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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Southwest Region Office

PO Box 47775 • Olympia, WA 98504-7775 • 360-407-6300

December 2, 2022

Tanya Girouard
Progress Rail
1605 Progress Dr
Albertville, AL 35950
tgirouard@progressrail.com

Re: No Further Action opinion for the following contaminated Site

Site name: Progress Rail
Site address: 4012 SR 509 S Frontage Rd, Tacoma, Pierce County, WA 98421
Facility/Site ID: 26693246
Cleanup Site ID: 16556
VCP Project No.: SW1779

Dear Tanya Girouard:

The Washington State Department of Ecology (Ecology) received your request for an opinion on August 4, 2022, on the sufficiency of your independent cleanup of the Progress Rail facility (Site) under the [Voluntary Cleanup Program \(VCP\)](#).¹ All Site data have been uploaded and accepted in to Ecology's Information Management System database (EIM) as of September 2, 2022. This letter provides our opinion. We are providing this opinion under the authority of the [Model Toxics Control Act \(MTCA\)](#),² [chapter 70A.305 Revised Code of Washington \(RCW\)](#).³

Opinion

Ecology has determined that no further remedial action is necessary to clean up contamination at the Site.

Ecology bases this opinion on an analysis of whether the remedial action meets the substantive requirements of MTCA and its implementing regulations, which are specified in chapter 70A.305 RCW and chapter [173-340](#)⁴ Washington Administrative Code (WAC) (collectively called "MTCA").

¹ <https://www.ecy.wa.gov/vcp>

² <https://apps.ecology.wa.gov/publications/SummaryPages/9406.html>

³ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305>

⁴ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340>

Site Description

This opinion only applies to the Site described below. The Site is defined by the nature and extent of contamination associated with the following release(s):

- Total Petroleum Hydrocarbons (TPH) as diesel range organics (DRO) and heavy oil range organics (ORO) into groundwater.
- Lead in groundwater.
- Arsenic in soil.

Enclosure A includes a Site description and figures of the Site using information from Ecology's files.

A parcel of real property can be affected by releases from multiple sites. Please note the parcel(s) of real property associated with this Site are also located within the project boundaries of the Tacoma Smelter Plume (Facility/Site No. 89267963).

Basis for the Opinion

Ecology bases this opinion on information in the documents listed below.

1. TRC Companies (TRC), Closure Summary and Technical Memorandum, August 3, 2022.
2. Ecology, Application Acceptance – Voluntary Cleanup Program, July 19, 2022.
3. Ecology, *Initial Investigation Report*, February 25, 2022.
4. Panhandle Geotechnical & Environmental (Panhandle), *Phase II Environmental Site Assessment*, December 16, 2021.
5. Ecology, Re: No Further Action at the following Site, Coast Engine & Equipment Corp, SW1474, September 16, 2016.

You can request these documents by filing a [records request](#).⁵ For help making a request, contact the [Public Records Officer](#)⁶ or call (360) 407-6040. Before making a request, check whether the documents are available on the [cleanup site search webpage](#).⁷

This opinion is void if any of the information contained in the documents is materially false or misleading.

⁵ <https://ecology.wa.gov/About-us/Accountability-transparency/Public-records-requests>

⁶ publicrecordsofficer@ecy.wa.gov

⁷ <https://apps.ecology.wa.gov/cleanupsearch/site/16556>

Analysis of the Cleanup

Ecology has concluded that no further remedial action is necessary to clean up contamination at the Site. Ecology bases its conclusion on the following analysis:

Characterizing the Site

Ecology has determined your completed Site characterization is sufficient for setting cleanup standards and selecting a cleanup action.

Ecology Initial Investigation

The exceedances of the MTCA Method A cleanup level for diesel in groundwater from the July 2021 sampling event (and confirmed in November 2021), were evaluated as required by WAC 173-340-310. Ecology completed an initial investigation related to the reported release in a document dated February 25, 2022. Ecology concluded a release was present related to the exceedances of TPH in groundwater and the arsenic in soil. Lead and arsenic were also recommended in the initial investigation for further evaluation at the Site. An early notice letter documenting the initial investigation evaluation was sent by Ecology on March 29, 2022.

Looking back on all factors of the situation and TRC's report, it appears that review of and technical assistance for the Site was necessary through standard VCP. Email correspondence containing technical assistance during the period awaiting entry into the standard VCP are provided in **Enclosure B**.

Site Hazardous Substances

During the Phase II ESA completed at the property in July 2021, soil and groundwater results were screened against applicable MTCA Method A and B cleanup levels. Based on resulting exceedances, the following Site hazardous substances have been evaluated further: diesel, heavy oil, lead, and arsenic.

Other analytes, such as barium, cadmium, chromium (total), and mercury, either were not detected or did not exceed a screening level and were not carried forward as Site hazardous substances. For instance, Ecology screened chromium concentrations in soil against the total or trivalent MTCA Method A cleanup level of 2,000 milligrams per kilogram (mg/kg), given the lack of any potential hexavalent chromium sources. Comparing concentrations from the Phase II ESA results for chromium in soil to the MTCA Method A total chromium cleanup level, there appear to be no exceedances for chromium in soil.

Groundwater Monitoring

In July, September, and November 2021, Panhandle sampled groundwater from monitoring wells MW-1R, MW-3R, MW-4, MW-5, and MW-6 (corrected well identifications). Spectra Laboratories noted “quite a bit of sediment” in the groundwater sample from MW-5 collected on July 30, 2021. TRC reviewed historical monitoring well nomenclature and corrected the names of monitoring wells inadvertently misidentified by Panhandle. Tables of the groundwater sampling results are presented in **Enclosure C**.

In May 2022, TRC re-developed three monitoring wells MW-1, MW-2, and MW-3 (Panhandle identified wells MW-4, MW-5, and MW-6) and sampled them for diesel, heavy oil, and metals, using low flow groundwater sampling methodology. Substantial sediment was reported removed from each well. The concentration of diesel and heavy oil in groundwater, with or without silica gel cleanup, was less than the MTCA Method A cleanup levels. The concentration of lead in groundwater, for both total and dissolved lead, was less than the MTCA Method A cleanup level.

Identified during the May 2022 sampling, the concentration of arsenic in groundwater, exceeded the background value⁸ of 8 micrograms per Liter ($\mu\text{g}/\text{L}$) for arsenic in Puget Sound basin at monitoring wells MW-3R and MW-5. Concentrations were less than the background value for the other four wells. Monitoring wells MW-3R and MW-5 are in two different areas of the Property.

There do not appear to be any operations tied to Progress Rail that would suggest an arsenic source. Additionally, arsenic in groundwater is a well-documented area-wide issue at the Port of Tacoma. TRC evaluated the arsenic concentrations in the area, which range in groundwater from 0.8 $\mu\text{g}/\text{L}$ to 76 $\mu\text{g}/\text{L}$. Ecology also acknowledges TRC’s review of the Phase II ESA grab groundwater arsenic analytical results which appear to be less than the background arsenic groundwater value.

Ecology recognizes that TRC compared the concentrations of arsenic in groundwater at the Site to the protection of marine organisms of 36 $\mu\text{g}/\text{L}$. Concentrations of arsenic (total or dissolved) in groundwater at Site monitoring wells are less than the aforementioned screening level. It is Ecology’s opinion that a groundwater cleanup level for arsenic is appropriate for this Site.⁹ Also, the arsenic in groundwater does not appear to be related to the release being evaluated by Ecology for this Site.

⁸ Ecology publication 14-09-044, Natural Background Groundwater Arsenic Concentrations in Washington State: Study Results, revised January 2022.

⁹ Ecology does not concur with screening arsenic concentrations in groundwater at the Site against this value. If a Site cleanup level protective of marine surface water were appropriate, it appears that the human health value of 10 $\mu\text{g}/\text{L}$ for arsenic in groundwater would be the initial criterion to screen concentrations protective of marine surface water, per WAC 173-201A. Furthermore, the location of the Site is between the Blair Waterway and the Puyallup River, which may require evaluation for fresh water arsenic cleanup values for surface water.

Post monitoring well re-development, the concentrations of DRO and ORO in groundwater were approximately the same as those reported in 2013-2016, when site monitoring wells were used to demonstrate compliance with cleanup levels for petroleum hydrocarbons in groundwater for VCP SW1474. Ecology issued a no further action opinion on September 16, 2016, for VCP SW1474. TRC argues that the observed DRO concentrations in groundwater in 2021 and 2022 at the Site are related to the previous¹⁰ petroleum release and do not represent a new release. TRC suggested that the exceedances of DRO and ORO in groundwater were related to sedimentation in monitoring wells MW-5 and MW-6, and that the observed DRO and ORO concentrations in groundwater were generally resolved upon re-development of Site monitoring wells. Ecology's initial investigation dated February 25, 2022, evaluated the results of the Phase II ESA and concluded that a new release had occurred and required further investigation.

To demonstrate the potential effect of naturally occurring polar organics, groundwater samples collected from Site monitoring wells have been analyzed both with and without silica gel cleanup (SGC), which removes polar organics prior to analysis. The findings presented in the reports from Panhandle and TRC showed a decrease in TPH concentrations where SGC was used. Panhandle and TRC also reference analytical reports that include laboratory data flags indicating that the chromatograms did not resemble the standard used for TPH analysis and provided chromatograms for comparison of analyses performed with and without SGC.

Terrestrial Ecological Evaluation (TEE)

The TEE submitted proposes an exclusion from further TEE in that all contamination is at depths greater than 15 feet below ground surface (bgs). Arsenic was detected in soil at a concentration of 22.4 mg/kg in sample SB-7 at a depth of 4-6 feet bgs, so the 15 foot bgs TEE exclusion does not apply.

However, Ecology evaluated an exclusion from further TEE by using the simplified TEE process under WAC 173-340-7492(2)(a)(ii), specifically using Table 749-2.¹¹ The property is zoned industrial and is anticipated to remain used for industrial purposes and does not act as a reservoir for wildlife. Based on a search of Washington State Department of Fish and Wildlife's priority species habitat mapper on September 6, 2022, there are no priority habitats or sensitive species at the Site. Ecology determines that the Site can be excluded from further TEE.

Environmental Information Management Database (EIM)

Site data were uploaded and accepted into Ecology's EIM system on September 2, 2022. The VCP cleanup project manager reviewed and approved.

¹⁰ Evaluated under VCP SW1474.

¹¹ WAC 173-340-900

Setting cleanup standards

Ecology has determined the cleanup levels and points of compliance you set for the Site meet the substantive requirements of MTCA.

Cleanup Standards: Under MTCA, cleanup standards consist of three primary components; cleanup levels,¹² points of compliance,¹³ and applicable state and federal laws.¹⁴

- a. **Cleanup Levels.** Ecology concurs with these proposed cleanup levels (CULs) for the Site. MTCA Method A soil and groundwater cleanup levels are being applied to the Site.

Site Hazardous Substance	Soil Cleanup Level (mg/kg)	Groundwater Cleanup Level (µg/L)
DRO	2,000	500
ORO	2,000	500
Lead	250	15
Arsenic	20	8 ¹⁵

- b. **Points of Compliance.** Points of compliance are the specific locations at the Site where cleanup levels must be attained. Ecology concurs with the following proposed points of compliance for the Site:

Media	Points of Compliance
Soil-Direct Contact	Based on human exposure via direct contact, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. WAC 173-340-740(6)(d) Cleanup levels met at the standard point of compliance.
Soil- Protection of Groundwater	Based on the protection of groundwater, the standard point of compliance is throughout the Site. WAC 173-340-747 Cleanup level met at the standard point of compliance.
Soil-Protection of Plants, Animals, and Soil Biota	Based on ecological protection, the standard point of compliance is throughout the Site from ground surface to fifteen feet below the ground surface. WAC 173-340-7490(4)(b) Site excluded from further TEE.
Groundwater	Based on the protection of groundwater quality, the standard point of compliance is throughout the site from the uppermost level of the saturated zone extending vertically to the lowest most depth which could potentially be affected by the site. WAC 173-340-720(8)(b) Cleanup levels met for all wells at the standard point of compliance.

¹² WAC 173-340-200 "Cleanup level."

¹³ WAC 173-340-200 "Point of Compliance."

¹⁴ WAC 173-340-200 "Applicable state and federal laws," WAC 173-340-700(3)(c)

¹⁵ Background value from Ecology Publication No. 14-09-044, *Natural Background Groundwater Arsenic Concentrations in Washington State*, January 2022.

- c. **Applicable State and Federal Laws.** Ecology concurs that the Method A cleanup levels are appropriate for this Site. Ecology did not identify any additional applicable state and federal laws that would require revising or reducing the proposed cleanup levels for the Site.

Selecting the cleanup action

Ecology has determined the cleanup action you selected for the Site meets the substantive requirements of MTCA. The method of cleanup was de facto natural attenuation and degradation.

Cleanup

Ecology has determined your cleanup meets the standards set for the Site. Ecology concurs with your argument to issue a no further action for the new CSID.

Ecology evaluated the concentration of 22.4 mg/kg (SB-7 at 4-6 feet bgs) in soil for arsenic by statistical evaluation, per WAC 173-340-740(7). This concentration, though in excess when directed compared to the MTCA Method A cleanup level for arsenic in soil of 20 mg/kg, is statistically in compliance with the cleanup level. Using ProUCL 5.1, Ecology calculated¹⁶ a 95% upper confidence limit (UCL) for the arsenic in soil dataset of 10.69 mg/kg, which is less than the MTCA Method A cleanup level for arsenic in soil of 20 mg/kg. For non-detect values, half the laboratory reporting limit was used in the UCL calculation. Additionally, the arsenic concentration in soil is less than two times the soil cleanup level and is less than 10% of the concentrations for arsenic in soil at the Site exceeding the cleanup level (1 of 21 samples; 4.8%).

Ecology evaluated the concentrations of lead in groundwater. While a few grab groundwater samples collected showed lead concentrations exceeding the MTCA Method A cleanup level (3 of 21 samples, SB-1, SB-10, and SB-17), for the majority of grab groundwater samples collected, total lead was not detected. High turbidity of the grab groundwater samples collected more likely than not affected the results. Additionally, total lead concentrations (total and dissolved) in groundwater were less than the cleanup level for all samples collected from properly constructed monitoring wells. Soil concentrations of lead were all less than the MTCA Method A cleanup level. Ecology concurs that it is more likely than not that the actual concentration of lead in groundwater complies with cleanup levels for the Site.

Silica Gel Cleanup and DRO in Groundwater Evaluation

Groundwater samples collected in July 2021 were analyzed without silica gel cleanup. In September 2021, groundwater samples collected were analyzed with silica gel cleanup. In November 2021 and May 2022, groundwater samples were analyzed using NWTPH-Dx with and without silica gel cleanup.

¹⁶ WAC 173-340-740(7)

Currently, Ecology guidance does not recommend use of silica gel cleanup in for analyzing groundwater samples.¹⁷ After re-developing Site wells, the concentrations of DRO in groundwater sampled were less than the MTCA Method A cleanup level for the May 2022 event. For ORO, concentrations were not detected during this May 2022 sampling event. Boring SB-15 was next to MW-5 (corrected ID) and SB-4 was near MW-6 (corrected ID). In each grab groundwater selected, DRO was less than the MTCA Method A cleanup level in both borings, and ORO was not detected, suggesting the exceedances observed in MW-5 and MW-6 were related to sediment build up in the wells rather than being representative of groundwater conditions at the Site.

The May 16, 2022, groundwater sampling event results for MW-1R (without silica gel cleanup) was 120 µg/L for DRO and no detection for ORO. At monitoring well MW-3R (without silica gel cleanup) the DRO concentration was 150 µg/L. ORO was not detected. Both these wells are outside the footprint of the former VCP SW1474 cleanup and the original sampling network, now properly identified by TRC as MW-4, MW-5, and MW-6. Both MW-1R and MW-3R are also outside the current footprint of the potential release being evaluated. These concentrations at MW-1R and MW-3R (120 µg/L and 150 µg/L, respectively), post well re-development, may represent a contribution of “naturally occurring organics” to the DRO results.

Based on the data presented, and the needed additional groundwater sampling data from May 2022, concentrations of diesel in groundwater currently appear to be sufficient to meet the monitoring requirements,¹⁸ considering results with and without silica gel cleanup. Laboratory chromatograms and total organic carbon data from the May 2022 sampling event would have helped Ecology best evaluate Site groundwater conditions in a multiple lines of evidence evaluation for the petroleum versus non-petroleum DRO contribution. However, it seems more likely than not that the exceedances reported for MW-5 and MW-6 were from sediment build up in the samples collected, and not representative of actual Site groundwater conditions.

The May 16, 2022, groundwater sampling results, consistent with groundwater sampling results identified during the VCP SW1474 project, seem to be consistent and representative of Site groundwater conditions. The evaluated conditions do not appear to pose a threat to human health and the environment. Ecology makes a professional judgement about compliance per WAC 173-340-360(2). **Determinations by Ecology related to this Site are not transferrable to any other Site.**

¹⁷ Ecology Publication 10-09-057, *Guidance for Remediation of Petroleum Contaminated Sites*, revised June 2016.

¹⁸ Section 10.3, Ecology Publication 10-09-057, *Guidance for the Remediation of Petroleum Contaminated Sites*, revised June 2016.

Per WAC 173-340-360(2)(a), threshold requirements are met for this cleanup and closure is appropriate because:

- The cleanup is protective of human health and the environment and complies with cleanup standards.
- Cleanup levels are met at a standard point of compliance.
- The cleanup method used is permanent to the maximum extent practicable and provided for cleanup in a reasonable restoration timeframe.
- A groundwater cleanup was not warranted based on the extent of contamination identified at the Site.
- The Site is not expected to be used as a school or residential property.
- Cleanup actions did not rely on dilution or dispersion.

Listing of the Site

Based on this opinion, Ecology will change the Site status on the Confirmed and Suspected Contaminated Sites List to no further action.

Limitations of the Opinion

Opinion does not settle liability with the state

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW [70A.305.040](#)(4).¹⁹

Opinion does not constitute a determination of substantial equivalence

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. See RCW [70A.305.080](#)²⁰ and WAC [173-340-545](#).²¹

State is immune from liability

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion.

See RCW [70A.305.170](#)(6).²²

¹⁹ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.040>

²⁰ <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.080>

²¹ <https://apps.leg.wa.gov/WAC/default.aspx?cite=173-340-545>

²² <https://app.leg.wa.gov/RCW/default.aspx?cite=70A.305.170>

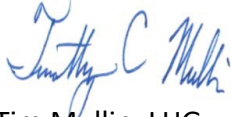
Termination of Agreement

Thank you for cleaning up the Site under the VCP. This opinion terminates the VCP Agreement governing VCP Project No. SW1779.

Questions

If you have any questions about this opinion or the termination of the Agreement, please contact me at 360-999-9589 or tim.mullin@ecy.wa.gov.

Sincerely,



Tim Mullin, LHG
Toxics Cleanup Program
Southwest Region Office

TCM/tam

Enclosures (3): A – Site Description and Figures
 B – Email Correspondence
 C – Data Tables

cc by email: Scott Hooton, Port of Tacoma, shooton@portoftacoma.com
 Scott Jagger, Progress Rail, sjagger@progressrail.com
 Keith Woodburne, TRC, kwoodburne@trccompanies.com
 Jerome Lambiotte, Ecology, jerome.lambiotte@ecy.wa.gov
 Rebecca Lawson, PE, LHG, Ecology, rebecca.lawson@ecy.wa.gov
 Tra Thai, TCP Operating Budget Analyst, tra.thai@ecy.wa.gov
 Fiscal, VCP Fiscal Analyst, ecyrevcp@ecy.wa.gov
 Ecology Site File

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Enclosure A

Site Description and Figures

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Site Description

The Site is located at 4012 SR 509 South Frontage Road in Tacoma, Washington (Pierce County Parcel No. 2001867000) which is located on a larger parent tract of land owned by the Port of Tacoma (Pierce County Parcel No. 0320021002) and leased by Progress Rail Services.

Property History and Current Use

The Property is currently operating as a railyard. It is Ecology's understanding that Progress Rail seeks to terminate their lease with the Port of Tacoma. The Port of Tacoma wants to continue to use the Property productively. Previously, there was a cleanup completed at the Site under VCP SW1474. That release was of diesel from an auxiliary locomotive fuel tank.

Property Vicinity

The Site is located at the southern border of the Port of Tacoma. Properties in the vicinity are commercial and industrial.

Soils and Geology

In general, subsurface soil conditions consist of approximately 1 to 5 feet of non-native fill material consisting of gravel with sand, silty sand, and sand overlying native sand with varying amounts of silt to the maximum depths explored. Soils are generally found to be moist, grading to saturated condition.

Groundwater

Based on historical data, depth to groundwater at the Site ranges from approximately 2-4 feet bgs. Historical groundwater flow appears to be towards the west-southwest.

Surface/Storm Water/Septic Systems

The Site lies between the Blair Waterway of Commencement Bay, located about ¼ mile north, and the Puyallup River, located about ½ mile to the south. There is no naturally occurring surface water at the Site. There are no storm water or septic systems at the Site.

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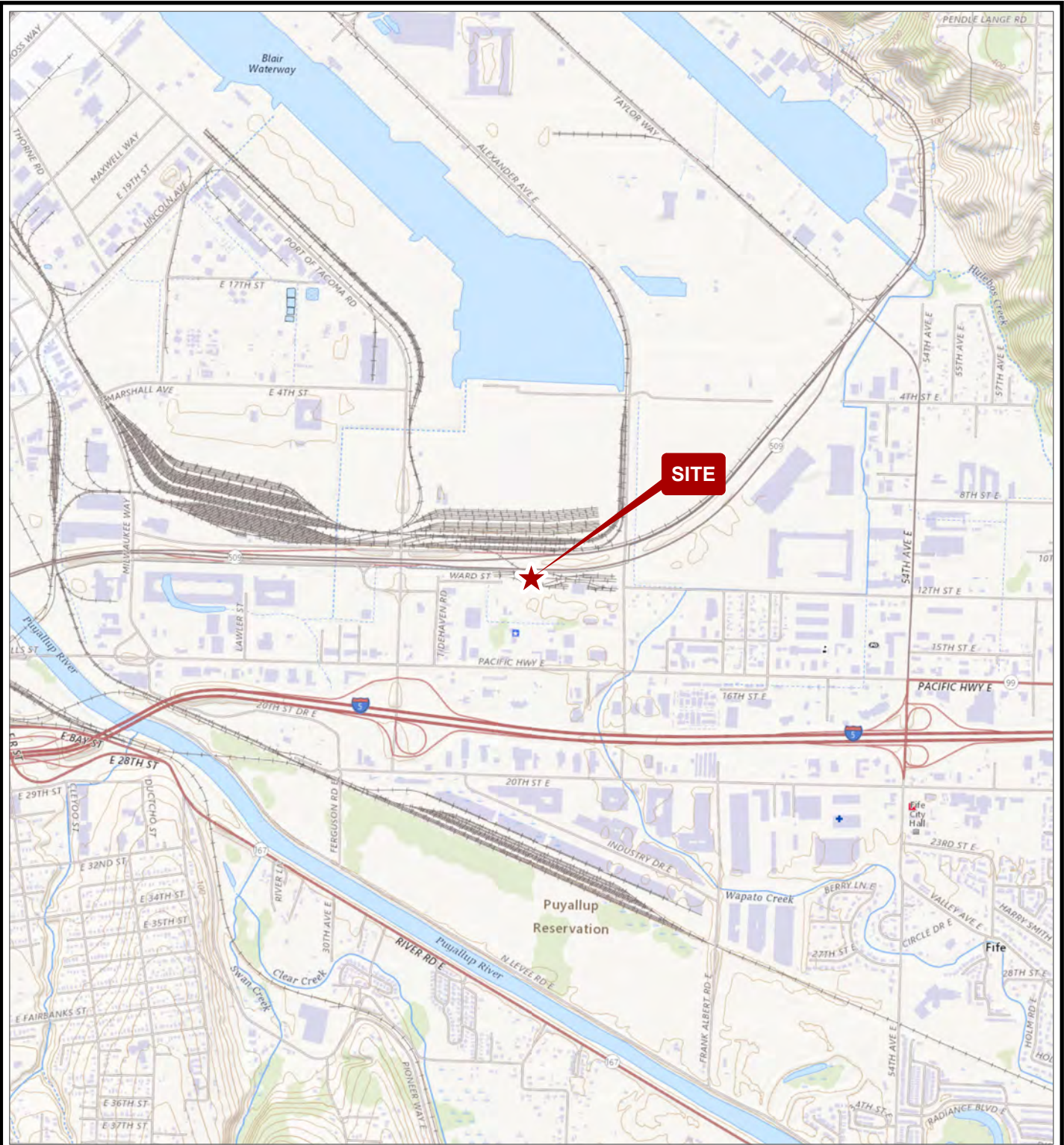
Site Figures



Figure 1 General Vicinity Map

Figure 2 Site Representation Showing Soil and Groundwater Sample Locations

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COORDINATE SYSTEM: NAD 1983 STATEPLANE WASHINGTON SOUTH FIPS 4602 FEET; MAP ROTATION: 0
 - SAVED BY: S RAY ON 8/3/2022, 11:36:34 AM; FILE PATH: T:\PROGRESS_RAIL_SERVICES\491744_TACOMA\2-APR\TECHNICAL MEMORANDUM - CLOSURE SUMMARY REPORT\APRX - LAYOUT NAME: FIG 1 - GVM



 0 1,000 2,000 FEET 1:24,000 1" = 2,000'	PROJECT: PROGRESS RAIL SERVICES CORPORATION TECHNICAL MEMORANDUM - CLOSURE SUMMARY REPORT 4012 STATE ROUTE 509 SOUTH FRONTAGE ROAD TACOMA, WASHINGTON	
	TITLE: GENERAL VICINITY MAP	
	DRAWN BY: S. RAY	PROJ. NO.: 491744.0001.0000
	CHECKED BY: K. WOODBURNE	FIGURE 1
	APPROVED BY: K. WOODBURNE	
DATE: AUGUST 2022		1180 NW MAPLE STREET SUITE 310 ISSAQUAH, WA 98027 PHONE: 425.395.0010
BASE MAP: USGS COLOR ORTHO IMAGERY DATA SOURCES: TRC		FILE: TECHNICAL MEMORANDUM - CLOSURE SUMMARY REPORT



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Coordinate System: NAD 1983 StatePlane Washington South FIPS 4602 Feet; Map Rotation: 0
 - Saved By: S.RAY on 8/3/2022, 11:42:25 AM; File Path: F:\Progress_Rail_Services\491744_Tacoma\2-APRX\Technical Memorandum - Closure Summary Report.aprx; Layout Name: Fig. 2 - Site Representation



- ◆ MONITORING WELL
- SOIL BORING
- ▭ BUILDING OUTLINES
- ⋯ PROPERTY BOUNDARY

NOTES:
 MW-5 (MW-1) - MONITORING WELLS MW-4, MW-5, AND MW-6 AS LABELED AND SAMPLED IN 2021 AND 2022 WERE CONFIRMED TO BE HISTORICAL WELLS MW-3, MW-1, AND MW-4, RESPECTIVELY.

BASE MAP: ESRI "WORLD IMAGERY" ONLINE SERVICE LAYER.
 DATA SOURCES: TRC



1:2,040
 1" = 170'
 0 170 340 FEET

PROJECT: **PROGRESS RAIL SERVICES CORPORATION
 TECHNICAL MEMORANDUM - CLOSURE SUMMARY REPORT
 4012 STATE ROUTE 509 SOUTH FRONTAGE ROAD
 TACOMA, WASHINGTON**

TITLE: **SITE REPRESENTATION SHOWING SOIL
 AND GROUNDWATER SAMPLE LOCATIONS**

DRAWN BY: S. RAY	PROJ. NO.: 491744.0001.0000
CHECKED BY: K. WOODBURNE	FIGURE 2
APPROVED BY: K. WOODBURNE	
DATE: AUGUST 2022	

TRC 1180 NW MAPLE STREET SUITE 310
 ISSAQUAH, WA 98027
 PHONE: 425.395.0010
 FILE: Technical Memorandum - Closure Summary Report.aprx

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Enclosure B

Email Correspondence

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From: [Tanya Girouard](#)
To: [Mullin, Tim \(ECY\)](#)
Subject: Re: Progress Rail technical assistance
Date: Thursday, March 10, 2022 7:17:40 AM

THIS EMAIL ORIGINATED FROM OUTSIDE THE WASHINGTON STATE EMAIL SYSTEM - Take caution not to open attachments or links unless you know the sender AND were expecting the attachment or the link

Tim,
Thanks for sending this.
And thanks again for your time and help. Looking forward to working with you as we navigate this.

Tanya

Tanya Girouard
Global Director, Environmental
Progress Rail, a Caterpillar Company
tgirouard@progressrail.com
801-510-3952

From: Mullin, Tim (ECY) <TMUL461@ECY.WA.GOV>
Sent: Tuesday, March 8, 2022 6:09:45 PM
To: Tanya Girouard <tgirouard@PROGRESSRAIL.com>
Cc: Hooton, Scott <shooton@portoftacoma.com>; Mullin, Tim (ECY) <TMUL461@ECY.WA.GOV>
Subject: Progress Rail technical assistance

This Message Is From an External Sender

This message came from outside Progress Rail. If you do not trust the sender, click the Report Phish button on the Ribbon bar of this email.

Hi Tanya,

Follow up on our call from 3/7/22.

Per WAC [173-340-515](#), this email provides non-binding informal advice and technical assistance regarding next steps in the Progress Rail cleanup. The early notice letter (ENL) is still in process, and this technical assistance is to aid in the continuation of the cleanup.

The type of cleanup

1. A fully independent cleanup is an option to meet the requirements of the Model Toxics Control Act (MTCA), WAC [173-340](#). However, Ecology only reviews the sufficiency of the cleanup if it enters one of our processes. Therefore, even if the cleanup meets the substantive requirements of MTCA fully independently, the Site remains in "cleanup started" or similar status in Ecology's records, and a no further action determination opinion letter is not issued.

2. To receive review of any cleanup and a potential no further action determination by opinion letter, the Progress Rail cleanup would be best served by entering the Voluntary Cleanup Program (VCP). VCP resources are provided below for reference.
3. Agreements between Progress Rail and the Port of Tacoma may also affect decision making around the previous two options.

Diesel in groundwater

1. Suggest collecting quarterly groundwater samples. Same frequency and approach as taken with SW1474 – [Coast Engine and Equipment Corp.](#)
2. Support continuing the low flow groundwater sampling methodology.
3. Recommend analyzing NWTPH-Dx with and without silica gel cleanup.
4. Suggest sampling the entire network to obtain concurrent results and to determine any contribution of organic components.
5. Suggest continuing to gauge all site wells to continue to report groundwater depths and calculate flow direction and gradient.
6. Recommend collecting and presenting multiple lines of evidence supporting use of silica gel cleanup at Site (presence of organics): total organic carbon, groundwater parameters (especially ORP), methane, carbon dioxide, providing any additional chromatograms from the lab
7. Regarding the frequency of groundwater monitoring, as this is a petroleum Site, recommend following Stage III monitoring in section 10.3, in Ecology Publication 10-09-57, [Guidance for Remediation of Petroleum Contaminated Sites](#), revised June 2016.
 - a. Alternately, statistical compliance under WAC 173-340-[720](#)(9) is also an option. However, this takes at least 11 compliant quarterly sampling events.

For the arsenic in soil

1. WAC 173-340-[740](#)(7) statistical compliance procedure. Recommend using the MTCA Method A 20 mg/kg cleanup level for arsenic in soil at the Site.

For the arsenic and lead laboratory reporting limits

1. I recommend first checking with the laboratory to see if they can report the method detection limit values to less than the MTCA Method A cleanup levels.
2. MTCA Method A cleanup levels: for arsenic in groundwater is 5 µg/L and lead is 15 µg/L. The reported laboratory reporting limit from the 2021 Phase II ESA was 25 µg/L.

Terrestrial ecological evaluation (TEE)

1. The TEE [form](#)
2. Suggest proposing a simplified TEE to exclude from further TEE using WAC 173-340-900, Table 749-1.

The VCP info again for reference

- 1) Determinations regarding compliance with MTCA for this Site are encouraged to be completed under the [standard VCP](#) process.
 - a. [Application](#)
 - b. [Agreement](#)
 - c. Agency Determination [Checklist](#)
 - d. [Working with VCP](#)

- e. [TEE form](#)
- f. Data upload to [EIM](#). Toxics Cleanup Program [Policy 840](#).
- g. Cultural resources [guidance](#)

Please let me know of any questions.

Thank you,
Tim

Tim Mullin, LHG
Acting VCP/II-SHA/LUST Unit Supervisor
Southwest Region – Toxics Cleanup Program
Washington State Department of Ecology
PO Box 47775
Olympia, WA 98504-7775
C: 360-999-9589

Caterpillar: Confidential Green

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Enclosure C

Data Tables

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Tables

Table 1.....Summary of Soil Analytical Results

Table 2.....Summary of Groundwater Analytical Results

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Table 1
Phase II ESA Soil Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Soil Cleanup Levels							MW-1R	Flags	MW-3R	Flags	SB-1	Flags	SB-2	Flags	SB-3	Flags	SB-4	Flags	SB-5	Flags
	Method A Unrestricted ^a	Method B Non-cancer ^b	Method B Cancer ^b	Protective of Groundwater ^b	Method A Industrial ^a	Method C Industrial Non-cancer ^b	Method C Industrial Cancer ^b	7/27/2021		7/27/2021		7/28/2021		7/29/2021		7/29/2021		7/29/2021		7/28/2021	
Petroleum Hydrocarbons^c																					
Diesel-Range Organics (DRO)	2,000	-	-	-	2,000	-	-	<10		<10		<15		<10		<10		<10		<15	
Oil-Range Organics (ORO)	2,000	-	-	-	2,000	-	-	<50		<50		<50		<50		<50		<50		<50	
Detected Metals^d																					
Total Arsenic	20.0	24.0	0.67	2.9	20	1,100	88	5.5		<2.5		<2.5		<2.5		<2.5		<2.5		<2.5	
Total Barium	-	16,000	-	1,600	-	700,000	-	23.8		10.3		17.2		14.2		10.3		15.6		33.8	
Total Cadmium	2	80	-	0.69	2	3,500	-	0.5		<0.3		<0.3		<0.3		<0.3		<0.3		<0.3	
Total Chromium*	19	240	0.38	18	19	11,000	260	19.4		7.8		13.2		15.2		8.2		12.2		12.3	
Total Lead	250	-	-	3,000	1,000	-	-	9.0		3.0		<2.5		<2.5		<2.5		<2.5		<2.5	
Total Mercury	2	-	-	2.1	2	-	-	0.038		<0.025		<0.025		<0.025		<0.025		<0.025		<0.025	
Detected Volatile Organic Compounds^e																					
Acetone	-	72,000	-	29	-	70,000	-	<0.61		<0.53		<0.066		<0.07		<0.05		<0.087		0.071	
Methylene chloride	0.02	480	94	0.022	0.02	21,000	66,000	0.49	**	0.402	**	<0.033		<0.035		<0.025		<0.044		<0.034	

Notes:

- All results presented in milligrams per kilogram (mg/kg).
- Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.
- Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.
- Bold** Bold result exceeds the laboratory method detection limit.
- Shaded result exceeds the MTCA Method A soil cleanup level for unrestricted land uses.
- < Result is less than the laboratory method detection limit.
- No value established.
- a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.
- b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.
- c Analyzed by NWTPH-Dx.
- d Analyzed by EPA Method 6010D. Mercury analyzed by Method SW7471B
- e Analyzed by EPA Method 8260D

Qualifiers:

- * No Total Chromium listed, Chromium values for Chromium VI (most stringent).
- ** Found in method blank above recovery limit, values <10x the method blank are biased high.
- *** Surrogate recovery >method defined upper limit, positive results are biased high.

Table 1
Phase II ESA Soil Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Soil Cleanup Levels							SB-6	Flags	SB-7	Flags	SB-8	Flags	SB-9	Flags	SB-10	Flags	SB-11	Flags	SB-12	Flags
	Method A Unrestricted ^a	Method B Non-cancer ^b	Method B Cancer ^b	Protective of Groundwater ^b	Method A Industrial ^a	Method C Industrial Non-cancer ^b	Method C Industrial Cancer ^b	7/29/2021		7/29/2021		7/29/2021		7/28/2021		7/29/2021		7/28/2021		7/29/2021	
Petroleum Hydrocarbons^c																					
Diesel-Range Organics (DRO)	2,000	-	-	-	2,000	-	-	<10		<10		<10		<15		<10		<15		<10	
Oil-Range Organics (ORO)	2,000	-	-	-	2,000	-	-	<50		<50		<50		<50		<50		<50		<50	
Detected Metals^d																					
Total Arsenic	20.0	24.0	0.67	2.9	20	1,100	88	<2.5		22.4		<2.5		<2.5		3.1		<2.5		10.6	
Total Barium	-	16,000	-	1,600	-	700,000	-	14		36.1		12.8		17		42		14.8		22.8	
Total Cadmium	2	80	-	0.69	2	3,500	-	<0.3		2		<0.3		<0.3		<0.3		<0.3		0.8	
Total Chromium*	19	240	0.38	18	19	11,000	260	5.4		17.1		8.8		10.9		26.8		8.6		16.6	
Total Lead	250	-	-	3,000	1,000	-	-	<2.5		<2.5		<2.5		<2.5		<2.5		<2.5		<2.5	
Total Mercury	2	-	-	2.1	2	-	-	<0.025		<0.025		<0.025		0.034		<0.025		0.034		<0.025	
Detected Volatile Organic Compounds^e																					
Acetone	-	72,000	-	29	-	70,000	-	<0.053		<0.062		<0.016	***	<0.22	***	<0.16		<0.075		<0.06	
Methylene chloride	0.02	480	94	0.022	0.02	21,000	66,000	<0.027		0.072	***	0.1	***	<0.04		<0.028		<0.038		0.068	***

Notes:

- All results presented in milligrams per kilogram (mg/kg).
- Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.
- Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.
- Bold** Bold result exceeds the laboratory method detection limit.
- Shaded** Shaded result exceeds the MTCA Method A soil cleanup level for unrestricted land uses.
- < Result is less than the laboratory method detection limit.
- No value established.
- a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.
- b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.
- c Analyzed by NWTPH-Dx.
- d Analyzed by EPA Method 6010D. Mercury analyzed by Method SW7471B
- e Analyzed by EPA Method 8260D

Qualifiers:

- * No Total Chromium listed, Chromium values for Chromium VI (most stringent).
- ** Found in method blank above recovery limit, values <10x the method blank are biased high.
- *** Surrogate recovery >method defined upper limit, positive results are biased high.

Table 1
Phase II ESA Soil Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Soil Cleanup Levels							SB-13 7/29/2021	Flags	SB-14 7/29/2021	Flags	SB-15 7/29/2021	Flags	SB-16 7/28/2021	Flags	SB-17 7/29/2021	Flags	SB-18 7/28/2021	Flags	SB-19 7/28/2021	Flags
	Method A Unrestricted ^a	Method B Non- cancer ^b	Method B Cancer ^b	Protective of Groundwater ^b	Method A Industrial ^a	Method C Industrial Non- cancer ^b	Method C Industrial Cancer ^b														
Petroleum Hydrocarbons^c																					
Diesel-Range Organics (DRO)	2,000	-	-	-	2,000	-	-	<10		<10		<10		<15		<10		<15		<15	
Oil-Range Organics (ORO)	2,000	-	-	-	2,000	-	-	<50		<50		<50		<50		<50		<50		<50	
Detected Metals^d																					
Total Arsenic	20.0	24.0	0.67	2.9	20	1,100	88	<2.5		<2.5		<2.5		4.0		10.7		<2.5		<2.5	
Total Barium	-	16,000	-	1,600	-	700,000	-	19		14.6		17.6		15.3		29.7		16		11.3	
Total Cadmium	2	80	-	0.69	2	3,500	-	<0.3		<0.3		<0.3		0.4		0.8		<0.3		<0.3	
Total Chromium*	19	240	0.38	18	19	11,000	260	15.0		18.3		14.6		13.4		23.8		11.2		14.9	
Total Lead	250	-	-	3,000	1,000	-	-	<2.5		<2.5		<2.5		8.4		15.1		<2.5		<2.5	
Total Mercury	2	-	-	2.1	2	-	-	0.034		<0.025		<0.025		0.026		<0.025		0.042		<0.025	
Detected Volatile Organic Compounds^e																					
Acetone	-	72,000	-	29	-	70,000	-	<0.063	***	0.14		<0.062		<0.058		<0.061		<0.073		<0.0063	
Methylene chloride	0.02	480	94	0.022	0.02	21,000	66,000	0.060	***	0.029		<0.031		<0.04		<0.03		<0.036		<0.032	

Notes:

- All results presented in milligrams per kilogram (mg/kg).
- Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.
- Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.
- Bold** Bold result exceeds the laboratory method detection limit.
- Shaded** Shaded result exceeds the MTCA Method A soil cleanup level for unrestricted land uses.
- < Result is less than the laboratory method detection limit.
- No value established.
- a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.
- b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.
- c Analyzed by NWTPH-Dx.
- d Analyzed by EPA Method 6010D. Mercury analyzed by Method SW7471B
- e Analyzed by EPA Method 8260D

Qualifiers:

- * No Total Chromium listed, Chromium values for Chromium VI (most stringent).
- ** Found in method blank above recovery limit, values <10x the method blank are biased high.
- *** Surrogate recovery >method defined upper limit, positive results are biased high.

Table 1
Phase II ESA Soil Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Soil Cleanup Levels							SB-20 7/28/2021	Flags	SB-21	Flags
	Method A Unrestricted ^a	Method B Non- cancer ^b	Method B Cancer ^b	Protective of Groundwater ^b	Method A Industrial ^a	Method C Industrial Non- cancer ^b	Method C Industrial Cancer ^b				
Petroleum Hydrocarbons^c											
Diesel-Range Organics (DRO)	2,000	-	-	-	2,000	-	-	<15		<15	
Oil-Range Organics (ORO)	2,000	-	-	-	2,000	-	-	<50		<50	
Detected Metals^d											
Total Arsenic	20.0	24.0	0.67	2.9	20	1,100	88	<2.5		3.8	
Total Barium	-	16,000	-	1,600	-	700,000	-	9.2		35.8	
Total Cadmium	2	80	-	0.69	2	3,500	-	<0.3		0.4	
Total Chromium*	19	240	0.38	18	19	11,000	260	9.0		12.6	
Total Lead	250	-	-	3,000	1,000	-	-	<2.5		11.4	
Total Mercury	2	-	-	2.1	2	-	-	<0.025		0.045	
Detected Volatile Organic Compounds^e											
Acetone	-	72,000	-	29	-	70,000	-	<0.081		0.33	
Methylene chloride	0.02	480	94	0.022	0.02	21,000	66,000	<0.041		<0.039	

Notes:

All results presented in milligrams per kilogram (mg/kg).

Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.

Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.

Bold Bold result exceeds the laboratory method detection limit.

Shaded Shaded result exceeds the MTCA Method A soil cleanup level for unrestricted land uses.

< Result is less than the laboratory method detection limit.

- No value established.

a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.

b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.

c Analyzed by NWTPH-Dx.

d Analyzed by EPA Method 6010D. Mercury analyzed by Method SW7471B

e Analyzed by EPA Method 8260D

Qualifiers:

* No Total Chromium listed, Chromium values for Chromium VI (most stringent).

** Found in method blank above recovery limit, values <10x the method blank are biased high.

*** Surrogate recovery >method defined upper limit, positive results are biased high.

Table 2
Phase II ESA Groundwater Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Groundwater Cleanup Levels			MW-1R	Flags	MW-3R	Flags	Dup. E	Flags	MW-4	Flags	MW-5	Flags	MW-5	Flags	MW-5 Dup.	Flags	MW-6	Flags	MW-6	Flags		
	Method A ^a	Method B Non-cancer ^b	Method C Non-cancer ^b	7/30/2021		7/30/2021		7/30/2021		7/30/2021		7/30/2021		9/27/2021		11/22/2021		11/22/2021		7/30/2021		9/27/2021	
Petroleum Hydrocarbons^c																							
Diesel-Range Organics (DRO)	500	-	-	80.6	**	57.2		<50		275		623		<24.3	*	495.0/<100 ^d	*	550/<100 ^d	*	546		<24.3	*
Oil-Range Organics (ORO)	500	-	-	<50		<50		<50		<50		<50		<48.5	*	390/<250 ^d	*	405/<250 ^d	*	<50		<48.5	*
Detected Metals^e																							
Total Barium	-	3.2	7.0	0.127		0.015		0.023		0.06		1.47		NS		NS		NS		0.061		NS	
Total Chromium	0.05	-	-	0.014		0.022		<0.007		<0.007		0.05		NS		NS		NS		0.018		NS	
Dissolved Barium	-	-	-	0.104		0.104		0.018		0.025		0.072		NS		NS		NS		0.044		NS	
Dissolved Chromium	-	-	-	<0.007		<0.007		<0.007		<0.007		0.039		NS		NS		NS		0.008		NS	
Total Lead	0.015	-	-	<0.025		<0.025		<0.025		<0.025		<0.025		NS		NS		NS		<0.025		NS	

Notes:

Petroleum hydrocarbon results presented in micrograms per liter (µg/L).

Metals results presented in milligrams per liter (mg/L).

Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.

A full range volatile organic compound (VOC) scan did not reveal any detections.

Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.

There was not enough water produced to get samples for metals in SB-3, TPH in SB-10 or TPH & metals in SB-12.

Bold Bold result exceeds the laboratory reporting limit.

Shaded Shaded result exceeds the MTCA Method A groundwater cleanup level.

< Result is less than the laboratory method detection limit.

- No value established.

^a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.

^b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.

^c Analyzed by NWTPH-Dx.

^d Sample extracts passed through a silica gel column prior to analysis.

^e Analyzed by EPA Method 6010D.

NS Not sampled.

Qualifiers:

* Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected.

** DRO do not resemble diesel reference pattern.

Table 2
Phase II ESA Groundwater Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Groundwater Cleanup Levels			MW-6	Flags	SB-1	Flags	SB-2	Flags	SB-3	Flags	SB-4	Flags	SB-5	Flags	SB-6	Flags	SB-7	Flags	SB-8	Flags	Dup. C	Flags
	Method A ^a	Method B Non-cancer ^b	Method C Non-cancer ^b	11/22/2021		7/28/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021	
Petroleum Hydrocarbons^c																							
Diesel-Range Organics (DRO)	500	-	-	260/<100 ^d		<50		<50		<50		325.0		<50	**	<50		<50		<50		<50	
Oil-Range Organics (ORO)	500	-	-	315.0/250 ^d		<50		<50		<50		<50		<50		<50		<50		<50		<50	
Detected Metals^e																							
Total Barium	-	3.2	7.0	NS		0.326		0.160		NS		0.236		0.058		0.213		0.097		0.042		0.039	
Total Chromium	0.05	-	-	NS		<0.007		<0.007		NS		<0.007		<0.007		<0.007		<0.007		<0.007		<0.007	
Dissolved Barium	-	-	-	NS		0.102		0.047		NS		0.098		0.037		0.085		0.056		0.039		0.034	
Dissolved Chromium	-	-	-	NS		<0.007		<0.007		NS		<0.007		<0.007		<0.007		<0.007		<0.007		<0.007	
Total Lead	0.015	-	-	NS		0.034		<0.025		NS		<0.025		<0.025		<0.025		<0.025		<0.025		<0.025	

Notes:

Petroleum hydrocarbon results presented in micrograms per liter (µg/L).

Metals results presented in milligrams per liter (mg/L).

Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.

A full range volatile organic compound (VOC) scan did not reveal any detections.

Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.

There was not enough water produced to get samples for metals in SB-3, TPH in SB-10 or TPH & metals in SB-12.

Bold Bold result exceeds the laboratory reporting limit.

Shaded Shaded result exceeds the MTCA Method A groundwater cleanup level.

< Result is less than the laboratory method detection limit.

- No value established.

^a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.

^b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.

^c Analyzed by NWTPH-Dx.

^d Sample extracts passed through a silica gel column prior to analysis.

^e Analyzed by EPA Method 6010D.

NS Not sampled.

Qualifiers:

* Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected.

** DRO do not resemble diesel reference pattern.

Table 2
Phase II ESA Groundwater Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Groundwater Cleanup Levels			SB-9	Flags	SB-10	Flags	SB-11	Flags	Dup. A	Flags	SB-12	Flags	SB-13	Flags	Dup. D	Flags	SB-14	Flags	SB-15	Flags	Dup. B	Flags
	Method A ^a	Method B Non-cancer ^b	Method C Non-cancer ^b	7/28/2021		7/29/2021		7/28/2021		7/28/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021		7/29/2021	
Petroleum Hydrocarbons^c																							
Diesel-Range Organics (DRO)	500	-	-	111		NS		<50		<50		NS		<50		<50		<50		199.0		150	
Oil-Range Organics (ORO)	500	-	-	<50		NS		<50		<50		NS		<50		<50		<50		<50		<50	
Detected Metals^e																							
Total Barium	-	3.2	7.0	0.089		0.809		0.119		0.248		NS		0.144		0.363		0.198		0.152		0.102	
Total Chromium	0.05	-	-	<0.007		<0.007		<0.007		<0.007		NS		<0.007		<0.007		<0.007		<0.007		<0.007	
Dissolved Barium	-	-	-	0.07		0.153		0.102		0.095		NS		0.039		0.052		0.1		0.103		0.073	
Dissolved Chromium	-	-	-	<0.007		<0.007		<0.007		<0.007		NS		<0.007		<0.007		<0.007		<0.007		<0.007	
Total Lead	0.015	-	-	<0.025		0.034		<0.025		<0.025		NS		<0.025		<0.025		<0.025		<0.025		<0.025	

Notes:

Petroleum hydrocarbon results presented in micrograms per liter (µg/L).

Metals results presented in milligrams per liter (mg/L).

Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.

A full range volatile organic compound (VOC) scan did not reveal any detections.

Polycyclic aromatic hydrocarbons (PAH) were not detected at concentrations greater than the laboratory method detection limits.

There was not enough water produced to get samples for metals in SB-3, TPH in SB-10 or TPH & metals in SB-12.

Bold Bold result exceeds the laboratory reporting limit.

Shaded Shaded result exceeds the MTCA Method A groundwater cleanup level.

< Result is less than the laboratory method detection limit.

- No value established.

^a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.

^b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.

^c Analyzed by NWTPH-Dx.

^d Sample extracts passed through a silica gel column prior to analysis.

^e Analyzed by EPA Method 6010D.

NS Not sampled.

Qualifiers:

* Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected.

** DRO do not resemble diesel reference pattern.

Table 2
Phase II ESA Groundwater Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

	MTCA Groundwater Cleanup Levels			SB-16	SB-17	SB-18	SB-19	SB-20	SB-21	
	Method A ^a	Method B Non-cancer ^b	Method C Non-cancer ^b	7/28/2021	7/29/2021	7/28/2021	7/28/2021	7/28/2021	7/28/2021	
Petroleum Hydrocarbons^c										
Diesel-Range Organics (DRO)	500	-	-	<50	<50	85.2	91.0	<50	<50	
Oil-Range Organics (ORO)	500	-	-	<50	<50	64.1	<50	<50	<50	
Detected Metals^e										
Total Barium	-	3.2	7.0	0.042	1.43	0.181	0.063	0.081	0.116	
Total Chromium	0.05	-	-	<0.007	0.063	<0.007	<0.007	<0.007	<0.007	
Dissolved Barium	-	-	-	0.027	0.203	0.12	0.058	0.042	0.046	
Dissolved Chromium	-	-	-	<0.007	<0.007	<0.007	<0.007	<0.007	<0.007	
Total Lead	0.015	-	-	<0.025	0.034	<0.025	<0.025	<0.025	<0.025	

Notes:

Petroleum hydrocarbon results presented in micrograms per liter (µg/L).

Metals results presented in milligrams per liter (mg/L).

Resource Conservation and Recovery Act (RCRA) 8 metals were not detected at concentrations greater than the laboratory method detection limits.

A full range volatile organic compound (VOC) scan did not reveal any detections.

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There was not enough water produced to get samples for metals in SB-3, TPH in SB-10 or TPH & metals in SB-12.

Bold Bold result exceeds the laboratory reporting limit.

Shaded Shaded result exceeds the MTCA Method A groundwater cleanup level.

< Result is less than the laboratory method detection limit.

- No value established.

^a Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.

^b MTCA Method B and C Groundwater Cleanup Levels from Cleanup Levels and Risk Calculations (CLARC) database.

^c Analyzed by NWTPH-Dx.

^d Sample extracts passed through a silica gel column prior to analysis.

^e Analyzed by EPA Method 6010D.

NS Not sampled.

Qualifiers:

* Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected.

** DRO do not resemble diesel reference pattern.

Table 3
Summary of May 2022 Groundwater Analytical Results
Closure Summary Report Technical Memorandum
Progress Rail Services Property
4012 State Route 509 South Frontage Road, Tacoma, Washington

Well ID (as Sampled on May 16, 2022)	Historical Well ID	Sample Date	Petroleum Hydrocarbons ^a				Metals ^b			
			DRO		ORO		Arsenic		Lead	
			without silica gel ^c	with silica gel ^d	without silica gel	with silica gel ^d	Total	Dissolved	Total	Dissolved
MW-1R	NA	5/16/2022	120	<75	<380	<380	<1	<1	<1	<1
MW-3R	NA	5/16/2022	150	<75	<380	<380	23.4	22.5	<1	<1
MW-4	MW-3	5/16/2022	130	<75	<380	<380	<1	<1	<1	<1
MW-5	MW-1	5/16/2022	240	<75	<380	<380	13.4	11.9	3.14	<1
MW-6	MW-4	5/16/2022	230	<75	<380	<380	5.75	5.68	<1	<1
MW-6 (DUP-1)	MW-4	5/16/2022	280	<75	<380	<380	6.03	5.41	<1	<1
MTCA Method A Cleanup Levels for Groundwater^e			500		500		5		15	

Notes:

All results presented in micrograms per liter (µg/L).

Bold Bold result exceeds the laboratory method detection limit.

Shaded Shaded result exceeds the MTCA Method A groundwater cleanup level.

< Result is less than the laboratory reporting limit.

a Analyzed by NWTPH-Dx.

b Analyzed by EPA Method 6020B.

c Chromatographic pattern does not resemble the fuel standard used for quantitation.

d Sample extracts passed through a silica gel column prior to analysis.

e Model Toxics Control Act (MTCA) Method A Cleanup Levels for Groundwater, Table 720-1, Washington Administrative Code (WAC) 173-340-900, July 2022.

NA Not applicable.

Compounds:

DRO Diesel-range organics

ORO Oil-range organics