

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-XXXX-XXXX

FOR

PACIFIC COAST PRODUCERS AND CITY OF WOODLAND
WOODLAND TOMATO CANNERY
YOLO COUNTY

This Monitoring and Reporting Program (MRP) is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. Except as specified otherwise in this MRP, grab samples will be considered representative of water, wastewater, solids/sludges, and groundwater.

The time, date, and location of each sample shall be recorded on the sample chain of custody form. All analyses shall be performed in accordance with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements*, dated 1 March 1991 (Standard Provisions). Field test instruments (such as those used to measure pH, electrical conductivity, dissolved oxygen, wind speed, and precipitation) may be used provided that:

1. The operator is trained in proper use and maintenance of the instruments;
2. The instruments are field calibrated at the frequency recommended by the manufacturer;
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.

Laboratory analytical procedures shall comply with the methods and holding times specified in the following (as applicable to the medium to be analyzed):

- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA);
- *Test Methods for Evaluating Solid Waste* (EPA);
- *Methods for Chemical Analysis of Water and Wastes* (EPA);
- *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA);

- *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and
- *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125).

Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the California Department of Public Health's Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than the applicable water quality objectives for the constituents to be analyzed.

If monitoring consistently shows no significant variation in a constituent concentration or parameter after at least 8 consecutive monitoring events, the Discharger may request this MRP be revised to reduce monitoring frequency. The proposal must include adequate technical justification for reduction in monitoring frequency. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP.

A glossary of terms used in this MRP is included on the last page.

PROCESSING SUPPLY WATER MONITORING

Samples of processing supply water shall be collected at the wellhead from the East Well and North Well. At a minimum, the Discharger shall monitor the process supply water as follows:

Constituent	Units	Type of Sample	Sampling and Reporting Frequency
pH	pH units	Grab	Every three years
Electrical Conductivity	µmhos/cm	Grab	Every three years
Total Dissolved Solids	mg/L	Grab	Every three years
Fixed Dissolved Solids	mg/L	Grab	Every three years
Total Kjeldahl Nitrogen	mg/L	Grab	Every three years
Nitrate Nitrogen	mg/L	Grab	Every three years
Metals/Inorganics ¹	mg/L	Grab	Every three years

¹ Metals/inorganics shall include, at a minimum, the following: boron, chloride, sodium, and sulfate.

POND MONITORING

The Discharger shall monitor the equalization pond in accordance with the following. Sampling will be conducted from sampling locations that provide samples representative of the wastewater in the pond. Freeboard shall be measured vertically from the water surface to the lowest elevation of pond berm (spillway), and shall be measured to the nearest 0.10 feet. If the pond is dry, the monitoring report shall so state. Pond monitoring shall include, at a minimum, the requirements specified below:

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Oxygen ¹	mg/L	Grab	Weekly/Monthly ²	Quarterly
Freeboard	0.1 feet	Measurement	Weekly/Monthly ²	Quarterly
Odors	--	Observation	Weekly/Monthly ²	Quarterly
Berm condition	--	Observation	Monthly	Quarterly

¹ Dissolved oxygen samples shall be measured using a properly calibrated probe lowered to a depth of one foot below the water surface with the reading taken while the probe is submerged in the water.

² Sample frequency is weekly during the processing season, generally July to September, and monthly during the off-season. If water is discharged during the off-season to the equalization pond, weekly sampling is required until the off-season discharge has ceased.

EFFLUENT MONITORING

Effluent samples shall be collected from the equalization pond prior to discharge to the land application area. Effluent monitoring is only required during periods when wastewater is discharged to the LAA. If no wastewater was discharged to land, the corresponding monitoring report shall so state. Analytical methods shall be selected to provide reporting limits below Water Quality Objectives for each constituent. At a minimum, the Discharger shall monitor the wastewater as follows:

Constituent	Units	Type of Sample	Sampling Frequency ⁴	Reporting Frequency
pH	pH units	Grab	Weekly	Quarterly
BOD ₅ ¹	mg/L	8-hr Composite	Weekly	Quarterly
Electrical Conductivity	µmhos/cm	8-hr Composite	Monthly	Quarterly
Total Dissolved Solids	mg/L	8-hr Composite	Monthly	Quarterly

Constituent	Units	Type of Sample	Sampling Frequency ⁴	Reporting Frequency
Fixed Dissolved Solids	mg/L	8-hr Composite	Monthly	Quarterly
TKN	mg/L	8-hr Composite	Monthly	Quarterly
Nitrate Nitrogen	mg/L	8-hr Composite	Monthly	Quarterly
Ammonia Nitrogen	mg/L	8-hr Composite	Monthly	Quarterly
Total Nitrogen	mg/L	8-hour Composite	Monthly	Quarterly
Dissolved Iron ²	mg/L	8-hr Composite	Annually	Annually
Dissolved Manganese ²	mg/L	8-hr Composite	Annually	Annually
Standard Minerals ³	mg/L	8-hr Composite	Annually	Annually

¹ Five-day, 20° Celsius biochemical oxygen demand.

² Samples shall be filtered with a 0.45-micron filter prior to sample preservation.

³ Standard Minerals shall include, at a minimum, the following: Boron, chloride, sodium, and sulfate.

⁴ Samples are to be collected only when wastewater is discharged to the LAA.

FLOW MONITORING

The Discharger shall monitor wastewater flows entering the SAF and the total flows to the equalization pond. Flow meter locations are shown on Attachment C.

Flow Source	Units	Type of Measurement	Measurement Frequency ¹	Reporting Frequency
Processing Facility Wastewater to SAF	gpd	Meter ²	Daily	Quarterly
Total Flow to the Equalization Pond	gpd	Meter ³	Daily	Quarterly

gpd = denotes gallons per day.

¹ Flow monitoring is required whenever wastewater is discharged to the SAF and/or equalization pond.

² Measured using the first flow meter (M1) located before the SAF, as shown on Attachment C.

³ Measured using the second flow meter (M2) located after the equalization tank at the processing plant.

Flow meter M2 is the compliance point for flow rates to the LAA.

LAND APPLICATION AREA MONITORING

The Discharger shall inspect the land application areas year-round and shall submit the results in the corresponding quarterly monitoring reports. Monitoring of the land application area shall include the following:

A. Daily Field Inspections

The Discharger shall inspect the land application areas at least once daily prior to and during irrigation events and observations from those inspections shall be documented for inclusion in the quarterly monitoring reports. The following items shall be documented for each check or field to be irrigated on that day:

1. Evidence of erosion;
2. Berm condition;
3. Condition of each standpipe and flow control valve (if applicable);
4. Proper use of valves;
5. Condition of all ditches used for the conveyance of wastewater and tailwater;
6. Ponding;
7. Tailwater ditches and potential runoff to off-site areas;
8. Potential and actual discharge to surface water;
9. Accumulation of organic solids in ditches and at soil surface;
10. Soil clogging;
11. Odors that have the potential to be objectionable at or beyond the property boundary; and
12. Insects.

Temperature; wind direction and relative strength; and other relevant field conditions shall also be observed and recorded. The notations shall also document any corrective actions taken based on observations made. A copy of entries made in the log during each month shall be submitted as part of the Quarterly Monitoring Report.

B. Routine Monitoring

The Discharger shall perform the following routine monitoring and loading calculations during all months when land application occurs, and shall present the data in the Quarterly and Annual Monitoring Reports.

Constituent	Units	Type of Measurement	Measurement Frequency	Reporting Frequency
Precipitation	0.1 inch	Rain Gauge ¹	Daily	Quarterly, Annual

Constituent	Units	Type of Measurement	Measurement Frequency	Reporting Frequency
Irrigation fields	--	Observation	Daily	Quarterly, Annual
Hydraulic Loading Rate	inch	Calculated ²	Daily	Quarterly, Annual
BOD ₅ Loading Rate	lb/ac/day	Calculated ²	Daily	Quarterly, Annual
Total Nitrogen Loading	lb/ac	Calculated ^{3,4}	Daily	Quarterly, Annual
TDS Loading Rate:	lb/ac	Calculated ³	Monthly	Quarterly, Annual
Flow-weighted FDS Concentration	mg/L	Calculated	Monthly	Annual

¹ Data obtained from the nearest National Weather Service rain gauge is acceptable.

² BOD₅ shall be calculated using the daily applied volume of wastewater, fields irrigated, and the most recent BOD₅ results.

³ Total nitrogen and TDS loading rates shall be calculated as a flow-weighted average using the applied volume of wastewater, actual application area, and effluent monitoring results.

⁴ Loading rates for supplemental nitrogen shall be calculated using the actual load and the application area.

GROUNDWATER MONITORING

The Discharger shall maintain the groundwater monitoring well network. If a groundwater monitoring well is dry for more than four consecutive sampling events or is damaged, the Discharger shall submit to the Regional Board a work plan and proposed time schedule to replace the well. The well shall be replaced following approval of the work plan.

Prior to construction of any additional groundwater monitoring wells, the Discharger shall submit plans and specifications to the Regional Board for review and approval. Once installed, all new monitoring wells shall be added to the MRP, and shall be monitored on a quarterly basis for a minimum of eight consecutive quarters before a reduction in monitoring frequency can be considered.

The groundwater monitoring program applies to groundwater monitoring wells tabulated below and any wells subsequently installed under direction of the Central Valley Water Board.

Monitoring Wells

Monitoring Well ID	Type of Monitoring Well
IMW1	Upgradient
IMW2	Downgradient/ Compliance
IMW4 ¹	Downgradient/ Compliance
IMW5	Mid-field/ Compliance
IMW6	Upgradient
IMW7	Mid-field/ Compliance
IMW8	Mid-field
IMW9	Downgradient/ Compliance
IMW10 ²	Upgradient
IMW11	Upgradient
WWTPMW5	Upgradient

¹ The gradient in the vicinity of IMW4 can be variable. Compliance should be determined in IMW4 only if the gradient has been to the north-northeast in that area, or consistent with gradients in the other compliance wells, for a year.

² Well is damaged and cannot be sampled, but will be replaced, as required in the Order. The replacement well will be added to this MRP upon well installation completion.

Prior to sampling, depth to groundwater measurements 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. Monitoring wells to be sampled shall be purged of at least three well volumes until temperature, pH, and electrical conductivity have stabilized. Low or no-purge sampling methods are acceptable, if described in an approved Sampling and Analysis Plan. Samples shall be collected and analyzed using standard EPA methods. 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	Annually
Groundwater Elevation ¹	0.01 feet	Calculated	Quarterly	Annually
Gradient	feet/feet	Calculated	Quarterly	Annually
Gradient Direction	degrees	Calculated	Quarterly	Annually
pH	pH units	Grab	Quarterly	Annually
TDS	mg/L	Grab	Quarterly	Annually
TKN	mg/L	Grab	Quarterly	Annually
Nitrate Nitrogen	mg/L	Grab	Quarterly	Annually

Constituent	Units	Type of Sample	Sampling Frequency	Reporting Frequency
Dissolved Iron ²	mg/L	Grab	Quarterly	Annually
Dissolved Manganese ²	mg/L	Grab	Quarterly	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 Samples shall be filtered with a 0.45-micron filter prior to sample preservation.

³ Standard minerals shall include, at a minimum, the following: boron, chloride, sodium, and sulfate.

APPLICABILITY OF GROUNDWATER LIMITATIONS

The Groundwater Limitations set forth in Section E of the WDRs shall apply to the specific compliance monitoring wells tabulated below. This table is subject to revision by the Executive Officer following construction of any new compliance monitoring wells.

Compliance Monitoring Wells				
IMW2	IMW4	IMW5	IMW7	IMW9

The groundwater limits set for the compliance monitoring wells identified above are shown below.

Sampling Requirements for Compliance Monitoring Wells		
Constituent	Maximum Allowable Concentration (mg/L)	Compliance Wells
TDS	No statistically significant increase ¹	IMW2, IMW4, IMW5, IMW7, IMW9
Nitrate Nitrogen	10 ²	IMW2, IMW4, IMW5, IMW7, IMW9
Sodium	No statistically significant increase ¹ 69 ³	IMW2, IMW7 MW4, MW5, MW9
Chloride	No statistically significant increase ¹ 500 ⁴	IMW2, IMW7, MW4, MW5, MW9
Iron	No statistically significant increase ¹ 0.3 ⁵	IMW7 IMW2, IMW4, IMW5, IMW9

Sampling Requirements for Compliance Monitoring Wells		
Constituent	Maximum Allowable Concentration (mg/L)	Compliance Wells
Manganese	No statistically significant increase ¹ 0.05 ⁵	IMW2, IMW5, IMW7, IMW9 IMW4

¹ No statistically significant increase from current groundwater quality, defined as groundwater conditions as presented in the 2016 Annual Monitoring Report but may be redefined by the Discharger using approved statistical methods described in the *Groundwater Limitations Compliance Assessment Plan*.

² Primary Maximum Contaminant Level

³ Lowest Agricultural Water Quality Goal

⁴ Secondary Maximum Contaminant Upper Level

⁵ Secondary Maximum Contaminant Recommended Level

REPORTING

All regulatory documents, submissions, materials, data, monitoring reports, and correspondence should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to:

centralvalleysacramento@waterboards.ca.gov

Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board
 ECM Mailroom
 11020 Sun Center Drive, Suite 200
 Rancho Cordova, California 95670

To ensure that your submittals are routed to the appropriate staff, the following information block should be included in any correspondence used to transmit documents to this office:

Pacific Coast Producers and the City of Woodland, Woodland Tomato Cannery, Yolo County		
Program: Non-15 Compliance	Order: R5-2018-XXXX	CIWQS Place ID: 247184

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 Central Valley 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 Professional Engineer or Geologist and signed by the registered professional.

A. Quarterly Monitoring Reports

Daily, weekly, and monthly monitoring data shall be reported in the quarterly monitoring report. Quarterly reports shall be submitted to the Central Valley Water Board on the **1st day of the second month following the quarter** (i.e. the January - March Report quarterly report is due by **1 May**). At a minimum, the report shall include:

1. Results of Pond Monitoring in tabular format for each month during the reported quarter.
2. Results of Effluent Monitoring in tabular format for each month during the reported quarter.
3. Results of Flow Monitoring in tabular format for each day during the reported quarter, including calculated values for the total flow and average daily flow for each month and total annual flow to date.
4. Results of Land Application Area Monitoring, including:
5. Calculated hydraulic loading rate for each month during the reported quarter and cumulative loading to date.
6. Calculated irrigation cycle average BOD loading rate for each LAA using the following formula:

$$M = \frac{8.345(CV)}{AT} + M_x$$

Where:	<i>M</i>	=	mass of BOD applied to an LAA in lb/ac/day.
	<i>C</i>	=	concentration of BOD in mg/L.
	<i>V</i>	=	total volume of wastewater applied to the LAA during the irrigation cycle, in millions of gallons.
	<i>A</i>	=	area of the LAA irrigated in acres.
	<i>T</i>	=	irrigation cycle length in days (from the first day water was applied to the last day of the drying time).
	8.345	=	unit conversion factor.

M_x = mass of BOD from other sources

7. Calculated total nitrogen loading rate for each LAA using the following formula:

$$M = \sum_{i=1}^{12} \frac{(8.345(C_i V_i) + M_x)}{A}$$

Where:

- M = mass of nitrogen applied to LAA in lb/ac/yr.
- C_i = Monthly average concentration of total nitrogen for month i in mg/L.
- V_i = volume of wastewater applied to the LAA during calendar month i in million gallons.
- A = area of the LAA irrigated in acres.
- i = the number of the month (e.g., January = 1, February = 2, etc.).
- M_x = nitrogen mass from other sources (e.g., fertilizer and compost) in pounds.
- 8.345 = unit conversion factor.

8. Calculated TDS loading rate for each LAA using the following formula:

$$M = \frac{8.345(CV)}{A} + M_x$$

Where:

- M = mass of TDS applied to an LAA in lb/ac/day.
- C = concentration of TDS in mg/L based on a 3-week running average.
- V = volume of wastewater applied to the LAA in millions of gallons per day.
- A = area of the LAA irrigated in acres.
- 8.345 = unit conversion factor.
- M_x = mass of TDS from other sources

9. Results of Groundwater Monitoring in tabular format for the reported quarter, including calculation of the groundwater elevation at each monitoring well, and determination of groundwater flow direction and gradient on the date of measurement.
10. A comparison of monitoring data to the flow limitations, effluent limitations, and discharge specifications and an explanation of any violation of those requirements;

11. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program; and
12. Copies of the laboratory analytical data reports shall be maintained by the Discharger and provided upon request by the Regional Water Board.

B. Annual Monitoring Reports

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

Flow Monitoring

1. Total annual flow discharged to land applications areas and determination of compliance with the annual flow limitation of the WDRs.

Groundwater Monitoring

1. A narrative description of all preparatory, monitoring, and sample and handling, for groundwater monitoring. The narrative shall be sufficiently detailed to verify compliance with the WDR, this MRP, and the Standard Provisions and Reporting Requirements.
2. A field log for each well documenting depth to groundwater; method of purging, parameters measured before, during, and after purging; sample preparation (e.g., filtering); and sample preservation. Low or no-purge sampling methods are acceptable if described in an approved Sampling and Analysis Plan.
3. Summary data tables of historical and current water table elevations and analytical results, comparison with previous flow direction and gradient data, and discussion of seasonal trends if any.
4. A scaled map showing relevant structures and features of the LAA, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to an appropriate datum (e.g., NGVD).
5. An evaluation of the groundwater quality beneath the site 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. Where the Groundwater Limitation is the maximum allowable concentration of “cumulative groundwater quality” near the specified land discharge area, the intra-well statistical average will be compared to the annual average for the most recent monitoring year completed for each of the specified compliance monitoring wells. In addition, an evaluation of changing upgradient conditions in

relation to groundwater concentrations at the LAA will be conducted, as required in the Groundwater Limitations Compliance Assessment Plan. Justifications for redefining “current” conditions for compliance wells based on changing background conditions shall be included in the annual monitoring report.

Include all calculations and data input/analysis tables derived from use of statistical software, as applicable.

6. Copies of the laboratory analytical data reports shall be maintained by the Discharger and provided upon request by the Regional Water Board.

Land Application Area Monitoring

1. Calculated flow-weighted annual average FDS effluent concentration and determination of compliance with Effluent Limitations of the WDRs. The flow-weighted annual average FDS effluent concentration shall be calculated using the following formula:

$$C_a = \frac{\sum_{i=1}^{12} [(C_{Pi} \times V_{Pi}) + (C_{Si} \times V_{Si})]}{\sum_{i=1}^{12} (V_{Pi} + V_{Si})}$$

Where:	C_a	=	Flow-weighted average annual FDS concentration in mg/L.
	i	=	the number of the month (e.g., January = 1, February = 2, etc.).
	C_{Pi}	=	Monthly average process wastewater FDS concentration for calendar month i in mg/L.
	C_{Si}	=	Monthly average supplemental irrigation water FDS concentration for calendar month i in mg/L (considering each supplemental source separately).
	V_{Pi}	=	Volume of process wastewater applied to LAA during calendar month i in million gallons.
	V_{Si}	=	Volume of supplemental irrigation water applied to LAA during calendar month i in million gallons (considering each supplemental source separately).

Additional Reporting

1. A discussion of compliance and the corrective action taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the waste discharge requirements.

2. Monitoring equipment maintenance and calibration records, as described in Standard Provision C.4., shall be maintained by the Discharger and provided upon request by the Regional Water Board.
3. A discussion of the following:
 - a. Waste constituent reduction efforts implemented in accordance with any required workplan;
 - b. Other treatment or control measures implemented during the calendar year either voluntarily or pursuant to the WDRs, this MRP, or any other Order;
 - c. A discussion of anticipated pond sludge removal in the coming year, and if so, include anticipated schedule for cleaning, drying, and disposal; and
 - d. Based on monitoring data, an evaluation of the effectiveness of the treatment or control measures implemented to date.
4. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring network or reporting program.

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 on the first day of the month following adoption of this Order.

Ordered by:

PAMELA C. CREEDON, Executive Officer

(Date)

GLOSSARY

BOD ₅	Five-day biochemical oxygen demand
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
TKN	Total Kjeldahl nitrogen
TDS	Total dissolved solids
Daily	Every day except weekends or holidays
Weekly	Once per week.
Monthly	Once per calendar month.
Quarterly	Once per calendar quarter.
Annually	Once per year.
mg/L	Milligrams per liter
µmhos/cm	Micromhos per centimeter
gpd	Gallons per day
mgd	Million gallons per day