CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM
ORDER NO. R5-2025-00XX

FOR
CAWELO WATER DISTRICT AND TRIO PETROLEUM LLC

PRODUCED WASTEWATER RECLAMATION PROJECT
SECTION 3 TREATMENT FACILITY
KERN FRONT OIL FIELD
KERN COUNTY

This Monitoring and Reporting Program (MRP) is required pursuant to Water Code section 13267.

Cawelo Water District and Trio Petroleum LLC (hereafter jointly referred to as Discharger) shall not implement any changes to this MRP unless and until the Central Valley Regional Water Quality Control Board (Central Valley Water Board) adopts, or the Executive Officer issues, a revised MRP. Changes to a sample location(s) shall be established with concurrence of Central Valley Water Board staff, and a description of the revised station(s) shall be submitted for approval by the Executive Officer.

This MRP includes monitoring, record-keeping, and reporting. Monitoring requirements include monitoring of groundwater, discharges of produced wastewater, solid wastes, chemicals associated with petroleum exploration and production, and the land application of recycled materials (wastewater and solid); to determine if the Discharger is complying with Waste Discharge Requirements Order No. R5-2025-00XX.

MONITORING

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with the applicable provisions of the ***Standard Provisions and Reporting Requirements for Waste Discharge Requirements***, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as a pH meter) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *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 State Water Board's Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer.

A complete list of substances that are tested for and reported on by the testing laboratory shall be provided to the Central Valley Water Board. All peaks must be reported. In addition, both the method detection limit (MDL) and the practical quantification limit (PQL) shall be reported. Detection limits shall be equal to or more precise than USEPA methodologies. Analysis with an MDL greater than the most stringent drinking water standard that results in non-detect needs to be reanalyzed with the MDL set lower than the drinking water standard, if possible, or at the lowest level achievable by the laboratory. If the regulatory limit for a given constituent is less than the reporting limit (RL) or PQL, then any analytical results for that constituent below the RL (or PQL), but above the MDL, shall be reported and flagged as estimated. All quality assurance/quality control (QA/QC) samples must be run on the same dates as when samples are actually analyzed. Proper chain of custody procedures must be followed and a copy of the completed chain of custody form shall be submitted with the report. All analyses must be performed by an ELAP certified laboratory.

The MRP can be modified if the Discharger provides sufficient data to support the proposed changes. If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after a statistically significant number of sampling events, the Discharger may request this MRP be revised by the Executive Officer to reduce the monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for reduction in monitoring frequency.

Monitoring requirements include the periodic visual inspection of the facility to ensure continued compliance with the Order. The MRP also requires submittal of information regarding the use of all chemicals used during well drilling, installation, operation, and maintenance activities associated with each well generating waste materials (liquids) that are discharged to land and regulated under this Order.

This MRP requires the Discharger to keep and maintain records for five years from the date the monitoring activities occurred and to prepare and submit reports containing the results of monitoring specified below. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Central Valley Water Board.

PRODUCED WASTEWATER MONITORING

Produced wastewater samples shall be representative of the volume and nature of the discharges. The Discharger shall maintain all sampling and analytical results: date, exact place, and time of sampling; dates analyses were performed; analyst's name; analytical techniques used; and results of all analyses.

The Discharger shall label all pipelines discharging produced wastewater, or other sources of water (e.g., surface water and/or groundwater), to Cawelo's Reservoir, Famoso Basin, and all additional ponds and/or reservoirs. Identifying labels shall be located within five feet of the pipeline and shall include at least the following: type of water (e.g., produced wastewater, surface water, or groundwater), source of the water (e.g., Well ID, canal, or lease/facility), and the company that supplies the water.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge within the specified monitoring frequency of this Order, the Discharger shall monitor and record data for all the constituents listed below, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge for the subsequent monitoring periods.

Discharge 001 – Produced Wastewater
(Section 3 Treatment Facility)

The Discharger shall monitor the volume and quality of produced wastewater discharged from the Section 3 Treatment Facility (Section 3 Facility) to Cawelo's Reservoir. Produced wastewater samples shall be collected downstream from the treatment system and prior to the discharge to Cawelo's Reservoir. Produced wastewater monitoring for Discharge 001 shall include at least the following:

Constituent/Parameter	Units	Sample Type	Frequency
Flow	ac-ft/d [1]	Metered [2]	Continuous
Electrical Conductivity	µmhos/cm	Meter	Continuous
Table I – Water Quality Monitoring	Varies	Grab	Quarterly
Table II – Oil Production and Process Chemicals and Additives [3]	Varies	Grab	Quarterly

[1] ac-ft/d = acre-feet per day.

[2] Flow may be measured with an appropriate engineered alternative if approved in writing by the Executive Officer.

[3] The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualifications of the entity that made the determination that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

Discharge 002 – Irrigation Water (Distribution Canal)

The Discharger shall monitor the volume and quality of the discharge from Cawelo's Reservoirs to the distribution canal. The monitoring location for Discharge 002 shall consist of the distribution canal, approximately 200 feet downstream as to obtain a representative water sample of the blended produced wastewater to be reused for irrigation or groundwater recharge. Monitoring at Discharge 002 shall include at least the following:

Constituent/Parameter	Units	Sample	Frequency
Flow from Cawelo's Reservoirs[1]	ac-ft/d[2]	Metered	Continuous
Flow of Water in the Distribution	MGD	Metered	Continuous
Table I – Water Quality Monitoring	Varies	Grab	Quarterly
Table II – Oil Production and Process Chemicals and Additives [5]	Varies	Grab	Quarterly

[1] If there are multiple sources of water originating from Cawelo's Reservoirs (e.g., groundwater, surface water, etc.), the flowrate for each shall be recorded individually.

[2] ac-ft/d = acre-feet per day.

[3.] Flow may be measured with an appropriate engineered alternative if approved in writing by the Executive Officer.

[4] Each source of water shall be defined and recorded individually.

[5] The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualifications of the entity that made the determination that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

IRRIGATION WATER MONITORING

The Discharger shall monitor the volume of water used for irrigation and the acreage of cropland receiving produced wastewater. Irrigation water monitoring shall include at least the following:

Constituent/Parameter	Units	Sample Type	Frequency
Volume [1] of Produced Wastewater	ac-ft/d [2]	Metered	Monthly

Constituent/Parameter	Units	Sample Type	Frequency
Volume [1] of Blending Water	ac-ft/d	Metered	Monthly
Blending Ratio [3]	-	Calculated	Monthly
Area of Cropland Receiving Produced Wastewater [4]	Acres	Calculated	Quarterly
Crop Types [5]	-	-	Annually

[1] Individual volumes shall be monitored and all sources of water defined in each monitoring report (e.g., petroleum leases, irrigation well names, and surface water sources).

[2] Acre-feet per day.

[3] Blending ratios shall be calculated using the sum of blending water (e.g., surface and/or groundwater) and produced wastewater that are mixed and used for irrigation.

[4] The acreage of cropland shall include all land that was irrigated with blended produced wastewater.

[5] This shall include at least the crop type and acreage for all cropland irrigated with blended produced wastewater.

CHEMICAL AND ADDITIVE MONITORING

In addition to the Table II monitoring in the Produced Wastewater Monitoring section above, the Discharger shall provide the following for all chemicals and additives[1] used at all leases and facilities that discharge produced wastewater to Cawelo's Reservoir:

Requirement	Frequency
A list of all chemicals and additives used.	Quarterly
The volume of each liquid chemical and additive used in gallons.	Quarterly
The mass of each solid chemical and additive used in grams or kilograms. (if dissolved into a solution, provide resulting solution concentration or ratio).	Quarterly
A list of the leases and facilities where the chemicals and additives are being used.	Quarterly

[1] Chemicals that are a part of trade secrets shall be kept confidential at the Central Valley Water Board. Documents containing trade secrets shall be properly marked on the cover, by the Discharger, prior to submitting the document to the Central Valley Water Board. Individuals that present proper credentials, or that have received permission by the Discharger, shall be granted access to view the files at the office.

Requirement	Frequency
Safety Data Sheets (SDSs) or Material Safety Data Sheets (MSDSs) for each chemical and/or additive used during the year	Annually

Monitoring and reporting of chemical additives may be reduced at the discretion of the Assistant Executive Officer.

SOLID WASTE MONITORING

Prior to the disposal of solid wastes on-site, a Solid Waste Management Plan must be approved, in writing, by the Executive Officer. Modifications to the Solid Waste Management Plan need to be submitted in an addendum report that requires written approval by the Executive Officer prior to implementation. On-site solid waste monitoring shall consist of the reporting requirements specified in the approved Solid Waste Management Plan.

Solid wastes disposed off-site shall be transported to a permitted facility. The Discharger shall provide at least the following for all solid waste disposed off-site:

1. Volume of solid waste,
2. Procedures for hauling waste,
3. Disposal location,
4. Waste manifest documentation, and
5. Documentation that the disposal facility is permitted to accept the solid waste.

FACILITY MONITORING

Permanent markers in Cawelo's Reservoir, Famoso Basins, and subsequent reservoirs and/or ponds shall be in place with calibrations indicating the water level at design capacity and available operational freeboard (two feet minimum required). Freeboard shall be monitored to the nearest tenth of a foot **monthly** and results included in the **quarterly report**.

Annually, prior to the anticipated rainy season, but **no later than 30 September**, the Discharger shall conduct an inspection of the Section 3 Facility, Cawelo's Reservoir, Famoso Basins, and the distribution canal. The inspection shall assess repair and maintenance needed for oil booms, drainage control systems, slope failure, groundwater monitoring wells, changes in site conditions that could impair the integrity of the reservoirs, overflow pipes, and a preparedness assessment for winter conditions including, but not limited to, erosion and sedimentation control. The Discharger shall take photos of any problem areas before and after repairs. Any necessary construction, maintenance, or repairs shall be **completed by 31 October**. Annual facility inspection

reporting shall be **submitted with the fourth quarter monitoring report.**

The Discharger shall inspect all precipitation diversion and drainage facilities for damage **within 7 days** following major storm events (e.g., a storm that causes continual runoff for at least one hour) capable of causing flooding, damage, or significant erosion. The Discharger shall take photos of any problem areas before and after repairs. Necessary repairs shall be completed **within 30 days** of the inspection. Notification and reporting requirements for major storm events shall be conducted as required in the Reporting Requirements section of this MRP and shall be reported in the quarterly monitoring report following the major storm event.

The Discharger shall monitor and record on-site rainfall data using an automated rainfall gauge or an acceptable alternative. Data shall be used in establishing the severity of storm events and wet seasons for comparison with design parameters used for waste management unit design and conveyance and drainage design. Daily data and on-site observation shall be used for establishing the need for inspection and repairs after major storm events. Rainfall data shall be reported in the semi-annual monitoring reports, as required by this MRP.

GROUNDWATER MONITORING

The Discharger shall monitor groundwater wells at the Famoso Basins (as defined in Finding 39 of Waste Discharge Requirements Order No. R5-2025-XXXX) and Cawelo's Reservoir[2]. After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the filter pack pore volume.

The Discharger shall monitor groundwater wells for the following:

Constituent/Parameter	Units	Sample Type	Frequency
Depth to groundwater	Feet [1]	Measured	Quarterly
Groundwater elevation	Feet [1]	Calculated	Quarterly

[2] Groundwater monitoring at Cawelo's Reservoir is only required if the Discharger is not able to demonstrate that Cawelo's Reservoir has been adequately designed and constructed to mitigate the percolation of produced wastewater, as described in Provision E.6 of Waste Discharge Requirements Order No. R5-2025-XXXX. Groundwater monitoring at Cawelo's Reservoir shall start immediately upon the completion of a groundwater monitoring well network, if needed.

Constituent/Parameter	Units	Sample Type	Frequency
Table I – Water Quality Monitoring	Varies	Grab	Quarterly
Table II – Oil Production and Process Chemicals and Additives [2]	Varies	Grab	Quarterly

1 Recorded to one hundredth of a foot.

2 The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualifications of the entity that made the determination that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

Within 30 days of notification that permission to sample a well(s) is not granted or is revoked or a well is dry, the Discharger shall submit for review and approval by Central Valley Water Board staff a report that either: (1) demonstrates that a reduction in the number of monitoring well(s) will not impair the ability to clearly and accurately assess potential groundwater impacts, or (2) proposes the installation of a new monitoring well(s) to offset the well(s) that is no longer able to be sampled.

REPORTING REQUIREMENTS

All monitoring reports shall be submitted to the Central Valley Water Board, which are due as follows:

Monitoring Report	Due Date
First Quarter Monitoring Report January – March	**1 May**
Second Quarter Monitoring Report April - June	**1 August**
Third Quarter Monitoring Report July - September	**1 November**
Fourth Quarter Monitoring Report October - December	**1 February**
Annual Monitoring Report	**1 February**

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any exceedances of applicable effluent or groundwater limitations or other instances of non-compliance that occurred during the reporting period and all corrective

actions taken or planned, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions, reference to the previous correspondence is satisfactory. **Reports shall be submitted whether or not there is a discharge.**

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible for all historical and current data. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with the waste discharge requirements.

If the Discharger monitors any constituent at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the monitoring reports. Such increased frequency shall be indicated in the monitoring reports.

All reports that include analytical results shall be accompanied by the corresponding laboratory report. Laboratory reports shall include at least the following: signature, chain of custody, and quality assurance and quality control results.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. All monitoring reports that involve planning, investigation, evaluation, design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

A. Reports submitted to the Central Valley Water Board

The Discharger shall submit copies of all monitoring reports, work plans, and technical reports to the State Water Board Geographic Environmental Information Management System database (GeoTracker).
(http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml)

A frequently asked question document for GeoTracker can be found on the Water Boards website. (http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf)

Electronic submittals to GeoTracker shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site.

The following information is to be included on all monitoring reports and report transmittal letters:

Trio Petroleum LLC and Cawelo Water District
Produced Wastewater Reclamation Project
Section 3 Treatment Facility
Waste Discharge Requirements Order No. R5-2025-00XX

GeoTracker Site Global ID: WDR100054616
CIWQS Place ID: 878280

B. Quarterly Monitoring Reports shall include the following:

Produced Wastewater Reporting:

1. Tabular summary of current and historical water quality results for Discharge 001 and Discharge 002.
2. The tabular summary of water quality results shall include the Chemicals Abstracts Service Registry Number (CASRN) for all constituents, as appropriate, required in Tables I and II of this Order.
3. For each month, a tabular summary of the monthly flow, the total annual flow (for the calendar year), and the historical annual flowrates for Discharge 001 and Discharge 002.

Irrigation Water Reporting:

1. Irrigation water reporting shall be clearly marked in all monitoring reports.
2. Tabular summary of current and historical results.
3. Crop types shall be reported in the fourth quarter monitoring report.

Chemical and Additive Reporting:

1. List of all chemicals and additives that were used during the quarter.
2. Tabular summary of current and historical monthly volume and mass for all chemicals and additives.
3. Summary that identifies if any chemicals and additives were detected in produced wastewater discharged to the Cawelo's Reservoir or in groundwater.
4. List of all leases and facilities where chemicals and additives are being used.
5. Safety Data Sheets shall be reported in the fourth quarter monitoring report.

Solid Waste Reporting:

1. The results of solid waste monitoring as specified in the approved Solid Waste Management Plan.
2. Tabular summary of current and historical analytical results characterizing the solid waste, and particularly, whether the waste is hazardous as defined in California Code of Regulations, title 22, section 66261.
3. For wastes transported off-site, information for the transfer of solid waste.

Facility Reporting:

1. Monthly freeboard results.

2. Daily rainfall data.

Groundwater Reporting:

1. For each monitoring well, a tabular summary of current and historical water quality results.
2. A groundwater contour map based on groundwater elevations for each quarter. The map shall show the gradient and direction of groundwater flow under/around Famoso Basins. The map shall also include the locations of monitoring wells and wastewater storage and discharge areas.
3. Provide a current isoconcentration map of groundwater data for EC, chloride, and boron concentrations.

Laboratory Reports:

1. Laboratory reports submitted in compliance with this MRP shall be accompanied by an EDF file in GeoTracker.

C. Annual Monitoring Reports, in addition to the above, by **1 February** of each year, the Discharger shall submit a written report to the Central Valley Water Board containing the following:

Facility Information:

1. The names and general responsibilities of all persons employed to operate the produced wastewater treatment systems.
2. The names and telephone numbers of persons to contact regarding the Facility for emergency and routine situations.
3. A statement certifying when the flow meters and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.4).
4. A summary of all spills/releases, if any, that occurred during the year at the production facility, tasks undertaken in response to the spills, and the results of the tasks undertaken.
5. The results of the facility inspection.
6. A summary of the chemical and additive data collected under the Chemical and Additive Monitoring section, the required Material Safety Data Sheets (MSDSs) / Safety Data Sheets (SDSs), and a discussion of whether any of the chemicals or additives were found in the discharge to Cawelo's Reservoir.
7. A flow chart (i.e. diagram that clearly illustrates all processes that produced wastewater undergoes within the Facility, including the irrigation of cropland with produced wastewater) and map of the following:
    - Facility (highlight treatment components) within the oil field;
    - Facility/Lease boundaries;
    - Produced wastewater distribution network with all discharge points to

Cawelo's Reservoir, Famoso Basins, and cropland;

- All cropland that is receiving produced wastewater.

Produced Wastewater Reporting:

1. Tabular summary of current and historical total annual flow for Produced Wastewater Monitoring.

Irrigation Water Reporting:

1. Irrigation water reporting shall be clearly marked in all monitoring reports.
2. Tabular summary of the current and historical annual results.
3. Tabular summary of current and historical crops that were irrigated with blended produced wastewater and the crops respective acreage within the service territory of each water provider.

Chemical and Additive Reporting:

1. Safety Data Sheets for all chemicals and additives that are identified in quarterly monitoring reports for that respective calendar year.
2. Tabular summary of current and historical annual volume and mass for all chemicals and additives.
3. Summary that identifies if any chemicals and additives were detected in the produced wastewater used for irrigation or groundwater.
4. Identify new chemicals/additives that were used during the current calendar year and not in the previous calendar year.
5. Identify chemicals/additives that were used during the current or previous calendar year that will no longer be used by the Discharger.

Requesting Administrative Review by the State Water Board. Any person aggrieved by an action of the Central Valley Water Board that is subject to review as set forth in Water Code section 13320(a), may petition the State Water Board to review the action. Any petition must be made in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 and following. The State Water Board must receive the petition within thirty (30) days of the date the action was taken, except that if the thirtieth day following the date the action was taken falls on a Saturday, Sunday, or state holiday, then the State Water Board must receive the petition by 5:00 p.m. on the next business day. Copies of the laws and regulations applicable to filing petitions may be found on the internet at (http://www. waterboards.ca.gov/public_notices/petitions/water_quality/index.shtml) or will be provided upon request.

Modifications. Any modification to this Monitoring and Reporting Program shall be in writing and approved by the Executive Officer, including any extensions. Any written extension request by the Discharger shall include justification for the delay.

I, PATRICK PULUPA, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of the Monitoring and Reporting Program issued by the California Regional Water Quality Control Board, Central Valley Region on X June 2025.

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PATRICK PULUPA, Executive Officer

Table I – Water Quality Monitoring

Parameters	Units	Monitoring Frequency	US EPA or other Method	Reporting Frequency
Field Parameters				
Temperature	^{o}F[1]	Quarterly	Meter	Quarterly
Electrical Conductivity	µmhos/ cm^2	Quarterly	Meter	Quarterly
pH	pH units	Quarterly	Meter	Quarterly
Monitoring Parameters				
Total Dissolved Solids (TDS)	mg/L[3]	Quarterly	160.1	Quarterly
Total Suspended Solids (TSS)[4]	mg/L	Quarterly	160.2	Quarterly
Total Organic Carbon (TOC)	mg/L	Quarterly	415.3	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly	2510B	Quarterly
Boron, dissolved	mg/L	Quarterly	6010B	Quarterly
Standard Minerals				
Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Bicarbonate Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Carbonate Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Hydroxide Alkalinity as CaCO3	mg/L	Quarterly	310.1	Quarterly
Sulfate, dissolved	mg/L	Quarterly	300.0	Quarterly
Nitrogen, Total	mg/L	Quarterly	440.0	Quarterly
Total Kjeldahl Nitrogen	mg/L	Quarterly	351.3	Quarterly
Nitrate as N	mg/L	Quarterly	300.0	Quarterly
Nitrite as N	mg/L	Quarterly	353.2	Quarterly
Ammonia N	mg/L	Quarterly	350.1	Quarterly
Ammonium N	mg/L	Quarterly	350.2	Quarterly
Calcium, dissolved	mg/L	Quarterly	6010B	Quarterly
Magnesium, dissolved	mg/L	Quarterly	6010B	Quarterly
Sodium, dissolved	mg/L	Quarterly	6010B	Quarterly
Potassium	mg/L	Quarterly	6010B	Quarterly
Chloride	mg/L	Quarterly	300.0	Quarterly
PAHs[5]	µg/L[6]	Quarterly	8270C-SIM	Quarterly

Parameters	Units	Monitoring Frequency	US EPA or other Method	Reporting Frequency
Total Petroleum Hydrocarbons (TPH)	µg/L	Quarterly	418.1	Quarterly
Volatile Organic Compounds				
Full Scan	µg/L	Quarterly	8260B	Quarterly
Oil and Grease	mg/L	Quarterly	1664A	Quarterly
Stable Isotopes				
Oxygen (^{18}O)	o/oo[7]	Quarterly	900.0	Quarterly
Deuterium (Hydrogen $_2$, ^2H, or D)	o/oo	Quarterly	900.0	Quarterly
Radionuclides				
Radium-226	pCi/L[8]	Quarterly	SM[9] 7500-Ra	Quarterly
Radium-228	pCi/L	Quarterly	SM 7500-Ra	Quarterly
Gross Alpha particle (excluding radon and uranium)	pCi/L	Quarterly	SM 7110	Quarterly
Other Constituents				
Lithium	mg/L	Quarterly	200.7	Quarterly
Strontium	mg/L	Quarterly	200.7	Quarterly
Iron	mg/L	Quarterly	200.8	Quarterly
Manganese	mg/L	Quarterly	200.8	Quarterly
Antimony	mg/L	Quarterly	200.8	Quarterly
Arsenic	mg/L	Quarterly	200.8	Quarterly
Barium	mg/L	Quarterly	200.8	Quarterly
Beryllium	mg/L	Quarterly	200.8	Quarterly
Cadmium	mg/L	Quarterly	200.8	Quarterly
Chromium (total)	mg/L	Quarterly	200.8	Quarterly
Chromium (hexavalent)	mg/L	Quarterly	7196A	Quarterly
Cobalt	mg/L	Quarterly	200.8	Quarterly
Copper	mg/L	Quarterly	200.8	Quarterly
Lead	mg/L	Quarterly	200.8	Quarterly
Mercury	mg/L	Quarterly	7470A	Quarterly
Molybdenum	mg/L	Quarterly	200.8	Quarterly
Nickel	mg/L	Quarterly	200.8	Quarterly
Selenium	mg/L	Quarterly	200.8	Quarterly
Silver	mg/L	Quarterly	200.8	Quarterly
Thallium	mg/L	Quarterly	200.8	Quarterly

Parameters	Units	Monitoring Frequency	US EPA or other Method	Reporting Frequency
Vanadium	mg/L	Quarterly	200.8	Quarterly
Zinc	mg/L	Quarterly	200.8	Quarterly
MBAS (Methylene Blue Active Substances)	mg/L	Quarterly	SM 425.1	Quarterly
QAC (Quaternary Ammonium Compounds)	mg/L	Quarterly	As Appropriate	Quarterly

[1] Degrees Fahrenheit.

[2] Micromhos per centimeter.

[3] Milligrams per liter.

[4] TSS is not required for groundwater monitoring.

[5] Polycyclic aromatic hydrocarbons.

[6] Micrograms per liter.

[7] Parts per thousand.

[8] Picocuries per liter.

[9] Standard Methods.

Table II - Oil Production and Process Chemicals and Additives

No.	Constituent	CASRN
1	1,2,3 Trimethylbenzene	526-73-8
2	1,2 Benzisothiazol-3(2H)-one	2634-33-5
3	1,2,4-Trimethylbenzene	95-63-6
4	1,3,5 Trimethylbenzene	108-67-8
5	1,4 Dioxane	123-91-1
6	1H, 3H-Pyrano (4,3-b)(1)benzopyran-9-carboxylic acid, 4,10-dihydro-3,7,8 trihydroxy-3-methyl-10-oxo	479-66-3
7	1-Hexadecene	629-73-2
8	2-Butoxyethanol	111-76-2
9	2-Ethylhexanol	104-76-7
10	2-Methylamino-2-methyl-1-propanol	27646-80-6
11	2-Propen-1-aminium, N,N-dimethyl-N-2-propenyl-, chloride, polymer with 2-hydroxypropyl 2-	67990-40-3
12	2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate, octadecyl 2-methyl 2 propenoate and 2propenoic acid, sodium salt	145417-45-4
13	2-Propenoic acid, polymer with 2-propenamide, sodium salt	25987-30-8
14	2-Propenoic acid, telomer with 2-methyl-2-(1-oxo-2-propenyl)-1-propanesulfonic acid, sodium salt	130800-24-7
15	3-Butyn-2-ol, 2-methyl	115-19-5
16	Acetaldehyde	75-07-0
17	Acetic Acid	64-19-7
18	Acetone	67-64-1
19	Acrolein	107-02-8
20	Acrolein dimer	100-73-2
21	Acrylamide	79-06-1
22	Acrylic Acid	79-10-7
23	Alchohols, C14-15, ethoxylated	68951-67-7
24	Alcohol ethoxylate	68439-45-2
25	Alcohol ethoxylated, C-10-14	66455-15-0
26	Alcohols, C9-11, ethoxylated	68439-46-3
27	Alkanes, C11-15-iso	90622-58-5
28	Alkanes, C14-16	90622-46-1
29	Alkanolamine aldehyde condensate	4719-04-4
30	Alkanolamine phosphate	29868-05-1
31	Alkoxylated alcohol	69011-36-5
32	Alkyl amine	68439-70-3
33	Alkyl benzenesulfonate	68081-81-2
34	Alkyl benzenesulfonic acid	68584-22-5
35	Alkyl dimethyl benzyl ammonium chloride	8001-54-5
36	Alkylaryl sulfonate	68584-27-0
37	Alkylaryl sulfonates	68910-32-7

No.	Constituent	CASRN
38	Alkylarylsulfonate amine salt	90218-35-2
39	Alkylbenzene mixture	68648-87-3
40	Almond Shell	90320-37-9
41	Aluminium oxide	1344-28-1
42	Aluminum chloride	7446-70-0
43	Aluminum chloride hydroxide	12042-91-0
44	Aluminum stearate	300-92-5
45	Amide surfactant acid salt	N/A
46	Amides, Non-Ionics	68140-01-2
47	Amine derivative	61791-24-0
48	Amine salt	67924-33-8
49	Amine salt	NP-U2856
50	Amine sulfate	64346-44-7
51	Amine sulfate	926-39-6
52	Aminotri (methylenephosphonic acid)	6419-19-8
53	Ammonium alkylaryl sulfonates	68910-31-6
54	Ammonium Benzoate	1863-63-4
55	Ammonium bisulfate	10192-30-0
56	Ammonium chloride	12125-02-9
57	Ammonium Fluoride	1341-49-7
58	Ammonium sulfate	7783-20-2
59	Amorphous silica	7631-86-9
60	Antimony trioxide	1309-64-4
61	Aromatic amines	N/A
62	Barite	13462-86-7
63	Barium	7440-39-3
64	Barium sulfate	7727-43-7
65	Bentonite	1302-78-9
66	Benzene	71-43-2
67	Benzoic Acid	65-85-0
68	Benzyl chloride	100-44-7
69	Beryllium	7440-41-7
70	Branched DDBSA	68411-32-5
71	C12-C14 Isoalkanes	68551-19-9
72	C12-C14 Isoalkanes	68551-20-2
73	C14-30 Alkyl Derivatives	68855-24-3
74	Cadmium	7440-43-9
75	Calcium carbonate	471-34-1
76	Calcium oxide	1305-78-8
77	Calcium sulfate	7778-18-9
78	Carbon	7440-44-0
79	Carbon Dioxide	124-38-9
80	Carboxymethyl cellulose	9004-32-4
81	Cationic acrylamide copolymer	69418-26-4

No.	Constituent	CASRN
82	Cationic acrylamide monomer	44992-01-0
83	Cationic polymer	54076-97-0
84	Cedar Fiber	11132-73-3
85	cellophane	9005-81-6
86	Cellulose	9004-34-6
87	Chromium	7440-47-3
88	Citric acid	77-92-9
89	Citrus Terpenes	94266-47-4
90	Cocamide DEA	68603-42-9
91	Cocamide DEA	68155-07-7
92	Coke, petroleum, calcined	64743-05-1
93	Copper	7440-50-8
94	Copper sulfate pentahydrate	7758-99-8
95	Cotton seed hulls	68308-87-2
96	Crosslinked polyol ester	129828-31-5
97	Cumene	98-82-8
98	Cyclohexanol	108-93-0
99	Cyclohexylamine	108-91-8
100	Cymenes	25155-15-1
101	DDBSA Salt	N/A
102	Diester of sulfosuccinic acid sodium salt	2673-22-5
103	Diethanolamine	111-42-2
104	Dimethyl siloxane	N/A
105	Dinonylphenyl polyoxyethylene	9014-93-1
106	Diphosphoric acid, sodium salt (1:4)	7722-88-5
107	Dipropylene glycol methyl ether	34590-94-8
108	Disodium ethylenediaminediacetate	38011-25-5
109	Diutan gum	125005-87-0
110	d-Limonene	5989-27-5
111	Dodecane	112-40-3
112	Drilling Paper	N/A
113	Ethanol	64-17-5
114	Ethanolamine thioglycolate	126-97-6
115	Ethoxylated amine	61791-26-2
116	Ethoxylated C11 Alcohol	34398-01-1
117	Ethoxylated octylphenol	N/A
118	Ethyl Acetate	141-78-6
119	Ethyl acrylate	140-88-5
120	Ethyl Octynol	5877-42-9
121	Ethylbenzene	100-41-4
122	Ethylene Glycol	107-21-1
123	Fatty Acid	143-07-7
124	Fatty acid ester	67762-38-3
125	Fatty acid oxyalkylate	70142-34-6

No.	Constituent	CASRN
126	Fatty acids, tall-oil, sodium salts	61790-45-2
127	Fatty alkylamines	61788-91-8
128	Ferrous sulfate	17375-41-6
129	Formaldehyde	50-00-0
130	Formamide	75-12-7
131	Formic Acid	64-18-6
132	Furfuryl alcohol	98-00-0
133	Glutaral	111-30-8
134	Glycerides, tall oil mono-, di, and tri	97722-02-6
135	Glycerine	56-81-5
136	Glycine, N,N, 1,2- ethanediylbis (N-(carboxymethyl)-disodium salt	139-33-3
137	Glycolic acid	79-14-1
138	Glyoxal	107-22-2
139	Graphite	7782-42-5
140	Gypsum	13397-24-5
141	Heavy aromatic naphtha	64742-94-5
142	Heavy Catalytic Naphtha	64741-68-0
143	Humic acids	1415-93-6
144	Hydrochloric Acid	7647-01-0
145	Hydrofluoric Acid	7664-39-3
146	Hydrogen Peroxide	7722-84-1
147	Hydroquinone	123-31-9
148	Hydrotreated light distillate	64742-47-8
149	Hydroxyethyl cellulose	9004-62-0
150	Hydroxyethylidenediphosphonic Acid	2809-21-4
151	Inorganic sulfer compound	7783-18-8
152	Iodine	7553-56-2
153	Ionic surfactants	N/A
154	Isobutanolamine	124-68-5
155	Isopropanol	67-63-0
156	Isoquinoline	119-65-3
157	Kerosene	8008-20-6
158	Krypton	7439-90-9
159	Krypton 85	13983-27-2
160	Lead	7439-92-1
161	Light Aliphatic Naphtha	64742-89-8
162	Light aromatic naphtha	64742-95-6
163	Lignite	129521-66-0
164	Limestone	1317-65-3
165	Lithium carbonate	554-13-2
166	Lithium chlorate	13453-71-9
167	Lithium chloride	7447-41-8
168	Lithium hydroxide	1310-65-2

No.	Constituent	CASRN
169	Lithium hypochlorite	13840-33-0
170	Magma Fiber	6806-10-0000
171	Mercury	7439-97-6
172	Methanol	67-56-1
173	Methyl Chloride	74-87-3
174	Methyl ester of sulfonated tannin	N/A
175	Methyl oxirane polymer	PE-M2464
176	Methylchloroisothiazolinone	26172-55-4
177	Mineral Oil	8012-95-1
178	Monoethanolamine	141-43-5
179	Mullite	1302-93-8
180	Naphthalene	91-20-3
181	Nickel	7440-02-0
182	Nickel sulfate	7786-81-4
183	Non Phenol Ethoxylates	9016-45-9
184	Nonylphenol polyethylene glycol ether	127087-87-0
185	Nutshell	N/A
186	Oleic acid	112-80-1
187	Orange terpenes	68647-72-3
188	Organic Acids Ethoxylated Alcohols	104-55-2
189	Organic surfactant	577-11-7
190	Oxyalkylated alkylphenol	68412-54-4
191	Oxyalkylated alkylphenolic resin	30704-64-4
192	Oxyalkylated alkylphenolic resin	30846-35-6
193	Oxyalkylated alkylphenolic resin	63428-92-2
194	Oxyalkylated alkylphenolic resin	68171-44-8
195	Oxyalkylated polyamine	67939-72-4
196	Oxyalkylated polyamine	68910-19-0
197	Paraffinic petroleum distillate	64742-55-8
198	Pentadecane, 3-methylene	56919-55-2
199	Pentadecane, 5-methylene	115146-98-0
200	Pentadecane, 7-methylene	13043-55-5
201	Pentasodium diethylenetriamine pentaacetate	140-01-2
202	Peroxyacetic acid	79-21-0
203	Petrolleum distillates	64742-53-6
204	Phosphate ester salt	68425-75-2
205	Phosphonate salt	P-84-470
206	Phosphonic Acid	13598-36-2
207	Phosphonium, tetrakis (hydroxymethyl)-, sulfate (2:1), salt	55566-30-8
208	Phosphoric acid	7664-38-2
209	Phosphoric acid ester salt	N/A
210	Piperazine	110-85-0
211	POE (20) Sorbitan Trioleate	9005-70-3
212	Polyacrylamide	9003 05 8

No.	Constituent	CASRN
213	Polyacrylate	9003-79-8
214	Polyacrylic acid	9003 01 4
215	Polyamine	64114-46-1
216	Polyamine salts	68955-69-1
217	Polycarboxlate salt	19019-43-3
218	PolyDADMAC	26062-79-3
219	Polydimethylsiloxane emulsion	N/A
220	Polyethylene	25038-59-9
221	Polyethylene glycol	25322-68-3
222	Polyglycol diepoxide	68036-92-0
223	Polyglycol diepoxide	68036-95-3
224	Polyglycol ester	PE-M2481
225	Polyglycol ether	9038-95-3
226	Polylactide resin	9051-89-2
227	Polymer sodium acrylate	9033-79-8
228	Polyoxyalklene glycol	68123-18-2
229	Polyoxyalkylene	68551-12-2
230	Polyoxyalkylene glycol	36484-54-5
231	Polyoxyalkylenes	78330-21-9
232	Polyoxyalkylenes	61790-86-1
233	Polyoxyethylene nonylphenyl ether phosphate	68412-53-3
234	Polypropylene glycol	25322-69-4
235	Polyquaternary amine	42751-79-1
236	Polyvinyl Alcohol	9002-89-5
237	Potassium acetate	127-08-2
238	Potassium bisulfate	7646-93-7
239	Potassium chloride	7447-40-7
240	Potassium hydroxide	1310-58-3
241	Potassium Oxide	12136-45-7
242	Propargl alcohol	107-19-7
243	Propionaldehyde	123-38-6
244	Propylene glycol	57-55-6
245	Quartz Crystalline Silica	14808-60-7
246	Quaternary ammonium compound	61790-41-8
247	Quaternary ammonium compound	68424-85-1
248	Quaternized condensed alkanolamines	68609-18-7
249	Quinaldine	91-63-4
250	Salt of an organic sulfur compound	P-88-1256
251	Salt of fatty acid polyamine	68153-60-6
252	Saponite	1319-41-1
253	Severely Hydrotreated Paraffinic	64742-62-7
254	Silica crystalline tridymite	15468-32-3
255	Silica, crystalline, cristoballite	14464-46-1
256	Siloxanes and Silicones	63148-62-9

No.	Constituent	CASRN
257	Smectite	1318-93-0
258	Sodium acetate	127-09-3
259	Sodium Acid Pyrophosphate	7758-16-9
260	Sodium Benzoate	532-32-1
261	Sodium bicarbonate	144-55-8
262	Sodium bisulfite	7631-90-5
263	Sodium carbonate	497-19-8
264	Sodium carboxymethylstarch	9063-38-1
265	Sodium Chlorate	7775 09 9
266	Sodium chloride	7647-14-5
267	Sodium chloride	4647-14-5
268	Sodium dichloroisocyanurate	2893-78-9
269	Sodium edetate	64-02-8
270	Sodium Erythorbate	6381-77-7
271	Sodium glycolate	2836-32-0
272	Sodium hydroxide	1310-73-2
273	Sodium hypochlorite	7681-52-9
274	Sodium Iodide	7681-82-5
275	Sodium olefin sulfonate	68439-57-6
276	Sodium Oxide	1313-59-3
277	Sodium polyacrylate	9003-79-3
278	Sodium polyacrylate	9003 04 7
279	Sodium sulfate	7757-82-6
280	Sodium tetraborate pentahydrate	12179-04-3
281	Sodium Thiosulfate Pentahydrate	10102-17-7
282	Sodium Thiosulfate Pentahydrate	7772-98-7
283	Sodium Trimetaphosphate	7785-84-4
284	Solvent Dewaxed Heavy Paraffinic	64742-65-0
285	Sorbitan ester	NP-SMO3_U1240
286	Sorbitan Mono-9-Octadecenoate	9005-65-6
287	Sorbitan monooleate	1338-43-8
288	Soybean oil, Me ester	67784-80-9
289	Stearic acid	57-11-4
290	Steel mill slag	65996-69-2
291	Stoddard Solvents	8052-41-3
292	Sulfur dioxide	7446 09 5
293	Sulfuric acid	7664-93-9
294	Tall oil fatty acids	61790-12-3
295	Tallow alkylamines	61790-33-8
296	Tar bases, Quinoline derivatives, benzyl chloride-Quaternized	72480-70-7
297	Terpene hydrocarbon	8002 09 3
298	Tetradecane	629-59-4
299	Tetrapropylenebenzene	25265-78-5

No.	Constituent	CASRN
300	Thiourea, polymer with formaldehyde and 1-phenylethanone	68527-49-1
301	Titanium dioxide	13463-67-7
302	Toluene	108-88-3
303	Tridecane	629-50-5
304	Triethylene Glycol	112-27-6
305	Trimethyl Benzene	25551-13-7
306	Triphosphoric acid, sodium salt (1:5)	7758-29-4
307	Trisodium nitrilotriacetic acid	5064-31-3
308	Undecane	1120-21-4
309	Urea	57-13-6
310	Walnut Shell	84012-43-1
311	Water	7732-18-5
312	Wood dust	N/A
313	Xanthan Gum	11138-66-2
314	Xenon	7440-63-3
315	Xenon radionuclide	14932-42-4
316	Xylene	1330-20-7
317	Zinc	7440-66-6
318	Zinc chloride	7646-85-7