

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM R5-2019-0713-R03
FOR
UNION PACIFIC RAILROAD COMPANY
DUNSMUIR RAILYARD, NORTH FUELING FACILITY
5750 SACRAMENTO AVENUE, DUNSMUIR, CALIFORNIA
SISKIYOU COUNTY

The Executive Officer of the Central Valley Regional Water Quality Control Board (Central Valley Water Board) finds as follows:

1. This Order is issued pursuant to Water Code section 13267, subdivision (b)(1), in conjunction with Cleanup and Abatement Order R5-2019-0713 (CAO) to Union Pacific Railroad Company (UPRR) for the Dunsmuir Railyard, North Fueling Facility (Site). A Map of the Site is attached as **Attachment A** to the CAO, and incorporated herein.
2. The Monitoring and Reporting Program (MRP) established herein is supported by **CAO Findings 1-39 and 55-61**, which are fully incorporated herein.
3. The monitoring and reporting activities required herein are necessary to ensure compliance with the operative CAO. The burdens of compliance are reasonable in relation to the need for monitoring and reporting outlined in the CAO findings.
4. At the time the CAO was issued, and as depicted in CAO Attachment A, there were 18 monitoring wells and 21 piezometers associated with the Site. At the time the CAO was issued, there were 33 "grout tubes" at the Site. In November 2019, all of the "grout tubes" except "grout tubes" P-24, P-25, P-26 were cut flush with the walkway to facilitate installation of the Interim Non-Aqueous Phase Liquid (NAPL) Discharge Control remedy (also known as the "oleophilic bio-barrier" or "OBB"). Of the "grout tubes" cut flush to the walkway, all but three "grout tubes" (P-7, P-18, and P-22) were filled with concrete. "Grout tubes" P-7, P-18, and P-22 were capped and covered with a steel plate and may be used in the future for monitoring and potential support of a remedial action, if appropriate. In April 2021, the Central Valley Water Board approved decommissioning of the three "grout tubes" remaining in original condition (P-24, P-25, and P-26).
5. This Order is separately-issued and may be revised independently of the CAO. Any revisions to this MRP shall be controlling over the provisions attached to the CAO.
6. The issuance of this Order, which pertains to information collection and environmental protection, is exempt from the California Environmental Quality Act (CEQA), Public Resource Code section 21000 et seq., in accordance with the CEQA Guidelines. (See Cal. Code Regs., tit. 14, §§ 15306, 15308.)

IT IS HEREBY ORDERED that, pursuant to Water Code section 13267, subdivision (b)(1), UPRR shall comply with the following requirements.

A. MONITORING REQUIREMENTS

<u>Activity</u>	<u>Frequency</u>
Groundwater Monitoring (§ A.1)	See Table 1.
Surface Water Monitoring (§ A.2)	See Table 3.
Site Monitoring (§ A.3)	Weekly and Prior to Forecasted Storm Events

(Tables 1-4 follow the signature page of this Order.)

1. Groundwater Monitoring

UPRR shall immediately begin groundwater monitoring in accordance with the operative Monitoring Plan.

Existing monitoring wells, piezometers, and “grout tubes” shall be sampled according to the schedule in **Table 1**, with samples analyzed in accordance with the methods specified in **Table 2**.

In the event that any new wells are constructed to replace or supplement existing ones (e.g., to address any CAO requirements), such wells shall be sampled in accordance with **Table 1**.

2. Surface Water Monitoring

UPRR shall immediately begin surface water monitoring in accordance with the operative Monitoring Plan.

Surface water samples shall be collected according to the schedule in **Table 3**, and analyzed by the methods in **Table 4**.

3. Site Monitoring

UPRR shall conduct routine inspections, at least once a week and in advance of forecasted storm events, to determine the presence of oil, oil sheen, or other signs of contaminant discharge in or near the Sacramento River. After storm events that result in partial or complete walkway submergence (e.g., when river stage exceeds approximately 3.5 feet),

UPRR shall conduct inspections of Site infrastructure. The observations shall be recorded and submitted with the monthly report. However, if a discharge or infrastructure damage is observed, the observations shall also be submitted via notification.

The minimum inspection frequency will continue until the Assistant Executive Officer determines that a reduced sampling frequency is appropriate and this MRP is revised, accordingly.

B. REPORTING REQUIREMENTS

UPRR shall submit the monitoring reports on a monthly, quarterly and annual basis, and in accordance with the provisions below, until otherwise directed in writing by the Assistant Executive Officer.

<u>Report</u>	<u>Due</u>
Quarterly Reports (§ B.1)	1 May (1st Qtr.)
	1 August (2nd Qtr.)
	1 November (3rd Qtr.)
	1 February (4th Qtr.)
Monthly Reports (§ B.3)	10th Day of Following Month (e.g., May Report due 10 June)
Annual Reports (§ B.2)	1 February
Notification (§ B.4)	Immediately Upon Discovery of Discharge or Damage

1. Quarterly Monitoring Reports

- a. Beginning with the Monitoring Report for the 2nd of Quarter 2019 (due 1 Aug. 2019), UPRR shall submit Quarterly Monitoring Reports in accordance with the following schedule:

<u>Quarter</u>	<u>Report Deadline</u>
1st Quarter (1 Jan.–30 Mar.)	1 May
2nd Quarter (1 April–30 June)	1 August
3rd Quarter (1 July–30 Sept.)	1 November
4th Quarter (1 Oct.–31 Dec.)	1 February

- b. Each Quarterly Monitoring Report shall contain the following information:
- i. A description and discussion of the groundwater, surface water, and “grout tube” sampling event and results, including trends in the concentrations of pollutants and groundwater elevations in the wells, how and when samples were collected, and whether the pollutant plume is delineated;
 - ii. Field logs for groundwater sampling that contain, at a minimum, water quality parameters measured before, during, and after well purging, method of purging, depth of water, volume of purged water, presence and thickness of NAPL (product or sheen), well condition, recommendations for well maintenance;
 - iii. Field logs for surface water sampling that contain, at a minimum, water quality parameters measured at the time of sampling, sampling method, river flow conditions, and presence of NAPL (product or sheen);
 - iv. Groundwater contour maps and corresponding Sacramento River stage elevation, as appropriate;
 - v. Pollutant concentration contour maps by constituent;
 - vi. Pollutant observation maps (NAPL/product presence in wells, piezometers, “grout tubes” and on surface of retaining wall and walkway). Observations of the grout tubes are only

required when grout tubes are accessible during the reporting period. If the Interim NAPL Discharge Control remedy is removed, grout tube observations shall resume according to Table 1;

- vii. A table showing well construction details such as well number, groundwater zone being monitored, coordinates (latitude/longitude), ground surface elevation, reference elevation, elevation of screen, well details);
 - viii. A table showing historical lateral and vertical (if applicable) flow directions and gradients;
 - ix. Cumulative data tables containing the water quality results for surface water and groundwater;
 - x. Cumulative data tables for depth to groundwater;
 - xi. A copy of laboratory analytical data reports;
 - xii. The status of any ongoing remediation, including an estimate of the cumulative mass of pollutant removed from the subsurface, any associated field notes, and documentation of contaminated media transportation and disposal (e.g., soil manifests, weight tags); and
 - xiii. A summary of any deviations from the procedures identified in the Monitoring Plan.
- c. UPRR shall continue the submission of Quarterly Monitoring Reports until the Assistant Executive Officer determines in writing that such reports are no longer necessary.

2. Annual Monitoring Reports

- a. Beginning with the 2019 Annual Monitoring Report, UPRR shall submit Annual Monitoring Reports on **1 February** of each year. These reports shall provide evaluation of the overall effectiveness and progress of the investigation and remediation activities at the Site.
- b. Annual Monitoring Reports shall contain the following information:
 - i. Both tabular and graphical summaries of all data obtained during the reporting year;

- ii. Groundwater contour maps, pollutant concentration maps, and NAPL/product distribution maps containing all data obtained during the reporting year,
- iii. A discussion of the long-term trends in the concentration and presence of pollutants in the groundwater monitoring wells, piezometers, "grout tubes", and Sacramento River;
- iv. Map and table of historic NAPL distribution and thickness in grout tubes, and
- v. If desired, a proposal and rationale for any revisions to the sampling plan frequency and/or list of analytes.

3. Monthly Reports

- a. Beginning with the Report for June 2019 (due 10 July 2019), UPRR shall submit Monthly Reports on the **10th day of the following month** (e.g., July Report due 10 Aug.). These reports shall provide an overall summary of all monitoring activities conducted at the Site.
- b. Monthly Reports shall include the following:
 - i. Photographs from walkway observations;
 - ii. Thickness of NAPL/product in "grout tubes" reported if collected during reporting period;
 - iii. Field forms;
 - iv. A summary of Site conditions; and
 - v. Update on the status of interim NAPL control measures, site investigation, and remedial tasks, including issues that may affect the project schedule.

4. Notification

- a. Upon discovery of any discharge or damage to the Interim NAPL Discharge Control remedy or other site infrastructure, UPRR shall immediately report the observation to Central Valley Water Board staff via telephone or email.
- b. Within seven days of discovery of any discharge or damage, UPRR shall submit a written report with the following information:

- i. Map(s) depicting the location;
- ii. Estimated river flow rate and river stage;
- iii. A description of the discharge or change in site infrastructure;
- iv. Corrective measures underway or proposed; and
- v. Time schedule for corrective measures.

C. OTHER REQUIREMENTS

1. Electronic Submission

- a. All reports and laboratory data shall be uploaded to State Water Board's [GeoTracker Database](http://geotracker.swrcb.ca.gov) (<http://geotracker.swrcb.ca.gov>). (See Cal. Code Regs., tit. 23, § 3890 et seq.)
 - i. Analytical laboratory data for soil, vapor, and water samples shall be saved/submitted as **Electronic Deliverable Format (EDF)**.
 - ii. Site Maps (i.e., GEO_MAP), boring/well survey information, depth to groundwater, boring logs and well screen intervals, location data (i.e., GEO_XY file), elevation data (i.e., GEO_Z file), and technical reports (e.g. work plans, assessment, and monitoring reports) shall be saved/submitted in searchable **Portable Data Format (PDF)**.
- b. After each upload to GeoTracker, notify Central Valley Water Board staff via email centralvalleyredding@waterboards.ca.gov, including the following information in the email body:

Attention:	Groundwater Unit
Report Title:	--
GeoTracker Upload ID:	--
Discharger Name:	Union Pacific Railroad Co.
Facility Name:	Dunsmuir Railyard, North Fueling Facility
County:	Siskiyou
CIWQS place ID:	220849

2. Mandatory Contents and Formatting

- a. Monitoring Reports shall be accompanied by a transmittal letter with the following certification from an authorized UPRR representative:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted, to the best of my knowledge and belief, is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

- b. Reported data shall be arranged in **tabular form** so as to render readily discernable all dates, sample types (e.g., run-on, outflow) and reported analytical results for each sample; and summarized in such a manner to clearly illustrate compliance with this Order.
- c. Results of any monitoring done more frequently than required at locations specified herein shall be included in the next regularly-submitted report.
- d. In accordance with Business and Professions Code sections 6735, 6835 and 7835.1, work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately licensed or certified professional. Please ensure that all documents that contain site specific data, data interpretations, or recommendations comply with this requirement and that they include the professional license stamp, signature and statement of professional certification (i.e., California Professional Geologist or California Professional Engineer).
- e. Laboratories analyzing monitoring samples shall be California-certified laboratories (see Wat. Code, § 13176), and include quality assurance/quality control data with their reports.

This Order is effective as of the date below.

ORDERED BY:

Original signed by:
Clint E. Snyder, AEO (*for*)

PATRICK PULUPA
Executive Officer,
Central Valley Water Board

DATE

MRP Glossary

Table 1—Groundwater Sampling Frequencies and Constituent Suites

Table 2—Groundwater Analytical Methods

Table 3—Surface Water Sampling Frequencies and Constituent Suites

Table 4—Surface Water Analytical Methods

MRP Glossary

CAO	Cleanup and Abatement Order R5-2019-0713 (and any subsequent revisions thereto)
µg/L	Microgram per Liter
mg/L	Milligram per Liter
mV.....	Millivolts
NAPL.....	Non-Aqueous Liquid Phase
NTU.....	Nephelometric Turbidity Unit
PAHs	Polynuclear Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
TPH.....	Total Petroleum Hydrocarbons
TPH[d/o/g]	Total Petroleum Hydrocarbons [as Diesel / Oil / Gasoline]
µS/cm.....	MicroSiemens per centimeter
VOC(s).....	Volatile Organic Compound(s)

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MRP Tables

Table 1 - Groundwater Sampling Frequencies and Constituent Suites

	<u>Suite A</u>	<u>Suite B</u> ³	<u>Suite C</u> ²	<u>Suite D</u> ¹	<u>Suite E</u> ¹
MWX-02S	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-04	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-06	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-07	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-08	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-09	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-11	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-11S	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDMW-13	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDMW-14	Quarterly ⁵	--	--	Quarterly ⁵	Every 5 Yrs.
NDMW-15	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-16	--	--	--	--	Every 5 Yrs.
NDMW-17	--	--	--	--	--
NDMW-18	--	--	--	--	Every 5 Yrs.
NDMW-19	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-20	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-21	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDMW-22	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDPZ-01	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-02	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-03	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-04	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-05	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-06	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.

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	Suite A	Suite B ³	Suite C ²	Suite D ¹	Suite E ¹
NDPZ-07	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-08	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-09	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDPZ-10	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-11	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-12	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-13	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
NDPZ-14	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-15A	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-15B	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-16A	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-16B	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-17A	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-17B	Quarterly ⁵	--	--	--	Every 5 Yrs.
NDPZ-18	Quarterly ⁵	--	--	--	Every 5 Yrs.
PT-01	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
PT-03	Quarterly ⁵	--	--	--	Every 5 Yrs.
SP-04	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
All New and Replacement Wells	Quarterly	Quarterly	Quarterly	Quarterly	Every 5 Yrs.
Grout Tubes	Monthly ⁴	--	--	--	--

1. If NAPL is present in a given well or piezometer at the time of sampling, the collected sample need not be analyzed per Suite D (quarterly) or Suite E (every 5 years).

2. Except as otherwise directed in writing by the Assistant Executive Officer, "Suite C" analyses (for PAHs) may be discontinued for a well after 4 consecutive sampling events without detection.

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3. Except as otherwise directed in writing by the Assistant Executive Officer, "Suite B" analyses may be discontinued for particular VOCs and metals for a given well after 4 consecutive sampling events without detection of the particular VOC or metal constituent.
4. Grout tube monitoring is only required to the extent grout tubes are accessible and Site conditions allow safe access to grout tubes.
5. Prior to the issuance of this MRP, the Responsible Party requested elimination of quarterly monitoring (per Suite A and Suite D) for the following wells and piezometers: **NDMW-11S**; **NDMW-13**; **NDMW-14**; **NDMW-17**; **NDPZ-01**; **NDPZ-02**; **NDPZ-03**; **NDPZ-04**; **NDPZ-05**; **NDPZ-07**; **NDPZ-08**; **NDPZ-10**; **NDPZ-11**; **NDPZ-12**; **NDPZ-14**; **NDPZ-15A**; **NDPZ-15B**; **NDPZ-16A**; **NDPZ-16B**; **NDPZ-17A**; **NDPZ-17B**; **NDPZ-18**; and **PT-03**. To the extent that the Responsible Party still seeks the discontinuance of any monitoring for these and other wells/piezometers, it shall submit a written request, supported by a technical justification, to the Assistant Executive Officer for approval. For R5-2019-0713-R02, Central Valley Water Board staff removed well **NDMW-17** from the monitoring program and discontinued field measurements (Suite D) at monitoring locations: **NDPZ-01**; **NDPZ-02**; **NDPZ-03**; **NDPZ-04**; **NDPZ-05**; **NDPZ-07**; **NDPZ-08**; **NDPZ-10**; **NDPZ-11**; **NDPZ-12**; **NDPZ-14**; **NDPZ-15A**; **NDPZ-15B**; **NDPZ-16A**; **NDPZ-16B**; **NDPZ-17A**; **NDPZ-17B**; **NDPZ-18**; **NDMW-11S**, **NDMW-13**, and **PT-03**.

Table 2 - Groundwater Analytical Methods

Constituents	Method	Maxum Practical Quantitation Limit
Suite A		
NAPL or product presence or thickness	Visual	0.1 inches
Groundwater Elevation	Water Level Meter or Transducer	±0.01 ft.
Suite B		
TPHd, TPHo	8015M	50 µg/L
TPHg	8015M/8260M	50 µg/L
VOCs (benzene, toluene, ethylbenzene, xylenes, chlorinated solvents ²)	8260M	0.5 µg/L ³
Dissolved CAM 17 Metals ⁴	6010B	2 µg/L
Suite C		
PAHs	8270	0.05 µg/L ³
Suite D		
pH	Field Meter ¹	±0.1 std. units
Specific Conductivity	Field Meter ¹	±50 µS/cm
Temperature	Field Meter ¹	±0.1 °C
Dissolved Oxygen	Field Meter ¹	±0.2 mg/L
Oxidation/Reduction Potential	Field Meter ¹	±10 mV
Turbidity	Field Meter ¹	±1 NTU
Suite E		
Total Well Depth	Water Level Meter	±0.1 feet

µg/L—Microgram per Liter,

mg/L—Milligram per Liter,

mV—Millivolts,

NAPL—Non-Aqueous Liquid Phase,

NTU—Nephelometric Turbidity Unit,

PAHs—Polynuclear Aromatic Hydrocarbons,

PCBs—Polychlorinated Biphenyls,

TPH[d/o/g]—Total Petroleum Hydrocarbons [as Diesel/Oil/Gasoline],

µS/Cm—MicroSiemens per centimeter

VOCs—Volatile Organic Compounds

1. Field test instruments (e.g., pH) 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, as per the Monitoring Plan.
2. Until otherwise directed in writing by the Assistant Executive Officer, the Responsible Party shall analyze groundwater samples per “Suite B” for all chlorinated solvents associated with USEPA Method 8260M, including, but not

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limited to, Tetrachloroethylene (PCE), Trichloroethylene (TCE),
 cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene and Vinyl Chloride.

3. These PQLs are consistent with the Reporting Limits (RLs) in the Central Valley Water Board’s laboratory contract, effective August 2018. Alternative VOC and PAH PQLs may be used, provided that the alternative PQL is supported by a technical justification, and does not exceed applicable Title 22 MCLs (if any).
4. Beryllium may be excluded from monitoring well sample analysis due to four consecutive sampling events without detection for beryllium.

Table 3 - Surface Water Sampling Frequencies and Constituent Suites

Sample Locations	Frequency	Constituent Suite(s)
Upstream River (3x) Downstream	Quarterly	A, B ¹ , C ² , D

1. Individual metals analyzed may be removed from the monitoring list for a given location after four consecutive sampling events without detection in surface water samples from that location.
2. May be discontinued after four consecutive events without detections of these constituents.

Table 4 - Surface Water Analytical Methods

Constituents	Method	Maximum Practical Quantitation Limit
Suite A		
TPHd, TPHo	8015M	50 µg/L
Suite B		
Dissolved CAM 17 metals	6010B	2 µg/L
Hardness	200.7	600 µg/L
Suite C		
PAHs	8270	0.05 µg/L ³
Suite D		
NAPL or product presence or thickness	Visual	n/a
pH	Field Meter ¹	±0.1 std. units
Specific Conductivity	Field Meter ¹	±50 µS/cm
Temperature	Field Meter ¹	±0.1°C
Dissolved Oxygen	Field Meter ¹	±0.2 mg/L
Turbidity	Field Meter ¹	±1 NTU

µg/L—Microgram per Liter,
 mg/L—Milligram per Liter,
 mV—Millivolts,

NAPL—Non-Aqueous Liquid Phase,
 NTU—Nephelometric Turbidity Unit,

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PAHs—Polynuclear Aromatic
Hydrocarbons,

PCBs—Polychlorinated Biphenyls,

TPH[d/o/g]—Total Petroleum
Hydrocarbons [as Diesel/Oil/Gasoline],

µS/Cm—MicroSiemens per centimeter

VOC(s)—Volatile Organic Compound(s)

1. Field test instruments (e.g., pH) 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, as per the Monitoring Plan.
2. Until otherwise directed in writing by the Assistant Executive Officer, the Responsible Party shall analyze surface water samples per “Suite B” for all chlorinated solvents associated with USEPA Method 8260M, including but not limited to, Tetrachloroethylene (PCE), Trichloroethylene (TCE), cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene and Vinyl Chloride.
3. These PQLs are consistent with the Reporting Limits (RLs) in the Central Valley Water Board’s laboratory contract, effective August 2018. Alternative VOC and PAH PQLs may be used, provided that the alternative PQL is supported by a technical justification, and does not exceed applicable Title 22 MCLs (if any).