California Regional Water Quality Control Board
North Coast Region

Monitoring and Reporting Program
Order No R1-2023-0020
(Rescinds and Replaces Monitoring and Reporting Program No. R1-2022-0048)

for

Union Pacific Railroad Company

99 Frances Street
Santa Rosa, CA

Case No. 1NSR078
WDID 1B930002NSON

Sonoma County

This Monitoring and Reporting Program Order is issued pursuant to California Water Code (Water Code) section 13267 (b) and requires monitoring of groundwater and treated effluent and the submission of technical reports. The objective of monitoring conducted under this monitoring program is to provide the Discharger and the Regional Water Board with information concerning groundwater quality and pollutant trends at the site, necessitated by the historic discharge of waste to the subsurface. In addition, monitoring of the groundwater extraction and system influent, effluent, and receiving water and lands, and respective submission of technical reports are required.

The objective of monitoring conducted under this monitoring program is to demonstrate compliance with both Waste Discharge Requirements for *Discharges of Highly Treated Groundwater to Surface Waters following Extraction and Treatment of Groundwater Polluted with Petroleum Hydrocarbons and Volatile Organic Compounds*, Order No. R1-2022-0013 (General National Pollutant Discharge Elimination System No. CAG911001) and the *Conditional Waiver of Waste Discharge Requirements for Specific Categories of Low Threat Discharge*, Conditional Waiver Order No. R1-2017-0039. The burden, including costs, of these reports bears a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

This Monitoring and Reporting Program rescinds and replaces Monitoring and Reporting Program No. R1-2022-0048.

The failure to furnish any of the required reports, or the submittal of substantially incomplete reports or false information, is a misdemeanor, and may result in additional enforcement actions being taken against the Discharger, including issuance of an Administrative Civil Liability (ACL) Complaint pursuant to Water Code section 13268.

Liability may be imposed pursuant to Water Code section 13268 in an amount not to exceed one thousand dollars ($1,000) for each day in which the violation occurs.

Under the authority of Water Code section 13267, the Discharger named above is required to comply with the following:

GROUNDWATER MONITORING

1. Prior to purging, the depth to groundwater shall be determined to at least 0.01-foot increments in all groundwater monitoring wells at a semi-annual frequency during the 1st and 3rd quarters of each year. The data generated from the elevation readings must be referenced to the same elevation datum used for the electronic Geotracker survey values.

2. Groundwater samples shall be collected from groundwater monitoring wells and analyzed for chlorinated volatile organic compounds (CVOCs) as specified in Table 1 (attached).

3. Newly installed groundwater monitoring wells shall be gauged and sampled at a quarterly frequency for at least four consecutive quarters. Additionally, the initial sample from all newly installed monitoring wells must include analysis for lead and 1,4-dioxane.

4. Per Water Code section 13176, all laboratory analyses shall be performed at a California certified laboratory. Analytical methods for sample analyses shall achieve practical quantitation limits that are adequate for evaluating regulatory action levels for each constituent.

REPORTING OF GROUNDWATER MONITORING RESULTS

1. Semi-annual monitoring reports shall be submitted to the Regional Water Board in accordance with the following schedule:

Reporting Period	Due Date
First Half – January through June	August 1 of the same year
Second Half – July through December	February 1 of following year

2. Monitoring data and reports shall be submitted to the Regional Water Board via the State Water Resources Control Board's Geographic Environmental Information Management System database (GeoTracker) as specified in Title 23, Division 3, Chapter 30, Article 2, Sections 3890-3895 of the California Code of Regulations.

3. Monitoring reports shall be prepared by or under the supervision of a California Professional Civil Engineer or Geologist.

4. The groundwater elevation data calculated from the depth to water measurements shall be referenced to the same elevation datum used for GeoTracker.

5. Groundwater elevation contour maps for the A-zone, B-zone, C-zone, and D-zone shall be included for each set of depth-to-water measurements collected. The maps shall include the direction of the calculated groundwater gradient in each zone and the location of all monitoring wells.

6. Contaminant isoconcentration contour maps shall be included for each significant contaminant of concern detected during each monitoring event and shall be displayed for the A-zone, B-zone, and C-zone.

7. Each semi-annual monitoring report shall include the following elements:

    a. A narrative description of the work conducted
    b. Field notes and/or sampling logs documenting such activities as well purging, aquifer parameter testing, well recharge prior to sampling
    c. Chain-of-custody documentation
    d. Laboratory reports, including QA/QC data
    e. An accurately scaled site plan showing all sampling points in relation to significant site features
    f. Groundwater elevation contours plotted at the same scale as the site plan
    g. Groundwater contaminant concentrations plotted at the same scale as the site plan
    h. Tabular results of the depth to groundwater measurements indicating the surveyed elevations of each reference point, depth to groundwater from the reference point, and the actual groundwater elevation.
    i. Data tables summarizing current and historical analytical results.

GROUNDWATER AND EXTRACTION TREATMENT SYSTEM MONITORING

1. All laboratory analyses shall be performed at a California certified laboratory. Analytical methods for sample analyses shall achieve practical quantitation limits that are adequate for evaluating regulatory actions levels for each constituent.

Monitoring Stations

2. Treatment System Influent-M-INF – Untreated groundwater at a point in the groundwater collection system immediately prior to treatment.

3. Discharge Point 001 – M-001 – Treated effluent after treatment and before contact with the receiving water, vegetated soil cover, and/or dilution by any other water or waste.

4. Receiving Water 001 – R-001 – Receiving water at an appropriate monitoring location upstream of the point of discharge that adequately represents upstream water quality.

5. Receiving Water 002 – R-002 – Receiving water at an appropriate monitoring location downstream of the point of discharge that adequately represents downstream water quality.

INFLUENT MONITORING

1. The Discharger shall monitor untreated groundwater/influent to the treatment facility at monitoring location M-INF in accordance with the following schedule:

Parameter	Frequency
Flow	Continuous
Temperature	Monthly
pH	Monthly
Dissolved Oxygen	Semiannually
Full Scan Volatile Organic Compounds by 8260B	Monthly
Total petroleum hydrocarbons as gasoline	Monthly

EFFLUENT MONITORING

2. The Discharger shall monitor treated effluent at monitoring location M-001 in accordance with the following schedule:

Parameter	Frequency
Flow	Continuous
Temperature	Monthly
pH	Monthly
Dissolved Oxygen	Semiannually
Full Scan Volatile Organic Compounds by 8260B	Monthly
Total Petroleum Hydrocarbons as Gasoline	Monthly
Acute Toxicity	Annually
Chronic Toxicity	Annually

RECEIVING WATER MONITORING

3. Receiving water sampling shall be performed when water is present with a flow rate of at least 0.1 cubic feet per second. Monthly inspections of the receiving water shall be conducted to verify the presence or absence of water.

4. When receiving water is determined to have an appropriate flow rate for the collection of representative samples, the Discharger shall monitor receiving water at R-001 and R-002 according to the following schedule:

Parameter	Frequency
Flow	Monthly
Temperature	Monthly
pH	Monthly
Dissolved Oxygen	Semiannually
Turbidity	Monthly

RECEIVING LANDS MONITORING

5. The Discharger shall inspect the land application area daily for the first week of irrigation activities and on a monthly basis thereafter while irrigation occurs. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions (e.g., mosquitos, odors, etc.) shall be noted in a field log. The field log should include the time and date of the inspection and the name of the individual performing the inspection.

6. Best Management Practices (BMPs) shall be implemented to prevent runoff and/or ponding onsite as specified within the December 2020 *Feasibility Study and Remedial Action Plan* and approved by the Regional Water Board on February 14, 2022.

7. The application of treated groundwater to the land application area is prohibited during the following times:

    a. Within 24 hours of a forecasted precipitation event with a greater than 50-percent probability of occurring;

    b. During a precipitation event;

    c. Within 24 hours after a precipitation event of ½-inch or more precipitation that results in a storm water discharge from the land application area; and

    d. When the land application area surface soil is saturated.

8. The Discharger shall inspect the land application area if a significant rain event occurs (more than one inch in a 24-hour period) to ensure that irrigation is not resulting in erosion, field saturation, runoff, or other nuisance conditions and that BMPs remain effective at preventing such.

9. The Discharger shall retain precipitation records, for times of wet weather when land application occurs. The precipitation records should include, but not be limited to:

    a. A printed copy of a precipitation event forecast from the National Weather Service Forecast Office (i.e., by entering the zip code of the land application area at http://www.srh.noaa.gov/forecast);
    b. The time, date, and rain gauge reading of the precipitation event;
    c. The date, time, and location of visual observations;
    d. The individual(s) who performed the visual observation.

REPORTING

10. Semiannual monitoring reports shall be submitted to the Regional Water Board in accordance with the following schedule:

Sampling Period	Due Date
1st and 2nd Quarter (January - June)	August 1
3rd and 4th Quarter (July, - December)	February 1

11. Monitoring data and reports shall be submitted to the Regional Water Board via the State Water Resources Control Board's Geographic Environmental Information Management System database (GeoTracker) as specified in Title 23, Division 3, Chapter 30, Article 2, Sections 3890-3895 of the California Code of Regulations.

12. Monitoring reports shall be prepared by or under the supervision of a California Professional Civil Engineer or Geologist.

13. Each monitoring report shall include the following elements:

    a. A narrative description of the work conducted
    b. A narrative of remediation system operation, maintenance, performance, estimates of contaminant mass removed, and an evaluation of system performance
    c. Receiving land application area inspections
    d. Precipitation records

e. Field notes and/or sampling logs documenting such activities as well purging, aquifer parameter testing, well recharge prior to sampling

f. Chain-of-custody documentation

g. Laboratory reports, including QA/QC data

h. An accurately scaled site plan showing all sampling points in relation to significant site features

Ordered by C.E. Reed for Water Boards
Digitally signed by Charles Reed_Sep2020
Date: 2023.02.10 14:08:50 -08'00'

Valerie Quinto
Executive Officer

TABLE 1

Well Name and (Water-Bearing Zone)	Sampling Frequency	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		Test	Water Levels	Test	Water Levels	Test	Water Levels	Test	Water Levels
MW-01(A)	Annual	VOCs	G				G		
MW-02(A)	Not sampled		G				G		
MW-03(A)	Not sampled		G				G		
MW-04(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-05(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-07(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-09(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-10(B)	Annual	VOCs	G				G		
MW-11(C)	Annual	VOCs	G				G		
MW-12(A)	Not sampled		G				G		
MW-13(B)	Not sampled		G				G		
MW-14(C)	Not sampled		G				G		
MW-15(D)	Semi-Annual	VOCs	G			VOCs	G		
MW-16(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-17(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-18(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-19(C)	Semi-Annual	VOCs	G			VOCs	G		
MW-20(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-21(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-22(C)	Semi-Annual	VOCs	G			VOCs	G		
MW-23(A)	Not sampled		G				G		
MW-24(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-25(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-26(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-27(C)	Semi-Annual	VOCs	G			VOCs	G		
MW-28(C)	Annual	VOCs	G				G		
MW-29(A)	Annual	VOCs	G				G		
MW-30(C)	Annual	VOCs	G				G		
MW-31(A)	Not sampled		G				G		

Well Name and (Water-Bearing Zone)	Sampling Frequency	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		Test	Water Levels	Test	Water Levels	Test	Water Levels	Test	Water Levels
MW-32(C)	Not sampled		G				G		
MW-33(A)	Not sampled		G				G		
MW-34(C)	Not sampled		G				G		
MW-35(A)	Annual	VOCs	G				G		
MW-36(C)	Annual	VOCs	G				G		
MW-40(D)	Annual	VOCs	G				G		
MW-41(D)	Semi-Annual	VOCs	G			VOCs	G		
MW-42(D)	Semi-Annual	VOCs	G			VOCs	G		
MW-43(D)	Annual	VOCs	G				G		
MW-44(E)	Annual	VOCs	G				G		
MW-45(E)	Annual	VOCs	G				G		
MW-46(E)	Annual	VOCs	G				G		
MW-47(A)	Semi-Annual	VOCs	G			VOCs	G		
MW-48(B)	Semi-Annual	VOCs	G			VOCs	G		
MW-49(A)	Semi-Annual	VOCs	G			VOCs	G		
E-201(A)	Annual	VOCs	G				G		
E-202(B)	Annual	VOCs	G				G		
E-203(A)	Not sampled		G				G		
E-204(A)	Not sampled		G				G		
E-205(B)	Not sampled		G				G		
E-206(C)	Semi-Annual	VOCs	G			VOCs	G		
E-207(A)	Not sampled		G				G		
E-208(A)	Annual	VOCs	G				G		
E-209(B)	Annual	VOCs	G				G		
E-210(A)	Annual	VOCs	G				G		
E-212(A)	Not sampled		G				G		
E-214(A)	Not sampled		G				G		
E-216(A)	Annual	VOCs	G				G		
E-217(C)	Not sampled		G				G		
E-218(B)	Annual	VOCs	G				G		
E-219(C)	Semi-Annual	VOCs	G			VOCs	G		

Well Name and (Water-Bearing Zone)	Sampling Frequency	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
		Test	Water Levels	Test	Water Levels	Test	Water Levels	Test	Water Levels
E-220(A)	Semi-Annual	VOCs	G			VOCs	G		
E-221(C)	Semi-Annual	VOCs	G			VOCs	G		
P-110(A)	Semi-Annual	VOCs	G			VOCs	G		

Notes:
VOCs = chlorinated volatile organic compounds by USEPA Test Method 8260B
G = Gauge well (measure ground water level)