional Water Board on the **1st day of the second month following sampling** (i.e. the January Report is due by 1 March). At a minimum, the reports shall include:

1. Results of the influent, effluent, pond, and land application area monitoring.
2. Calculation of the average daily influent flow (as determined by the total flow during the calendar month divided by the number of days in the month), total monthly influent flow, cumulative annual influent flow to date, and monthly median effluent total coliform.
3. A comparison of monitoring data to the flow limitations, effluent limitations, and discharge specifications and an explanation of any violation of those requirements. Data shall be presented in tabular format.
4. Copies of laboratory analytical report(s).
5. Copies of current calibration logs for all field test instruments.

B. Quarterly Monitoring Reports

The Discharger shall establish a quarterly sampling schedule for groundwater monitoring such that samples are obtained approximately every three months. Quarterly monitoring reports shall be submitted to the Central Valley Water Board by the **1st day of the second month after the quarter** (i.e. the January-March quarterly report is due by May 1st). The Quarterly Report shall include the following:

1. Results of the groundwater monitoring in tabular format, including a graphical summary of the historical data;
2. A narrative description of all preparatory, monitoring, sampling, and analytical testing activities for the groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements. The narrative shall be supported by field logs for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of casing volume; and total volume of water purged;
3. Calculation of groundwater elevations, an assessment of groundwater flow direction and gradient on the date of measurement, comparison of previous flow direction and gradient data, and discussion of seasonal trends if any;

4. Summary data tables of historical and current groundwater elevations and analytical results.
5. A scaled map showing relevant structures and features of the facility, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum; and
6. Copies of laboratory analytical report(s) for groundwater monitoring.

C. Annual Report

The Annual Report shall be submitted to the Central Valley Water Board by **1 February each year**. The Annual Report shall include the following:

1. The results from annual monitoring of the effluent, groundwater, sludge and water supply.
2. Calculations to determine the total annual influent flow, average dry weather flow, and total annual I/I flow.
3. A tabular summary of the following for each month of the calendar year: total influent flow, total inflow and infiltration (I/I) flow (total flow minus number of days in that calendar month times average dry weather flow), and total precipitation. The tabulated data shall include totals for each parameter (gallons per month).
4. If the total annual I/I flow is greater than 80 percent of the maximum annual I/I flow, acknowledgment that the requirements of Provision I.2 have been triggered and that the *Inflow and Infiltration Assessment and Correction Workplan* is due by **1 July of the following year**.
5. Tabular and graphical summaries of all data collected during the year.
6. An evaluation of the groundwater quality beneath the wastewater treatment facility and land application areas, and determination of compliance with the groundwater limitations of the WDRs based on statistical analysis for each constituent monitored for each compliance well in accordance with the approved *Groundwater Limitations Compliance Assessment Plan*. Include all calculations and data input/analysis tables derived from use of statistical software, as applicable.
7. A discussion of compliance and the corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.
8. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system or reporting program.
9. A copy of the certification for each certified wastewater treatment plant operator working at the facility and a statement about whether the Discharger is in compliance with Title 23, CCR, Division 3, Chapter 26.
10. A forecast of influent flows, as described in Standard Provision No. E.4;

11. A discussion of the following:

- a. Waste constituent reduction efforts implemented in accordance with any required workplan;
- b. Other best practical treatment and control measures implemented pursuant to any approved BPTC Workplan (if required by the Executive Officer); and
- c. Based on monitoring data, an evaluation of the BPTC measures that were implemented.

A letter transmitting the self-monitoring reports shall accompany each report. The letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain the penalty of perjury statement by the Discharger, or the Discharger's authorized agent, as described in the Standard Provisions General Reporting Requirements Section B.3.

The Discharger shall implement the above monitoring program as of the date of this Order.

Ordered by: _____
PAMELA C. CREEDON, Executive Officer

(Date)