PRELIMINARY DRAFT
ATTACHMENT E

MONITORING AND REPORTING PROGRAM TEMPLATE FOR ORDER R5-20XX-XXXX GENERAL WASTE DISCHARGE REQUIREMENTS FOR DISCHARGES TO LAND FROM NUT HULLING AND PROCESSING FACILITIES WITHIN THE CENTRAL VALLEY REGION

This Model Monitoring and Reporting Program (MRP) establishes guidance for developing site-specific monitoring and reporting requirements for facilities covered under *General Waste Discharge Requirements for Discharges from Nut Hulling and Processing Facilities within the Central Valley Region*, Order R5-20XX-XXXX (General Order).

When a facility is enrolled under the General Order through issuance of a Notice of Applicability (NOA), a site-specific MRP will also be issued pursuant to Water Code section 13267. This site-specific MRP will outline the monitoring and reporting requirements applicable to the discharger enrolled under the General Order.

The list of constituents/parameters and monitoring frequencies in this MRP Template represents the monitoring generally anticipated for most enrollees under the General Order. However, each site-specific MRP will be tailored to that Facility and will include only those requirements necessary to ensure compliance with the General Order. Accordingly, the constituents and monitoring frequencies outlined in a site-specific MRP may differ from those shown in this MRP Template based on site-specific conditions.

I. INTRODUCTION

The reports required by this MRP are necessary to ensure that the Discharger complies with General Order requirements and its NOA. The burden, including costs, of the required reports bears a reasonable relationship to the need and the benefits to be obtained thereby. Pursuant to Water Code section 13267, the Discharger shall implement this MRP and shall submit the technical or monitoring reports described herein. Pursuant to Water Code section 13268, failure to submit the required technical or monitoring reports, including but not limited to, Compliance letters as described herein or falsifying information is guilty of a misdemeanor and may be subject to enforcement action, including but not limited to penalties up to $1,000 per violation per day.

The Central Valley Water Board requires dischargers enrolled under the General Order to submit monitoring reports electronically using State Water Resources Control Board's GeoTracker database. Dischargers subject to the General Order shall submit reports (both technical and monitoring reports) and all data to the GeoTracker database via the Internet in portable document format (PDF) and electronic deliverable format (EDF), respectively. GeoTracker database information related to the electronic submittal of information (ESI) is available online. (http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml)

Additional information regarding the submittal of electronic reports and data is provided under the Reporting Requirements section of this MRP.

Dischargers shall comply with all monitoring and reporting requirements described in this MRP unless otherwise noted. Acronyms used within this MRP are defined in the Acronyms and Abbreviations section included in **Attachment A** – Acronyms and Glossary of the General Order.

II. SAMPLING AND ANALYSIS

A. Sampling and Analysis Plan

The Discharger shall prepare a Sampling and Analysis Plan (SAP) describing how the Discharger will carry out its operations in compliance with the General Order and the Facility's site-specific MRP. Anyone performing sampling on behalf of the Discharger must be familiar with the SAP. At a minimum, the SAP shall include the following:

1. A process flow diagram with all treatment, storage components, and monitoring locations labeled. Include groundwater monitoring wells if applicable.

2. A list of parameters that will be monitored/sampled in the field or metered in situ. Include field calibration procedures.

3. Sample chain-of-custody procedures and documentation.

4. List of sampling containers, chemical preservatives, and holding times.

5. Sample collection and field preservation procedures.

6. Tabulated list of sampling parameters with corresponding analytical methods, and detection limits.

7. Analytical/monitoring schedule.

8. Groundwater monitoring and purging procedures (if applicable).

B. Sampling

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. Samples and measurements shall be obtained at the monitoring points specified in the table below and the Facility's SAP. Dischargers shall submit a new SAP to the Central Valley Water Board prior to making any changes.

Table 1. Monitoring Locations

Monitoring Location	Monitoring Location Description
SW-001, SW-00X, etc.	Facility's source water
IG-001, IG-00X, etc.	Supplemental irrigation water
EFF-001	Location where a representative sample of the effluent can be taken after any treatment or processing but prior to discharged to an unlined pond.
EFF-002	Location where a representative sample of the effluent can be taken after any treatment, processing, and/or storage prior to discharge to the land application area.
PND-001, PND-00X, etc.	Pond monitoring
LAA-001, LAA-00X, etc.	Land application area (LAA) monitoring
GW-001, GW-00x, etc.	Groundwater monitoring well
(insert monitoring location name)	(insert location description)

The Discharger shall use clean sample containers and sample handling, storage, and preservation methods shall be in accordance with approved United States Environmental Protection Agency (US EPA) analytical methods or as recommended by the analytical laboratory. Samples collected for laboratory analysis shall be preserved as required and submitted to the laboratory within the required holding time appropriate for the analytical method used and constituents analyzed. All samples collected for laboratory analysis shall be identified on a properly completed chain-of-custody form containing the sampler's name, time, date, type, and location

of each sample collected. All field logs, laboratory reports, and quality assurance/ quality control data shall be reported with the sample results to which it applies.

Field test instruments (such as those used to measure pH, temperature, electrical conductivity (EC), dissolved oxygen (DO), 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 this MRP.

Consistent with Water Code section 13176, data produced and reports submitted for compliance with this General Order must be generated by a laboratory with accreditation from the State Water Resources Control Board (State Water Board), Division of Drinking Water, Environmental Laboratory Accreditation Program (ELAP), where accreditation is specific to the analyses required, or the laboratory must hold a valid certificate of accreditation for equivalent analytical test methods validated for the intended uses and approved by the State Water Board or Central Valley Water Board. 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 (US EPA);

- Test Methods for Evaluating Solid Waste (US EPA);

- Methods for Chemical Analysis of Water and Wastes (US EPA);

- Methods for Determination of Inorganic Substances in Environmental Samples (US 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 currently approved for use by the US EPA or the Division of Drinking Water’s 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.

C. Flow Monitoring

Hydraulic flow rates shall be measured at the monitoring points specified in this MRP. Any proposed modifications to flow-monitoring locations shall be submitted to, and approved by, the Central Valley Water Board Executive Officer prior to implementation.

All flow monitoring systems shall be appropriate for the conveyance system (e.g., open channel flow or pressure pipeline) and liquid type. Unless otherwise specified, each flow meter shall be equipped with a flow totalizer to allow reporting of cumulative volume as well as instantaneous flow rate. Flow meters shall be calibrated at the frequency recommended by the manufacturer; typically, at least once per year and records of calibration shall be maintained for review upon request.

Alternative flow-estimation methods (e.g., assumed equal to facility source water use, storage tank measurements, pump run-time calculations, or other technical defensible methods) are subject to Executive Officer approval.

III. SPECIFIC MONITORING REQUIREMENTS

A. Source Water and Supplemental Irrigation Monitoring

Each source of water supply used for nut hulling and processing activities (water supply well, surface water, municipal source, etc.) shall be monitored (at Monitoring Location SW-00X). Source water monitoring samples shall be collected in **September** during the hulling season. In addition, **Tier 2 and 3** facilities shall monitor any supplemental irrigation water source (at Monitoring Location IRG-00X) used to meet crop requirements with the LAAs, if different from the Facility's source water supply. Facility source water and supplemental irrigation monitoring shall include the following:

Table 2. Source Water Monitoring

Parameter	Units	Sample Type	Tier 1a, 1b (see 1 below)	Tier 2	Tier 3
EC	µmhos/cm	Grab	One-time sample	1/3 Years (see 3 below)	1/3 Years (see 3 below)
TDS	mg/L	Grab	One-time sample	1/3 Years (see 3 below)	1/3 Years (see 3 below)
FDS	mg/L	Grab	One-time sample	1/3 Years (see 3 below)	1/3 Years (see 3 below)

Parameter	Units	Sample Type	Tier 1a, 1b (see 1 below)	Tier 2	Tier 3
Nitrate as N	mg/L	Grab	One-time sample	1/3 Years (see 3 below)	1/3 Years (see 3 below)
General Minerals (see 2 below)	mg/L	Grab	One-time sample	1/3 Years (see 3 below)	1/3 Years (see 3 below)

Table 3. Supplemental Irrigation Water Monitoring

Parameter	Units	Sample Type	Tier 2	Tier 3
Flow	gpd	Metered or calculated	Continuous or daily	Continuous or daily
EC	µmhos/cm	Grab	1/Year	1/Year
TDS	mg/L	Grab	1/Year	1/Year
Nitrate as N	mg/L	Grab	1/Year	1/Year

1. For **Tier 1** facilities, a one-time sample shall be performed within the first year upon issuance of coverage under the General Order and/or when there has been a change to the source and quality.

2. For General Minerals, minimum constituents are listed in the Glossary section of the General Order. For constituents with Secondary MCLs listed in California Code of Regulations Title 22 Table 64449-A (e.g., iron, and manganese), samples shall be filtered with a 1.5-micron filter prior to preservation, digestion, and analysis. For all other constituents, samples shall be filtered with a 0.45-micron filter prior to preservation, digestion, and analysis.

3. For **Tiers 2 and 3** facilities, samples shall be collected once every three years starting the year following issuance of the NOA.

4. A copy of the most current Consumer Confidence Report or analytical results submitted to the County Environmental Health Division or State Water Resources Control Board, Division of Drinking Water, as applicable, may be submitted in lieu of sampling requirement.

B. Effluent Discharge to Unlined Ponds

Effluent samples and monitoring are required when process wastewater is discharged to an unlined pond for storage and/or disposal. Effluent flow measurements and samples shall be collected at monitoring location EFF-001, after screening and at a location where process wastewater, including process wastewater generated from outdoor processing areas, discharges from the facility

but prior to treatment in a pond. Effluent monitoring to an unlined pond shall include the following:

Table 4. Process Wastewater to Unlined Ponds

Parameter	Units	Sample Type	Tier 1b	Tier 2	Tier 3
Days of operation (see 1 below)	day	Observation	Daily	Daily	Daily
Flow	gpd	Metered or calculated	Continuous or daily	Continuous or daily	Continuous or daily
BOD_5	mg/L	Grab	1/Year	2/Month	1/week
TDS	mg/L	Grab	1/Year	2/Month	1/week
FDS	mg/L	Grab	1/Year	2/Month	1/week
Potassium	mg/L	Grab	1/Year	2/Month	1/week
Nitrate as N	mg/L	Grab	1/Year	1/Month	2/Month
TKN	mg/L	Grab	1/Year	1/Month	2/Month
Total Nitrogen	mg/L	Calculated	1/Year	1/Month	2/Month
General Minerals (see 2 below)	mg/L	Grab	1/Year (see 3 below)	1/2 Year (see 3 below)	2 Years (see 3 below)

1. Facility effluent observation days only required when process wastewater is being generated.

2. For General Minerals, the minimum constituents are listed in the Glossary section of the General Order. For constituents with Secondary MCLs listed in California Code of Regulations Title 22 Table 64449-A (e.g., iron, and manganese), samples shall be filtered with a 1.5-micron filter prior to preservation, digestion, and analysis. For all other constituents, samples shall be filtered with a 0.45-micron filter prior to preservation, digestion, and analysis.

3. General Minerals Analysis: For **Tier 1b** facilities and **Tier 2** facilities that conduct strictly hulling operations, samples shall be collected once a year during the processing season, in September. For **Tier 2** with full processing operations such as roasting, flavoring, salting, or other value-added processes, samples shall be collected twice per year one in the spring (March through May) and one in the fall (September through November), unless otherwise specified. **For Tier 3** facilities, samples shall be collected twice per year one in the spring (March through May) and one in the fall (September through November), unless otherwise specified.

4. Flow rate shall be measured directly via a flowmeter or, for **Tier 1b** facilities only, may be calculated using an accurate alternative method

(e.g., assume effluent flow is equal to facility source water use, calculate process effluent flow from a daily water balance of all effluent storage tank levels). The Central Valley Water Board may specify a required flow measurement method.

5. The flow-weighted annual average FDS concentration shall be calculated using monthly flow data and the most recent chemical analysis.

C. Pond Monitoring (if applicable)

Wastewater ponds, whether lined or unlined, shall be monitored, at Monitoring Location PND-00X, as specified below unless otherwise stated. Pond samples shall be collected from the pond only when there is greater than one foot of water in the bottom of the pond. Freeboard shall be measured from the surface of the water to the lowest point on the containment berm. In addition to sampling the wastewater, the Discharger shall also inspect the pond(s) and note the condition of the berms and liner (if applicable) in field logs, a summary of which shall be included in the applicable monitoring report. Ponds used to store or dispose of process wastewater shall be monitored until dry.

Table 5. Pond Monitoring (lined or unlined)

Parameter	Units	Sample Type	Tier 1a, 1b	Tier 2	Tier 3
DO (see 1 below)	mg/L	Field	1/Month	2/Month	1/Week
pH (see 1 and 2 below)	mg/L	Field	1/Month	2/Month	1/Week
EC (see 1 below)	µmhos/cm	Field	1/Month	2/Month	1/Week
Freeboard	0.1 foot	Observation	1/Week	1/Week	1/Week
Berm Condition	None	Observation	1/Week	1/Week	1/Week
Liner Condition (see 5 below)	None	Observation	When visible	When visible	When visible
Liner Integrity Leak Test (see 6 below)	None	Observation	1/5 Years	1/5 Years	1/5 Years
Lysimeter Pan	gallons	Grab	1/Year	1/Year	1/Year

1. Samples for DO, pH, and EC shall be collected at a depth of one foot below the surface opposite the pond inlet between the hours of 8:00 am and 10:00 a.m. If there is insufficient water in the pond no sample shall be collected, and the Discharger shall report that in the appropriate monitoring report.

2. If offensive odors are detected by or brought to the attention of the Discharger, the Discharger shall monitor the potential source pond at least daily (excluding weekends and holidays) for DO and pH until the odor issue has been resolved.

3. Freeboard shall be monitored when wastewater is present in the pond(s) and to the nearest tenth of a foot utilizing a permanent staff gage or other suitable measuring device calibrated with marks that clearly shows the water level at design capacity and enables determination of available operational freeboard.

4. Pond berm shall be inspected for evidence of burrowing animals, erosion, cracks, and other conditions that may impact berm integrity. Inspections shall be conducted when wastewater is present in the pond(s).

5. If a liner is present, prior to the start of the harvest season and/or when visible inspect the pond liner for evidence of damage (e.g., cracks, tears, punctures) and other conditions that may impact liner integrity. If evidence of damage or tearing is observed, the applicable monitoring report shall include a work plan with a time schedule to complete liner repairs.

6. The Discharger shall have an integrity test performed on any lined pond at least once every five years in accordance with the conditions in Process Water Ponds Specifications E.14. An annual evaluation of a dedicated Leachate Collection and Recovery System (LCRS) with the action leak level or groundwater monitoring may replace this requirement.

D. Effluent Discharge to Land Application Area

Monitoring effluent discharged to land application areas (LAAs) shall be conducted at a point in the system following all treatment and/or storage ponds in months when process wastewater is being applied to the LAAs at Monitoring Location EFF-002. The date and time of collection of the sample shall be recorded. If no wastewater is discharged to land, the report shall so state.

Table 6. Effluent to Land Application Area Monitoring

Parameter	Units	Sample Type	Tier 1a, 1b	Tier 2	Tier 3
Day of Operation (see 1 below)	Day	Observation	Daily	Daily	Daily
Flow	gpd	Metered or calculated	Continuous or daily	Continuous or daily	Continuous or daily
BOD_5	mg/L	Grab or composite	1/Year (see 2 below)	1/Month	2/Month)

Parameter	Units	Sample Type	Tier 1a, 1b	Tier 2	Tier 3
EC	µmhos/cm	Grab or composite	1/Year (see 2 below)	2/Month	1/Week
FDS	mg/L	Grab or composite	1/Year (see 2 below)	2/Month	1/Week
TDS	mg/L	Grab or composite	1/Year (see 2 below)	2/Month	1/Week
Potassium	mg/L	Grab or composite	1/Year (see 2 below)	2/Month	1/Week
TKN	mg/L	Grab or composite	1/Year (see 2 below)	1/Month	2/Month
Nitrate as N	mg/L	Grab or composite	1/Year (see 2 below)	1/Month	2/Month
Total nitrogen	mg/L	Grab or composite	1/Year (see 2 below)	1/Month	2/Month
General minerals (see 3 below)	mg/L	Grab or composite	1/Year (see 2 below)	1/2 Years (see 4 below)	2 Years (see 4 below)

1. Facility effluent observation for operating days only required when process wastewater is being applied.

2. For **Tier 1** facilities, samples shall be collected in September during the harvest season.

3. For General Minerals, the minimum constituents are listed in the Glossary section of the General Order. For constituents with Secondary MCLs listed in California Code of Regulations Title 22 Table 64449-A (e.g., iron, and manganese), samples shall be filtered with a 1.5-micron filter prior to preservation, digestion, and analysis. For all other constituents, samples shall be filtered with a 0.45-micron filter prior to preservation, digestion, and analysis.

4. General minerals: For **Tier 2** facilities that conduct strictly hulling operations, samples shall be collected once per year, during the processing season, in September. For **Tier 2** facilities with full processing operations such as roasting, flavoring, salting, or other value-added processes and **Tier 3** facilities, samples shall be collected twice per year one in the spring (March through May) and one in the fall (September through November), unless otherwise specified.

5. Flows shall be measured directly via a flowmeter or may be calculated using an accurate alternative method. The flow measurement method must be capable of determining the discharge flow to each individual

management unit. The Central Valley Water Board may specify a required flow measurement method.

6. Grab samples can be collected in lieu of 24-hour composite samples if collected near the outlet of a pond with at least 24-hour residence time and the discharge to the land application area is entirely from the pond.

E. Land Application Area Monitoring

Land application area monitoring shall be conducted when there is discharge to land. Routine monitoring and loading calculations for the land application area shall be performed. In addition, the land application area shall be inspected and the field conditions noted in field logs, a summary of which shall be included in the monitoring reports. Data shall be collected and presented in tabular format for each individual management unit.

Table 7. Land Application Area Monitoring

Constituent	Units	Type of Sample	Tier 1a, 1b	Tier 2, 3
Nuisance Odors/Vectors	NA	Observation	Weekly	Daily
Discharge Runoff	NA	Observation	Weekly	Daily
Cropping activities	NA	Observation	When it occurs	When it occurs
Application field number	in/day	Observation	Daily	Daily
Application area	gpd	Observation	Daily	Daily
Days in irrigation cycle	in/day	Observation	Daily	Daily
Precipitation	inches	Rain gage	Daily	Daily
Process water flow	gpd	Metered or calculated	Continuous or daily	Continuous or daily
Process water loading	in/ac/d	Calculated	Daily	Daily
Supplemental water flow	gpd	Metered or estimated	Daily	Daily
Supplemental water loading	in/ac/d	Calculated	Daily	Daily
Total hydraulic loading	in/ac/mo (or /yr)	Calculated	1/Year	1/Month

Constituent	Units	Type of Sample	Tier 1a, 1b	Tier 2, 3
BOD_5 Loading:				
Daily Loading	lb/ac/d	Calculated	Daily	Daily
Cycle Average	lb/ac/d	Calculated	Cycle	Cycle
Nitrogen Loading:				
Loading by source (see 1 below)	lb/ac/yr	Calculated	1/Year	1/Year
Cumulative nitrogen	lb/ac/yr	Calculated	1/Year	1/Year
FDS Loading:				
From Effluent	lb/ac/yr	Calculated	1/Year	1/Year
From Supplemental Irrigation	lb/ac/yr	Calculated	1/Year	1/Year
Cumulative FDS	lb/ac/yr	Calculated	1/Year	1/Year
Potassium Loading:				
From Effluent	lb/ac/yr	Calculated	1/Year	1/Year
Cumulative Potassium	lb/ac/yr	Calculated	1/Year	1/Year

1. **Tier 1** facilities, nitrogen loading is from wastewater only. **Tier 2 and 3** facilities, nitrogen loading sources may include but not limited to wastewater, supplemental water, and fertilizers.

2. Process water flowrate shall be measured directly using a flowmeter or, for **Tier 1** facilities only, may be calculated using an accurate alternative method. The flow measurement method must be capable of determining the discharge flow to each individual management unit. The Central Valley Water Board may specify a required flow measurement method. Average daily flow method means as measured or estimated during the first seven days of the discharge occurring each month.

3. National Weather Service or CIMIS data from the nearest weather station is acceptable for precipitation data.

4. Total hydraulic loading is the combined loading from wastewater, irrigation water, and precipitation for the season.

5. BOD loading rates to be calculated using the applied volume of wastewater, applied acreage, and BOD concentration of the wastewater. The cycle average shall be calculated using the equation in Section III.F. Reporting Requirements of this MRP.

6. Nitrogen, potassium and salt loadings shall be calculated using the applied volume of wastewater, applied acreage, and average effluent concentrations for total nitrogen, potassium and FDS, respectively, for the season. Loading equation provided in Section III.F. Reporting Requirements Annual Reports of the MRP.

7. Inspect the land application area for evidence of erosion, field saturation, runoff, or presence of nuisance conditions (e.g., flies, ponding, etc.).

8. Record the cropping activities (e.g., fertilizer applied [total pounds and pounds per acre], fertilizer nitrogen content, type of crop planted, or landscape irrigated, planting and harvest dates, crop harvest yield [total wet tons and wet tons per acre], and crop tissue sampling dates/analytical results (if applicable) by land application area field or individual management unit number, as appropriate. For land application fields divided into smaller management units (e.g., subfields, subareas, checks), identify the individual management unit number, its acreage, the amounts of process water and of supplemental water applied, and the cropping or planting activities at each individual management unit.

9. Identify the number of wet days (i.e., days with process water irrigation) and dry days (i.e., non-irrigation days following wet days) in each irrigation cycle by individual management unit.

F. Solids Monitoring

Process solids monitoring shall be conducted when process solids are disposed of. Monitoring shall also include solids characterization and field monitoring when process solids are land applied to the LAAs.

Table 8. Solids Monitoring

Constituent	Units	Type of Sample	Tier 1a, 1b	Tier 2, 3
Solids generated (see 1 below)	Wet tons	Estimated or measured	1/Year	1/Month
Disposal method (see 2 below)	NA	Observation	1/Year	1/Month
Land applied solids (see 3 below)				
Amount applied	Wet tons	Estimated or measured	1/Year	1/Month
Application field	NA	Grab	1/Year	1/Month
Application area	acre	Grab	1/Year	1/Month
TKN	mg/kg	Grab	N/A	1/Quarter

Constituent	Units	Type of Sample	Tier 1a, 1b	Tier 2, 3
Nitrate as nitrogen	mg/kg	Grab	N/A	1/Quarter
Total nitrogen	mg/kg	Grab	N/A	1/Quarter
Potassium	mg/kg	Grab	N/A	1/Quarter

1. Identify the source of the process solids (e.g., hulls, shells, skins, and pond dredging) and the amount generated.

2. If more than one disposal method is used, identify material and quantity sent to each (e.g., landfill, off-site reuses, composting, land applied, etc.).

3. Required if process solids are applied to the land application area. A representative composite sample of the process solids material shall be collected prior to land application and analyzed for the constituents listed. Sampling results shall be provided on a dry weight basis.

4. All facilities shall maintain detailed records for disposal and/or reuse of residual solids removed during the hull operations. The record should include information on quantity, storage, method of disposal (i.e., livestock feed, soil amendment, composting, etc.) and receipts (if applicable).

5. **Tier 2 and 3** facilities that apply process solids to the LAAs, provide a map identifying specific locations as well as any sample results used to evaluate agronomic loading.

G. Groundwater Monitoring (if applicable)

1. Facilities with existing groundwater monitoring well networks may be required to continue groundwater monitoring. In addition, Facilities without existing groundwater monitoring wells may, on a case-by-case basis, be directed in their site-specific MRP to install a monitoring well network and begin groundwater monitoring. If the site-specific MRP specifies groundwater monitoring for a Facility without an existing monitoring well network, the Discharger shall install a monitoring well network in accordance with the Time Schedule as outlined in Monitoring Provision M.1. of the General Order. Typical groundwater monitoring requirements for sites that are required to have a groundwater monitoring network are outlined in Table 10 below.

   Prior to sampling, depth-to-groundwater shall be measured in each well and groundwater elevations calculated. The monitoring wells shall be adequately purged until pH, temperature, and EC have stabilized. Depending on the hydraulic conductivity of the geologic setting, the volume of water removed during purging is typically a minimum of three

casing volumes. Alternatively, low flow purging and sampling techniques may be utilized. Once groundwater levels have recovered sufficiently to ensure collection of representative groundwater samples, a qualified individual (e.g., consultant, technician, etc.) trained in proper sampling methods shall collect samples using approved US EPA methods. All purge and sampling data shall be recorded and submitted in the monitoring well field sampling logs, and shall be included in the appropriate monitoring report.

Table 9. Groundwater Monitoring

Parameter	Units	Type of Sample	Tier 1a, 1b	Tier 2	Tier 3
Depth to groundwater	0.1 ft	Measured	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Groundwater elevation	0.1 ft	Calculated	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Groundwater gradient	feet/feet	Calculated	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Groundwater flow direction	Degrees	Calculated	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
pH	pH units	Field	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
EC	µmhos/cm	Field	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
FDS	mg/L	Grab	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
TDS	mg/L	Grab	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Potassium	mg/L	Grab	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
TKN	mg/L	Grab	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Nitrate as N	mg/L	Grab	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Total nitrogen	mg/L	Grab	1/Year (see 1 below)	2/Year (see 2 below)	1/Quarter
Total organic carbon	mg/L	Grab	1/Year (see 1 below)	1/2 Year (see 4 below)	2 Year (see 4 below)
General minerals (see 3 below)	mg/L	Grab	1/Year (see 1 below)	1/2 Year (see 4 below)	2 Year (see 4 below)

1. **Tier 1** facilities, groundwater monitoring (if applicable) shall be conducted once per year in September.

2. **Tier 2** facilities, groundwater monitoring shall be conducted twice per year, one in the spring (March through May) and one in the fall (September through November), unless otherwise specified.

3. For General Minerals, the minimum constituents are listed in the Glossary section of the General Order. For constituents with Secondary MCLs listed in California Code of Regulations Title 22 Table 64449-A (e.g., iron, and manganese), samples shall be filtered with a 1.5-micron filter prior to preservation, digestion, and analysis. For all other constituents, samples shall be filtered with a 0.45-micron filter prior to preservation, digestion, and analysis. The semi-annual or 2/Year monitoring period is from January through June and July through December.

4. Total organic carbon and General minerals: For **Tier 2** facilities that conduct strictly hulling operations, samples shall be collected once per year, during the processing season, in September. For **Tier 2** facilities with full processing operations such as roasting, flavoring, salting, or other value-added processes and **Tier 3** facilities, samples shall be collected twice per year, one in the spring (March through May) and one in the fall (September through November), unless otherwise specified.

5. Depth to groundwater measurements shall be measured in each monitoring well to the nearest 0.1 feet.

6. Groundwater elevations shall be calculated to determine groundwater gradient and flow direction. 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.

7. The minimum constituents for general minerals are listed in the Glossary section of this MRP.

8. Sampling activities shall be conducted in accordance with an approved Sampling and Analysis Plan. Samples shall be collected and analyzed using standard EPA methods.

H. Soil Monitoring

1. Pre-Discharge Baseline Soil Conditions (New Discharges): Prior to commencement of any discharge of process wastewater to land, the Discharger shall establish pre-discharge soil conditions to develop a one-time baseline dataset representative of existing soil quality within all land application areas. Baseline soil data shall be used for future comparison to

assess potential changes in soil chemistry resulting from wastewater application and to support staff evaluation during permit rescission.

a. With concurrence from Central Valley Water Board staff, the Discharger shall identify representative soil profile monitoring locations within the land application area(s) and at least two representative background locations that have not historically received process wastewater.

b. The Discharger shall submit a map identifying soil sample locations no fewer than **60 days** prior to the first soil-sampling event following adoption of this Order.

c. Pre-discharge baseline soil sampling shall be conducted within **60 days** prior to the start of the next pistachio processing season.

2. Final Soil Sampling for Permit Rescission: When permit rescission or site closure is being considered, the Discharger shall conduct a final soil-profile monitoring event to evaluate soil conditions at the time of proposed termination of regulatory coverage. The purpose of the final sampling is to assess whether long-term application of process wastewater has resulted in measurable changes to soil chemistry relative to baseline conditions, and to confirm that no persistent impacts remain.

a. Prior to conducting final soil sampling, the Discharger shall consult with Central Valley Water Board staff to confirm sampling locations. Soil sampling locations shall, to the extent practicable, match the locations used for pre-discharge baseline monitoring as well as any long-term monitoring locations established during the life of the Order.

b. Final soil sampling shall be performed no more than **90 days** prior to submittal of a formal request for permit rescission.

3. Soil Sampling and Analysis: Soil samples collected for pre-discharge baseline and final soil monitoring shall be obtained from each designated sampling location at depths of 6 inches, 2 feet, 4 feet, and 6 feet below ground surface (bgs). All samples shall be analyzed for the constituents listed in **Table 10** (Soil Monitoring), using the analytical methods and reporting units specified therein. Soil monitoring results shall be submitted in the monitoring report for the period in which sampling occurred, consistent with the reporting frequency established in this MRP.

Table 10. Soils Monitoring

Constituent	Units	Sample Type
Soil pH	pH units	2 feet, 4 feet, 6 feet
Buffer pH	mg/kg as CaCO3	2 feet, 4 feet, 6 feet
Sodium	mg/kg	2 feet, 4 feet, 6 feet
Chloride	mg/kg	2 feet, 4 feet, 6 feet
Nitrate as N	mg/kg	2 feet, 4 feet, 6 feet
TKN	mg/kg	2 feet, 4 feet, 6 feet

I. Pond Liner Leak Testing

1. Dischargers shall test the wastewater treatment pond lining system for leaks **every 5 years** and shall submit the results of leak testing in the Annual Monitoring Report for the year during which testing was performed. The report shall identify all leaks, and if appropriate, shall provide a plan and schedule for leak repair.

   If a performance evaluation was conducted during the reporting year, a description of the pond liner integrity and leak detection tests and results, and a discussion of the pond liner performance shall be provided.

IV. REPORTING REQUIREMENTS

A. Electronic Submittals

All technical and monitoring reports must be provided electronically in a searchable PDF format. Central Valley Water Board staff may request submittal of some documents on paper, particularly drawings or maps that require a large size to be readable or in other electronic formats where evaluation of data is required.

The Discharger shall submit all reports/documents and laboratory analytical data to the instate Water Board's GeoTracker database consistent with applicable Electronical Submittal of Information (ESI) requirements under a Facility specific global identification number.

(https://www.waterboards.ca.gov/ust/electronic_submittal/index.html)

In order to submit reports electronically, the Discharger shall create a secure GeoTracker account and log in credentials, claim their Facility by requesting access in GeoTracker, and upload copies of the required reports via the ESI portal as outlined in the GeoTracker ESI Beginner's Guide for Responsible Parties (Beginner's Guide). The Discharger may complete the above tasks by

accessing the 'Getting Started' section on the GeoTracker ESI webpage.

(https://www.waterboards.ca.gov/ust/electronic_submittal/index.html)

Additional GeoTracker support information can be found at the following:

1. Guides/Resources' document link in the "Tools" on the Discharger's GeoTracker ESI account.

2. Resources on the GeoTracker ESI website, such as the Beginner's Guide (https://www.waterboards.ca.gov/ust/electronic_submittal/docs/geotracker_esi_rp_beginner s_guide_revisedoct2019.pdf)

3. General GeoTracker Help Desk contact information:
Phone: 1-866-480-1028, Email: geotracker@waterboards.ca.gov

B. Reporting Submittal Information

1. 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 MRP shall be reported to the Central Valley Water Board.

2. Laboratory analysis reports shall be included in the monitoring reports. All laboratory reports, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by the General Order, and records of all data used to complete the application for the General Order must be retained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Water Board Executive. For a Discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

3. Record of monitoring information shall include the following:

    a. the date, exact place, and the time of sampling or measurements;

    b. the individual(s) who performed the sampling of the measurements;

    c. the date(s) analyses were performed;

    d. the individual(s) who performed the analyses;

e. the laboratory which performed the analysis;

f. the analytical techniques or methods used; and

g. the results of such analyses.

Monitoring information shall include the method detection limit (MDL) and the Reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

4. All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

C. Reporting Schedule

1. Reporting periods and due dates are summarized in the table below.

Table 11. Reporting Schedule

Report	Monitoring Period	Report Due Date
1st Quarter Monitoring Report	1 January to 31 March	1 May
2nd Quarter Monitoring Report	1 April to 30 June	1 August
3rd Quarter Monitoring Report	1 July to 30 September	1 November
4th Quarter Monitoring Report	1 October to 31 December	1 February
Annual Monitoring Report (may be submitted as part of the 4th Quarter Monitoring Report)	1 January to 31 December	1 February

D. Compliance Transmittal Letter (All Tiers)

1. A compliance transmittal letter shall accompany each monitoring report. The letter shall include a discussion of all violations of this MRP during the reporting period and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Discharger or the Discharger's authorized agent certifying under penalty of perjury that the

report is true, accurate and complete to the best of the signer's knowledge.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

2. Facility name, facility tier, enrollee number.

3. Discussion of any violations or exceedances that occurred during the reporting period. Actions taken or planned to correct the violations and prevent future violations (e.g., operation or facility modifications) with a time schedule to implement the corrective actions.

4. If a pond liner performance evaluation was conducted during the reporting period, description of any liner maintenance, repairs, or modifications needed to maintain pond performance and provide an implementation schedule.

5. A summary of any changes in processing that occurred during the reporting year or planned for the next year that might affect process water flow rates.

6. Description of any groundwater monitoring well maintenance, repairs, or modifications needed, planned, or completed during the reporting period and provide an implementation schedule.

7. Descriptions of any facility or BPTC improvements or modifications required by the facility NOA that were begun and/or completed during the reporting period and planned for the next reporting period. Include an implementation schedule.

8. Descriptions of any other notable repair or maintenance activities conducted this reporting period or planned for the next reporting period and provide the implementation schedule.

E. Annual Report (Tier 1 Facilities only) shall include the following:

1. Scaled Map showing Facility structures (e.g., buildings, storage pads, etc.), processing areas, solids storage areas, LAA, water supply wells, and any other relevant site features. Include identifying information (e.g., field numbers, acreages).

2. Provide total days of operation and total annual process wastewater flows and compare the total annual flow to the design flow stipulated in the NOA.

3. Results from a One-time monitoring sample of the source water as specified in Section III.A of the MRP. The sample shall be obtained upon issuance of coverage under the General Order and in the month of September during harvest. Additional samples may be required if there is a change to the source and/or quality of the source water.

4. Tier 1b only - Results of Effluent Discharge to Unlined Pond Monitoring Section III.B of the MRP.

5. Results of Pond Monitoring Section III.C of the MRP.

6. Results of the Effluent Discharge to Land Application Area Monitoring Section III.D of the MRP.

7. Results of the Land Application Area Monitoring Section III.E.

8. Summary of disposal and/or reuse in accordance with Solids Monitoring Section III.F of the MRP.

9. If required, results of Groundwater Monitoring Section III.G of the MRP.

10. Compare the salinity of the discharge with the Salinity Requirements established in the Facility's NOA.

11. For new dischargers, provide analytical data from a one-time pre-discharge baseline soil sampling event conducted prior to discharge, along with a map identifying the solid soils sampling locations.

12. For facilities with lined ponds, provide the results from the Pond Liner Leak Testing.

F. Reporting Tiers 2 Facilities (Strictly Hulling Operations)

Annual Report shall include the following:

1. Scaled Map showing Facility structures (e.g., buildings, storage pads, etc.), processing areas, solids storage areas, LAA, water supply wells, and any other relevant site features. Include identifying information (e.g., field numbers, acreages).

2. Results of Source Water and Supplemental Irrigation Water Monitoring Section III.A of the MRP.

3. Results of Effluent Discharge to Unlined Pond Monitoring Section III.B of the MRP.

5. Results of Pond Monitoring Section III.C of the MRP.

6. Results of the Effluent Discharge to Land Application Area Monitoring Section III.D of the MRP.

7. Results of the Land Application Area Monitoring Section III.E. For loading calculations, refer to Section III.I of the MRP.

8. Summary of disposal and/or reuse in accordance with Solids Monitoring Section III.G of the MRP. For parameters that require quarterly monitoring, results shall be reported in the applicable semiannual report.

9. For new dischargers, provide analytical data from a one-time pre-discharge baseline soil sampling event conducted prior to discharge, along with a map identifying the solid soils sampling locations.

10. For facilities with lined ponds, provide the results from the Pond Liner Leak Testing.

11. Groundwater Monitoring (if required) shall be reported at the required frequency (semiannual or annual) as specified in Section III.G of the MRP. If there is insufficient water for sampling, the well shall be reported as dry for that monitoring period. At a minimum, the semiannual or annual report shall include the following:

    a. A table and graphs showing current and historical groundwater depth, elevation, and constituent concentrations through the current period.
    b. Groundwater contour map showing the gradient and direction of groundwater flow.
    c. Discussion of groundwater elevation and constituent concentration trends over time and projected impacts on groundwater quality.
    d. Copies of chain-of-custody forms and all field sampling logs and laboratory analytical reports.

G. Reporting Tiers 2 Facilities (Full Processing including roasting, flavoring, salting or other value-added process)

1. Scaled Map showing Facility structures (e.g., buildings, storage pads, etc.), processing areas, solids storage areas, LAA, water supply wells, and any other relevant site features. Include identifying information (e.g., field numbers, acreages).

2. Results of Source Water and Supplemental Irrigation Water Monitoring Section III.A of the MRP.

3. Results of Effluent Discharge to Unlined Pond Monitoring Section III.B of the MRP. **Tier 2** facilities with full processing operations such as roasting, flavoring, salting, or other value-added processes, shall collect samples twice per year one in the spring (March through May) and one in the fall (September through November). These results shall be reported in the semiannual reports.

5. Results of Pond Monitoring Section III.C of the MRP.

6. Results of the Effluent Discharge to Land Application Area Monitoring Section III.D of the MRP. **Tier 2** facilities with full processing operations such as roasting, flavoring, salting, or other value-added processes, shall collect samples twice per year one in the spring (March through May) and one in the fall (September through November). These results shall be reported in the semiannual reports.

7. Results of the Land Application Area Monitoring Section III.E. For loading calculations, refer to Section III.I of the MRP.

8. Summary of disposal and/or reuse in accordance with Solids Monitoring Section III.G of the MRP. For parameters that require quarterly monitoring, results shall be reported in the applicable semiannual report.

9. For new dischargers, provide analytical data from a one-time pre-discharge baseline soil sampling event conducted prior to discharge, along with a map identifying the solid soils sampling locations.

10. For facilities with lined ponds, provide the results from the Pond Liner Leak Testing.

11. Groundwater Monitoring (if required) shall be reported at the required frequency (semiannual or annual) as specified in Section III.G of the MRP. If there is insufficient water for sampling, the well shall be reported as dry for that monitoring period. At a minimum, the semiannual or annual report shall include the following:

    a. A table and graphs showing current and historical groundwater depth, elevation, and constituent concentrations through the current period.

    b. Groundwater contour map showing the gradient and direction of groundwater flow.

    c. Discussion of groundwater elevation and constituent concentration trends over time and projected impacts on groundwater quality.

d. Copies of chain-of-custody forms and all field sampling logs and laboratory analytical reports.

H. Reporting Tier 3 Facilities

Annual Report shall include the following:

1. Scaled Map showing Facility structures (e.g., buildings, storage pads, etc.), processing areas, solids storage areas, LAA, water supply wells, and any other relevant site features. Include identifying information (e.g., field numbers, acreages).

2. Results of Source Water and Supplemental Irrigation Water Monitoring Section III.A of the MRP.

3. Results of Effluent Discharge to Unlined Pond Monitoring Section III.B of the MRP. For parameters that require twice per year sampling, one in the spring (March through May) and one in the fall (September through November), the results shall be reported in the semiannual reports.

5. Results of Pond Monitoring Section III.C of the MRP.

6. Results of the Effluent Discharge to Land Application Area Monitoring Section III.D of the MRP. For parameters that require twice per year sampling, one in the spring (March through May) and one in the fall (September through November), the results shall be reported in the semiannual reports.

7. Results of the Land Application Area Monitoring Section III.E. For loading calculations, refer to Section III.I of the MRP.

8. Summary of disposal and/or reuse in accordance with Solids Monitoring Section III.G of the MRP. For parameters that require quarterly monitoring, results shall be reported in the applicable semiannual report.

9. For new dischargers, provide analytical data from a one-time pre-discharge baseline soil sampling event conducted prior to discharge, along with a map identifying the solid soils sampling locations.

10. For facilities with lined ponds, provide the results from the Pond Liner Leak Testing.

11. Groundwater Monitoring (if required) shall be reported at the required frequency (semiannual or annual) as specified in Section III.G of the MRP. For parameters that require quarterly monitoring, results shall be reported in the applicable semiannual report. If there is insufficient water for

sampling, the well shall be reported as dry for that monitoring period. At a minimum, the semiannual or annual report shall include the following:

a. A table and graphs showing current and historical groundwater depth, elevation, and constituent concentrations through the current period.
b. Groundwater contour map showing the gradient and direction of groundwater flow.
c. Discussion of groundwater elevation and constituent concentration trends over time and projected impacts on groundwater quality.
d. Copies of chain-of-custody forms and all field sampling logs and laboratory analytical reports.

H. Effluent and Land Application Area Loading Calculations and Additional Reporting Requirements

1. Loading calculations as required in Land Application Area Monitoring section II.E.1 of the MRP are as follows.

a. Cycle average BOD_5 loading rate applied to the LAAs. Include the number of days in each irrigation cycle.

The mass of BOD_5 applied to the irrigation area within the LAA as a cycle average shall be calculated using the following formula:

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

Where:

M = Mass of BOD_5 for a given field in pounds per acre per day (lb/ac/day).
C = Concentration of BOD_5 based on the average concentration for the month in mg/L.
V = Total volume of wastewater applied to the LAAs during the irrigation cycle, in millions of gallons (MG).
A = Area of the LAA's irrigated with wastewater in acres (ac).
T = Irrigation cycle length in days (from the first day wastewater was applied to the last day of the drying time)
8.345 = Unit conversion factor for mg/L and MG to lbs.

b. Daily BOD loading rate applied to the LAAs.

The mass of BOD applied to the irrigation area within the LAA per day shall be calculated using the following formula:

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

Where:

M = Mass of BOD_5 for a given field in pounds per acre per day (lb/ac/day).

C = Concentration of BOD_5 based on the average concentration for the month in mg/L.

V = Total volume of wastewater applied to the LAAs on that day, in millions of gallons (MG).

A = Area of the LAA's irrigated with wastewater in acres (ac).

8.345 = Unit conversion factor for mg/L and MG to lbs.

c. Total nitrogen and FDS rate applied to the LAAs as calculated from the sum of the monthly loading.

The total mass loading for total nitrogen and FDS applied to the irrigation area of the LAAs shall be calculated using the following formula:

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

Where:

M = Mass of total nitrogen or FDS applied to the LAA in lb/acre/year.

C_1 = Concentration of total nitrogen or FDS (based on the average concentration) for the month *i* in mg/L.

V_i = Volume of wastewater applied to the LAA's during the calendar month *i* in MG.

A = Area of the LAA's irrigated with wastewater in acres.

i = The number of the month (e.g., Jan = 1, Feb = 2, etc.)

M_x = Nitrogen and FDS from other sources (e.g., fertilizer and compost) in pounds.

8.345 = Unit conversion factor for mg/L and MG to lb.

d. Type of crop(s) grown, planting and harvest dates, and the quantified nitrogen and FDS uptakes (as estimated by technical references or defined by representative plant tissue analysis).

2. Monthly and annual process water and supplemental water volumes applied to each individual management unit (application field, zone, parcel, etc.) expressed in gallons.

3. Calculation of the monthly and total hydraulic loading from process water and supplemental water applied to each individual management unit by month.

4. Calculation of the cycle average BOD loading rates for each individual management unit. Include the number of days in each irrigation cycle.

5. An annual nitrogen balance showing the total annual nitrogen loading (in pounds per acre per year [lb/ac/yr]) to each land application field or individual management unit, as appropriate, as calculated from the sum of the monthly loading from all sources of nitrogen applied to the land. The nitrogen balance shall include:

   a. Types of crops grown, or landscape irrigated, planting and harvest dates, and crop harvest yield.

   b. Nitrogen loading by source (e.g., fertilizer, process water, process solids, compost, etc.). Indicate any estimated nitrogen losses that reduced plant available nitrogen used in the nitrogen balance calculations.

c. Crop uptake rates for each crop grown or landscape irrigated. Provide results of representative plant tissue analysis or technical reference source of the crop uptake rate values.

d. A comparison of the total nitrogen applied to the nitrogen taken up by the crop harvested or removed.

The Discharger shall implement the above monitoring program as of the NOA effective date.

PATRICK PULUPA, Executive Officer

Date