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Phase II Environmental Site Assessment



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PHASE II ENVIRONMENTAL SITE ASSESSMENT
PRS Locomotive Facility
4012 State Route 509 S. Frontage Road
Tacoma, Pierce County, Washington

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EXECUTIVE SUMMARY

Panhandle Geotechnical & Environmental has completed a Phase II Environmental Site Assessment (ESA) at the subject property (4012 State Route 509 S. Frontage Road, Tacoma, Washington) to address eight *Recognized Environmental Conditions (RECs)* in a Phase I ESA completed by PGE at the subject property in March 2021.

The subject property consists of a locomotive repair/rebuilding facility located on approximately 14 acres on the east side of Tacoma, just west of the Tacoma/Fife city boundaries, approximately 2.75 miles southeast of the Port of Tacoma. At the time of the site visit, the subject property was occupied by a locomotive repair and remanufacturing facility (PRS Locomotive). A review of historical information provided by Environmental Data Resources indicates that the subject property is currently owned by the State of Washington who was granted the property from the Tacoma Port Authority.

To address the *RECs* identified in the Phase I ESA and satisfy the requests made by the Tacoma Port Authority, PGE completed two temporary monitoring wells and 21 soil borings to collect soil and groundwater samples at the site. Asbestos containing material, lead-based paint, PCB-containing material, and hazardous materials surveys were also completed to address the *RECs* and Port Authority requests and are addressed in a separate Hazardous Materials Survey. The temporary monitoring wells were completed using hollow-stem augers in conjunction with direct push sampling and the soil borings were completed by driving a direct push sampling tube to continuously collect soil samples from the surface throughout the vadose zone. Each soil boring and monitoring well was completed approximately 5 ft. into groundwater and a temporary monitoring well was set to collect a groundwater sample.

The soil and groundwater samples were analyzed for TPH by Method NWTPH-Dx, full VOCs by Method 8260/624 VOA, SVOCs/PAHs according to Method 8270/625, RCRA 8 Metals (total & dissolved) by Method 6010D and 7471B and the results were compared to the Washington Department of Ecology Voluntary Remediation Program Cleanup Target Values found in the Cleanup Levels and Risk Calculation guidance. The results are summarized below.

Soil

TPH

NWTPH-Dx analysis of the soil samples revealed the presence of TPH as diesel in the SB-1 4-6' sample (0.14 mg/kg). This detection is far below the WDOE CLARC cleanup goal for

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unrestricted soil Method A (2,000.0 mg/kg). There were no other TPH detections above any laboratory MDLs in any of the other soil samples.

Metals

The metals sampling of the soil samples revealed the low level presence of total arsenic, total barium, total cadmium, total chromium, total lead, and total mercury in several of the soil samples collected during this investigation. There were no total barium, total cadmium, total lead, or total mercury detections above any WDOE CLARC cleanup values.

Total arsenic was detected in MW-1R 4-6' (5.8 mg/kg), SB-7 4-6' (22.4 mg/kg), SB-10 4-6' (3.1 mg/kg), SB-12 4-6' (10.6 mg/kg), SB-16 4-6' (4.0 mg/kg), SB-17 4-6' (10.7 mg/kg), and SB-21 4-6' (3.8 mg/kg). All of these detections were above the WDOE CLARC cleanup value for Soil Cancer Method B (0.67 mg/kg) and Soil Protective of Groundwater (2.9 mg/kg) but were well below the Soil Unrestricted Use Method A (20.0 mg/kg) value in the CLARC guidance table.

Total cadmium was detected in the SB-12 4-6' (0.8 mg/kg), SB-16 4-6' (0.4 mg/kg), SB-17 4-6' (0.8 mg/kg), and SB-21 4-6' (0.4 mg/kg) soil samples. The detections in SB-12 and SB-17 were above the WDOE CLARC cleanup value for Soil Protective of Groundwater (0.69 mg/kg) but below the Soil Unrestricted Method A value (2.0 mg/kg).

Total chromium (note that no values for total chromium for soils is listed in the CLARC table or EPA guidance and the values for chromium VI were used) was detected in MW-1R 4-6' (19.4 mg/kg), MW-3R 4-6' (7.8 mg/kg), SB-2 4-6' (15.2 mg/kg), SB-3 4-6' (8.2 mg/kg), SB-4 4-6' (12.2 mg/kg), SB-5 4-6' (12.3 mg/kg), SB-6 4-6' (5.4 mg/kg), SB-8 4-6' (8.8 mg/kg), SB-9 4-6' (10.9 mg/kg), SB-10 4-6' (26.8 mg/kg), SB-11 4-6' (8.6 mg/kg), SB-12 4-6' (16.6 mg/kg), SB-13 4-6' (15.0 mg/kg), SB-14 4-6' (18.3 mg/kg), SB-15 4-6' (14.6 mg/kg), SB-16 4-6' (11.2 mg/kg), SB-19 4-6' (14.9 mg/kg), SB-20 4-6' (9.0 mg/kg), SB-21 4-6' (12.6 mg/kg). The detections in MW-1R, and SB-14 were above the WDOE CLARC cleanup value for Soil Protective of Groundwater (18.0 mg/kg) and the MW-1R detection was just above the Soil Unrestricted Method A value (19.0 mg/kg). Again, it should be noted that the WDOE CLARC values for chromium VI (most stringent) were used for comparison as no value for total chromium was given for soil.

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VOCs

The only VOC detections above the laboratory detection limits in the soil samples were acetone and methylene chloride. Acetone was detected in the SB-13 4-6' (0.063 mg/kg) and SB-14 4-6' (0.14 mg/kg) samples but were far below any WDOE CLARC cleanup goals (lowest goal 29.0 mg/kg for Soil Protective of Groundwater).

Methylene chloride was detected in MW-1R 4-6' (0.49 mg/kg), MW-3R 4-6' (0.402 mg/kg), SB-7 4-6' (0.072 mg/kg), SB-8 4-6' (0.076 mg/kg), SB-12 4-6' (0.068 mg/kg), SB-13 4-6' (0.06 mg/kg), and SB-14 4-6' (0.029 mg/kg). The detections in MW-1R, MW-3R, SB-7, SB-8, SB-12, SB-13, and SB-14 were above the WDOE CLARC cleanup values for Soil Unrestricted Method A (0.02 mg/kg) and Soil Protective of Groundwater (0.021 mg/kg). It should be noted that the laboratory marked all but the SB-14 sample was being biased high due to the surrogate recovery being greater than the defined upper limit of the lab method and that all of the detections were far below the WDOE CLARC cleanup goals for Soil Industrial Method C (cancer 94.0 mg/kg and 480.0 mg/kg non-cancer).

PAHs

There were no PAH detections above the laboratory MDLs in any of the soil samples.

Groundwater

TPH

The groundwater NWTPH-Dx analyses revealed the presence of TPH as diesel in the following samples: MW-1R (80.6 ug/L), MW-3R (57.2 ug/L), MW-4 (275.0 ug/L), MW-5 (623.0 ug/L), MW-6 (546.0 ug/L), SB-4 (325.0 ug/L), SB-9 (111.0 ug/L), SB-18 (85.2 ug/L), and SB-19 (91.0 ug/L). The MW-5 and MW-6 detections were above the WDOE CLARC Groundwater Target Cleanup Method A for unrestricted use (500.0 ug/L). The TPH as diesel detections in MW-4, MW-5, and MW-6 were noted to have chromatogram patterns which do match diesel range organics in the lab report and further inquiry with the laboratory revealed that the patterns appeared to be associated with sulfur and possibly aged diesel organics. Due to the fact that the detections in MW-5 and MW-6 were just over the WDOE CLARC cleanup level for groundwater and the wells were discovered during the Phase II ESA and had not been opened or sampled since PRS's ownership, MW-5 and MW-6 were resampled on September 27th and analyzed for NWPTH-Dx but incorporated an acid gel cleanup to rectify any interference by the presence of sulfur (laboratory recommendation). The results of the September 27th sampling event did not reveal the presence of TPH above any laboratory MDLs.

Due to the fact that the September samples were only analyzed with a silica acid gel cleanup,
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MW-5 and MW-6 were resampled on November 22nd, 2021 and analyzed for NWPTH-Dx with and without an acid gel cleanup. The results of the November sampling event revealed the presence of TPH as diesel at 495.0 ug/L in MW-5 and at 260.0 ug/L in MW-6 without the silica acid gel cleanup and below the laboratory detection limit in both wells with the silica acid gel cleanup. For the November sampling event, the duplicate sample was 550.0 ug/L, just over the 500.0 ug/L threshold for the sample without acid gel cleanup but was below the laboratory method detection limit with the acid gel cleanup. There were no other TPH as diesel detections above any WDOE CLARC threshold levels or any other TPH detections above any of the laboratory MDLs. There were no other TPH diesel detections above any WDOE CLARC threshold levels or any other TPH detections above any of the laboratory MDLs.

Metals

Metals [total] detections in the groundwater samples included barium, barium [dissolved], chromium [total], chromium [dissolved], and lead below the in the groundwater samples which were all below the WDOE groundwater cleanup goal [Method A] for unrestricted use.

VOCs

There were no VOC detections above the laboratory MDLs for the groundwater sampling event.

PAHs

There were no PAH detections above the laboratory MDLs for the groundwater sampling event.

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1.0 INTRODUCTION

Panhandle Geotechnical & Environmental (PGE) has completed a Phase II Environmental Site Assessment (ESA) at 4012 State Route 509 S. Frontage Road to address eight *Recognized Environmental Condition (RECs)* reported in a Phase I ESA completed by PGE at the subject property in March 2021. In addition, this Phase II ESA also addresses the potential presence of asbestos-containing materials, lead-based paint, PCB-containing materials, and hazardous materials through individual surveys incorporated into the investigation.

2.0 SITE DESCRIPTION

2.1 Location

The subject property is located at 4012 State Route 509 S. Frontage Road in Tacoma, Pierce County, Washington. The property is identified as Parcel IDs 0320024099, 0320013143, and 0320017021 in the Pierce County Assessor's office and is located in the SW¹/₄ of the SW¹/₄, of Section 1, Township 20N, Range 3E. The approximate subject property boundaries are depicted on an maps and diagrams in Appendicies A and B.

2.2 Site Characteristics

The subject property is located on the east side of the City of Tacoma, approximately 2.75 miles southeast of the Port of Tacoma, 2,750 ft. south of Turning Basin, just east of the Tacoma/Fife border. The site occupies an approximate 19 acre parcel owned by the Port Authority of Tacoma. The main entrance to the site is located at the northeast corner of the property, off of Alexander Ave., approximately 150 ft. south of the intersection of State Rt. 509 and Alexander Ave.

There are several structures present on site including the Engine/Machine Shop Paint Storage Building, Maintenance Building, and stormwater treatment system on the west side of the property, the Locomotive Shop, Locomotive Wash Pad, Treatment Room, and Oven Tunnel near the center of the property, and the Car Shop Office and Bolster Shop on the east end of the property. In addition there are storage areas around the outside of the buildings and there are storage structures and cargo trailers southeast and southwest of the Locomotive Shop.

2.3 Local Geology & Groundwater

From about 2 million years ago until about 15,000 years ago, glacial till was deposited in a series of glacial cycles that eroded and deposited sediment in the Puget Sound area. Glacial till is the primary sediment found in most of the low land areas and consists of clay, silt, sand, and gravel. Igneous bedrock exposures can be present but were no observed at the subject property which appeared to consist of Quaternary glacial till.

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Groundwater in the vicinity of the site is generally encountered approximately 5 ft. BGL. Generalized groundwater flow is to the northwest, towards the Port of Tacoma.

Surface water present at the site may be present in a stormwater swale which trends from near the center of the property to an outfall area in the northwest corner of the property. Surface water may also be present in a stormwater swale on the eastern portion of the property during storm events but is otherwise dry. There is a wetlands area present in the southwest portion of the subject property. No work has been completed in this area and the area is barricaded to prevent vehicle access. The physical settings of the subject property are summarized below and the site is depicted on the topographic maps in Appendix A.

Table 2.3. Summary of physical settings for the subject property.

Physical Setting Information		
Topography		
Site Elevation	14 ft. AMSL	US Fish & Wildlife Service Wetlands Inventory. https://www.fws.gov/wetlands/data/google-earth.html
Surface Runoff/Topographic Gradient	Relatively flat site with general gradient sloping towards the west (west half) and east (east half)	
Closest Surface Water	Stormwater swale from center to NW corner of property & wetlands in SW corner of property.	
Soil Characteristics		
Soil Type	Not listed	United States Department of Agriculture. Web Soil Survey Map. https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
Description	Urban Land - 0-5% slope	
Geology/Hydrology		
Formation	Glacial Till (Quaternary)	Washington State Dept. of Natural Resources
Description	Glacial sediment (clay, silt, sand, gravel) covers lowland areas.	Washington State Dept. of Natural Resources
Hydrogeologic Gradient	Depth to groundwater was	Boring Logs, Appendix D.

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	approximately 5 ft. below ground level. Regional groundwater flow in the area is expected to be northwest towards the Port of Tacoma.	WDOE EIM Groundwater Map Search tool.
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3.0 SUMMARY OF PHASE I ASSESSMENT

Panhandle Geotechnical & Environmental, Inc. completed a Section 128(a) Phase I ESA at the subject property in August 2021. This Phase I ESA included a reconnaissance visit to the site, a review of available environmental database and related agency information, interviews, record of deeds, numerous documents related to the site, and other related items. The information was used to evaluate existing or potential environmental impairment of the site due to current or past use. Based on review of the aforementioned information, this assessment revealed eight *Recognized Environmental Conditions (RECs)* and two *Business Environmental Risks (BERs)* associated with the subject property as follows. Note that lead, asbestos, mold, structural integrity, etc. are not within the scope of a Phase I ESA and were evaluated separately.

REC-1 - Former and present use of the site as a locomotive and railcar remanufacturing/repair facility which incorporated the storage and disposal of hazardous substances in site activities and has RCRA LQG classification.

REC-2 - Historical confirmation of contaminated soil onsite.

REC-3 - Historical confirmation of contaminated groundwater onsite.

REC-4 - Soil staining along the tracks throughout the property.

REC-5 - Former use of a diesel UST without adequate secondary containment in the northeast portion of the property.

REC-6 - Cracked concrete on the base of the Engine Wash Pad and former Mart Wash Pad.

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REC-7 – Presence of soil piles with debris and stained soil present in the northwest corner and southeast corner of the property as well as near the Paint Storage Building and Maintenance Building.

REC-8 – Storage of materials and product containers around the property.

BER-1 – The presence of potentially asbestos-containing material(s) in the buildings on the subject property.

BER-2 – The presence of potentially PCB-containing light ballasts in the buildings on the subject property.

There are currently site redevelopment plans and the owner is addressing the identified concerns to ensure compliance with all applicable laws. Environmental concerns related to possible soil and groundwater contamination are addressed herein. Concerns related to ACM, LBP, and PCBs are addressed in a separate Hazardous Building Materials Survey.

4.0 SCOPE OF SERVICES

The Phase II ESA scope of services is presented in the Phase II ESA Site-Specific Sampling & Analysis Plan completed in June 2021. Prior to field work, PGE prepared a Site-Specific Health and Safety Plan in accordance with PGE's general Health and Safety Plan.

4.1 Asbestos Containing Material Survey

An ACM survey of the property was conducted in accordance with the ASTM Standard Practice for Comprehensive Building Asbestos Surveys (E2456) to determine presence, location condition, and quantity of ACM in the subject property building. The ACM survey was completed by an inspector licensed in the State of Washington and the results are reported in the Hazardous Building Materials Survey.

4.2 Lead Based Paint Survey

A LBP survey of the property was completed in accordance with the protocols from the 1997 Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. The LBP survey was completed by an inspector licensed in the State of Washington and incorporated any suspect structures/materials observed at the site. The results are reported in the Hazardous Building Materials Survey.

4.3 PCB Survey

A PCB Survey was completed on and in the Machine Shop and Tunnel Oven at the subject property. The PCB Survey was limited to this area as there is ample evidence (as indicated in aerial photographs and official government records) that these were the only structures existing at the site in 1979, the date when PCBs were banned for use in the United States. The PCB survey was completed by an inspector trained and experienced in conducting PCB inspections and licensed in the State of Washington. The results are discussed in the Hazardous Building Materials Survey.

4.4 Hazardous Materials Survey

A Hazardous Materials Survey was conducted throughout the facility in effort to identify hazardous materials not identified elsewhere (e.g. lights, switches, thermostats, etc.). The results are discussed in the Hazardous Building Materials Survey.

4.5 Boring Advancement

A Mobile truck-mounted drill rig and a Mobile direct push drill rig were utilized for this investigation which was completed in accordance with the Phase II ESA Site-Specific Sampling and Analysis Plan. PGE completed two temporary replacement monitoring wells (MW-1R and MW-3R) on July 27th, 2021, using the Mobile drill rig and hollow-stem augers. PGE completed the 21 soil borings by direct push using the Mobile direct push drill rig between July 27th and July 30th, 2021.

In MW-1R and MW-3R a dual tube sampler was pushed into the surface to collect soil samples continuously. Each boring was advanced into the groundwater and a 2 in. temporary monitoring well was set with a 5 ft. screen placed approximately 5 ft. into groundwater. Clean 12/20 silica sand was emplaced to the top of the screened interval and hydrated bentonite seal was emplaced above the sand interval.

The soil borings were advanced approximately 15 ft. BGL and a ¾ in. diameter screen was placed into the borehole, approximately 5 ft. in to groundwater. Each boring was plugged with bentonite after sample collection.

4.5 Soil Sampling & Testing

Soil samples were collected from the two temporary monitoring wells and the soil borings using a macro core sampling barrel with a Shelby Tube inner sampling sleeve during the boring advancement. All soil samples were divided into two separate

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portions immediately after obtaining the sample. One portion was used for a headspace analysis and the other portion for a possible laboratory analysis. The sampler and appropriate equipment was decontaminated with a lab grade detergent followed by clean water rinses after each sample was collected.

For the headspace portion of the soil sample, the soil was placed in a clean wide mouth Mason jar approximately half full. A piece of aluminum foil was placed tightly over the mouth of the jar and a ring cap secured the foil onto the mouth of the jar. The jar was then properly labeled and placed in an environment above 60°F for a period of at least 30 minutes. The remaining portion of the sample was collected for laboratory analysis by placing the soil in a "Pre-cleaned Certified" glass jar (not compacted) with as little headspace as possible. The lip of the jar was wiped clean and a Teflon-lined lid was securely placed on the jar. After preparing the sample it was properly labeled (to correspond with the proper headspace sample) and immediately placed in a cooler on ice (if kept overnight, the sample was refrigerated at PGE's office and repacked in the cooler to ship). After at least 30 minutes, the headspace samples were field analyzed for VOCs with a properly calibrated photoionization detector (PID). Each headspace sample was analyzed by puncturing the tip of the PID through the foil and into the "headspace" area of the sample. The highest instrument reading was then recorded on the corresponding boring log (Appendix D). After the headspace field analyses were performed for each sample at each soil boring, the soil sample aliquot corresponding with the interval with the highest level of contamination as detected by the PID was selected for laboratory analysis. If no contaminants were detected with the PID or observed in another manner (visual, olfactory), the second sample was collected from the lowest interval of the vadose zone (4-6 ft. at the site). Note that the soil samples were not collected from the saturated interval if present in the sample.

For this investigation, there were no PID detections in the headspace samples and all of the soil samples were collected from the 4-6 ft. interval. The selected soil samples were delivered to Spectra Laboratories in Tacoma, Washington for analysis of TPH by Method NWTPH-Dx, full VOCs by Method 8260/624 VOA, SVOCs/PAHs according to Method 8270/625, RCRA 8 Metals (total & dissolved) by Method 6010D and 7471B.

Each boring location was logged for lithology, soil characteristics, signs of contamination, etc. The boring logs are included in Appendix D.

4.6 Groundwater Sampling & Testing

Groundwater samples were collected from the soil borings during their completion as well as the temporary monitoring wells completed for this investigation (MW-1R and MW-3R) on July 30th, 2021. MW-1R and MW-3R, existing monitoring wells MW-4, MW-5, and MW-6 were also sampled on July 30th. In addition, MW-5 and MW-6 were resampled on September 27th. Note that MW-5 and MW-6 were found during the Phase II drilling event and were sampled as the wells appeared in good order.

Prior to sampling, each well was gauged to the nearest 0.01 ft. using an oil/water interface probe and then purged with a low-flow sampling pump until the turbidity stabilized to or below 10 NTUs. Each sample aliquot was collected in the corresponding containers provided by Spectra Laboratories and contained the appropriate preservative (if applicable). The samples were not field filtered during collection.

Each individual sample container was appropriately labeled and logged onto the chain-of-custody upon completion and field notes were recorded (Appendix G). The samples were properly protected (i.e. bubble wrap, Ziploc bags, etc.) and placed in a shipping container directly on ice immediately after being obtained and labeled. The coolers were delivered directly to the laboratory. This protocol was followed for each sampling point.

The groundwater samples were analyzed for TPH by Method NWTPH-Dx, full VOCs by Method 8260/624 VOA, SVOCs/PAHs according to Method 8270/625, RCRA 8 Metals (total & dissolved) by Method 6010D and 7471B. These parameters were selected based on their likely presence associated with the historical use of the site. All sampling parameters were approved in the Phase II ESA Proposal/Sampling Plan.

Note that due to a lack of water while sampling, SB-3 was not sampled for metals, SB-10 was not sampled for TPH, and SB-12 was not sampled for TPH or metals.

4.7 Cleaning Operations & Other Measures to Reduce Cross-Contamination

Sampling equipment, including the tip of the sampling barrel were cleaned with Alconox® detergent followed by a clean water rinse prior to and at the completion of the field investigation. The push rods were cleaned between borings with an Alconox® detergent and rinsed with clean water.

Single use disposable tubing was used in conjunction with a check valve for purging and a bladder pump for sampling. The check valve and bladder pump were decontaminated with Alconox® detergent and rinsed with clean water between wells. In addition, personnel wore new disposable nitrile gloves between sampling points. All of the cleaning/decon activities were completed in accordance with the Phase II ESA Proposal/Sampling Plan.

5.0 HYDROGEOLOGIC CHARACTERISTICS

Continuous soil samples were collected for field screening, laboratory analysis, soil classification, and borehole logging. During this investigation, groundwater was present at approximately 5 ft. below ground level in the monitoring wells.

The monitoring wells were surveyed to established elevation benchmarks by a licensed surveyor and the gauging data was used to compile a groundwater flow map (Appendix C); however, it should be noted that the map was compiled using limited data.

6.0 RATIONALE FOR SAMPLING LOCATIONS

Rationale for the sampling locations and sampling parameters were selected based on the findings in the March 2021 Phase I ESA completed by PGE (summarized in Section 3.0) and past use of the site.

7.0 SAMPLING & ANALYSIS RESULTS

7.1 Soil

The soil sample results were compared to the WDOE Cleanup Level and Risk Calculation target cleanup levels for unrestricted use (Method A), industrial unrestricted use (Method A), soil cancer (Method B), soil non-cancer (Method B), Soil Protective of Groundwater, industrial use non-cancer (Method C), and industrial cancer (Method C). The detections and comparisons are summarized in a table in Appendix E.

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TPH

The TPH sampling revealed the presence of TPH as diesel in the SB-1 4-6' sample (0.14 mg/kg), far below the 2000.0 mg/kg WDOE CLARC cleanup goal for unrestricted soil. There were no other TPH detections above the laboratory method detection limits.

Metals

The metals sampling revealed the presence of total arsenic, total barium, total cadmium, total chromium, total lead, and total mercury. There were no total barium, total cadmium, total lead, or total mercury detections above any WDOE CLARC threshold values. It should also be noted that all of the constituent detections were far below the WDOE CLARC cleanup goals for Soil Industrial Method C (cancer and non-cancer).

Total arsenic was detected in MW-1R 4-6' (5.8 mg/kg), SB-7 4-6' (22.4 mg/kg), SB-10 4-6' (3.1 mg/kg), SB-12 4-6' (10.6 mg/kg), SB-16 4-6' (4.0 mg/kg), SB-17 4-6' (10.7 mg/kg), and SB-21 4-6' (3.8 mg/kg). All of these detections were above the WDOE CLARC cleanup value for Soil Cancer Method B (0.67 mg/kg) and Soil Protective of Groundwater (2.9 mg/kg) but were well below the Soil Unrestricted Use Method A (20.0 mg/kg) value in the CLARC guidance table.

Total cadmium was detected in the SB-12 4-6' (0.8 mg/kg), SB-16 4-6' (0.4 mg/kg), SB-17 4-6' (0.8 mg/kg), and SB-21 4-6' (0.4 mg/kg) soil samples. The detections in SB-12 and SB-17 were above the WDOE CLARC cleanup value for Soil Protective of Groundwater (0.69 mg/kg) but below the Soil Unrestricted Method A values.

Total chromium (note that no values for total chromium for soils is listed in the CLARC table and the values for chromium VI were used) was detected in MW-1R 4-6' (19.4 mg/kg), MW-3R 4-6' (7.8 mg/kg), SB-2 4-6' (15.2 mg/kg), SB-3 4-6' (8.2 mg/kg), SB-4 4-6' (12.2 mg/kg), SB-5 4-6' (12.3 mg/kg), SB-6 4-6' (5.4 mg/kg), SB-8 4-6' (8.8 mg/kg), SB-9 4-6' (10.9 mg/kg), SB-10 4-6' (26.8 mg/kg), SB-11 4-6' (8.6 mg/kg), SB-12 4-6' (16.6 mg/kg), SB-13 4-6' (15.0 mg/kg), SB-14 4-6' (18.3 mg/kg), SB-15 4-6' (14.6 mg/kg), SB-16 4-6' (11.2 mg/kg), SB-19 4-6' (14.9 mg/kg), SB-20 4-6' (9.0 mg/kg), SB-21 4-6' (12.6 mg/kg). The detections in MW-1R, and SB-14 were above the WDOE CLARC cleanup value for Soil Protective of Groundwater (18.0 mg/kg) and the MW-1R detection was just above the Soil

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Unrestricted Method A value (19.0 mg/kg). Again, it should be noted that the WDOE CLARC values for chromium VI (most stringent) were used for comparison as no value for total chromium was given for soil.

VOCs

The only VOC detections above the laboratory detection limits were acetone and methylene chloride. Acetone was detected in the SB-13 4-6' (0.063 mg/kg) and SB-14 4-6' (0.14 mg/kg) samples but was far below any WDOE CLARC cleanup goals (lowest goal 29.0 mg/kg for Soil Protective of Groundwater).

Methylene chloride was detected in MW-1R 4-6' (0.49 mg/kg), MW-3R 4-6' (0.402 mg/kg), SB-7 4-6' (0.072 mg/kg), SB-8 4-6' (0.076 mg/kg), SB-12 4-6' (0.068 mg/kg), SB-13 4-6' (0.06 mg/kg), and SB-14 4-6' (0.029 mg/kg). The detections in MW-1R, MW-3R, SB-7, SB-8, SB-12, SB-13, and SB-14 were above the WDOE CLARC cleanup values for Soil Unrestricted Method A (0.02 mg/kg) and Soil Protective of Groundwater (0.021 mg/kg). It should be noted that the laboratory marked all but the SB-14 sample as being biased high due to the surrogate recovery being greater than the defined upper limit of the lab method and that all of the detections were far below the WDOE CLARC cleanup goals for Soil Industrial Method C (cancer and non-cancer).

PAHs

There were no PAH detections above the laboratory MDLs in any of the soil samples.

7.2 Groundwater

The groundwater sample results were compared to the WDOE Cleanup Level and Risk Calculation target cleanup levels for unrestricted use (Method A). The detections and comparisons are summarized in a table in Appendix F.

TPH

The groundwater sampling results revealed the presence of TPH as diesel in MW-1R (80.6 ug/L), MW-3R (57.2 ug/L), MW-4 (275.0 ug/L), MW-5 (623.0 ug/L), MW-6 (546.0 ug/L), SB-4 (325.0 ug/L), SB-9 (111.0 ug/L), SB-18 (85.2 ug/L), and SB-19 (91.0 ug/L). In these wells, the MW-5 and MW-6 detections were above the WDOE CLARC Groundwater Target Cleanup Method A for unrestricted use. The TPH as diesel detections in MW-4, MW-5, and MW-6 were noted to have chromatogram patterns which do match diesel range organics in the lab report and further inquiry

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with the laboratory revealed that the patterns were more likely associated with sulfur and possibly aged diesel organics. Due to the fact that the detections in MW-5 and MW-6 were just over the WDOE CLARC cleanup level for groundwater and the wells were discovered during the Phase II ESA (indicating they had not been open or sampled since PRS's ownership) and had unknown integrity, MW-5 and MW-6 were resampled on September 27th and analyzed for NWPTH-Dx but incorporated an acid gel cleanup to rectify any interference by the presence of sulfur. The results of the September 27th sampling event did not reveal the presence of TPH above any laboratory MDLs in MW-5 or MW-6. Due to the fact that the September samples were only analyzed with a silica acid gel cleanup, MW-5 and MW-6 were resampled on November 22nd, 2021 and analyzed for NWPTH-Dx with and without an acid gel cleanup. The results of the November sampling event revealed the presence of TPH as diesel at 495.0 ug/L in MW-5 and at 260.0 ug/L in MW-6 without the silica acid gel cleanup and below the laboratory detection limit in both wells with the silica acid gel cleanup. For the November sampling event, the duplicate sample was 550.0 ug/L, just over the 500 ug/L threshold. There were no other TPH as diesel detections above any WDOE CLARC threshold levels or any other TPH detections above any of the laboratory MDLs.

Metals

Metals (total) detections in the groundwater samples included barium, barium (dissolved), chromium (total), chromium (dissolved), and lead below the in the groundwater samples which were all below the WDOE groundwater cleanup goal (Method A) for unrestricted use.

VOCs

There were no VOC detections above the laboratory MDLs for the groundwater sampling event.

PAHs

There were no PAH detections above the laboratory MDLs in any of the groundwater samples.

8.0 DATA QUALITY REVIEW

8.1 Field Data Quality Review

The Phase II ESA Work Plan establishes methodologies and procedures for data collection.

8.2 Quality Control Parameters

The Phase II ESA Work Plan describes the methods and procedures approved for data collection. The Plan establishes procedures to maintain data quality to support the project decisions.

8.3 Precision

As described in the Phase II Work Plan, precision is evaluated using the relative percent difference (RPD) between the actual samples and duplicate samples. Duplicate groundwater samples were collected in accordance with the Work Plan as follows: Dup. A and SB-11, Dup. B and SB-15, Dup. C and SB-8, Dup. D and SB-13, and Dup. E and MW-3R. Duplicate samples were also collected from MW-5 while sampling during the additional sampling events completed on September 27th and November 22nd. Field blanks were collected from SB-18 during the July 28th event and from SB-10 on the July 29th event.

For constituents with detections (metals and TPH), the results of the duplicate samples are summarized along with the corresponding sample. The QC Report in (Appendix I) provides a comparison of the results along with calculation of RPD. The respective RPDs were within the acceptable recovery limits except for barium in SB-11 and Dup. A and SB-13 and Dup. D.

Accuracy is evaluated using a percent recovery measured in spiked and un-spiked samples. Accuracy is a function of the laboratory method, and parameters regarding accuracy are included in the data quality packages provided by the laboratory with each sample delivery group.

There were no VOC detections above the laboratory method detection limits in the Field Blanks or Trip Blanks.

Each sample batch analyzed by Spectra Laboratories was reviewed by the laboratory for data usability. Notes were present in the laboratory analytical report case

narratives; notably, several of the groundwater samples which had TPH as diesel detections had chromatograms that did not match the pattern associated with diesel. MW-5 and MW-6 were resampled and reanalyzed with a silica gel extraction due to the pattern mismatch and the results did not reveal the presence of diesel above the laboratory MDL.

8.4 Representativeness

Representativeness of the field assessment activities to document the degree to which the sample data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition was evaluated. Review of field methods and procedures indicate that sample collection, handling, and transportation were conducted consistent with the Phase II Work Plan.

8.5 Completeness

Laboratory analysis was completed on each of the samples collected in the field and submitted for analysis. No data was rejected based on review of the data. There were RPD limit exceedances for barium in SB-11 and Dup. A and SB-13 and Dup. D and thus the completeness was determined to be 99.3% for the groundwater sampling event. The RPD values are included in Appendix I. Note that samples with reported analytic concentrations above the method detection limit (MDL), but below the reporting limit (RL) can produce variability which may generate RPD values which are non-representative. RPD values are non-representative when any of the following conditions exist: field duplicate pairs are less than five times the RL; one or both sample results are qualified as estimated, rejected, or suspected of blank contamination; or both results are not detected at the RL (non-detect).

8.6 Comparability

To produce comparable data, the units specified for analytical results obtained during the field activities are consistent throughout this project and standardized analytical methods have been used for each parameter.

8.7 Sensitivity

The laboratory sample reporting limits for soil and groundwater were sufficient to report concentrations below potentially applicable regulatory action levels. The laboratory reporting limits are included in Appendix J.

8.8 Laboratory Data Quality Review

Spectra Laboratories completed data reviews incorporating validation and verification of laboratory data and methods. Each sample batch analyzed by Spectra Laboratories was reviewed by the laboratory for data usability. Notes were present in the laboratory analytical report case narrative as described above.

9.0 INVESTIGATION DERIVED WASTE

Decontamination water, purge water, soil cores, and spent supplies (Shelby tubes, gloves, tubing etc.) were generated during this investigation.

9.1 Decontamination Fluids

Approximately two partially full 55-gal. drums of water were generated from cleaning and well development at the site. Based on the results of the groundwater sampling, the water will be disposed of in the facility's evaporator or alternatively at a groundwater treatment plant at the time of demolition.

9.2 Soil Cores

Approximately half of a 55-gal. drums of soil cores and cuttings were generated at the site. The soil will be disposed of in accordance with applicable laws during the site demolition.

9.3 Other Investigation Derived Waste

Plastic sample lines, nitrile gloves, tubing, and other miscellaneous items related to the sampling event and drilling event were generated as investigation-derived waste. The spent sampling supplies will be disposed of in accordance with applicable laws during the site demolition.

10.0 DISCUSSION OF RESULTS

Panhandle Geotechnical & Environmental recently completed a Phase II Environmental Site Assessment (ESA) at the Progress Rail Services Tacoma, Washington facility (4012 State Route 509 S. Frontage Rd.) to address *Recognized Environmental Conditions* identified in a Phase I Environmental Site Assessment completed by PGE in March 2021. To address the concerns as well as requests/concerns voiced by the Port Authority of Tacoma, PGE completed two temporary replacement monitoring wells (MW-1R and MW-3R) and 21 soil borings borings at the subject property to collect soil and groundwater samples which were then compared to the soil and groundwater cleanup values established by the WDOE CLARC

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guidance documents. If no value was found on the CLARC cleanup goal table, PGE used the residential soil, industrial soil, and groundwater values from the Environmental Protection Agency's RSL table for comparison. The soil and groundwater detections and comparisons with the WDOE CLARC and EPA cleanup levels are summarized as follows.

Soil

TPH

NWTPH-Dx analysis of the soil samples revealed the presence of TPH as diesel in the SB-1 4-6' sample (0.14 mg/kg). This detection is far below the WDOE CLARC cleanup goal for unrestricted soil Method A (2,000.0 mg/kg). There were no other TPH detections above any laboratory MDLs in any of the other soil samples.

Metals

The metals sampling of the soil samples revealed the low level presence of total arsenic, total barium, total cadmium, total chromium, total lead, and total mercury in several of the soil samples collected during this investigation. There were no total barium, total cadmium, total lead, or total mercury detections above any WDOE CLARC cleanup values.

Total arsenic was detected in MW-1R 4-6' (5.8 mg/kg), SB-7 4-6' (22.4 mg/kg), SB-10 4-6' (3.1 mg/kg), SB-12 4-6' (10.6 mg/kg), SB-16 4-6' (4.0 mg/kg), SB-17 4-6' (10.7 mg/kg), and SB-21 4-6' (3.8 mg/kg). All of these detections were above the WDOE CLARC cleanup value for Soil Cancer Method B (0.67 mg/kg) and Soil Protective of Groundwater (2.9 mg/kg) but were well below the Soil Unrestricted Use Method A (20.0 mg/kg) value in the CLARC guidance table.

Total cadmium was detected in the SB-12 4-6' (0.8 mg/kg), SB-16 4-6' (0.4 mg/kg), SB-17 4-6' (0.8 mg/kg), and SB-21 4-6' (0.4 mg/kg) soil samples. The detections in SB-12 and SB-17 were above the WDOE CLARC cleanup value for Soil Protective of Groundwater (0.69 mg/kg) but below the Soil Unrestricted Method A value (2.0 mg/kg).

Total chromium (note that no values for total chromium for soils is listed in the CLARC table or EPA guidance and the values for chromium VI were used) was detected in MW-1R 4-6' (19.4 mg/kg), MW-3R 4-6' (7.8 mg/kg), SB-2 4-6' (15.2 mg/kg), SB-3 4-6' (8.2 mg/kg), SB-4 4-6' (12.2 mg/kg), SB-5 4-6' (12.3 mg/kg), SB-6 4-6' (5.4 mg/kg), SB-8 4-6' (8.8 mg/kg), SB-9 4-6' (10.9 mg/kg), SB-10 4-6' (26.8 mg/kg), SB-11 4-6' (8.6 mg/kg), SB-12 4-6' (16.6 mg/kg), SB-13 4-6' (15.0 mg/kg), SB-14 4-6' (18.3 mg/kg), SB-15 4-6' (14.6 mg/kg), SB-16 4-6'

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[11.2 mg/kg) , SB-19 4-6' (14.9 mg/kg), SB-20 4-6' (9.0 mg/kg), SB-21 4-6' (12.6 mg/kg). The detections in MW-1R, and SB-14 were above the WDOE CLARC cleanup value for Soil Protective of Groundwater (18.0 mg/kg) and the MW-1R detection was just above the Soil Unrestricted Method A value (19.0 mg/kg). Again, it should be noted that the WDOE CLARC values for chromium VI (most stringent) were used for comparison as no value for total chromium was given for soil.

VOCs

The only VOC detections above the laboratory detection limits in the soil samples were acetone and methylene chloride. Acetone was detected in the SB-13 4-6' (0.063 mg/kg) and SB-14 4-6' (0.14 mg/kg) samples but were far below any WDOE CLARC cleanup goals (lowest goal 29.0 mg/kg for Soil Protective of Groundwater).

Methylene chloride was detected in MW-1R 4-6' (0.49 mg/kg), MW-3R 4-6' (0.402 mg/kg), SB-7 4-6' (0.072 mg/kg), SB-8 4-6' (0.076 mg/kg), SB-12 4-6' (0.068 mg/kg), SB-13 4-6' (0.06 mg/kg), and SB-14 4-6' (0.029 mg/kg). The detections in MW-1R, MW-3R, SB-7, SB-8, SB-12, SB-13, and SB-14 were above the WDOE CLARC cleanup values for Soil Unrestricted Method A (0.02 mg/kg) and Soil Protective of Groundwater (0.021 mg/kg). It should be noted that the laboratory marked all but the SB-14 sample was being biased high due to the surrogate recovery being greater than the defined upper limit of the lab method and that all of the detections were far below the WDOE CLARC cleanup goals for Soil Industrial Method C (cancer 94.0 mg/kg and 480.0 mg/kg non-cancer).

PAHs

There were no PAH detections above the laboratory MDLs in any of the soil samples.

Groundwater

TPH

The groundwater NWTPH-Dx analyses revealed the presence of TPH as diesel in the following samples: MW-1R (80.6 ug/L), MW-3R (57.2 ug/L), MW-4 (275.0 ug/L), MW-5 (623.0 ug/L), MW-6 (546.0 ug/L), SB-4 (325.0 ug/L), SB-9 (111.0 ug/L), SB-18 (85.2 ug/L), and SB-19 (91.0 ug/L). The MW-5 and MW-6 detections were above the WDOE CLARC Groundwater Target Cleanup Method A for unrestricted use (500.0 ug/L). The TPH as diesel detections in MW-4, MW-5, and MW-6 were noted to have chromatogram patterns which do match diesel range organics in the lab report and further inquiry with the laboratory revealed that the patterns appeared to be associated with sulfur and possibly aged diesel organics. Due

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to the fact that the detections in MW-5 and MW-6 were just over the WDOE CLARC cleanup level for groundwater and the wells were discovered during the Phase II ESA and had not been opened or sampled since PRS's ownership, MW-5 and MW-6 were resampled on September 27th and analyzed for NWPTH-Dx but incorporated an acid gel cleanup to rectify any interference by the presence of sulfur [laboratory recommendation]. The results of the September 27th sampling event did not reveal the presence of TPH above any laboratory MDLs. There were no other TPH diesel detections above any WDOE CLARC threshold levels or any other TPH detections above any of the laboratory MDLs.

Metals

Metals [total] detections in the groundwater samples included barium, barium [dissolved], chromium [total], chromium [dissolved], and lead below the in the groundwater samples which were all below the WDOE groundwater cleanup goal [Method A] for unrestricted use.

VOCs

There were no VOC detections above the laboratory MDLs for the groundwater sampling event.

PAHs

There were no PAH detections above the laboratory MDLs for the groundwater sampling event.

11.0 DEVIATIONS FROM THE SITE-SPECIFIC SAMPLING and ANALYSIS PLAN

As stated above, MW-5 and MW-6 were discovered during the Phase II ESA drilling event and incorporated into the sampling for the investigation during the field event. These monitoring wells were also resampled on September 27th due to the fact that the diesel detections did not match the chromatogram pattern for diesel range organics and appeared to be more likely associated with sulfur and/or degraded diesel. The September samples were also analyzed for NWTPH-Dx but also incorporated an acid gel cleanup to address the chromatogram pattern issue that was observed in the prior sampling event.

Due to a lack of water while sampling, SB-3 was not sampled for metals, SB-10 was not sampled for TPH, and SB-12 was not sampled for TPH or metals. PGE does not believe the lack of sampling at these points has compromised the integrity of this Assessment as ample groundwater and soil samples were collected across the site to accurately represent the site conditions.

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There were no other deviations from the Phase II ESA.

12.0 REFERENCES

References are included in Appendix H.

13.0 GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon the data obtained from the indicated soil borings and monitoring wells completed at the indicated locations and from other information discussed in this report.

This report has been prepared for use by the Progress Rail Services and parties as designated by PRS. No warranties, expressed or implied, are intended or made. If any changes in the location or nature of contamination be observed, the conclusions in this report must be reviewed to ensure validity.

Aerial Photograph



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Copyright:© 2013 National Geographic Society, i-cubed

0 500 1,000 2,000
Feet

1 inch = 1,000 feet

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Tacoma, WA

JOB NUMBER: RP210046-00

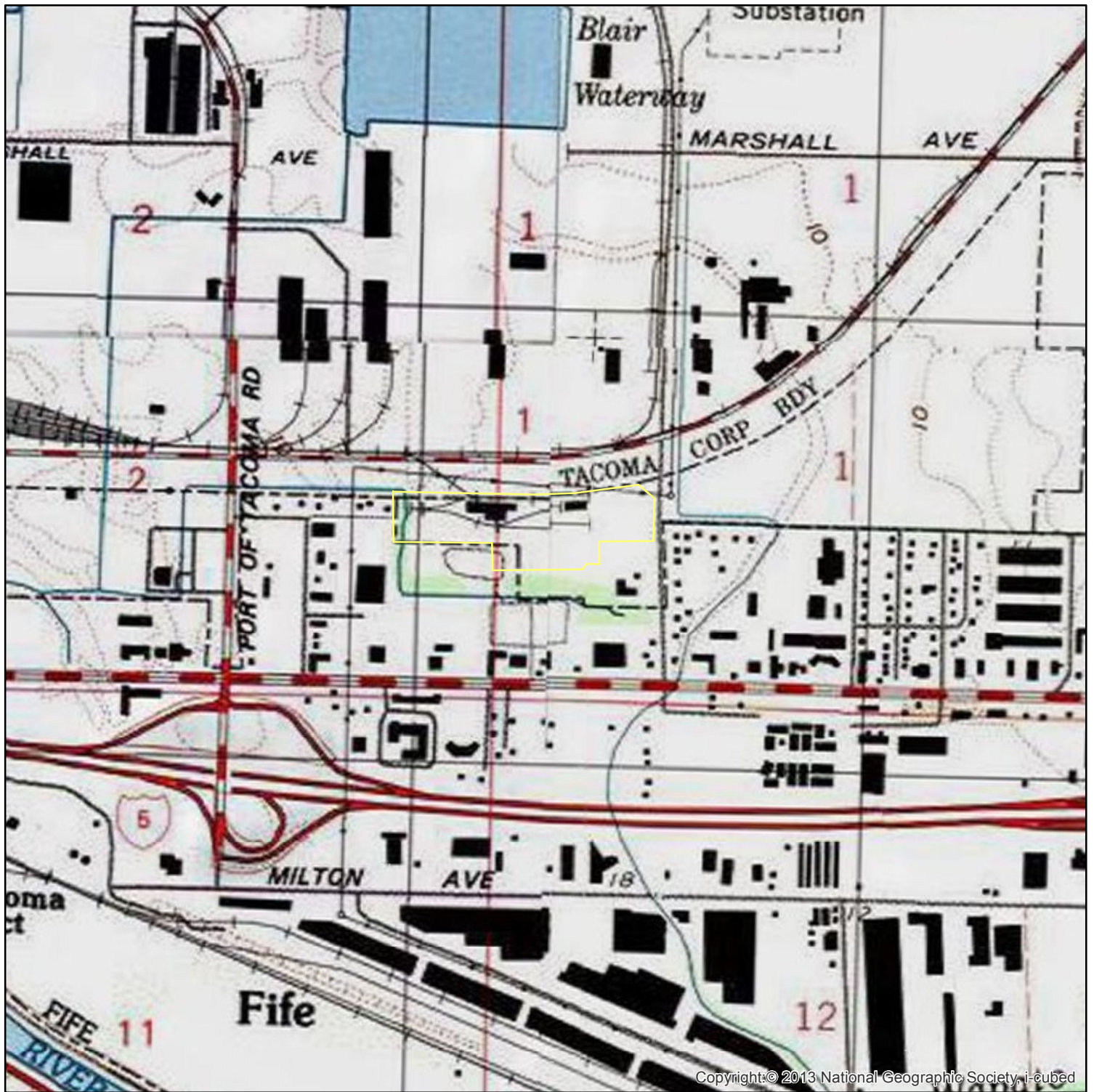
DATE: 10/4/2021

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Topographic Map



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1 inch = 1,000 feet

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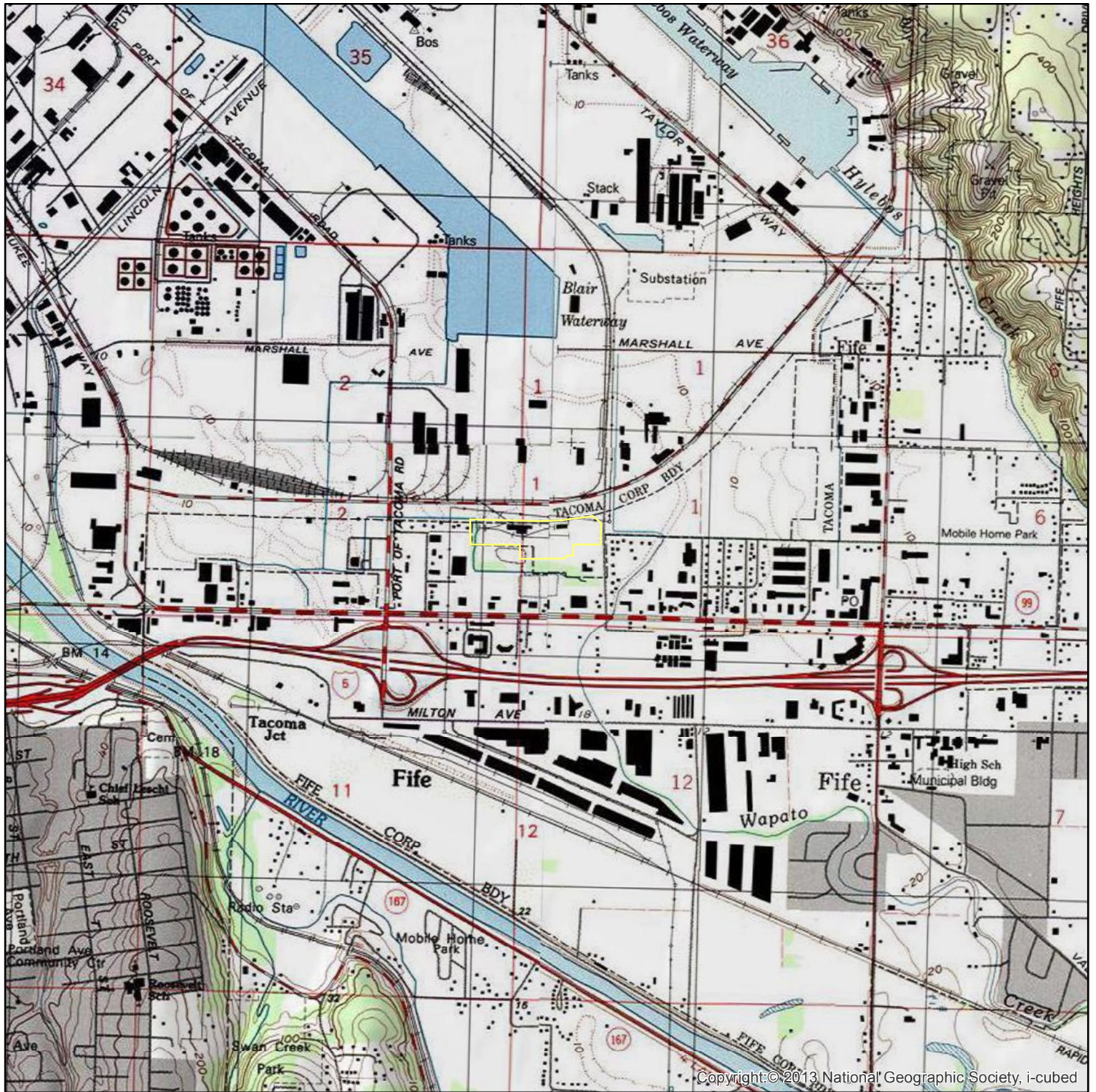
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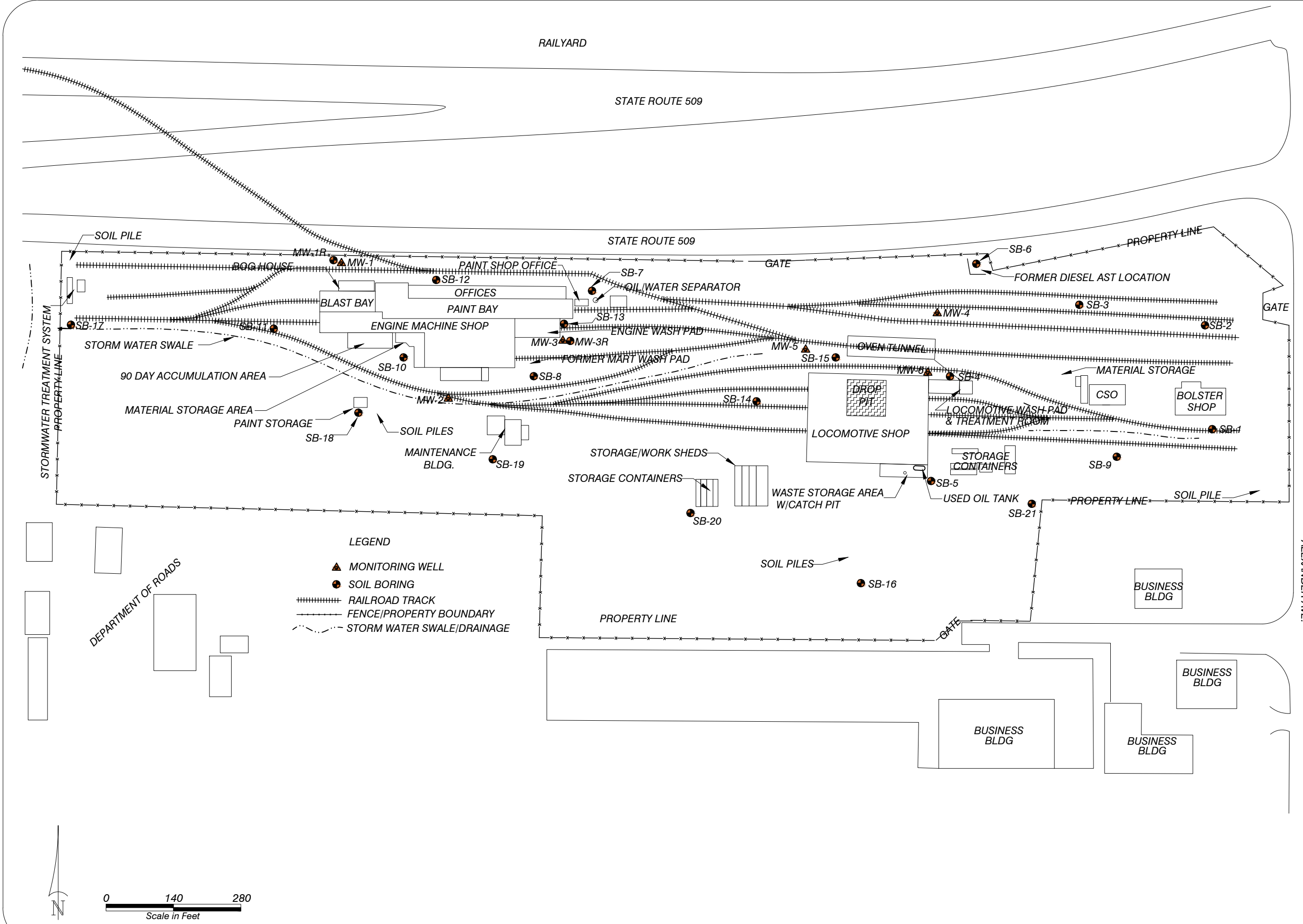
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Appendix B

Site Diagrams & Well Survey



- LEGEND**
- ▲ MONITORING WELL
 - SOIL BORING
 - ===== RAILROAD TRACK
 - - - - - FENCE/PROPERTY BOUNDARY
 - - - - - STORM WATER SWALE/DRAINAGE

0 140 280
Scale in Feet



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TACOMA, WA 98421
FACILITY SITE DIAGRAM**

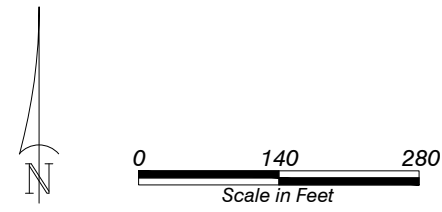
**CLIENT: PROGRESS RAIL SERVICES
CONTACT: SCOTT JAGGER**

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PROJ. DATE:
10/6/2021 - LA

PROJ. MGR:
DS

FIGURE
1



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 FACILITY SITE DIAGRAM
 W/AERIAL PHOTOGRAPH

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FIGURE
1

MONITOR WELL EXHIBIT MAP

APN 0320013143 & 0320017021
 PIERCE COUNTY, WASHINGTON
 SW 1/4 SECTION 1, T.20N., R.3E., W.M.



HORIZONTAL DATUM:

HORIZONTAL DATUM FOR THIS SURVEY IS NAD 1983(91), WASHINGTON STATE PLANE SOUTH ZONE COORDINATE SYSTEM, U.S. SURVEY FEET. THE HORIZONTAL DATUM IS BASED ON PUBLISHED INFORMATION FROM WSDOT, POINT DESIGNATION IS27157.

POINT DESIGNATION IS27157
 NORTHING: 703379.794
 EASTING: 1174431.732

VERTICAL DATUM:

VERTICAL DATUM IS NAVD88 BASED ON PUBLISHED INFORMATION FROM WSDOT, POINT DESIGNATION IS27157

POINT DESIGNATION IS27157
 ELEVATION: 18.29

PARAMETRIX CONTROL TABLE

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
9000	703285.32	1175181.28	18.35	SET R/CAP
9001	703358.36	1174288.61	17.67	SET R/CAP
9002	703381.19	1173713.12	16.75	SET R/CAP
9003	703017.90	1174370.82	17.96	SET R/CAP

MONITOR WELL TABLE

ELEVATIONS ARE TO NORTHERLY RIM AND NORTHERLY TOP OF PVC

POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
9201	703377.50	1173804.36	17.32	MON WELL #1R RIM
			17.05	TOP OF 2" PVC PIPE
9200	703257.37	1174177.94	17.55	MON WELL #3R RIM
			17.33	TOP OF 2" PVC PIPE
9204	703305.92	1174726.32	18.19	MON WELL #4 RIM
			17.70	TOP OF 2" PVC PIPE
9202	703245.92	1174524.02	17.47	MON WELL #5 RIM
			17.24	TOP OF 2" PVC PIPE
9205	703226.55	1174686.00	18.06	MON WELL #6 RIM
			17.64	TOP OF 2" PVC PIPE

LEGEND

- FOUND WSDOT 1 1/2" ALUM. CAP STAMPED "IS27157"
- SET 1/2" REBAR WITH CAP STAMPED "PMX CONTROL"
- MONITORING WELL



SCALE IN FEET



7-30-2021

Parametrix

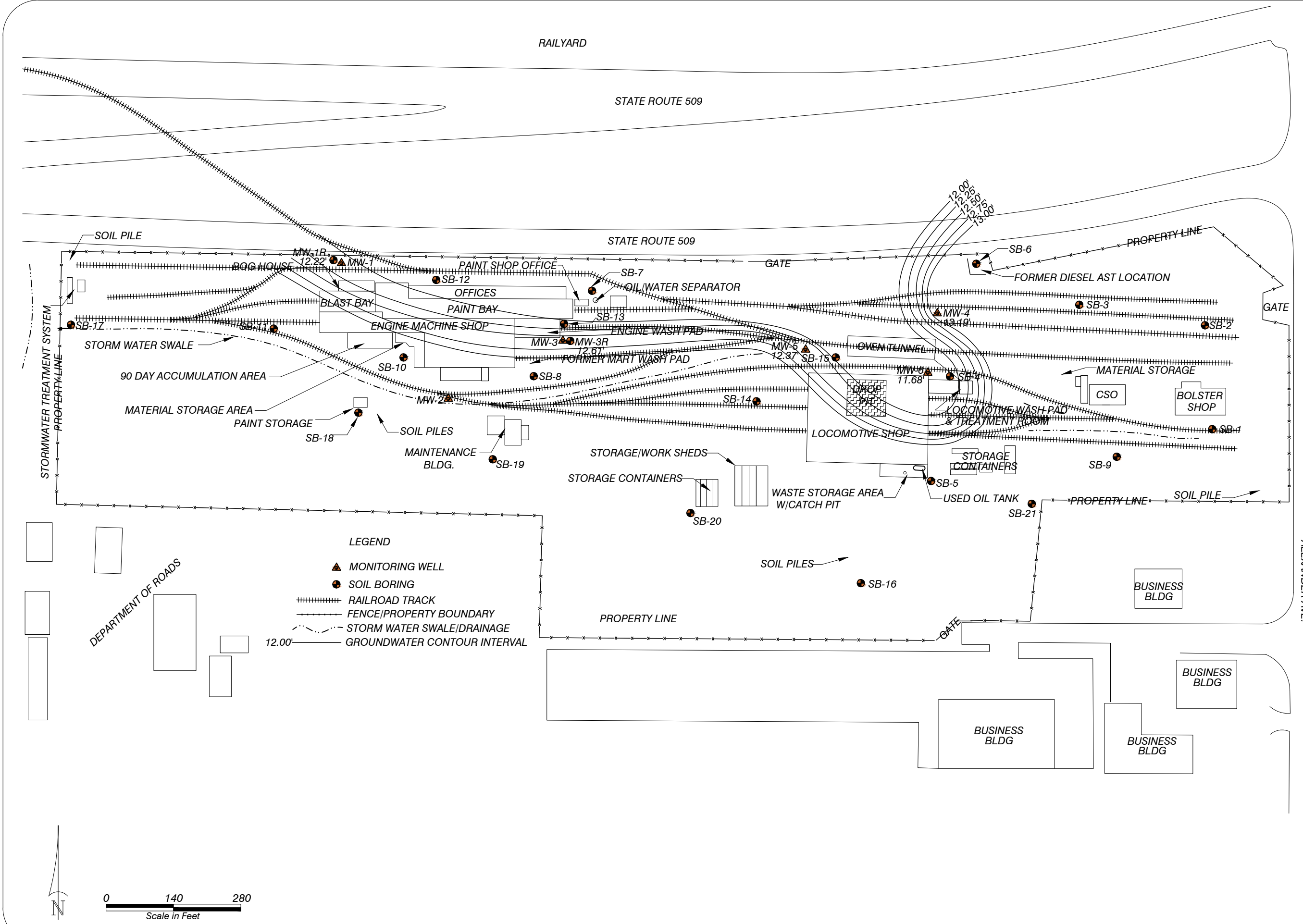
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 P 253.604.6600
 WWW.PARAMETRIX.COM

SURVEYED JMM	0 1 ONE INCHES AT FULL SCALE IF NOT SCALE ACCORDINGLY	SHEET NO. 1 OF 1
DRAWN JMM		
CHECKED JMK	SCALE 1"=200'	
APPROVED JMK	DATE 07/30/2021	

Appendix C

Groundwater Flow Map



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 FACILITY SITE DIAGRAM
 GROUNDWATER FLOW MAP
 CLIENT: PROGRESS RAIL SERVICES
 CONTACT: SCOTT JAGGER

PROJ. NUMBER:
 RP210046-00

PROJ. DATE:
 10/6/2021 - LA

PROJ. MGR:
 DS

FIGURE
1

Appendix D

Boring Logs



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Boring Log Form

818 S Beltline Hwy E, Scottsbluff, Nebraska 69361

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Project Name: **Progress Rail Services**
Project Number: **RP210046-00**
Project Location: **Tacoma, Washington**

Log of Boring

SB-1

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)	
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology
Diameter of Borehole (in)	2"	Type of Well Casing	3/4" PVC	Sampler Type	Geoprobe Liners
Type / Depth of Perforation	0.001"	From - To	10-15	Type / Depth of Seals	From - To
Type / Depth of Filter Pack		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Fine-grained sand w/ silt. Brown. Moist.		
3									Very fine-grained sand w/ silt. Dark Brown. Moist.		
4											
5											
6									Silt & sand w/ gravel - up to 0.5". Light brown. Dry.		
7											
8											
9									Silty sand. Dark Brown. Wet.		
10											
11									Silt & sand. Dark Brown. Wet.		
12											
13											
14											
15									END		
16											
17											
18											
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Project Name: Progress Rail Services
Project Number: RP210046-00
Project Location: Tacoma, Washington

Log of Boring

SB-2

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals			
Type / Depth of Filter Pack			From - To		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Silty sand. Brown. Dry.		
3									Fine-grained sand w/ little silt. Dark brown. Moist.		
4											
5											
6									Sandy clay. Brown. Moist.		
7									Clayey sand. Brown. Moist.		
8									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
9											
10									Sandy clay. Brown. Wet.		
11									Silty sand w/ some gravel. Light brown. Dry.		
12											
13									Sandy clay. Dark brown. Wet.		
14											
15									END		
16											
17											
18											
19											
20											
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22											
23											
24											
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Boring Log Form

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Project Name: **Progress Rail Services**
 Project Number: **RP210046-00**
 Project Location: **Tacoma, Washington**

Log of Boring

SB-3

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals		From - To	
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Very fine-grained sand & silt. Brown. Moist		
3									Fine-grained sand & silt. Brown. Moist.		
4											
5									Clayey sand. Dark brown. Moist.		
6									Sandy clay. Dark brown. Moist.		
7											
8										No recovery 8 to 15 ft.	
9											
10											
11											
12											
13											
14											
15											
16									END		
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Boring Log Form

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 Project Number: **RP210046-00**
 Project Location: **Tacoma, Washington**

Log of Boring

SB-4

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)	
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology
					Analytical
Diameter of Borehole (in)	2"	Type of Well Casing	3/4" PVC	Sampler Type	Geoprobe Liners
Type / Depth of Perforation	0.001"	From - To	10-15	Type / Depth of Seals	From - To
Type / Depth of Filter Pack		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Silty sand. Brown. Moist		
3									Silty sand. Dark brown. Moist.		
4											
5											
6									Silt & sand w/ gravel - up tp 0.25". Light brown. Dry.		
7											
8									Sandy clay. Dark. Brown. Moist.		
9									Sandy clay. Dark. Brown. Wet.		
10											
11									Fine-grained sand. Dark brown. Wet.		
12									Sandy clay. Dark brown. Wet.		
13									Clayey sand. Dark brown. Wet.		
14											
15									END		
16											
17											
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Project Name: Progress Rail Services
Project Number: RP210046-00
Project Location: Tacoma, Washington

Log of Boring

SB-5

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals			
Type / Depth of Filter Pack			From - To		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1										Silty sand and gravel (railroad ballast). Light brown.	
2										Very fine-grained sand & silt. Brown. Moist.	
3										Sandy clay. Dark brown. Moist.	
4										Silty clay. Dark brown. Moist.	
5										Very fine-grained sand w/ silt. Dark brown. Moist.	
6											
7										Silt & sand w/ gravel - up to 0.5'. Light brown. Dry.	
8											
9											
10										Sandy silt. Dark brown. Moist.	
11											
12										Fine-grained sand. Brown. Wet.	
13											
14											
15										END	
16											
17											
18											
19											
20											
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23											
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Project Name: Progress Rail Services
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Log of Boring

SB-6

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals			
Type / Depth of Filter Pack			From - To		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Silty sand. Brown. Moist.		
3											
4											
5											
6									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
7									Silt & sand. Brown. Moist.		
8									Sandy clay w/ organic matter. Dark brown. Moist.		
9											
10									Fine-grained sand. Dark brown. Wet.		
11											
12											
13									Sandy clay. Dark brown. Wet.		
14											
15									END		
16											
17											
18											
19											
20											
21											
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Project Location: **Tacoma, Washington**

Log of Boring

SB-7

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
Diameter of Borehole (in)	2"	Type of Well Casing	3/4" PVC	Total Depth of Borehole (ft)	15 ft.			
Type / Depth of Perforation	0.001"	From - To	10-15	Type / Depth of Seals	From - To			
Type / Depth of Filter Pack		From - To						

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1									Silty sand and gravel (railroad ballast). Light brown.		
2											
3									Fine-grained sand w/ silt. Brown. Moist.		
4									Fine-grained sand w/ gravel - up to 0.25". Dark brown. Moist.		
5											
6									Sandy clay. Dark brown. Moist.		
7											
8											
9											
10									Sand & clay. Dark brown. Wet.		
11									Sand & clay w/ gravel - up to 0.25". Dark brown. Wet.		
12											
13									Silty sand. Dark brown. Wet.		
14											
15									END		
16											
17											
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20											
21											
22											
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Log of Boring

SB-8

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"			Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.
Type / Depth of Perforation	0.001"			From - To	10-15	Type / Depth of Seals	From - To	
Type / Depth of Filter Pack				From - To				

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2											
3											
4									Sandy clay. Dark brown. Moist.		
5											
6											
7									Silt & sand w/ gravel - up to 0.5". Light brown. Dry.		
8									Sandy clay. Dark brown. Moist.		
9											
10											
11									Silty sand. Dark brown. Wet.		
12											
13											
14											
15									END		
16											
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19											
20											
21											
22											
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 Project Location: **Tacoma, Washington**

Log of Boring

SB-9

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)	
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology
					Analytical
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC	Sampler Type
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals
Type / Depth of Filter Pack			From - To		From - To

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Fine-grained sand. Brown. Moist.		
3									Very fine-grained sand. Dark brown. Moist.		
4									Silty sand. Dark brown. Moist.		
5									Clay w/ organic matter. Dark brown. Moist.		
6									Silt & sand w/ gravel - up to 0.5". Light brown. Dry.		
7									Sandy silt. Dark brown. Wet.		
8											
9											
10											
11											
12											
13											
14											
15									END		
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 Project Location: **Tacoma, Washington**

Log of Boring

SB-10

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Silty sand w/ gravel - up to 0.25". Light brown. Dry.		
3											
4											
5											
6									Sandy silt. Brown. Moist.		
7									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
8											
9									Sandy clay. Brown. Moist.		
10									Silty clay. Dark brown. Wet.		
11										No recovery 11 to 15 ft.	
12											
13											
14											
15									END		
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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 Project Location: **Tacoma, Washington**

Log of Boring

SB-11

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)	
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology
					Analytical
Diameter of Borehole (in)	2"	Type of Well Casing	3/4" PVC	Sampler Type	Geoprobe Liners
Type / Depth of Perforation	0.001"	From - To	10-15	Type / Depth of Seals	From - To
Type / Depth of Filter Pack		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2											
3											
4									Sandy silt. Brown. Moist.		
5									Sandy silt. Dark brown. Moist.		
6											
7									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
8											
9									Silty sand. Brown. Moist.		
10									Silty sand. Dark brown. Moist.		
11									Sandy silt. Dark brown. Wet.		
12									Fine-grained sand. Dark brown. Wet.		
13									Sandy clay. Dark brown. Wet.		
14											
15											
16									END		
17											
18											
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 Project Location: **Tacoma, Washington**

Log of Boring

SB-12

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.	No recovery 1 to 5 ft.	
2											
3											
4											
5											
6									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
7									Sandy silt. Dark brown. Moist.		
8									Sandy clay. Dark brown. Moist.		
9											
10									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
11									Sandy clay. Dark brown. Wet.		
12											
13											
14											
15									END		
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Project Name: Progress Rail Services
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Project Location: Tacoma, Washington

Log of Boring

SB-13

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)	
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology
					Analytical
Diameter of Borehole (in)	2"			Type of Well Casing	3/4" PVC
Type / Depth of Perforation	0.001"			From - To	10-15
Type / Depth of Filter Pack				From - To	
				Type / Depth of Seals	From - To
Sampler Type Geoprobe Liners					
Total Depth of Borehole (ft) 15 ft.					

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1										Silty sand and gravel (railroad ballast). Light brown.	
2											
3										Fine-grained sand w/ gravel - up to 0.25". Brown. Moist.	
4											
5										Clayey sand. Dark brown. Moist.	
6											
7										Silt & sand w/ gravel - up to 0.50". Light brown. Dry.	
8										Silt & sand w/ gravel - up to 0.50". Light brown. Moist.	
9										Sandy clay. Dark brown. Moist.	
10										Clayey sand. Dark brown. Moist.	
11											
12										Silt & sand w/ gravel - up to 1.0". Light brown. Dry.	
13										Sandy clay. Dark brown. Wet.	
14											
15										Fine-grained sand w/ silt. Dark brown. Wet.	
16										END	
17											
18											
19											
20											
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22											
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25											
26											



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 Project Location: **Tacoma, Washington**

Log of Boring

SB-14

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Silty sand. Brown. Moist.		
3									Sandy clay. Dark brown. Moist.		
4									Silty sand. Dark brown. Moist.		
5									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
6									Silty sand. Dark brown. Moist.		
7									Sandy clay. Dark brown. Moist.		
8											
9									Clayey sand. Dark brown. Moist.		
10											
11											
12											
13									Sandy clay. Dark brown. Wet.		
14											
15									END		
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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 Project Location: **Tacoma, Washington**

Log of Boring

SB-15

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1										Silty sand and gravel (railroad ballast). Light brown.	
2											
3										Sandy clay. Brown. Moist.	
4										Clayey sand. Dark brown. Moist.	
5											
6										Fine-grained sand. Dark brown. Moist.	
7											
8										Sandy clay. Dark brown. Moist.	
9										Fine-grained sand w/ silt. Dark brown. Moist.	
10											
11										Clayey sand. Dark brown. Wet.	
12											
13										Sandy clay. Dark brown. Wet.	
14											
15										END	
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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Log of Boring

SB-16

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Top soil		
2									Sandy silt w/ organic matter		
3									Sandy silt. Light brown. Dry.		
4									Silty sand. Brown. Moist.		
5									Sandy clay w/ little gravel - up to 0.5". Dark brown. Moist.		
6									Silty sand. Dark brown. Moist.		
7									Very fine-grained sand. Dark brown. Moist.		
8									Silty clay w/ oranic matter. Dark brown. Wet.		
9											
10											
11											
12											
13									Fine to very fine-grained sand. Dark brown. Wet.		
14											
15											
16									END		
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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Log of Boring

SB-17

Sheet 1 of 1

Date(s) Drilled	7/29/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15		Type / Depth of Seals	From - To	
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1										Silty sand and gravel (railroad ballast). Light brown.	
2											
3										Silty sand w/ gravel - up to 0.5". Brown. Moist.	
4											
5											
6										Sandy clay. Dark brown. Moist.	
7											
8										Silt & sand w/ gravel - up to 0.5". Light brown. Dry.	
9										Sandy clay w/ organic matter. Dark brown. Moist.	
10											
11										Silty sand. Dark brown. Wet,	
12										Silty clay. Dark brown. Wet.	
13											
14											
15										END	
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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Log of Boring

SB-18

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1										Silty sand and gravel (railroad ballast). Light brown.	
2										Fine-grained sand w/ silt. Brown. Dry.	
3										Silty sand. Brown. Moist.	
4										Sandy clay. Dark brown. Moist.	
5										Silt & sand w/ gravel - up to 0.5". Light brown. Dry.	
6										Silt & sand. Dark brown. Moist.	
7										Silty sand. Dark brown. Wet.	
8										Sandy clay. Dark brown. Wet.	
9										Very fine-grained sand. Dark brown. Wet.	
10										END	
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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Project Location: Tacoma, Washington

Log of Boring

SB-19

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals			
Type / Depth of Filter Pack			From - To		From - To			

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Sandy silt. Brown. Moist.		
3									Silty sand. Brown. Moist.		
4									Sandy silt. Dark brown. Moist.		
5									Silty sand w/ organic matter. Dark brown. Moist.		
6											
7									Clayey sand. Dark brown. Moist.		
8									Sandy clay w/ organic matter. Dark brown. Moist.		
9											
10											
11											
12											
13									Fine-grained sand w/ silt. Dark brown. Wet.		
14											
15											
16									END		
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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Log of Boring

SB-20

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh			
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)				
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John			
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology	Analytical	Sampler Type	Geoprobe Liners
						1		
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC		Total Depth of Borehole (ft)	15 ft.	
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals	From - To		
Type / Depth of Filter Pack			From - To					

Locations / Comments

Depth (ft-bgs)	SAMPLES							Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace	USCS				
1									Silty sand and gravel (railroad ballast). Light brown.	No recovery 1 to 5 ft.	
2											
3											
4											
5											
6									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
7											
8									Silty clay w/ organic matter. Dark brown. Moist.		
9											
10									Sandy silt. Dark brown. Wet.		
11											
12									Very fine-grained sand. Dark brown. Wet.		
13											
14											
15									END		
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											



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Log of Boring

SB-21

Sheet 1 of 1

Date(s) Drilled	7/28/21	Logged By	Ryan Penn	Checked By	Levi Allbaugh
Drilling Method	Direct Push	Drill Bit Size/Type		Ground Elevation (ft-msl)	
Drill Rig Type	Probe	Drilling Company	Holocene	Driller Name	Chris John
Groundwater Level (ft-bgs)	First	Comp	24 Hrs	Number of Samples	Lithology
					Analytical 1
Diameter of Borehole (in)	2"		Type of Well Casing	3/4" PVC	Sampler Type Geoprobe Liners
Type / Depth of Perforation	0.001"		From - To	10-15	Type / Depth of Seals From - To
Type / Depth of Filter Pack			From - To		

Locations / Comments

Depth (ft-bgs)	SAMPLES						USCS	Graphic Log	Well Completion Log	MATERIAL DESCRIPTION	REMARKS
	Type	Number	Blow Counts	Recovery (ft)	Screening	Headspace					
1									Silty sand and gravel (railroad ballast). Light brown.		
2									Silty sand. Brown. Moist.		
3											
4											
5											
6									Silt & sand. Brown. Moist.		
7									Silt & sand w/ gravel - up to 0.50". Light brown. Dry.		
8											
9									Silty clay. Dark brown. Moist.		
10									Silty sand, Dark brown. Wet.		
11											
12									Silt & sand w/ gravel - up to 0.25". Light brown. Dry.		
13											
14									Very fine-grained sand. Brown. Wet.		
15									END		
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											

Appendix E

Summary of Analytical Detections in Soil

**Progress Rail
Tacoma, Washington
Analytical Results Summary - Soil**

	WDOE Cleanup Levels mg/kg							Sample ID	MW-1R	MW-3R	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6
	Soil Unrestricted Method A	Soil Noncancer Method B	Soil Cancer Method B	Soil Protective of GW @13c	Soil Industrial Method A	Soil Industrial Noncancer Method C	Soil Industrial Cancer Method C	Depth (ft)	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
								Date	7/27/2021	7/27/2021	7/28/2021	7/29/2021	7/29/2021	7/29/2021	7/28/2021	7/29/2021
Units	mg/kg	Flags	mg/kg	Flags	mg/kg	Flags	mg/kg	Flags	mg/kg	Flags	mg/kg	Flags	mg/kg	Flags	mg/kg	Flags
Organics																
Diesel	2000.0	-	-	-	2000.0	-	-	-	ND	ND	0.14	ND	ND	ND	ND	ND
Heavy Oils	2000.0	-	-	-	2000.0	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND
Mineral Oil	4000.0	-	-	-	4000.0	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND
GRO, benzene present	30.0	-	-	-	30.0	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND
GRO, no detectable benzene	100.0	-	-	-	100.0	-	-	-	ND	ND	ND	ND	ND	ND	ND	ND
Wet Chemistry & Metals																
Total Arsenic	20.0	24.0	0.67	2.9	20.0	1100.0	88.0	-	5.8	ND	ND	ND	ND	ND	ND	ND
Total Barium	-	16000.0	-	1600.0	-	700000.0	-	-	23.8	10.4	17.2	14.20	10.3	15.60	33.8	14.0
Total Cadmium	2.0	80.0	-	0.690	2.0	3,500.0	-	-	0.5	ND	ND	ND	ND	ND	ND	ND
Total Chromium*	19.0	240	-	18	19.0	11000	-	-	19.4	7.8	ND	15.20	8.2	12.20	12.3	5.4
Total Lead	250.0	-	-	3000.0	1,000.0	-	-	-	9.0	3.0	ND	ND	ND	ND	ND	ND
Total Mercury	2.0	-	-	2.1	2.00	-	-	-	0.038	ND	ND	ND	ND	ND	ND	ND
VOCs																
Acetone	-	72000.0	-	29.0	-	70000.0	-	-	ND	ND	ND	ND	ND	ND	ND	ND
Methylene chloride	0.02	480.0	94.0	0.021	0.0200	21000.0	66,000.0	-	0.49**	0.402**	ND	ND	ND	ND	ND	ND

*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

Cleanup values from WDOE CLARC Soil Unrestricted Land Use Table (Methods A, B, Groundwater Protection, & Soil Leaching Parameters) - Feb. 2021

Note that a PAH analysis did not reveal any detections.

SB-7	SB-8	SB-9	SB-10	SB-11	SB-12	SB-13	SB-14	SB-15	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21
4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6
7/29/2021	7/29/2021	7/28/2021	7/29/2021	7/28/2021	7/29/2021	7/29/2021	7/29/2021	7/29/2021	7/28/2021	7/29/2021	7/28/2021	7/28/2021	7/28/2021	7/28/2021
Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags	Flags
mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

22.4	ND	ND	3.1	ND	10.6	ND	ND	ND	4.0	10.7	ND	ND	ND	3.8
ND	12.80	17.0	42.00	14.8	22.8	19.0	14.60	17.6	15.3	29.7	16.00	11.3	9.2	35.8
ND	ND	ND	ND	ND	0.8	ND	ND	ND	0.4	0.8	ND	ND	ND	0.4
ND	8.80	10.9	26.80	8.6	16.60	15.0	18.30	14.6	13.4	23.8	11.20	14.9	9.0	12.6
ND	ND	ND	ND	ND	11.80	ND	ND	ND	8.4	15.1	ND	ND	ND	11.4
ND	ND	0.034	ND	0.034	ND	0.034	ND	ND	0.026	ND	0.042	ND	ND	0.045

ND	ND	ND	ND	ND	ND	0.063**	0.14	ND	ND	ND	ND	ND	ND	ND
0.072**	0.076**	ND	ND	ND	0.068**	0.060**	0.029	ND	ND	ND	ND	ND	ND	ND

Appendix F

Summary of Analytical Detections in Groundwater

**Progress Rail
Tacoma, WA
Analytical Results Summary - Groundwater**

	WDOE Groundwater Target Cleanup Levels ug/L Method A	WDOE Groundwater Target Cleanup Levels ug/L Noncancer Method B	WDOE Groundwater Target Cleanup Levels ug/L Cancer Method B	WDOE/WA State/Fed. Maximum Contaminant Level Goal ug/L	WDOE Maximum Contaminant Level Goal ug/L Noncancer Method C	WDOE Maximum Contaminant Level Goal ug/L Cancer Method C	Sample ID	MW-1R	MW-3R	Dup. E	MW-4	MW-5	MW-5	MW-5 Dup.	MW-6	
							SWL (ft. BTOC)	4.83	4.71	NA	4.51	4.87	6.29	2.88	2.88	5.96
							TD (ft. BGL)	15.0	15	15	14.1	9.7	10.3	10.3	10.3	15.4
							Date	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
							Units	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Organics																
Diesel	500	-	-	-	-	NA	-	80.6 **	57.2	ND	275.0	623.0	ND*	495.0/ND*	550.0/ND*	546.0
Heavy Oils	500	-	-	-	-	NA	-	ND	ND	ND	ND	ND	ND*	390.0/ND*	405.0/ND*	ND
Mineral Oil	500	-	-	-	-	NA	-	ND	ND	ND	ND	ND	ND*	ND/ND*	ND/ND*	ND
GRO, benzene present	800	-	-	-	-	NA	-	ND	ND	ND	ND	ND	ND*	ND/ND*	ND/ND*	ND
GRO, no detectable benzene	1000	-	-	-	-	NA	-	ND	ND	ND	ND	ND	ND*	ND/ND*	ND/ND*	ND
Wet Chemistry & Metals																
Barium	-	3200	-	2000	7000	NA	-	0.127	0.015	0.018	0.06	1.47	NS	NS	NS	0.061
Chromium (Total)	50	-	-	100	-	NA	-	0.014	0.022	ND	ND	0.05	NS	NS	NS	0.018
Dissolved Barium	-	-	-	-	-	NA	-	0.104	0.014	0.016	0.025	0.072	NS	NS	NS	0.044
Dissolved Chromium	-	-	-	-	-	NA	-	ND	ND	ND	ND	0.04	NS	NS	NS	0.008
Lead	15	-	-	0/15.0	-	NA	-	ND	ND	ND	ND	ND	NS	NS	NS	ND

Organics Cleanup values calculated from WAC 173-340-720(4)(b)(ii) and 173-340-720(5)(b)(iii) Equation 720-1

Metals cleanup values from Method A & WDOE CLARC Unrestricted Land Use Table (Methods A, B, Groundwater Protection, & Soil Leaching Parameters (Feb. 2021).

Note that a full range VOC scan did not reveal any detections.

Note that a PAH analysis did not reveal any detections.

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

**DRO do not resemble diesel reference pattern

MW-6	MW-6	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	SB-7	SB-8	Dup. C	SB-9	SB-10	SB-11	Dup. A	SB-12	SB-13	Dup. D
6.31	2.82	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15.1	15.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
9/27/2021	11/22/2021	7/28/2021	7/29/2021	7/29/2021	7/29/2021	4/16/2019	7/29/2021	7/29/2021	7/29/2021	7/29/2021	7/28/2021	7/29/2021	4/16/2019	4/16/2019	7/29/2021	7/29/2021	7/29/2021
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L

ND	260.0/ND*	ND	ND	ND	325.0	ND	**	ND	ND	ND	ND	111.0	NS	ND	ND	NS	ND	ND
ND	315.0/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND	NS	ND	ND
ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND	NS	ND	ND
ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND	NS	ND	ND
ND	ND/ND*	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND	NS	ND	ND

NS	NS	0.326	0.160	NS	0.236	0.058	0.213	0.097	0.042	0.039	0.089	0.809	0.119	0.248	NS	0.144	0.363
NS	NS	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND
NS	NS	0.102	0.047	NS	0.098	0.037	0.085	0.056	0.039	0.041	0.07	0.153	0.102	ND	NS	0.039	0.052
NS	NS	ND	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND
NS	NS	0.034	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NS	ND	ND

SB-14	SB-15	Dup. B	SB-16	SB-17	SB-18	SB-19	SB-20	SB-21
-	-	-	-	-	-	-	-	-
7/29/2021	7/29/2021	7/29/2021	4/16/2019	7/29/2021	4/16/2019	4/16/2019	4/16/2019	7/28/2021
µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ND	199.0	150.0	ND	ND	85.2	91.0	ND	ND
ND	ND	ND	ND	ND	64.1	ND	ND	ND
ND	ND	ND	ND	ND	64.1	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	ND	ND	ND	ND	ND

0.198	0.152	0.102	0.042	1.43	0.181	0.063	0.081	0.116
ND	ND	ND	ND	0.063	ND	ND	ND	ND
0.1	0.103	0.095	0.027	0.203	0.12	0.058	0.042	0.046
ND	ND	ND	ND	ND	ND	ND	ND	ND
ND	ND	ND	ND	0.034	ND	ND	ND	ND

Appendix G

Field Notes

7/27/21

Arrived 8:00
Departed 16:00Ryan, Dave, Holocene driller - RT, Adam,
Eam

Safety meeting

Set up on MW-1R. Started
drilling at 9:00. Completed
well - didn't develop yet.Started drilling MW-2R at
10:30. Didn't develop wells yet.Holocene de-mob. Developed MW-1R
~ 9-10 gallons. Developed MW-2R
~ 15 gallons.

Holocene departed 13:00

- Lunch ~ 30 minutes.

Marked out 5B localities

* 7/26/21 travel ! 8 hrs

7/24/21

Arrived: 6:00

Reported: 16:30

in lunch 30 min

on site 6:00. RL, Dave, Holocene
Dr. 1/15 - Chris + John.

Started on SB-1. Finished well
(soil sampling only): SB-1, SB-7, SB-5
SB-20 → no recovery at 4-6',
so we sampled 6-8' instead.
SB-16.

SB-1: 7.6 swl. Purged 1 gallon.
Took sample at 8:20.

SB-9: 6.5 swl. Purged 1 gallon.
Took sample at 9:00. (swl taken
after)

~~SB-20~~

SB-20: 7.2 swl. Purged 1 gallon.
Took sample at 10:00. (swl
taken before)

SB-16: 10 ft. swl (after purging)
Purged 1 gallon. Took sample
at 10:45.

SB-5: Took sample at
11:15. Purged 1 gallon.

Drilled SB-20. Took soil
samples, set well, 11:15.

Drilled SB-17. Took soil
samples, set well, 11:45.

Drilled SB-18. Took soil
samples, set well, 12:15.

SB-20: Took our sample at
11:50. Purged 1 gallon.

SB-17: Took our sample at
10:30. Purged 1 gallon.

Drilled SB-11. Took soil
samples, set well, 12:50.

SB-11: Took our sample at
3:00 pm. Purged 1 gallon. Took
Rep-A.

FB at 3:20 pm. SB-18 at 1:10.

7/29/21 Arrived: 7:30
 Departed: 19:30
 on site @ 7:30. Avul - Jeremy, R/M,
 Dave, Drilled on site at 8:30 -
 Chris, John (Holden).

Locating utilities around remaining SB
 locations. Safety meeting at 8:30.

Started drilling SB-6. Took soil
 sample, & set well. 9:00. Took
 GW sample at 9:30.

Drilled SB-3. Took sample at
 9:30. Took GW sample at
 10:10. - Couldn't get enough water, no sample

Drilled SB-2. Took sample at
 10:00. Took GW sample at 10:50

Drilled SB-4. Took sample at
 10:30. Took GW sample at 11:30

Drilled SB-15. Took sample at
 11:00. Took GW sample at
 13:00. Dup-B.

Drilled SB-14. Took sample
 at 11:30. Took GW sample
 at 13:45.

Drilled SB-8. Took sample
 at 13:00. Took GW sample
 at 14:35. Dup-C

Drilled SB-13. Took sample
 at 13:30. Took GW sample
 at 15:05. Dup-D

Drilled SB-7. Took sample
 at 13:45. Took GW sample
 at 15:55.

Drilled SB-12. No recovery
 from 0-5 ft. Took 6-8' sample
 at 14:20. Took GW sample
 at 17:00. Well not dry very quickly.

Drilled SB-17. Took sample
 at 15:00. Took GW sample at
 16:55. Well going dry quickly

Drilled SB-10. Took sample
at 15:30. Took water sample at

-FB at 18:00.

Hobson Jr. and I departed at
7/30/21 Arrived: 7:00 Departed: 11:00
R/M, Dave

sampled monitoring wells:

well	SWL	Pumped	sample time
MW-1R	4.83	8 gal.	10:00
MW-3R	4.71	8 gal.	9:30
MW-4	4.51	7.5 gal.	10:45
MW-5	4.87	9 gal.	9:25
MW-6	5.96	7.5 gal.	10:15

well	total depth
MW-1R	15 ft.
MW-3R	15 ft.
MW-4	14.1 ft.
MW-5	9.7 ft.
MW-6	15.4 ft.

Dup-E w/ MW-3R

Dropped off samples, rental equipment.
Travel - 8 hrs.



LOMBARDINI
GEOLOGICAL
SERVICES LLC

DAILY FIELD REPORT

PROJECT NAME: Progressive Race

PROJECT NO: 21-140

SITE ADDRESS: 4012 SR 509 S FRENCH RD
TACOMA, WA

DATE: 9.27.21

SITE CONDITIONS: 50° SUN/RAIN

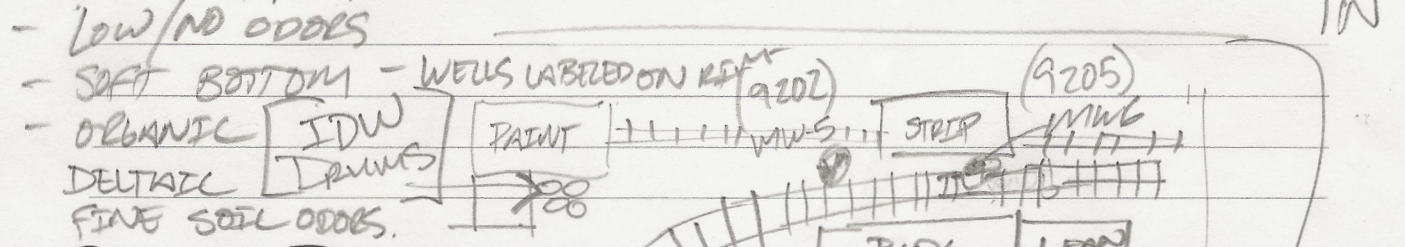
LGS STAFF: SHAWN

ARRIVE TIME: 1530

LEAVE TIME: 1930

OUR ACTIVITIES:

- LGS → SPECTRA TO OBTAIN OX, DUP, SILICA, GEL CLEANUP METHODS, GW SAMPLES MW-5 & MW-6.
- LGS → SITE, MET FRANK (SECRET), POWER COMPANY ONSITE AS WELL.
- SAMPLED LOW FLOW AFTER DTW MEASUREMENTS. 509



- * [PH HIGH?] - FIELD CALIBRATE W/ REPEAT
- * ALL OTHER PARAMETERS IN SPEC, $L_{10\%}$ Δ SPEC = SAMPLE

SUB ACTIVITIES:

- IDW TO EXISTING DRUMS ONSITE
- PURGED ~4.5 GAL / WELL, TURBIDITY @ SAMP. TIME, LOW
- CLOSED WELLS & REMOVED TUBING / DISPOSED OF.
- NO OTHER OBS.
- DELIVERED TO SPECTRA LAB ON BLUE ICE @ ~2000.



LOMBARDINI
GEOLOGICAL
SERVICES LLC

GROUNDWATER MONITORING DAILY FIELD SHEET

PROJECT NAME: PROGRESSIVE FILL
 SITE ADDRESS: 4012 SPRING STREET RD INCONA WA
 SITE CONDITIONS: 500 SUN/RAIN
 WELL CONDITION: GOOD
 SIZE OF WELL: 2"
 DEPTH TO WATER: 6.29' (10.3' TOTAL DEPTH)
 FLOW RATE: 1.500 ML/MIN

DATE: 9.27.21
 WELL NO: MW-5
 LGS STAFF: SHAWN
 ARRIVE TIME: 1530
 LEAVE TIME: 1930
 ODORS: NONE, LOW, ORGANIC (DETRITUS SOLUS)
 TIME SAMPLED: ~1810
 GALLONS PURGED: ~4.5 GALLONS

TIME	PH	CONDUCTIVITY	TEMPERATURE	SALINITY	ORP	DISSOLVED OXYGEN	NOTES
1730	11.5	1628	17.05	1.37	-242.7	.83	
1740	12.0	1505	16.7	1.29	-261.4	.42	
1750	12.0	1478	16.25	1.25	-248.1	.38	
1800	12.2	1483	16.24	1.28	-247.1	.30	
1805	12.3	1494	16.24	1.28	-251	.28	
1810	12.4	1498	16.23	1.29	-251	.26	
SAMPLE ✓		✓	✓	✓	✓	✓	
	*						
	PH HIGH	CALIBRATION					
		CLEAN BULB?					
			1.6 x 3 x 4.0		1.9 GAL	1.9 GALLON MIN	
					(3 WELL VOLUMES)		



LOMBARDINI
GEOLOGICAL
SERVICES LLC

GROUNDWATER MONITORING DAILY FIELD SHEET

PROJECT NAME:
SITE ADDRESS:

~~PROGRESSIVE PAUL~~
4012 SRE 09 SE FLORISSA RD
TACOMA WA

DATE:
WELL NO:
LGS STAFF:

9.27.21
MW-6
SHAWN

SITE CONDITIONS:

50° SUN/PART

ARRIVE TIME:
LEAVE TIME:

1530
1930

WELL CONDITION:

GOOD

ODORS:

NONE, LOW, ORGANIC (DETAILED SOILS)

SIZE OF WELL:

2"

TIME SAMPLED:

1910

DEPTH TO WATER:

6.31' (15.1' TOTAL DEPTH)

GALLONS PURGED:

~4.5 GALLONS

FLOW RATE:

LS00 ml/min

TIME	PH	CONDUCTIVITY	TEMPERATURE	SALINITY	ORP	DISSOLVED OXYGEN	NOTES
1830	11.14	1368	16.3	.21	-265	1.83	
1840	11.4	1376	16.5	.22	-251	1.83	
1850	11.47	1377	16.4	.22	-241	1.81	
1900	11.6	1384	15.9	.22	-213	1.88	
1905	11.7	1381	16.0	.22	-193	1.13	
1910	11.7	1379	15.9	.22	-183	1.57	
SAMPLE		100%	✓	✓	✓	✓	• AIR BUBBLES ON BULBS, SHOCK FLOW THROUGH CELL TO REPAIR
* PH HIGH?		CALIBRATE / CLEAN BULBS?		116 x 3 x 8.79		[4.2] GAL MEN	
						3 x WELL VOL.	



LOMBARDINI
GEOLOGICAL
SERVICES LLC

DAILY FIELD REPORT

PROJECT NAME: PROGRESS RAIL
SITE ADDRESS: 4012 SR 509 S. FRAUNFELT RD
SITE CONDITIONS: OVERCAST 53°F

PROJECT NO: 21-140
DATE: 11.22.21
LGS STAFF: SHAWN
ARRIVE TIME: 0930
LEAVE TIME: 1230

OUR ACTIVITIES:

- LGS ONSITE TO RESAMPLE MW-5 & MW-6
- TWO GW SAMPLES DX
- TWO GW SAMPLES DX W SELECTOR GEL CLEANUP
- ONE DUPLICATE (MW-5)
- MET PERMETERS DURING GW SAMPLING YSI
- DELTAIC SOILS ODOR, NO PETROL ODORS EVIDENT
- NO SHEENS
- 55 GALLON DRUM ~ 3/4 FULL W GW
- * NO DRUM USED FROM LGS
- DROPPED OFF @ SPECTRA
- DIRECT PAYMENT TO MC SCHIFF EASC. INC

SUB ACTIVITIES:

- NO OTHER ISSUES.
- SAMPLING NOMINAL.

Appendix H

References

References

ASTM International, E1903-11, Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process. 2011.

Environmental Systems Research Institute, 2-D World Imagery Map.

Panhandle Geotechnical & Environmental, Inc. Phase I Environmental Site Assessment. PRS Tacoma, Washington. March 4, 2021.

Panhandle Geotechnical & Environmental, Inc. Phase II Environmental Site Assessment Work Plan. June 23, 2021.

Panhandle Geotechnical & Environmental, Inc. Site Specific Health & Safety Plan. July 2021.

Washington Department of Ecology Cleanup Levels and Risk Calculation (CLARC). February 2021.

Washington State Model Toxics Control Act (MTCA) Regulation, Chapter 173-340 WAC. October 12, 2007.

Appendix I

QC Report - RPDs

PRS - Tacoma, Washington
Phase II ESA
Relative Percent Difference Values
(diesel values in ug/L & metals values in ug/L)

SB-11 & Dup. A

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
Arsenic	<0.025	<0.025	<0.025	0.00	Yes
Barium	0.119	0.248	0.184	70.30	No
Barium (dissolved)	0.102	0.095	0.099	7.11	Yes
Cadmium	<0.003	<0.003	<0.003	0.00	Yes
Chromium	<0.007	<0.007	<0.007	0.00	Yes
Chromium (dissolved)	<0.007	<0.007	<0.007	0.00	Yes
Lead	<0.025	<0.025	<0.025	0.00	Yes
Selenium	<0.025	<0.025	<0.025	0.00	Yes
Silver	<0.007	<0.007	<0.007	0.00	Yes
Mercury	<0.0005	<0.0005	<0.0005	0.00	Yes
TEH (diesel)	<50.0	<50.0	<50.0	0.00	Yes
TEH (waste oil)	<50.0	<50.0	<50.0	0.00	Yes

SB-15 & Dup. B

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
Arsenic	<0.025	<0.025	<0.025	0.00	Yes
Barium	0.152	0.102	0.127	39.37	Yes
Barium (dissolved)	0.103	0.095	0.099	8.08	Yes
Cadmium	<0.003	<0.003	<0.003	0.00	Yes
Chromium	<0.007	<0.007	<0.007	0.00	Yes
Chromium (dissolved)	<0.007	<0.007	<0.007	0.00	Yes
Lead	<0.025	<0.025	<0.025	0.00	Yes
Selenium	<0.025	<0.025	<0.025	0.00	Yes
Silver	<0.007	<0.007	<0.007	0.00	Yes
Mercury	<0.0005	<0.0005	<0.0005	0.00	Yes
TEH (diesel)	199.0	150.000	174.500	28.08	Yes
TEH (waste oil)	<50.0	<50.0	<50.0	0.00	Yes

SB-8 & Dup. C

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
Arsenic	<0.025	<0.025	<0.025	0.00	Yes
Barium	0.042	0.039	0.041	7.41	Yes
Barium (dissolved)	0.039	0.034	0.037	13.70	Yes
Cadmium	<0.003	<0.003	<0.003	0.00	Yes
Chromium	<0.007	<0.007	<0.007	0.00	Yes
Chromium (dissolved)	<0.007	<0.007	<0.007	0.00	Yes
Lead	<0.025	<0.025	<0.025	0.00	Yes
Selenium	<0.025	<0.025	<0.025	0.00	Yes
Silver	<0.007	<0.007	<0.007	0.00	Yes
Mercury	<0.0005	<0.0005	<0.0005	0.00	Yes
TEH (diesel)	<50.0	<50.0	<50.0	0.00	Yes
TEH (waste oil)	<50.0	<50.0	<50.0	0.00	Yes

SB-13 & Dup. D

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
Arsenic	<0.025	<0.025	<0.025	0.00	Yes
Barium	0.144	0.363	0.254	86.39	No
Barium (dissolved)	0.039	0.052	0.046	28.57	Yes
Cadmium	<0.003	<0.003	<0.003	0.00	Yes
Chromium	<0.007	<0.007	<0.007	0.00	Yes
Chromium (dissolved)	<0.007	<0.007	<0.007	0.00	Yes
Lead	<0.025	<0.025	<0.025	0.00	Yes
Selenium	<0.025	<0.025	<0.025	0.00	Yes
Silver	<0.007	<0.007	<0.007	0.00	Yes
Mercury	<0.0005	<0.0005	<0.0005	0.00	Yes
TEH (diesel)	<50.0	<50.0	<50.0	0.00	Yes
TEH (waste oil)	<50.0	<50.0	<50.0	0.00	Yes

MW-3R & Dup. E

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
Arsenic	<0.025	<0.025	<0.025	0.00	Yes
Barium	0.015	0.023	0.019	42.11	Yes
Barium (dissolved)	0.014	0.018	0.016	25.00	Yes
Cadmium	<0.003	<0.003	<0.003	0.00	Yes
Chromium	<0.007	<0.007	<0.007	0.00	Yes
Chromium (dissolved)	<0.007	<0.007	<0.007	0.00	Yes
Lead	<0.025	<0.025	<0.025	0.00	Yes
Selenium	<0.025	<0.025	<0.025	0.00	Yes
Silver	<0.007	<0.007	<0.007	0.00	Yes
Mercury	<0.0005	<0.0005	<0.0005	0.00	Yes
TEH (diesel)	57.2	<50.0	53.6	13.43	Yes
TEH (waste oil)	<50.0	<50.0	<50.0	0.00	Yes

MW-5 & MW-5 Dup.

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
TEH (diesel) **	<50.0	<50.0	<50.0	0.00	Yes
TEH (waste oil) **	<50.0	<50.0	<50.0	0.00	Yes

MW-5 & MW-5 Dup.

Constituent	Constituent Value	Duplicate Value	Average	RPD	Acceptable
TEH (diesel)	495.0	550.0	522.5	10.53	Yes
TEH (waste oil)	390.0	405.0	397.5	3.77	Yes
TEH (diesel) **	<50.0	<50.0	<50.0	0.00	Yes
TEH (waste oil) **	<50.0	<50.0	<50.0	0.00	Yes

*Samples with reported analytic concentrations above the method detection limit (MDL) but below the reporting limit (RL) can produce variability which may generate RPD values which are non-representative. RPD values are non-representative when any of the following conditions exist: field duplicate pairs are less than five times the RL; one or both sample results are qualified as estimated, rejected, or suspected of blank contamination; or both results are not detected at the RL (non-detect).

**With acid gel cleanup

Appendix J

Laboratory MDLs

SOIL SAMPLES

Reporting Limits subject to change if sample is contaminated or has matrix interferences

Method	Compound	MDL	Reporting Limit	Units
NWTPH-Dx (Diesel & Heavy Oil)				
NWTPH-Dx	Diesel	10	10	mg/Kg
NWTPH-Dx	Heavy Oil	50	50	mg/Kg
METALS				
SW 846-6010C	Arsenic	0.4	2.5	mg/Kg
SW 846-6010C	Barium	0.03	0.25	mg/Kg
SW 846-6010C	Cadmium	0.3	0.3	mg/Kg
SW 846-6010C	Chromium	0.7	0.7	mg/Kg
SW 846-6010C	Lead	0.4	2.5	mg/Kg
SW 846-6010C	Selenium	0.4	2.5	mg/Kg
SW 846-6010C	Silver	0.7	0.7	mg/Kg
SW 846 7471B	Mercury	0.005	0.05	mg/Kg
VOLATILE ORGANIC COMPOUNDS				
SW 846 8260C	1,1,1,2-Tetrachloroethane	0.006	0.05	mg/Kg
SW 846 8260C	1,1,1-Trichloroethane	0.006	0.05	mg/Kg
SW 846 8260C	1,1,2,2-Tetrachloroethane	0.030	0.05	mg/Kg
SW 846 8260C	1,1,2-Trichloroethane	0.024	0.05	mg/Kg
SW 846 8260C	1,1-Dichloroethane	0.022	0.05	mg/Kg
SW 846 8260C	1,1-Dichloroethene	0.033	0.05	mg/Kg
SW 846 8260C	1,1-Dichloropropene	0.026	0.05	mg/Kg
SW 846 8260C	1,2,3-Trichlorobenzene	0.024	0.05	mg/Kg
SW 846 8260C	1,2,3-Trichloropropane	0.025	0.05	mg/Kg
SW 846 8260C	1,2,4-Trichlorobenzene	0.023	0.05	mg/Kg
SW 846 8260C	1,2,4-Trimethylbenzene	0.011	0.05	mg/Kg
SW 846 8260C	1,2-Dibromoethane (EDB)	0.02	0.05	mg/Kg
SW 846 8260C	1,3,5-Trimethylbenzene	0.015	0.05	mg/Kg
SW 846 8260C	1,2-Dichlorobenzene	0.023	0.05	mg/Kg
SW 846 8260C	1,2-Dichloroethane	0.026	0.05	mg/Kg
SW 846 8260C	1,2-Dichloropropane	0.022	0.05	mg/Kg
SW 846 8260C	1,3-Dichlorobenzene	0.012	0.05	mg/Kg
SW 846 8260C	1,3-Dichloropropane	0.018	0.05	mg/Kg
SW 846 8260C	1,4-Dichlorobenzene	0.017	0.05	mg/Kg
SW 846 8260C	2-Chloroethylvinyl Ether	0.060	0.5	mg/Kg
SW 846 8260C	2,2-Dichloropropane	0.022	0.05	mg/Kg
SW 846 8260C	2-Butanone (MEK)	0.20	0.5	mg/Kg
SW 846 8260C	2-Chlorotoluene	0.0085	0.05	mg/Kg
SW 846 8260C	2-Hexanone (MBK)	0.085	0.5	mg/Kg
SW 846 8260C	4-Chlorotoluene	0.015	0.05	mg/Kg
SW 846 8260C	4-Methyl-2-pentanone (MIBK)	0.095	0.5	mg/Kg
SW 846 8260C	Acetone	0.11	0.5	mg/Kg
SW 846 8260C	Acrolein	0.39	0.5	mg/Kg
SW 846 8260C	Acrylonitrile	0.11	0.5	mg/Kg

SW 846 8260C	Benzene	0.02	0.05	mg/Kg
SW 846 8260C	Bromobenzene	0.012	0.05	mg/Kg
SW 846 8260C	Bromochloromethane	0.027	0.05	mg/Kg
SW 846 8260C	Bromodichloromethane	0.027	0.05	mg/Kg
SW 846 8260C	Bromoform	0.023	0.05	mg/Kg
SW 846 8260C	Bromomethane	0.045	0.05	mg/Kg
SW 846 8260C	Carbon Tetrachloride	0.021	0.05	mg/Kg
SW 846 8260C	Chlorobenzene	0.013	0.05	mg/Kg
SW 846 8260C	Chlorodibromomethane	0.026	0.05	mg/Kg
SW 846 8260C	Chloroethane	0.05	0.05	mg/Kg
SW 846 8260C	Chloroform	0.019	0.05	mg/Kg
SW 846 8260C	Chloromethane	0.05	0.05	mg/Kg
SW 846 8260C	cis-1,2-Dichloroethene	0.029	0.05	mg/Kg
SW 846 8260C	cis-1,3-Dichloropropene	0.012	0.05	mg/Kg
SW 846 8260C	Dibromomethane	0.026	0.05	mg/Kg
SW 846 8260C	Dichlorodifluoromethane	0.05	0.05	mg/Kg
SW 846 8260C	Ethylbenzene	0.014	0.05	mg/Kg
SW 846 8260C	Hexachlorobutadiene	0.016	0.05	mg/Kg
SW 846 8260C	Isopropylbenzene	0.009	0.05	mg/Kg
SW 846 8260C	Methyl bromide	0.05	0.05	mg/Kg
SW 846 8260C	Methyl tert-butyl ether	0.013	0.05	mg/Kg
SW 846 8260C	Methylene chloride	0.12	0.25	mg/Kg
SW 846 8260C	Naphthalene	0.011	0.05	mg/Kg
SW 846 8260C	n-Butylbenzene	0.026	0.05	mg/Kg
SW 846 8260C	n-Propylbenzene	0.013	0.05	mg/Kg
SW 846 8260C	p-Isopropyltoluene	0.05	0.05	mg/Kg
SW 846 8260C	sec-Butylbenzene	0.014	0.05	mg/Kg
SW 846 8260C	Styrene	0.015	0.05	mg/Kg
SW 846 8260C	tert-Butylbenzene	0.013	0.05	mg/Kg
SW 846 8260C	Tetrachloroethene	0.020	0.05	mg/Kg
SW 846 8260C	Toluene	0.020	0.05	mg/Kg
SW 846 8260C	Total Xylenes	0.038	0.1	mg/Kg
SW 846 8260C	trans-1,2-Dichloroethene	0.021	0.05	mg/Kg
SW 846 8260C	trans-1,3-Dichloropropene	0.009	0.05	mg/Kg
SW 846 8260C	Trichloroethene	0.027	0.05	mg/Kg
SW 846 8260C	Trichlorofluoromethane	0.027	0.05	mg/Kg
SW 846 8260C	Vinyl Acetate	0.07	0.5	mg/Kg
SW 846 8260C	Vinyl chloride	0.009	0.05	mg/Kg
PAH's				
SW 846 8270D	1-Methylnaphthalene	0.006	0.08	mg/Kg
SW 846 8270D	2-Methylnaphthalene	0.010	0.08	mg/Kg
SW 846 8270D	Acenaphthene	0.010	0.03	mg/Kg
SW 846 8270D	Acenaphthylene	0.010	0.03	mg/Kg
SW 846 8270D	Anthracene	0.010	0.03	mg/Kg
SW 846 8270D	Benzo(a)Anthracene	0.011	0.03	mg/Kg
SW 846 8270D	Benzo(a)Pyrene	0.010	0.03	mg/Kg
SW 846 8270D	Benzo(b)Fluoranthene	0.010	0.03	mg/Kg

SW 846 8270D	Benzo(ghi)Perylene	0.007	0.03	mg/Kg
SW 846 8270D	Benzo(k)Fluoranthene	0.009	0.03	mg/Kg
SW 846 8270D	Chrysene	0.010	0.03	mg/Kg
SW 846 8270D	Dibenzo(a,h)Anthracene	0.011	0.03	mg/Kg
SW 846 8270D	Fluoranthene	0.009	0.03	mg/Kg
SW 846 8270D	Fluorene	0.008	0.03	mg/Kg
SW 846 8270D	Indeno(1,2,3-cd)Pyrene	0.010	0.03	mg/Kg
SW 846 8270D	Naphthalene	0.010	0.03	mg/Kg
SW 846 8270D	Phenanthrene	0.010	0.03	mg/Kg
SW 846 8270D	Pyrene	0.017	0.03	mg/Kg
FULL Semi-VOA (some are duplicated from the PAH list above)				
SW 846 8270D	1,2 diphenylhydrazine	0.011	0.08	mg/Kg
SW 846 8270D	1,2,4-Trichlorobenzene	0.010	0.08	mg/Kg
SW 846 8270D	1,2-Dichlorobenzene	0.009	0.08	mg/Kg
SW 846 8270D	1,3-Dichlorobenzene	0.009	0.08	mg/Kg
SW 846 8270D	1,4-Dichlorobenzene	0.009	0.08	mg/Kg
SW 846 8270D	1-Methylnaphthalene	0.006	0.08	mg/Kg
SW 846 8270D	2,3,4,5-tetrachlorophenol	0.026	0.08	mg/Kg
SW 846 8270D	2,3,4,6-tetrachlorophenol	0.026	0.08	mg/Kg
SW 846 8270D	2,4,5-Trichlorophenol	0.020	0.08	mg/Kg
SW 846 8270D	2,4,6-Trichlorophenol	0.010	0.08	mg/Kg
SW 846 8270D	2,4-Dichlorophenol	0.013	0.08	mg/Kg
SW 846 8270D	2,4-Dimethylphenol	0.014	0.08	mg/Kg
SW 846 8270D	2,4-Dinitrophenol	0.010	0.33	mg/Kg
SW 846 8270D	2,4-Dinitrotoluene	0.006	0.08	mg/Kg
SW 846 8270D	2,6-Dinitrotoluene	0.007	0.08	mg/Kg
SW 846 8270D	2-Chloronaphthalene	0.011	0.08	mg/Kg
SW 846 8270D	2-Chlorophenol	0.013	0.08	mg/Kg
SW 846 8270D	2-Methylnaphthalene	0.010	0.08	mg/Kg
SW 846 8270D	2-Methylphenol	0.017	0.08	mg/Kg
SW 846 8270D	2-Nitroaniline	0.008	0.08	mg/Kg
SW 846 8270D	2-Nitrophenol	0.016	0.08	mg/Kg
SW 846 8270D	3,3-Dichlorobenzidine	0.042	0.67	mg/Kg
SW 846 8270D	3-Methylchloranthrene	0.007	0.08	mg/Kg
SW 846 8270D	3-Nitroaniline	0.012	0.08	mg/Kg
SW 846 8270D	4,6-Dinitro-2-Methylphenol	0.010	0.33	mg/Kg
SW 846 8270D	4-Bromophenyl-phenylether	0.012	0.08	mg/Kg
SW 846 8270D	4-Chloro-3-Methylphenol	0.010	0.08	mg/Kg
SW 846 8270D	4-Chloroaniline	0.016	0.08	mg/Kg
SW 846 8270D	4-Chlorophenyl-phenylether	0.008	0.08	mg/Kg
SW 846 8270D	4-Methylphenol	0.012	0.08	mg/Kg
SW 846 8270D	4-Nitroaniline	0.021	0.08	mg/Kg
SW 846 8270D	4-Nitrophenol	0.037	0.08	mg/Kg
SW 846 8270D	7H-Dibenzo(c,g)carbazole	0.007	0.08	mg/Kg
SW 846 8270D	Acenaphthene	0.010	0.03	mg/Kg
SW 846 8270D	Acenaphthylene	0.010	0.03	mg/Kg
SW 846 8270D	Aniline	0.075	0.33	mg/Kg

SW 846 8270D	Anthracene	0.010	0.03	mg/Kg
SW 846 8270D	Benzidine	0.059	0.67	mg/Kg
SW 846 8270D	Benzo(a)Anthracene	0.011	0.03	mg/Kg
SW 846 8270D	Benzo(a)Pyrene	0.010	0.03	mg/Kg
SW 846 8270D	Benzo(b)Fluoranthene	0.010	0.03	mg/Kg
SW 846 8270D	Benzo(ghi)Perylene	0.007	0.03	mg/Kg
SW 846 8270D	Benzo(j)fluoranthene	0.033	0.03	mg/Kg
SW 846 8270D	Benzo(k)Fluoranthene	0.009	0.03	mg/Kg
SW 846 8270D	Benzo(r,s,t)pentaphene	0.033	0.03	mg/Kg
SW 846 8270D	Benzoic Acid	0.026	0.33	mg/Kg
SW 846 8270D	Benzyl Alcohol	0.016	0.08	mg/Kg
SW 846 8270D	Biphenyl	0.010	0.08	mg/Kg
SW 846 8270D	bis(2-Chloroethoxy)Methane	0.013	0.08	mg/Kg
SW 846 8270D	Bis(2-Chloroethyl)Ether	0.063	0.08	mg/Kg
SW 846 8270D	bis(2-chloroisopropyl)Ether	0.011	0.08	mg/Kg
SW 846 8270D	bis(2-Ethylhexyl)Phthalate	0.022	0.08	mg/Kg
SW 846 8270D	Butylbenzylphthalate	0.021	0.08	mg/Kg
SW 846 8270D	Carbazole	0.012	0.08	mg/Kg
SW 846 8270D	Chrysene	0.010	0.03	mg/Kg
SW 846 8270D	Dibenzo(a,e)pyrene	0.033	0.03	mg/Kg
SW 846 8270D	Dibenzo(a,h)acridine	0.033	0.03	mg/Kg
SW 846 8270D	Dibenzo(a,h)Anthracene	0.011	0.03	mg/Kg
SW 846 8270D	Dibenzo(a,h)pyrene	0.033	0.03	mg/Kg
SW 846 8270D	Dibenzo(a,j)Acridine	0.033	0.03	mg/Kg
SW 846 8270D	Dibenzofuran	0.008	0.08	mg/Kg
SW 846 8270D	Diethylphthalate	0.006	0.08	mg/Kg
SW 846 8270D	Dimethyl Phthalate	0.009	0.08	mg/Kg
SW 846 8270D	Di-n-Butylphthalate	0.012	0.08	mg/Kg
SW 846 8270D	Di-n-Octyl Phthalate	0.026	0.08	mg/Kg
SW 846 8270D	Fluoranthene	0.009	0.03	mg/Kg
SW 846 8270D	Fluorene	0.008	0.03	mg/Kg
SW 846 8270D	Hexachlorobenzene	0.012	0.08	mg/Kg
SW 846 8270D	Hexachlorobutadiene	0.011	0.08	mg/Kg
SW 846 8270D	Hexachlorocyclopentadiene	0.022	0.08	mg/Kg
SW 846 8270D	Hexachloroethane	0.009	0.08	mg/Kg
SW 846 8270D	Indeno(1,2,3-cd)Pyrene	0.010	0.03	mg/Kg
SW 846 8270D	Isophorone	0.016	0.08	mg/Kg
SW 846 8270D	Naphthalene	0.010	0.03	mg/Kg
SW 846 8270D	n-decane	0.000	0.08	mg/Kg
SW 846 8270D	Nitrobenzene	0.010	0.08	mg/Kg
SW 846 8270D	N-nitrosodimethylamine	0.010	0.08	mg/Kg
SW 846 8270D	N-Nitroso-Di-n-Propylamine	0.014	0.08	mg/Kg
SW 846 8270D	N-Nitrosodiphenylamine	0.007	0.08	mg/Kg
SW 846 8270D	n-octadecane	0.000	0.08	mg/Kg
SW 846 8270D	Pentachlorophenol	0.020	0.08	mg/Kg
SW 846 8270D	Perylene	0.033	0.03	mg/Kg
SW 846 8270D	Phenanthrene	0.010	0.03	mg/Kg

SW 846 8270D	Phenol	0.018	0.08	mg/Kg
SW 846 8270D	Pyrene	0.017	0.03	mg/Kg
SW 846 8270D	Pyridine	0.026	0.33	mg/Kg

WATER SAMPLES

Reporting Limits subject to change if sample is contaminated or has matrix interferences

Act. Det. Act. Quant

Method	Compound	MDL	Reporting Limit	Units
NWTPH-Dx (Diesel & Heavy Oil)				
NWTPH-Dx	Diesel	50	50	ug/L
NWTPH-Dx	Heavy Oil	50	50	ug/L
METALS				
SW 846-6010C	Arsenic	0.004	0.025	mg/L
SW 846-6010C	Barium	0.001	0.002	mg/L
SW 846-6010C	Cadmium	0.0025	0.003	mg/L
SW 846-6010C	Chromium	0.006	0.007	mg/L
SW 846-6010C	Lead	0.0015	0.025	mg/L
SW 846-6010C	Selenium	0.012	0.025	mg/L
SW 846-6010C	Silver	0.002	0.007	mg/L
SW 846 7470A	Mercury	0.00008	0.0005	mg/L
VOLATILE ORGANIC COMPOUNDS				
SW 846 8260C	1,1,1,2-Tetrachloroethane	0.12	1	µg/L
SW 846 8260C	1,1,1-Trichloroethane	0.12	1	µg/L
SW 846 8260C	1,1,2,2-Tetrachloroethane	0.59	1	µg/L
SW 846 8260C	1,1,2-Trichloroethane	0.48	1	µg/L
SW 846 8260C	1,1-Dichloroethane	0.44	1	µg/L
SW 846 8260C	1,1-Dichloroethene	0.66	1	µg/L
SW 846 8260C	1,1-Dichloropropene	0.51	1	µg/L
SW 846 8260C	1,2,3-Trichlorobenzene	0.47	1	µg/L
SW 846 8260C	1,2,3-Trichloropropane	0.49	1	µg/L
SW 846 8260C	1,2,4-Trichlorobenzene	0.45	1	µg/L
SW 846 8260C	1,2,4-Trimethylbenzene	0.22	1	µg/L
SW 846 8260C	1,2-Dibromoethane (EDB)	0.4	1	µg/L
SW 846 8260C	1,3,5-Trimethylbenzene	0.29	1	µg/L
SW 846 8260C	1,2-Dichlorobenzene	0.46	1	µg/L
SW 846 8260C	1,2-Dichloroethane	0.52	1	µg/L
SW 846 8260C	1,2-Dichloropropane	0.43	1	µg/L
SW 846 8260C	1,3-Dichlorobenzene	0.24	1	µg/L
SW 846 8260C	1,3-Dichloropropane	0.36	1	µg/L
SW 846 8260C	1,4-Dichlorobenzene	0.33	1	µg/L
SW 846 8260C	2-Chloroethylvinyl Ether	1.19	10	µg/L
SW 846 8260C	2,2-Dichloropropane	0.43	1	µg/L
SW 846 8260C	2-Butanone (MEK)	3.96	10	µg/L
SW 846 8260C	2-Chlorotoluene	0.17	1	µg/L
SW 846 8260C	2-Hexanone (MBK)	1.7	10	µg/L
SW 846 8260C	4-Chlorotoluene	0.29	1	µg/L
SW 846 8260C	4-Methyl-2-pentanone (MIBK)	1.9	10	µg/L
SW 846 8260C	Acetone	2.2	10	µg/L
SW 846 8260C	Acrolein	7.7	10	µg/L

SW 846 8260C	Acrylonitrile	2.2	10	µg/L
SW 846 8260C	Benzene	0.4	1	µg/L
SW 846 8260C	Bromobenzene	0.24	1	µg/L
SW 846 8260C	Bromochloromethane	0.54	1	µg/L
SW 846 8260C	Bromodichloromethane	0.54	1	µg/L
SW 846 8260C	Bromoform	0.46	1	µg/L
SW 846 8260C	Bromomethane	0.89	1	µg/L
SW 846 8260C	Carbon Tetrachloride	0.41	1	µg/L
SW 846 8260C	Chlorobenzene	0.26	1	µg/L
SW 846 8260C	Chlorodibromomethane	0.51	1	µg/L
SW 846 8260C	Chloroethane	1	1	µg/L
SW 846 8260C	Chloroform	0.38	1	µg/L
SW 846 8260C	Chloromethane	1	1	µg/L
SW 846 8260C	cis-1,2-Dichloroethene	0.57	1	µg/L
SW 846 8260C	cis-1,3-Dichloropropene	0.24	1	µg/L
SW 846 8260C	Dibromomethane	0.51	1	µg/L
SW 846 8260C	Dichlorodifluoromethane	1	1	µg/L
SW 846 8260C	Ethylbenzene	0.28	1	µg/L
SW 846 8260C	Hexachlorobutadiene	0.31	1	µg/L
SW 846 8260C	Isopropylbenzene	0.18	1	µg/L
SW 846 8260C	Methyl bromide	1	1	µg/L
SW 846 8260C	Methyl tert-butyl ether	0.26	1	µg/L
SW 846 8260C	Methylene chloride	2.4	5	µg/L
SW 846 8260C	Naphthalene	0.21	1	µg/L
SW 846 8260C	n-Butylbenzene	0.52	1	µg/L
SW 846 8260C	n-Propylbenzene	0.25	1	µg/L
SW 846 8260C	p-Isopropyltoluene	1	1	µg/L
SW 846 8260C	sec-Butylbenzene	0.28	1	µg/L
SW 846 8260C	Styrene	0.29	1	µg/L
SW 846 8260C	tert-Butylbenzene	0.25	1	µg/L
SW 846 8260C	Tetrachloroethene	0.39	1	µg/L
SW 846 8260C	Toluene	0.39	1	µg/L
SW 846 8260C	Total Xylenes	0.76	2	µg/L
SW 846 8260C	trans-1,2-Dichloroethene	0.41	1	µg/L
SW 846 8260C	trans-1,3-Dichloropropene	0.18	1	µg/L
SW 846 8260C	Trichloroethene	0.54	1	µg/L
SW 846 8260C	Trichlorofluoromethane	0.53	1	µg/L
SW 846 8260C	Vinyl Acetate	1.4	10	µg/L
SW 846 8260C	Vinyl chloride	0.18	1	µg/L
PAH's				
SW 846 8270D	1-Methylnaphthalene	0.18	2.5	µg/L
SW 846 8270D	2-Methylnaphthalene	0.29	2.5	µg/L
SW 846 8270D	Acenaphthene	0.29	1	µg/L
SW 846 8270D	Acenaphthylene	0.31	1	µg/L
SW 846 8270D	Anthracene	0.31	1	µg/L
SW 846 8270D	Benzo(a)Anthracene	0.32	1	µg/L
SW 846 8270D	Benzo(a)Pyrene	0.29	1	µg/L

SW 846 8270D	Benzo(b)Fluoranthene	0.3	1	µg/L
SW 846 8270D	Benzo(ghi)Perylene	0.21	1	µg/L
SW 846 8270D	Benzo(k)Fluoranthene	0.28	1	µg/L
SW 846 8270D	Chrysene	0.29	1	µg/L
SW 846 8270D	Dibenzo(a,h)Anthracene	0.32	1	µg/L
SW 846 8270D	Fluoranthene	0.28	1	µg/L
SW 846 8270D	Fluorene	0.25	1	µg/L
SW 846 8270D	Indeno(1,2,3-cd)Pyrene	0.29	1	µg/L
SW 846 8270D	Naphthalene	0.31	1	µg/L
SW 846 8270D	Phenanthrene	0.31	1	µg/L
SW 846 8270D	Pyrene	0.51	1	µg/L
FULL Semi-VOA (some are duplicated from the PAH list above)				
SW 846 8270D	1,2 diphenylhydrazine	0.34	2.5	µg/L
SW 846 8270D	1,2,4-Trichlorobenzene	0.29	2.5	µg/L
SW 846 8270D	1,2-Dichlorobenzene	0.27	2.5	µg/L
SW 846 8270D	1,3-Dichlorobenzene	0.28	2.5	µg/L
SW 846 8270D	1,4-Dichlorobenzene	0.26	2.5	µg/L
SW 846 8270D	1-Methylnaphthalene	0.18	2.5	µg/L
SW 846 8270D	2,3,4,5-tetrachlorophenol	0.78	2.5	µg/L
SW 846 8270D	2,3,4,6-tetrachlorophenol	0.78	2.5	µg/L
SW 846 8270D	2,4,5-Trichlorophenol	0.6	2.5	µg/L
SW 846 8270D	2,4,6-Trichlorophenol	0.29	2.5	µg/L
SW 846 8270D	2,4-Dichlorophenol	0.4	2.5	µg/L
SW 846 8270D	2,4-Dimethylphenol	0.41	2.5	µg/L
SW 846 8270D	2,4-Dinitrophenol	0.29	10	µg/L
SW 846 8270D	2,4-Dinitrotoluene	0.18	2.5	µg/L
SW 846 8270D	2,6-Dinitrotoluene	0.22	2.5	µg/L
SW 846 8270D	2-Chloronaphthalene	0.34	2.5	µg/L
SW 846 8270D	2-Chlorophenol	0.4	2.5	µg/L
SW 846 8270D	2-Methylnaphthalene	0.29	2.5	µg/L
SW 846 8270D	2-Methylphenol	0.52	2.5	µg/L
SW 846 8270D	2-Nitroaniline	0.24	2.5	µg/L
SW 846 8270D	2-Nitrophenol	0.47	2.5	µg/L
SW 846 8270D	3,3-Dichlorobenzidine	1.26	20	µg/L
SW 846 8270D	3-Nitroaniline	0.35	2.5	µg/L
SW 846 8270D	4,6-Dinitro-2-Methylphenol	0.29	10	µg/L
SW 846 8270D	4-Bromophenyl-phenylether	0.36	2.5	µg/L
SW 846 8270D	4-Chloro-3-Methylphenol	0.31	2.5	µg/L
SW 846 8270D	4-Chloroaniline	0.48	2.5	µg/L
SW 846 8270D	4-Chlorophenyl-phenylether	0.25	2.5	µg/L
SW 846 8270D	4-Methylphenol	0.36	2.5	µg/L
SW 846 8270D	4-Nitroaniline	0.64	2.5	µg/L
SW 846 8270D	4-Nitrophenol	1.12	2.5	µg/L
SW 846 8270D	Aniline	2.26	10	µg/L
SW 846 8270D	Benzidine	1.78	20	µg/L
SW 846 8270D	Benzoic Acid	0.79	10	µg/L
SW 846 8270D	Benzyl Alcohol	0.49	2.5	µg/L

SW 846 8270D	Biphenyl	0.3	2.5	µg/L
SW 846 8270D	bis(2-Chloroethoxy)Methane	0.4	2.5	µg/L
SW 846 8270D	Bis(2-Chloroethyl)Ether	1.9	2.5	µg/L
SW 846 8270D	bis(2-chloroisopropyl)Ether	0.32	2.5	µg/L
SW 846 8270D	bis(2-Ethylhexyl)Phthalate	0.66	2.5	µg/L
SW 846 8270D	Butylbenzylphthalate	0.62	2.5	µg/L
SW 846 8270D	Carbazole	0.35	2.5	µg/L
SW 846 8270D	Dibenzofuran	0.25	2.5	µg/L
SW 846 8270D	Diethylphthalate	0.19	2.5	µg/L
SW 846 8270D	Dimethyl Phthalate	0.26	2.5	µg/L
SW 846 8270D	Di-n-Butylphthalate	0.37	2.5	µg/L
SW 846 8270D	Di-n-Octyl Phthalate	0.79	2.5	µg/L
SW 846 8270D	Hexachlorobenzene	0.37	2.5	µg/L
SW 846 8270D	Hexachlorobutadiene	0.32	2.5	µg/L
SW 846 8270D	Hexachlorocyclopentadiene	0.67	2.5	µg/L
SW 846 8270D	Hexachloroethane	0.28	2.5	µg/L
SW 846 8270D	Isophorone	0.47	2.5	µg/L
SW 846 8270D	Nitrobenzene	0.29	2.5	µg/L
SW 846 8270D	n-decane	2.5	2.5	µg/L
SW 846 8270D	N-nitrosodimethylamine	0.31	2.5	µg/L
SW 846 8270D	N-Nitroso-Di-n-Propylamine	0.41	2.5	µg/L
SW 846 8270D	N-Nitrosodiphenylamine	0.21	2.5	µg/L
SW 846 8270D	n-octadecane	2.5	2.5	µg/L
SW 846 8270D	Pentachlorophenol	0.59	2.5	µg/L
SW 846 8270D	Phenol	0.53	2.5	µg/L
SW 846 8270D	Pyridine	0.79	10	µg/L
SW 846 8270D	3-Methylchloranthrene	0.2	0.2	µg/L
SW 846 8270D	7H-Dibenzo(c,g)carbazole	0.2	0.2	µg/L
SW 846 8270D	Acenaphthene	0.29	1	µg/L
SW 846 8270D	Acenaphthylene	0.31	1	µg/L
SW 846 8270D	Anthracene	0.31	1	µg/L
SW 846 8270D	Benzo(a)Anthracene	0.32	1	µg/L
SW 846 8270D	Benzo(a)Pyrene	0.29	1	µg/L
SW 846 8270D	Benzo(b)Fluoranthene	0.3	1	µg/L
SW 846 8270D	Benzo(ghi)Perylene	0.21	1	µg/L
SW 846 8270D	Benzo(j)fluoranthene	1	1	µg/L
SW 846 8270D	Benzo(k)Fluoranthene	0.28	1	µg/L
SW 846 8270D	Benzo(r,s,t)pentaphene	1	1	µg/L
SW 846 8270D	Chrysene	0.29	1	µg/L
SW 846 8270D	Dibenzo(a,e)pyrene	1	1	µg/L
SW 846 8270D	Dibenzo(a,h)acridine	1	1	µg/L
SW 846 8270D	Dibenzo(a,h)Anthracene	0.32	1	µg/L
SW 846 8270D	Dibenzo(a,h)pyrene	1	1	µg/L
SW 846 8270D	Dibenzo(a,j)Acridine	1	1	µg/L
SW 846 8270D	Fluoranthene	0.28	1	µg/L
SW 846 8270D	Fluorene	0.25	1	µg/L
SW 846 8270D	Indeno(1,2,3-cd)Pyrene	0.29	1	µg/L

SW 846 8270D	Naphthalene	0.31	1	µg/L
SW 846 8270D	Perylene	1	1	µg/L
SW 846 8270D	Phenanthrene	0.31	1	µg/L
SW 846 8270D	Pyrene	0.51	1	µg/L

Appendix K

Laboratory Results

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-1
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.326	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.102	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	0.034	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.007	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	91	NWTPH-Dx	4-Bromofluorobenzene	1010	SW846 8260D
Dibromofluoromethane	103	SW846 8260D	Nitrobenzene-d5	79	SW846 8270E
1,2-Dichloroethane-d4	102	SW846 8260D	2-Fluorobiphenyl	84	SW846 8270E
Toluene-d8	101	SW846 8260D	p-Terphenyl-d14	83	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-1
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	91	NWTPH-Dx	4-Bromofluorobenzene	1010	SW846 8260D
Dibromofluoromethane	103	SW846 8260D	Nitrobenzene-d5	79	SW846 8270E
1,2-Dichloroethane-d4	102	SW846 8260D	2-Fluorobiphenyl	84	SW846 8270E
Toluene-d8	101	SW846 8260D	p-Terphenyl-d14	83	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-1
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 1

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	91	NWTPH-Dx
Dibromofluoromethane	103	SW846 8260D
1,2-Dichloroethane-d4	102	SW846 8260D
Toluene-d8	101	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	1010	SW846 8260D
Nitrobenzene-d5	79	SW846 8270E
2-Fluorobiphenyl	84	SW846 8270E
p-Terphenyl-d14	83	SW846 8270E

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-9
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	111	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.089	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.070	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<1.00	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	112	NWTPH-Dx	4-Bromofluorobenzene	98	SW846 8260D
Dibromofluoromethane	106	SW846 8260D	Nitrobenzene-d5	92	SW846 8270E
1,2-Dichloroethane-d4	106	SW846 8260D	2-Fluorobiphenyl	82	SW846 8270E
Toluene-d8	103	SW846 8260D	p-Terphenyl-d14	102	SW846 8270E

SPECTRA LABORATORIES

Marie Holt
 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-9
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	112	NWTPH-Dx	4-Bromofluorobenzene	98	SW846 8260D
Dibromofluoromethane	106	SW846 8260D	Nitrobenzene-d5	92	SW846 8270E
1,2-Dichloroethane-d4	106	SW846 8260D	2-Fluorobiphenyl	82	SW846 8270E
Toluene-d8	103	SW846 8260D	p-Terphenyl-d14	102	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-9
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:2

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	112	NWTPH-Dx
Dibromofluoromethane	106	SW846 8260D
1,2-Dichloroethane-d4	106	SW846 8260D
Toluene-d8	103	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	98	SW846 8260D
Nitrobenzene-d5	92	SW846 8270E
2-Fluorobiphenyl	82	SW846 8270E
p-Terphenyl-d14	102	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-5
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:3

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.058	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.037	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	110	NWTPH-Dx	4-Bromofluorobenzene	96	SW846 8260D
Dibromofluoromethane	106	SW846 8260D	Nitrobenzene-d5	83	SW846 8270E
1,2-Dichloroethane-d4	107	SW846 8260D	2-Fluorobiphenyl	77	SW846 8270E
Toluene-d8	100	SW846 8260D	p-Terphenyl-d14	109	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

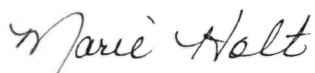
Project: Progress Rail
 Client ID: SB-5
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:3

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	110	NWTPH-Dx	4-Bromofluorobenzene	96	SW846 8260D
Dibromofluoromethane	106	SW846 8260D	Nitrobenzene-d5	83	SW846 8270E
1,2-Dichloroethane-d4	107	SW846 8260D	2-Fluorobiphenyl	77	SW846 8270E
Toluene-d8	100	SW846 8260D	p-Terphenyl-d14	109	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-5
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:3

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	110	NWTPH-Dx
Dibromofluoromethane	106	SW846 8260D
1,2-Dichloroethane-d4	107	SW846 8260D
Toluene-d8	100	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	96	SW846 8260D
Nitrobenzene-d5	83	SW846 8270E
2-Fluorobiphenyl	77	SW846 8270E
p-Terphenyl-d14	109	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-21
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:4

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.116	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.046	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	95	NWTPH-Dx	4-Bromofluorobenzene	100	SW846 8260D
Dibromofluoromethane	106	SW846 8260D	Nitrobenzene-d5	78	SW846 8270E
1,2-Dichloroethane-d4	106	SW846 8260D	2-Fluorobiphenyl	72	SW846 8270E
Toluene-d8	104	SW846 8260D	p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-21
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:4

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.957	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.957	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.957	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	95	NWTPH-Dx	4-Bromofluorobenzene	100	SW846 8260D
Dibromofluoromethane	106	SW846 8260D	Nitrobenzene-d5	78	SW846 8270E
1,2-Dichloroethane-d4	106	SW846 8260D	2-Fluorobiphenyl	72	SW846 8270E
Toluene-d8	104	SW846 8260D	p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-21
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:4

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.957	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.957	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.957	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.957	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.957	µg/L	SW846 8270E
Chrysene	<0.957	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.957	µg/L	SW846 8270E
Fluoranthene	<0.957	µg/L	SW846 8270E
Fluorene	<0.957	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.957	µg/L	SW846 8270E
Naphthalene	<0.957	µg/L	SW846 8270E
Phenanthrene	<0.957	µg/L	SW846 8270E
Pyrene	<0.957	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	95	NWTPH-Dx
Dibromofluoromethane	106	SW846 8260D
1,2-Dichloroethane-d4	106	SW846 8260D
Toluene-d8	104	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	100	SW846 8260D
Nitrobenzene-d5	78	SW846 8270E
2-Fluorobiphenyl	72	SW846 8270E
p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-16
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:5

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.042	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.027	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	100	NWTPH-Dx	4-Bromofluorobenzene	98	SW846 8260D
Dibromofluoromethane	108	SW846 8260D	Nitrobenzene-d5	68	SW846 8270E
1,2-Dichloroethane-d4	108	SW846 8260D	2-Fluorobiphenyl	67	SW846 8270E
Toluene-d8	100	SW846 8260D	p-Terphenyl-d14	112	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-16
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:5

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	100	NWTPH-Dx	4-Bromofluorobenzene	98	SW846 8260D
Dibromofluoromethane	108	SW846 8260D	Nitrobenzene-d5	68	SW846 8270E
1,2-Dichloroethane-d4	108	SW846 8260D	2-Fluorobiphenyl	67	SW846 8270E
Toluene-d8	100	SW846 8260D	p-Terphenyl-d14	112	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-16
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:5

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

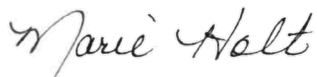
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	100	NWTPH-Dx
Dibromofluoromethane	108	SW846 8260D
1,2-Dichloroethane-d4	108	SW846 8260D
Toluene-d8	100	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
4-Bromofluorobenzene	98	SW846 8260D
Nitrobenzene-d5	68	SW846 8270E
2-Fluorobiphenyl	67	SW846 8270E
p-Terphenyl-d14	112	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-20
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:6

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.081	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.042	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	111	NWTPH-Dx	4-Bromofluorobenzene	101	SW846 8260D
Dibromofluoromethane	107	SW846 8260D	Nitrobenzene-d5	61	SW846 8270E
1,2-Dichloroethane-d4	109	SW846 8260D	2-Fluorobiphenyl	67	SW846 8270E
Toluene-d8	104	SW846 8260D	p-Terphenyl-d14	109	SW846 8270E

SPECTRA LABORATORIES

Marie Holt
 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-20
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:6

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	111	NWTPH-Dx	4-Bromofluorobenzene	101	SW846 8260D
Dibromofluoromethane	107	SW846 8260D	Nitrobenzene-d5	61	SW846 8270E
1,2-Dichloroethane-d4	109	SW846 8260D	2-Fluorobiphenyl	67	SW846 8270E
Toluene-d8	104	SW846 8260D	p-Terphenyl-d14	109	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-20
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:6

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	111	NWTPH-Dx
Dibromofluoromethane	107	SW846 8260D
1,2-Dichloroethane-d4	109	SW846 8260D
Toluene-d8	104	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	101	SW846 8260D
Nitrobenzene-d5	61	SW846 8270E
2-Fluorobiphenyl	67	SW846 8270E
p-Terphenyl-d14	109	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-19
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 7

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	91.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.063	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.058	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<5.00	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	104	NWTPH-Dx	4-Bromofluorobenzene	98	SW846 8260D
Dibromofluoromethane	111	SW846 8260D	Nitrobenzene-d5	67	SW846 8270E
1,2-Dichloroethane-d4	113	SW846 8260D	2-Fluorobiphenyl	70	SW846 8270E
Toluene-d8	101	SW846 8260D	p-Terphenyl-d14	95	SW846 8270E

SPECTRA LABORATORIES

Marie Holt
 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-19
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 7

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	104	NWTPH-Dx	4-Bromofluorobenzene	98	SW846 8260D
Dibromofluoromethane	111	SW846 8260D	Nitrobenzene-d5	67	SW846 8270E
1,2-Dichloroethane-d4	113	SW846 8260D	2-Fluorobiphenyl	70	SW846 8270E
Toluene-d8	101	SW846 8260D	p-Terphenyl-d14	95	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-19
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 7

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	104	NWTPH-Dx
Dibromofluoromethane	111	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	101	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	98	SW846 8260D
Nitrobenzene-d5	67	SW846 8270E
2-Fluorobiphenyl	70	SW846 8270E
p-Terphenyl-d14	95	SW846 8270E

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-18
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 8

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	85.2	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	64.1	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.181	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.120	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	101	NWTPH-Dx	4-Bromofluorobenzene	101	SW846 8260D
Dibromofluoromethane	110	SW846 8260D	Nitrobenzene-d5	48	SW846 8270E
1,2-Dichloroethane-d4	114	SW846 8260D	2-Fluorobiphenyl	48	SW846 8270E
Toluene-d8	102	SW846 8260D	p-Terphenyl-d14	51	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-18
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 8

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	101	NWTPH-Dx	4-Bromofluorobenzene	101	SW846 8260D
Dibromofluoromethane	110	SW846 8260D	Nitrobenzene-d5	48	SW846 8270E
1,2-Dichloroethane-d4	114	SW846 8260D	2-Fluorobiphenyl	48	SW846 8270E
Toluene-d8	102	SW846 8260D	p-Terphenyl-d14	51	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-18
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 8

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	101	NWTPH-Dx
Dibromofluoromethane	110	SW846 8260D
1,2-Dichloroethane-d4	114	SW846 8260D
Toluene-d8	102	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	101	SW846 8260D
Nitrobenzene-d5	48	SW846 8270E
2-Fluorobiphenyl	48	SW846 8270E
p-Terphenyl-d14	51	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-11
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:9

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.119	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.102	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<1.00	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	76	NWTPH-Dx	4-Bromofluorobenzene	102	SW846 8260D
Dibromofluoromethane	110	SW846 8260D	Nitrobenzene-d5	55	SW846 8270E
1,2-Dichloroethane-d4	113	SW846 8260D	2-Fluorobiphenyl	58	SW846 8270E
Toluene-d8	102	SW846 8260D	p-Terphenyl-d14	64	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-11
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:9

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<1.00	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	76	NWTPH-Dx	4-Bromofluorobenzene	102	SW846 8260D
Dibromofluoromethane	110	SW846 8260D	Nitrobenzene-d5	55	SW846 8270E
1,2-Dichloroethane-d4	113	SW846 8260D	2-Fluorobiphenyl	58	SW846 8270E
Toluene-d8	102	SW846 8260D	p-Terphenyl-d14	64	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-11
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:9

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	76	NWTPH-Dx
Dibromofluoromethane	110	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	102	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	102	SW846 8260D
Nitrobenzene-d5	55	SW846 8270E
2-Fluorobiphenyl	58	SW846 8270E
p-Terphenyl-d14	64	SW846 8270E

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: Dup-A
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 10

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.248	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.095	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0*	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	98	NWTPH-Dx	4-Bromofluorobenzene	102	SW846 8260D
Dibromofluoromethane	109	SW846 8260D	Nitrobenzene-d5	79	SW846 8270E
1,2-Dichloroethane-d4	112	SW846 8260D	2-Fluorobiphenyl	76	SW846 8270E
Toluene-d8	101	SW846 8260D	p-Terphenyl-d14	92	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: Dup-A
 Sample Matrix: Water
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 10

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00*	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	98	NWTPH-Dx	4-Bromofluorobenzene	102	SW846 8260D
Dibromofluoromethane	109	SW846 8260D	Nitrobenzene-d5	79	SW846 8270E
1,2-Dichloroethane-d4	112	SW846 8260D	2-Fluorobiphenyl	76	SW846 8270E
Toluene-d8	101	SW846 8260D	p-Terphenyl-d14	92	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-A
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 10

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	98	NWTPH-Dx
Dibromofluoromethane	109	SW846 8260D
1,2-Dichloroethane-d4	112	SW846 8260D
Toluene-d8	101	SW846 8260D

Surrogate	Recovery	Method
4-Bromofluorobenzene	102	SW846 8260D
Nitrobenzene-d5	79	SW846 8270E
2-Fluorobiphenyl	76	SW846 8270E
p-Terphenyl-d14	92	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Field Blank
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 11

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0*	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<1.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00*	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
Dibromofluoromethane	113	SW846 8260D
1,2-Dichloroethane-d4	114	SW846 8260D
Toluene-d8	104	SW846 8260D
4-Bromofluorobenzene	103	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Field Blank
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 11

Analyte	Result	Units	Method
Ethylbenzene	<1.00	µg/L	SW846 8260D
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D
Iodomethane	<5.00	µg/L	SW846 8260D
Isopropylbenzene	<1.00	µg/L	SW846 8260D
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D
Methylene chloride	<5.00	µg/L	SW846 8260D
Naphthalene	<1.00	µg/L	SW846 8260D
Styrene	<1.00	µg/L	SW846 8260D
Tetrachloroethene	<1.00	µg/L	SW846 8260D
Toluene	<1.00	µg/L	SW846 8260D
Total Xylenes	<2.00	µg/L	SW846 8260D
Trichloroethene	<1.00	µg/L	SW846 8260D
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Vinyl Acetate	<10.0	µg/L	SW846 8260D
Vinyl chloride	<1.00	µg/L	SW846 8260D
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
n-Butylbenzene	<1.00	µg/L	SW846 8260D
n-Propylbenzene	<1.00	µg/L	SW846 8260D
sec-Butylbenzene	<1.00	µg/L	SW846 8260D
tert-Butylbenzene	<1.00	µg/L	SW846 8260D
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
Dibromofluoromethane	113	SW846 8260D
1,2-Dichloroethane-d4	114	SW846 8260D
Toluene-d8	104	SW846 8260D
4-Bromofluorobenzene	103	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Trip Blank
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 12

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<5.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D

*Sample was ran outside of hold time, results are an estimate. As all other samples in the project were non detects, results uneffected.

Surrogate	Recovery	Method
Dibromofluoromethane	118	SW846 8260D
1,2-Dichloroethane-d4	100	SW846 8260D
Toluene-d8	100	SW846 8260D
4-Bromofluorobenzene	109	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Trip Blank
Sample Matrix: Water
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 12

Analyte	Result	Units	Method
Ethylbenzene	<1.00	µg/L	SW846 8260D
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D
Iodomethane	<5.00	µg/L	SW846 8260D
Isopropylbenzene	<1.00	µg/L	SW846 8260D
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D
Methylene chloride	<5.00	µg/L	SW846 8260D
Naphthalene	<1.00	µg/L	SW846 8260D
Styrene	<1.00	µg/L	SW846 8260D
Tetrachloroethene	<1.00	µg/L	SW846 8260D
Toluene	<1.00	µg/L	SW846 8260D
Total Xylenes	<2.00	µg/L	SW846 8260D
Trichloroethene	<1.00	µg/L	SW846 8260D
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Vinyl Acetate	<10.0	µg/L	SW846 8260D
Vinyl chloride	<1.00	µg/L	SW846 8260D
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
n-Butylbenzene	<1.00	µg/L	SW846 8260D
n-Propylbenzene	<1.00	µg/L	SW846 8260D
sec-Butylbenzene	<1.00	µg/L	SW846 8260D
tert-Butylbenzene	<1.00	µg/L	SW846 8260D
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D

Analyte	Result	Units	Method
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*Sample was ran outside of hold time, results are an estimate. As all other samples in the project were non detects, results uneffected.

Surrogate	Recovery	Method
Dibromofluoromethane	118	SW846 8260D
1,2-Dichloroethane-d4	100	SW846 8260D
Toluene-d8	100	SW846 8260D
4-Bromofluorobenzene	109	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-1 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 13

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0066	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0066	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0066	mg/Kg	SW846 8260D
Total Barium	17.2	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0066	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0066	mg/Kg	SW846 8260D
Total Chromium	13.2	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0066	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0066	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0066	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.066	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0066	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0066	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.066	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0066	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0066	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0066	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0066	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0066	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.066	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0066	mg/Kg	SW846 8260D	Acetone	<0.066	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0066	mg/Kg	SW846 8260D	Acrolein	<0.066	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0066	mg/Kg	SW846 8260D	Acrylonitrile	<0.066	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0066	mg/Kg	SW846 8260D	Benzene	<0.0066	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0066	mg/Kg	SW846 8260D	Bromobenzene	<0.0066	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0066	mg/Kg	SW846 8260D	Bromochloromethane	<0.0066	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0066	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0066	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.066	mg/Kg	SW846 8260D	Bromoform	<0.0066	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0066	mg/Kg	SW846 8260D	Bromomethane	<0.0066	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Dibromofluoromethane	109	SW846 8260D
Toluene-d8	102	SW846 8260D
4-Bromofluorobenzene	100	SW846 8260D
1,2-Dichloroethane-d4	102	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	59	NWTPH-Dx
Nitrobenzene-d5	90	SW846 8270E
2-Fluorobiphenyl	91	SW846 8270E
p-Terphenyl-d14	102	SW846 8270E

SPECTRA LABORATORIES


 Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-1 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 13

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0066	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0066	mg/Kg	SW846 8260D
Chlorobenzene	<0.0066	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0066	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0066	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0066	mg/Kg	SW846 8260D
Chloroethane	<0.0066	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0066	mg/Kg	SW846 8260D
Chloroform	<0.0066	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0066	mg/Kg	SW846 8260D
Chloromethane	<0.0066	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0066	mg/Kg	SW846 8260D
Dibromomethane	<0.0066	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0066	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0066	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E
Ethylbenzene	<0.0066	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0066	mg/Kg	SW846 8260D	Acenaphthene	<0.056	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0066	mg/Kg	SW846 8260D	Acenaphthylene	<0.056	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0066	mg/Kg	SW846 8260D	Anthracene	<0.056	mg/Kg	SW846 8270E
Methylene chloride	<0.033	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.056	mg/Kg	SW846 8270E
Naphthalene	<0.013	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.056	mg/Kg	SW846 8270E
Styrene	<0.0066	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0066	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.056	mg/Kg	SW846 8270E
Toluene	<0.0066	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Total Xylenes	<0.013	mg/Kg	SW846 8260D	Chrysene	<0.056	mg/Kg	SW846 8270E
Trichloroethene	<0.0066	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.056	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0066	mg/Kg	SW846 8260D	Fluoranthene	<0.056	mg/Kg	SW846 8270E
Vinyl Acetate	<0.066	mg/Kg	SW846 8260D	Fluorene	<0.056	mg/Kg	SW846 8270E
Vinyl chloride	<0.0066	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.056	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0066	mg/Kg	SW846 8260D	Naphthalene	<0.056	mg/Kg	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	109	SW846 8260D
Toluene-d8	102	SW846 8260D
4-Bromofluorobenzene	100	SW846 8260D
1,2-Dichloroethane-d4	102	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	59	NWTPH-Dx
Nitrobenzene-d5	90	SW846 8270E
2-Fluorobiphenyl	91	SW846 8270E
p-Terphenyl-d14	102	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-1 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 13

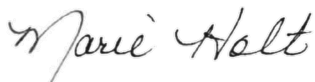
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.056	mg/Kg	SW846 8270E
Pyrene	<0.056	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	109	SW846 8260D
Toluene-d8	102	SW846 8260D
4-Bromofluorobenzene	100	SW846 8260D
1,2-Dichloroethane-d4	102	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	59	NWTPH-Dx
Nitrobenzene-d5	90	SW846 8270E
2-Fluorobiphenyl	91	SW846 8270E
p-Terphenyl-d14	102	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-9 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 14

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0091	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0091	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0091	mg/Kg	SW846 8260D
Total Barium	17.0	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0091	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0091	mg/Kg	SW846 8260D
Total Chromium	10.9	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0091	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0091	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0091	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.055*	mg/Kg	SW846 8260D
Total Mercury	0.034	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0091	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0091	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.0091	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0091	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0091	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0091	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0091	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0091	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.091	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0091	mg/Kg	SW846 8260D	Acetone	<0.22*	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0091	mg/Kg	SW846 8260D	Acrolein	<0.091	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0091	mg/Kg	SW846 8260D	Acrylonitrile	<0.091	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0091	mg/Kg	SW846 8260D	Benzene	<0.0091	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0091	mg/Kg	SW846 8260D	Bromobenzene	<0.0091	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0091	mg/Kg	SW846 8260D	Bromochloromethane	<0.0091	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0091	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0091	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.091	mg/Kg	SW846 8260D	Bromoform	<0.0091	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0091	mg/Kg	SW846 8260D	Bromomethane	<0.0091	mg/Kg	SW846 8260D

*Surrogate recovery is greater than the method defined limit. Results for associated compounds may be biased high.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	133*	SW846 8260D	p-Terphenyl	61	NWTPH-Dx
Toluene-d8	96	SW846 8260D	Nitrobenzene-d5	88	SW846 8270E
4-Bromofluorobenzene	98	SW846 8260D	2-Fluorobiphenyl	82	SW846 8270E
1,2-Dichloroethane-d4	127*	SW846 8260D	p-Terphenyl-d14	92	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-9 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 14

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0091	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0091	mg/Kg	SW846 8260D
Chlorobenzene	<0.0091	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0091	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0091	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0091	mg/Kg	SW846 8260D
Chloroethane	<0.0091	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0091	mg/Kg	SW846 8260D
Chloroform	<0.0091	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0091	mg/Kg	SW846 8260D
Chloromethane	<0.0091	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0091	mg/Kg	SW846 8260D
Dibromomethane	<0.0091	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0091	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0091	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.085	mg/Kg	SW846 8270E
Ethylbenzene	<0.0091	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.085	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0091	mg/Kg	SW846 8260D	Acenaphthene	<0.085	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0091	mg/Kg	SW846 8260D	Acenaphthylene	<0.085	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0091	mg/Kg	SW846 8260D	Anthracene	<0.085	mg/Kg	SW846 8270E
Methylene chloride	<0.045	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.085	mg/Kg	SW846 8270E
Naphthalene	<0.018	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.085	mg/Kg	SW846 8270E
Styrene	<0.0091	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.085	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0091	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.085	mg/Kg	SW846 8270E
Toluene	<0.0091	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.085	mg/Kg	SW846 8270E
Total Xylenes	<0.018	mg/Kg	SW846 8260D	Chrysene	<0.085	mg/Kg	SW846 8270E
Trichloroethene	<0.0091	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.085	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0091	mg/Kg	SW846 8260D	Fluoranthene	<0.085	mg/Kg	SW846 8270E
Vinyl Acetate	<0.091	mg/Kg	SW846 8260D	Fluorene	<0.085	mg/Kg	SW846 8270E
Vinyl chloride	<0.0091	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.085	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0091	mg/Kg	SW846 8260D	Naphthalene	<0.085	mg/Kg	SW846 8270E

*Surrogate recovery is greater than the method defined limit. Results for associated compounds may be biased high.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	133*	SW846 8260D	p-Terphenyl	61	NWTPH-Dx
Toluene-d8	96	SW846 8260D	Nitrobenzene-d5	88	SW846 8270E
4-Bromofluorobenzene	98	SW846 8260D	2-Fluorobiphenyl	82	SW846 8270E
1,2-Dichloroethane-d4	127*	SW846 8260D	p-Terphenyl-d14	92	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-9 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 14

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.085	mg/Kg	SW846 8270E
Pyrene	<0.085	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Surrogate recovery is greater than the method defined limit. Results for associated compounds may be biased high.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	133*	SW846 8260D
Toluene-d8	96	SW846 8260D
4-Bromofluorobenzene	98	SW846 8260D
1,2-Dichloroethane-d4	127*	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	61	NWTPH-Dx
Nitrobenzene-d5	88	SW846 8270E
2-Fluorobiphenyl	82	SW846 8270E
p-Terphenyl-d14	92	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

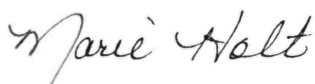
Project: Progress Rail
 Client ID: SB-5 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 15

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0067	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0067	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0067	mg/Kg	SW846 8260D
Total Barium	33.8	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0067	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0067	mg/Kg	SW846 8260D
Total Chromium	12.3	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0067	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0067	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0067	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.067	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0067	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0067	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.067	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0067	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0067	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0067	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0067	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0067	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.067	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0067	mg/Kg	SW846 8260D	Acetone	0.071	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0067	mg/Kg	SW846 8260D	Acrolein	<0.067	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0067	mg/Kg	SW846 8260D	Acrylonitrile	<0.067	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0067	mg/Kg	SW846 8260D	Benzene	<0.0067	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0067	mg/Kg	SW846 8260D	Bromobenzene	<0.0067	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0067	mg/Kg	SW846 8260D	Bromochloromethane	<0.0067	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0067	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0067	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.067	mg/Kg	SW846 8260D	Bromoform	<0.0067	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0067	mg/Kg	SW846 8260D	Bromomethane	<0.0067	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Dibromofluoromethane	115	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	119	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	58	NWTPH-Dx
Nitrobenzene-d5	85	SW846 8270E
2-Fluorobiphenyl	87	SW846 8270E
p-Terphenyl-d14	103	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-5 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 15

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0067	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0067	mg/Kg	SW846 8260D
Chlorobenzene	<0.0067	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0067	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0067	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0067	mg/Kg	SW846 8260D
Chloroethane	<0.0067	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0067	mg/Kg	SW846 8260D
Chloroform	<0.0067	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0067	mg/Kg	SW846 8260D
Chloromethane	<0.0067	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0067	mg/Kg	SW846 8260D
Dibromomethane	<0.0067	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0067	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0067	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E
Ethylbenzene	<0.0067	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0067	mg/Kg	SW846 8260D	Acenaphthene	<0.063	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0067	mg/Kg	SW846 8260D	Acenaphthylene	<0.063	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0067	mg/Kg	SW846 8260D	Anthracene	<0.063	mg/Kg	SW846 8270E
Methylene chloride	<0.034	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.063	mg/Kg	SW846 8270E
Naphthalene	<0.013	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.063	mg/Kg	SW846 8270E
Styrene	<0.0067	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0067	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.063	mg/Kg	SW846 8270E
Toluene	<0.0067	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Total Xylenes	<0.013	mg/Kg	SW846 8260D	Chrysene	<0.063	mg/Kg	SW846 8270E
Trichloroethene	<0.0067	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.063	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0067	mg/Kg	SW846 8260D	Fluoranthene	<0.063	mg/Kg	SW846 8270E
Vinyl Acetate	<0.067	mg/Kg	SW846 8260D	Fluorene	<0.063	mg/Kg	SW846 8270E
Vinyl chloride	<0.0067	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.063	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0067	mg/Kg	SW846 8260D	Naphthalene	<0.063	mg/Kg	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	115	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	119	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	58	NWTPH-Dx
Nitrobenzene-d5	85	SW846 8270E
2-Fluorobiphenyl	87	SW846 8270E
p-Terphenyl-d14	103	SW846 8270E

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-5 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 15


<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.063	mg/Kg	SW846 8270E
Pyrene	<0.063	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	115	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	119	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	58	NWTPH-Dx
Nitrobenzene-d5	85	SW846 8270E
2-Fluorobiphenyl	87	SW846 8270E
p-Terphenyl-d14	103	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

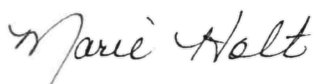
Project: Progress Rail
 Client ID: SB-21 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 16

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0078	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0078	mg/Kg	SW846 8260D
Total Arsenic	3.8	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0078	mg/Kg	SW846 8260D
Total Barium	35.8	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0078	mg/Kg	SW846 8260D
Total Cadmium	0.4	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0078	mg/Kg	SW846 8260D
Total Chromium	12.6	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0078	mg/Kg	SW846 8260D
Total Lead	11.4	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0078	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0078	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.078	mg/Kg	SW846 8260D
Total Mercury	0.045	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0078	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0078	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.078	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0078	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0078	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0078	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0078	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0078	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.078	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0078	mg/Kg	SW846 8260D	Acetone	0.33	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0078	mg/Kg	SW846 8260D	Acrolein	<0.078	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0078	mg/Kg	SW846 8260D	Acrylonitrile	<0.078	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0078	mg/Kg	SW846 8260D	Benzene	<0.0078	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0078	mg/Kg	SW846 8260D	Bromobenzene	<0.0078	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0078	mg/Kg	SW846 8260D	Bromochloromethane	<0.0078	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0078	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0078	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.078	mg/Kg	SW846 8260D	Bromoform	<0.0078	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0078	mg/Kg	SW846 8260D	Bromomethane	<0.0078	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Dibromofluoromethane	120	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	98	SW846 8260D
1,2-Dichloroethane-d4	114	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	101	NWTPH-Dx
Nitrobenzene-d5	92	SW846 8270E
2-Fluorobiphenyl	86	SW846 8270E
p-Terphenyl-d14	164	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-21 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 16

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0078	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0078	mg/Kg	SW846 8260D
Chlorobenzene	<0.0078	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0078	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0078	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0078	mg/Kg	SW846 8260D
Chloroethane	<0.0078	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0078	mg/Kg	SW846 8260D
Chloroform	<0.0078	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0078	mg/Kg	SW846 8260D
Chloromethane	<0.0078	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0078	mg/Kg	SW846 8260D
Dibromomethane	<0.0078	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0078	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0078	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.076	mg/Kg	SW846 8270E
Ethylbenzene	<0.0078	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.076	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0078	mg/Kg	SW846 8260D	Acenaphthene	<0.076	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0078	mg/Kg	SW846 8260D	Acenaphthylene	<0.076	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0078	mg/Kg	SW846 8260D	Anthracene	<0.076	mg/Kg	SW846 8270E
Methylene chloride	<0.039	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.076	mg/Kg	SW846 8270E
Naphthalene	<0.016	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.076	mg/Kg	SW846 8270E
Styrene	<0.0078	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.076	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0078	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.076	mg/Kg	SW846 8270E
Toluene	<0.0078	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.076	mg/Kg	SW846 8270E
Total Xylenes	<0.16	mg/Kg	SW846 8260D	Chrysene	<0.076	mg/Kg	SW846 8270E
Trichloroethene	<0.0078	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.076	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0078	mg/Kg	SW846 8260D	Fluoranthene	<0.076	mg/Kg	SW846 8270E
Vinyl Acetate	<0.078	mg/Kg	SW846 8260D	Fluorene	<0.076	mg/Kg	SW846 8270E
Vinyl chloride	<0.0078	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.076	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0078	mg/Kg	SW846 8260D	Naphthalene	<0.076	mg/Kg	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	120	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	98	SW846 8260D
1,2-Dichloroethane-d4	114	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	101	NWTPH-Dx
Nitrobenzene-d5	92	SW846 8270E
2-Fluorobiphenyl	86	SW846 8270E
p-Terphenyl-d14	164	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-21 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 16

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.076	mg/Kg	SW846 8270E
Pyrene	<0.076	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	120	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	98	SW846 8260D
1,2-Dichloroethane-d4	114	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	101	NWTPH-Dx
Nitrobenzene-d5	92	SW846 8270E
2-Fluorobiphenyl	86	SW846 8270E
p-Terphenyl-d14	164	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-16 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 17

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0058	mg/Kg	SW846 8260D
Total Arsenic	4.0	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0058	mg/Kg	SW846 8260D
Total Barium	15.3	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0058	mg/Kg	SW846 8260D
Total Cadmium	0.4	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D
Total Chromium	13.4	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0058	mg/Kg	SW846 8260D
Total Lead	8.4	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0058	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.058	mg/Kg	SW846 8260D
Total Mercury	0.026	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0058	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0058	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.058	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0058	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0058	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0058	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0058	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0058	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.058	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0058	mg/Kg	SW846 8260D	Acetone	<0.058	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0058	mg/Kg	SW846 8260D	Acrolein	<0.058	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0058	mg/Kg	SW846 8260D	Acrylonitrile	<0.058	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Benzene	<0.0058	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0058	mg/Kg	SW846 8260D	Bromobenzene	<0.0058	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Bromochloromethane	<0.0058	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0058	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0058	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.058	mg/Kg	SW846 8260D	Bromoform	<0.0058	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0058	mg/Kg	SW846 8260D	Bromomethane	<0.0058	mg/Kg	SW846 8260D

*Surrogate recovery is greater than the method defined limit. Results for associated analytes may be biased high. As all associated analytes were non detects for this sample, results uneffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	109	SW846 8260D	p-Terphenyl	88	NWTPH-Dx
Toluene-d8	98	SW846 8260D	Nitrobenzene-d5	89	SW846 8270E
4-Bromofluorobenzene	102	SW846 8260D	2-Fluorobiphenyl	92	SW846 8270E
1,2-Dichloroethane-d4	126*	SW846 8260D	p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-16 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 17

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0058	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0058	mg/Kg	SW846 8260D
Chlorobenzene	<0.0058	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0058	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0058	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0058	mg/Kg	SW846 8260D
Chloroethane	<0.0058	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0058	mg/Kg	SW846 8260D
Chloroform	<0.0058	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0058	mg/Kg	SW846 8260D
Chloromethane	<0.0058	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0058	mg/Kg	SW846 8260D
Dibromomethane	<0.0058	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0058	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0058	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.054	mg/Kg	SW846 8270E
Ethylbenzene	<0.0058	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.054	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0058	mg/Kg	SW846 8260D	Acenaphthene	<0.054	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0058	mg/Kg	SW846 8260D	Acenaphthylene	<0.054	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0058	mg/Kg	SW846 8260D	Anthracene	<0.054	mg/Kg	SW846 8270E
Methylene chloride	0.040	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.054	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.054	mg/Kg	SW846 8270E
Styrene	<0.0058	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.054	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0058	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.054	mg/Kg	SW846 8270E
Toluene	<0.0058	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.054	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.054	mg/Kg	SW846 8270E
Trichloroethene	<0.0058	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.054	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0058	mg/Kg	SW846 8260D	Fluoranthene	<0.054	mg/Kg	SW846 8270E
Vinyl Acetate	<0.058	mg/Kg	SW846 8260D	Fluorene	<0.054	mg/Kg	SW846 8270E
Vinyl chloride	<0.0058	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.054	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0058	mg/Kg	SW846 8260D	Naphthalene	<0.054	mg/Kg	SW846 8270E

*Surrogate recovery is greater than the method defined limit. Results for associated analytes may be biased high. As all associated analytes were non detects for this sample, results uneffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	109	SW846 8260D	p-Terphenyl	88	NWTPH-Dx
Toluene-d8	98	SW846 8260D	Nitrobenzene-d5	89	SW846 8270E
4-Bromofluorobenzene	102	SW846 8260D	2-Fluorobiphenyl	92	SW846 8270E
1,2-Dichloroethane-d4	126*	SW846 8260D	p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-16 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 17

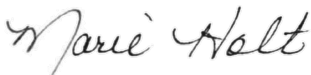
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.054	mg/Kg	SW846 8270E
Pyrene	<0.054	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Surrogate recovery is greater than the method defined limit. Results for associated analytes may be biased high. As all associated analytes were non detects for this sample, results uneffected.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>	<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	109	SW846 8260D	p-Terphenyl	88	NWTPH-Dx
Toluene-d8	98	SW846 8260D	Nitrobenzene-d5	89	SW846 8270E
4-Bromofluorobenzene	102	SW846 8260D	2-Fluorobiphenyl	92	SW846 8270E
1,2-Dichloroethane-d4	126*	SW846 8260D	p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

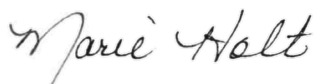
Project: Progress Rail
 Client ID: SB-20 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 18

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0081	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0081	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0081	mg/Kg	SW846 8260D
Total Barium	9.2	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0081	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0081	mg/Kg	SW846 8260D
Total Chromium	9.0	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0081	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0081	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0081	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.081	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0081	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0081	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.081	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0081	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0081	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0081	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0081	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0081	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.081	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0081	mg/Kg	SW846 8260D	Acetone	<0.081	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0081	mg/Kg	SW846 8260D	Acrolein	<0.081	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0081	mg/Kg	SW846 8260D	Acrylonitrile	<0.081	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0081	mg/Kg	SW846 8260D	Benzene	<0.0081	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0081	mg/Kg	SW846 8260D	Bromobenzene	<0.0081	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0081	mg/Kg	SW846 8260D	Bromochloromethane	<0.0081	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0081	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0081	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.081	mg/Kg	SW846 8260D	Bromoform	<0.0081	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0081	mg/Kg	SW846 8260D	Bromomethane	<0.0081	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Dibromofluoromethane	109	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	104	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	82	NWTPH-Dx
Nitrobenzene-d5	73	SW846 8270E
2-Fluorobiphenyl	60	SW846 8270E
p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-20 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 18

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0081	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0081	mg/Kg	SW846 8260D
Chlorobenzene	<0.0081	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0081	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0081	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0081	mg/Kg	SW846 8260D
Chloroethane	<0.0081	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0081	mg/Kg	SW846 8260D
Chloroform	<0.0081	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0081	mg/Kg	SW846 8260D
Chloromethane	<0.0081	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0081	mg/Kg	SW846 8260D
Dibromomethane	<0.0081	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0081	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0081	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E
Ethylbenzene	<0.0081	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0081	mg/Kg	SW846 8260D	Acenaphthene	<0.064	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0081	mg/Kg	SW846 8260D	Acenaphthylene	<0.064	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0081	mg/Kg	SW846 8260D	Anthracene	<0.064	mg/Kg	SW846 8270E
Methylene chloride	<0.041	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.064	mg/Kg	SW846 8270E
Naphthalene	<0.016	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.064	mg/Kg	SW846 8270E
Styrene	<0.0081	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.064	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0081	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.064	mg/Kg	SW846 8270E
Toluene	<0.0081	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.064	mg/Kg	SW846 8270E
Total Xylenes	<0.016	mg/Kg	SW846 8260D	Chrysene	<0.064	mg/Kg	SW846 8270E
Trichloroethene	<0.0081	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.064	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0081	mg/Kg	SW846 8260D	Fluoranthene	<0.064	mg/Kg	SW846 8270E
Vinyl Acetate	<0.081	mg/Kg	SW846 8260D	Fluorene	<0.064	mg/Kg	SW846 8270E
Vinyl chloride	<0.0081	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.064	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0081	mg/Kg	SW846 8260D	Naphthalene	<0.064	mg/Kg	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	109	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	104	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	82	NWTPH-Dx
Nitrobenzene-d5	73	SW846 8270E
2-Fluorobiphenyl	60	SW846 8270E
p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-20 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 18

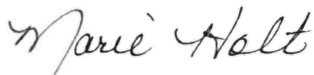
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.064	mg/Kg	SW846 8270E
Pyrene	<0.064	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	109	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	104	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	82	NWTPH-Dx
Nitrobenzene-d5	73	SW846 8270E
2-Fluorobiphenyl	60	SW846 8270E
p-Terphenyl-d14	110	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

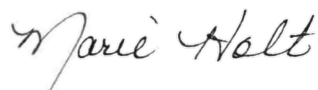
Project: Progress Rail
 Client ID: SB-19 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 19

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0063	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0063	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0063	mg/Kg	SW846 8260D
Total Barium	11.3	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0063	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0063	mg/Kg	SW846 8260D
Total Chromium	14.9	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0063	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0063	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0063	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.063	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0063	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0063	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.063	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0063	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0063	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0063	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0063	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0063	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.063	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0063	mg/Kg	SW846 8260D	Acetone	<0.063	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0063	mg/Kg	SW846 8260D	Acrolein	<0.063	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0063	mg/Kg	SW846 8260D	Acrylonitrile	<0.063	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0063	mg/Kg	SW846 8260D	Benzene	<0.0063	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0063	mg/Kg	SW846 8260D	Bromobenzene	<0.0063	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0063	mg/Kg	SW846 8260D	Bromochloromethane	<0.0063	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0063	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0063	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.063	mg/Kg	SW846 8260D	Bromoform	<0.0063	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0063	mg/Kg	SW846 8260D	Bromomethane	<0.0063	mg/Kg	SW846 8260D

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	124*	SW846 8260D	p-Terphenyl	66	NWTPH-Dx
Toluene-d8	96	SW846 8260D	Nitrobenzene-d5	59	SW846 8270E
4-Bromofluorobenzene	97	SW846 8260D	2-Fluorobiphenyl	58	SW846 8270E
1,2-Dichloroethane-d4	123*	SW846 8260D	p-Terphenyl-d14	62	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

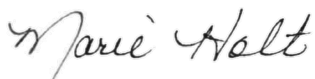
Project: Progress Rail
 Client ID: SB-19 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number: 19

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0063	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0063	mg/Kg	SW846 8260D
Chlorobenzene	<0.0063	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0063	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0063	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0063	mg/Kg	SW846 8260D
Chloroethane	<0.0063	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0063	mg/Kg	SW846 8260D
Chloroform	<0.0063	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0063	mg/Kg	SW846 8260D
Chloromethane	<0.0063	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0063	mg/Kg	SW846 8260D
Dibromomethane	<0.0063	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0063	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0063	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.062	mg/Kg	SW846 8270E
Ethylbenzene	<0.0063	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.062	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0063	mg/Kg	SW846 8260D	Acenaphthene	<0.062	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0063	mg/Kg	SW846 8260D	Acenaphthylene	<0.062	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0063	mg/Kg	SW846 8260D	Anthracene	<0.062	mg/Kg	SW846 8270E
Methylene chloride	<0.032	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.062	mg/Kg	SW846 8270E
Naphthalene	<0.013	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.062	mg/Kg	SW846 8270E
Styrene	<0.0063	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.062	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0063	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.062	mg/Kg	SW846 8270E
Toluene	<0.0063	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.062	mg/Kg	SW846 8270E
Total Xylenes	<0.013	mg/Kg	SW846 8260D	Chrysene	<0.062	mg/Kg	SW846 8270E
Trichloroethene	<0.0063	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.062	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0063	mg/Kg	SW846 8260D	Fluoranthene	<0.062	mg/Kg	SW846 8270E
Vinyl Acetate	<0.063	mg/Kg	SW846 8260D	Fluorene	<0.062	mg/Kg	SW846 8270E
Vinyl chloride	<0.0063	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.062	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0063	mg/Kg	SW846 8260D	Naphthalene	<0.062	mg/Kg	SW846 8270E

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	124*	SW846 8260D	p-Terphenyl	66	NWTPH-Dx
Toluene-d8	96	SW846 8260D	Nitrobenzene-d5	59	SW846 8270E
4-Bromofluorobenzene	97	SW846 8260D	2-Fluorobiphenyl	58	SW846 8270E
1,2-Dichloroethane-d4	123*	SW846 8260D	p-Terphenyl-d14	62	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-19 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number: 19

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.062	mg/Kg	SW846 8270E
Pyrene	<0.062	mg/Kg	SW846 8270E

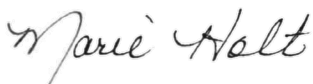
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results uneffected.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	124*	SW846 8260D
Toluene-d8	96	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	123*	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	66	NWTPH-Dx
Nitrobenzene-d5	59	SW846 8270E
2-Fluorobiphenyl	58	SW846 8270E
p-Terphenyl-d14	62	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

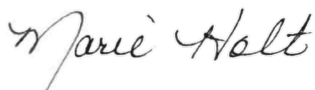
Project: Progress Rail
 Client ID: SB-18 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:20

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0073	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0073	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0073	mg/Kg	SW846 8260D
Total Barium	16.0	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0073	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0073	mg/Kg	SW846 8260D
Total Chromium	11.2	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0073	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0073	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0073	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.073	mg/Kg	SW846 8260D
Total Mercury	0.042	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0073	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0073	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.073	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0073	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0073	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0073	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0073	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0073	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.073	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0073	mg/Kg	SW846 8260D	Acetone	<0.073	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0073	mg/Kg	SW846 8260D	Acrolein	<0.073	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0073	mg/Kg	SW846 8260D	Acrylonitrile	<0.073	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0073	mg/Kg	SW846 8260D	Benzene	<0.0073	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0073	mg/Kg	SW846 8260D	Bromobenzene	<0.0073	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0073	mg/Kg	SW846 8260D	Bromochloromethane	<0.0073	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0073	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0073	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.073	mg/Kg	SW846 8260D	Bromoform	<0.0073	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0073	mg/Kg	SW846 8260D	Bromomethane	<0.0073	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Dibromofluoromethane	118	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	99	SW846 8260D
1,2-Dichloroethane-d4	118	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	77	NWTPH-Dx
Nitrobenzene-d5	91	SW846 8270E
2-Fluorobiphenyl	100	SW846 8270E
p-Terphenyl-d14	113	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

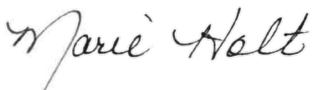
Project: Progress Rail
 Client ID: SB-18 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:20

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0073	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0073	mg/Kg	SW846 8260D
Chlorobenzene	<0.0073	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0073	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0073	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0073	mg/Kg	SW846 8260D
Chloroethane	<0.0073	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0073	mg/Kg	SW846 8260D
Chloroform	<0.0073	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0073	mg/Kg	SW846 8260D
Chloromethane	<0.0073	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0073	mg/Kg	SW846 8260D
Dibromomethane	<0.0073	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0073	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0073	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E
Ethylbenzene	<0.0073	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0073	mg/Kg	SW846 8260D	Acenaphthene	<0.064	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0073	mg/Kg	SW846 8260D	Acenaphthylene	<0.064	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0073	mg/Kg	SW846 8260D	Anthracene	<0.064	mg/Kg	SW846 8270E
Methylene chloride	<0.036	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.064	mg/Kg	SW846 8270E
Naphthalene	<0.015	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.064	mg/Kg	SW846 8270E
Styrene	<0.0073	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.064	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0073	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.064	mg/Kg	SW846 8270E
Toluene	<0.0073	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.064	mg/Kg	SW846 8270E
Total Xylenes	<0.015	mg/Kg	SW846 8260D	Chrysene	<0.064	mg/Kg	SW846 8270E
Trichloroethene	<0.0073	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.064	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0073	mg/Kg	SW846 8260D	Fluoranthene	<0.064	mg/Kg	SW846 8270E
Vinyl Acetate	<0.073	mg/Kg	SW846 8260D	Fluorene	<0.064	mg/Kg	SW846 8270E
Vinyl chloride	<0.0073	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.064	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0073	mg/Kg	SW846 8260D	Naphthalene	<0.064	mg/Kg	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	118	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	99	SW846 8260D
1,2-Dichloroethane-d4	118	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	77	NWTPH-Dx
Nitrobenzene-d5	91	SW846 8270E
2-Fluorobiphenyl	100	SW846 8270E
p-Terphenyl-d14	113	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-18 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:20

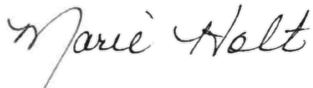
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.064	mg/Kg	SW846 8270E
Pyrene	<0.064	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	118	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	99	SW846 8260D
1,2-Dichloroethane-d4	118	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	77	NWTPH-Dx
Nitrobenzene-d5	91	SW846 8270E
2-Fluorobiphenyl	100	SW846 8270E
p-Terphenyl-d14	113	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
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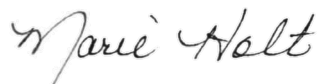
Project: Progress Rail
 Client ID: SB-11 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<15.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0075	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0075	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0075	mg/Kg	SW846 8260D
Total Barium	14.8	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0075	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0075	mg/Kg	SW846 8260D
Total Chromium	8.6	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0075	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0075	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0075	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.075	mg/Kg	SW846 8260D
Total Mercury	0.034	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0075	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0075	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.075	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0075	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0075	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0075	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0075	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0075	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.075	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0075	mg/Kg	SW846 8260D	Acetone	<0.075	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0075	mg/Kg	SW846 8260D	Acrolein	<0.075	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0075	mg/Kg	SW846 8260D	Acrylonitrile	<0.075	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0075	mg/Kg	SW846 8260D	Benzene	<0.0075	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0075	mg/Kg	SW846 8260D	Bromobenzene	<0.0075	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0075	mg/Kg	SW846 8260D	Bromochloromethane	<0.0075	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0075	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0075	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.075	mg/Kg	SW846 8260D	Bromoform	<0.0075	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0075	mg/Kg	SW846 8260D	Bromomethane	<0.0075	mg/Kg	SW846 8260D

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	134*	SW846 8260D	p-Terphenyl	92	NWTPH-Dx
Toluene-d8	93	SW846 8260D	Nitrobenzene-d5	87	SW846 8270E
4-Bromofluorobenzene	97	SW846 8260D	2-Fluorobiphenyl	51	SW846 8270E
1,2-Dichloroethane-d4	128*	SW846 8260D	p-Terphenyl-d14	103	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

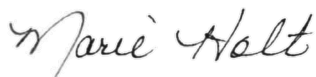
Project: Progress Rail
 Client ID: SB-11 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/28/2021
 Date Received: 07/28/2021
 Spectra Project: 2021070691
 Spectra Number:21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0075	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0075	mg/Kg	SW846 8260D
Chlorobenzene	<0.0075	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0075	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0075	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0075	mg/Kg	SW846 8260D
Chloroethane	<0.0075	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0075	mg/Kg	SW846 8260D
Chloroform	<0.0075	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0075	mg/Kg	SW846 8260D
Chloromethane	<0.0075	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0075	mg/Kg	SW846 8260D
Dibromomethane	<0.0075	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0075	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0075	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.065	mg/Kg	SW846 8270E
Ethylbenzene	<0.0075	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.065	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0075	mg/Kg	SW846 8260D	Acenaphthene	<0.065	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0075	mg/Kg	SW846 8260D	Acenaphthylene	<0.065	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0075	mg/Kg	SW846 8260D	Anthracene	<0.065	mg/Kg	SW846 8270E
Methylene chloride	<0.038	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.065	mg/Kg	SW846 8270E
Naphthalene	<0.015	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.065	mg/Kg	SW846 8270E
Styrene	<0.0075	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.065	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0075	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.065	mg/Kg	SW846 8270E
Toluene	<0.0075	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.065	mg/Kg	SW846 8270E
Total Xylenes	<0.015	mg/Kg	SW846 8260D	Chrysene	<0.065	mg/Kg	SW846 8270E
Trichloroethene	<0.0075	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.065	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0075	mg/Kg	SW846 8260D	Fluoranthene	<0.065	mg/Kg	SW846 8270E
Vinyl Acetate	<0.075	mg/Kg	SW846 8260D	Fluorene	<0.065	mg/Kg	SW846 8270E
Vinyl chloride	<0.0075	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.065	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0075	mg/Kg	SW846 8260D	Naphthalene	<0.065	mg/Kg	SW846 8270E

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Dibromofluoromethane	134*	SW846 8260D	p-Terphenyl	92	NWTPH-Dx
Toluene-d8	93	SW846 8260D	Nitrobenzene-d5	87	SW846 8270E
4-Bromofluorobenzene	97	SW846 8260D	2-Fluorobiphenyl	51	SW846 8270E
1,2-Dichloroethane-d4	128*	SW846 8260D	p-Terphenyl-d14	103	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-11 4-6'
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:21

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.065	mg/Kg	SW846 8270E
Pyrene	<0.065	mg/Kg	SW846 8270E

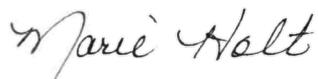
<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	134*	SW846 8260D
Toluene-d8	93	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	128*	SW846 8260D

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	92	NWTPH-Dx
Nitrobenzene-d5	87	SW846 8270E
2-Fluorobiphenyl	51	SW846 8270E
p-Terphenyl-d14	103	SW846 8270E

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:22

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<0.0050	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.050	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0050	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0050	<mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0050	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0050	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0050	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.050	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0050	mg/Kg	SW846 8260D	Acetone	<0.050	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0050	mg/Kg	SW846 8260D	Acrolein	<0.050	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0050	mg/Kg	SW846 8260D	Acrylonitrile	<0.050	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Benzene	<0.0050	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0050	mg/Kg	SW846 8260D	Bromobenzene	<0.0050	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Bromochloromethane	<0.0050	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0050	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0050	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.050	mg/Kg	SW846 8260D	Bromoform	<0.0050	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0050	mg/Kg	SW846 8260D	Bromomethane	<0.0050	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0050	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0050	mg/Kg	SW846 8260D	Chlorobenzene	<0.0050	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0050	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0050	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0050	mg/Kg	SW846 8260D	Chloroethane	<0.0050	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Chloroform	<0.0050	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0050	mg/Kg	SW846 8260D	Chloromethane	<0.0050	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Dibromomethane	<0.0050	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0050	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0050	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.050	mg/Kg	SW846 8260D	Ethylbenzene	<0.0050	mg/Kg	SW846 8260D
2-Chlorotoluene	<0.0050	mg/Kg	SW846 8260D	Hexachlorobutadiene	<0.0050	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Dibromofluoromethane	111	SW846 8260D
Toluene-d8	96	SW846 8260D
4-Bromofluorobenzene	96	SW846 8260D
1,2-Dichloroethane-d4	108	SW846 8260D

SPECTRA LABORATORIES

Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Soil
Date Sampled: 07/28/2021
Date Received: 07/28/2021
Spectra Project: 2021070691
Spectra Number:22

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Isopropylbenzene	<0.0050	mg/Kg	SW846 8260D
Methyl-tert-Butyl Ether	<0.0050	mg/Kg	SW846 8260D
Methylene chloride	<0.025	mg/Kg	SW846 8260D
Naphthalene	<0.010	mg/Kg	SW846 8260D
Styrene	<0.0050	mg/Kg	SW846 8260D
Tetrachloroethene	<0.0050	mg/Kg	SW846 8260D
Toluene	<0.0050	mg/Kg	SW846 8260D
Total Xylenes	<0.010	mg/Kg	SW846 8260D
Trichloroethene	<0.0050	mg/Kg	SW846 8260D
Trichlorofluoromethane	<0.0050	mg/Kg	SW846 8260D
Vinyl Acetate	<0.050	mg/Kg	SW846 8260D
Vinyl chloride	<0.0050	mg/Kg	SW846 8260D
cis-1,2-Dichloroethene	<0.0050	mg/Kg	SW846 8260D
cis-1,3-Dichloropropene	<0.0050	mg/Kg	SW846 8260D
n-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
n-Propylbenzene	<0.0050	mg/Kg	SW846 8260D
sec-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
tert-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
trans-1,2-Dichloroethene	<0.0050	mg/Kg	SW846 8260D
trans-1,3-Dichloropropene	<0.0050	mg/Kg	SW846 8260D

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
----------------	---------------	--------------	---------------

Type text here

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
Dibromofluoromethane	111	SW846 8260D
Toluene-d8	96	SW846 8260D
4-Bromofluorobenzene	96	SW846 8260D
1,2-Dichloroethane-d4	108	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

8/11/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070691
Applies to Spectra #'s 13-21
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Element	Blank Result
Arsenic	< 2.5
Barium	< 0.2
Cadmium	< 0.3
Chromium	< 0.7
Lead	< 2.5
Selenium	< 2.5
Silver	< 0.7

Laboratory Control Sample (LCS)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Element	Spike Addition	LCS Conc.	LCS %Rec
Arsenic	200.0	207.4	103.7
Barium	200.0	194.5	97.3
Cadmium	200.0	187.8	93.9
Chromium	200.0	205.7	102.9
Lead	200.0	194.0	97.0
Selenium	200.0	198.4	99.2
Silver	200.0	184.3	92.2

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Sample Spiked: 2021080018-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc	MSD %Rec	RPD
Arsenic	35.0	200.0	255.1	110.1	261.7	113.4	3.0
Barium	89.8	200.0	294.2	102.2	281.6	95.9	6.4
Cadmium	13.3	200.0	199.8	93.3	201.5	94.1	0.9
Chromium	38.0	200.0	241.3	101.7	238.8	100.4	1.2
Lead	18.9	200.0	226.1	103.6	231.2	106.2	2.4
Selenium	0.0	200.0	189.4	94.7	192.6	96.3	1.7
Silver	0.0	200.0	187.1	93.6	193.3	96.7	3.3

Comment:

Recovery Limits 75-125%

RPD Limit 20

August 11, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070691
Applies to Spectra #s: 13-21
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - SW846 7471B - Soil/Solid

Method Blank (MBLK)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

	CAS #	Result
Mercury	7439-97-6	< 0.025

Laboratory Control Spike (LCS)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	0.2	0.237	118.5

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Sample Spiked: 2021080163-1

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.071	0.2	0.272	100.4	0.286	107.4	6.7

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES

August 4, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
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Units: ug/L
Spectra Project: 2021070691
Applies to Spectra #'s: 1-10
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - Total and Dissolved - SW846 7470A - Water/Liquid

Dissolved Filter Blank/Laboratory Reagent Blank (LRB)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

	CAS #	Result
Mercury	7439-97-6	< 0.5

Laboratory Control Spike (LCS)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	2.0	1.88	94.0

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

Sample Spiked: 2021070228-2

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.00	2.0	1.72	86.0	1.92	96.0	11.0

Recovery Limits 70-130%

RPD Limit 20

SPECTRA LABORATORIES

August 4, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/L
Spectra Project: 2021070691
Applies to Spectra #'s 1-10
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010D - Total and Dissolved - Liquid/Water

Method Blank/Dissolved Filter Blank

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

Element	Blank Result
Arsenic	< 0.025
Barium	< 0.002
Cadmium	< 0.003
Chromium	< 0.007
Lead	< 0.025
Selenium	< 0.025
Silver	< 0.007

Blank Spike (LCS)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

Element	Spike Added	LCS	
		Conc.	%Rec
Arsenic	1.0	1.009	100.9
Barium	1.0	1.040	104.0
Cadmium	1.0	1.012	101.2
Chromium	1.0	0.991	99.1
Lead	1.0	0.962	96.2
Selenium	1.0	0.994	99.4
Silver	1.0	0.983	98.3

LCS Recovery limits 80-120%

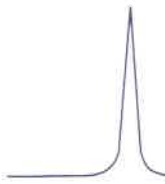
Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021
Sample Spiked: 2021080063-2

Element	Sample		Spike		MS		MSD		RPD
	Conc.	Conc.	Conc.	%Rec	Conc.	%Rec			
Arsenic	0.000	1.0	1.039	103.9	1.050	105.0	1.1		
Barium	0.039	1.0	1.050	101.1	1.048	100.9	0.2		
Cadmium	0.000	1.0	1.026	102.6	1.022	102.2	0.4		
Chromium	0.000	1.0	0.983	98.3	0.981	98.1	0.2		
Lead	0.000	1.0	0.981	98.1	1.003	100.3	2.2		
Selenium	0.000	1.0	1.035	103.5	1.041	104.1	0.6		
Silver	0.000	1.0	1.024	102.4	1.016	101.6	0.8		

Recovery Limits 75-125%

RPD Limit 20



August 4, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070691
Applies to Spectra # 1-4

NWTPH-DX ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	7/29/2021	Date Analyzed:	8/3/2021
<u>Compound</u>	<u>Spike Amount Added</u>	<u>Spike Amount Found</u>	<u>Percent Recovery</u>
Diesel	2500	2346.00	94%

METHOD BLANK

Date Extracted:	7/29/2021	Date Analyzed:	8/3/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 107%

Surrogate Recovery Limits: 50 -150%

August 4, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: $\mu\text{g/L}$
Spectra Project: 2021070691
Applies to Spectra # 5-10

NWTPH-DX ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

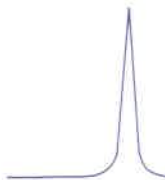
Date Extracted:	8/2/2021	Date Analyzed:	8/4/2021
	Spike Amount	Spike Amount	Percent
<u>Compound</u>	<u>Added</u>	<u>Found</u>	<u>Recovery</u>
Diesel	2500	1984.00	79%

METHOD BLANK

Date Extracted:	8/2/2021	Date Analyzed:	8/4/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 85%

Surrogate Recovery Limits: 50 -150%



August 11, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-Dx
Sample Matrix: Solid
Units: mg/Kg
Spectra Project: 2021070691
Applies to Spectra # 13-21

NWTPH-Dx ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/10/2021			Date Analyzed:	8/10/2021		RPD
	Spike Amount Added	Spike Amount Found	Percent Recovery		Dup. Spike Amount Found	Percent Recovery	
Compound							
Diesel	125	100.7	81%	91.40	73%		9.7

METHOD BLANK

Date Extracted:	8/10/2021	Date Analyzed:	8/10/2021
Diesel	<10.0		
Heavy Oil	<50.0		
Surrogate Recovery:			
p-Terphenyl	59%		

Surrogate Recovery Limits: 50 -150%

August 12, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Water
 Spectra Project: 2021070691
 Date Analyzed: 8/5/2021
 Applies to Spectra #'s: #1-11

GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK

COMPOUND	BLANK RESULT ug/L	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT ug/L	SPIKE RESULT ug/L	
Benzene	<1.00	20.0	20.5	103
Ethylbenzene	<1.00	20.0	20.0	99
Methyl tert-butyl ether	<1.00	20.0	19.0	95
Toluene	<1.00	20.0	19.80	99
m, p-Xylene	<1.00	40.0	40.6	102
o-Xylene	<1.00	20.0	19.9	100
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	109	109	%	
1,2-Dichloroethane-d4	107	111	%	
Toluene-d8	101	102	%	
4-Bromofluorobenzene	97	102	%	

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 August 12, 2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

Sample Matrix: Water
 Date Analyzed: 8/5/2021
 Spiked Sample: Method Blank
 Spectra Project: 2021070691
 Applies to: #1-11

GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)

COMPOUND	SAMPLE RESULT ug/L	SPIKE RESULT ug/L	MS RESULT ug/L	% REC	MSD RESULT ug/L	% REC	RPD
1,1-Dichloroethene	<1.00	20.0	25.7	128	25.9	101	0.00
Benzene	<1.00	20.0	22.6	113	22.9	101	0.01
Trichloroethene	<1.00	20.0	21.7	108	22.2	103	0.03
Toluene	<1.00	20.0	21.0	105	21.5	102	0.02
Chlorobenzene	<1.00	20.0	20.7	104	21.3	103	0.03

Surrogates	MS	MSD	
Dibromofluoromethane	110	111	%
1,2-Dichloroethane-d4	110	108	%
Toluene-d8	100	101	%
4-Bromofluorobenzene	93	96	%

August 12, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Water
Sample: Method Blank
Date Analyzed: 8/5/2021
Spectra Project: 2021070691
Applies to: #1-11

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK**

COMPOUND	µg/L	COMPOUND	µg/L
Acetone	< 10.0	trans-1,2-Dichloroethene	< 1.00
Acetonitrile	< 10.0	1,2-Dichloropropane	< 1.00
Acrolein	< 10.0	1,3-Dichloropropane	< 1.00
Acrylonitrile	< 10.0	cis-1,3-Dichloropropene	< 1.00
Benzene	< 1.00	trans-1,3-Dichloropropene	< 1.00
Bromobenzene	< 1.00	2,2-Dichloropropane	< 1.00
Bromochloromethane	< 1.00	1,1-Dichloropropene	< 1.00
Bromodichloromethane	< 1.00	Ethylbenzene	< 1.00
Bromoform	< 1.00	2-Hexanone (MBK)	< 10.0
Bromomethane	< 1.00	Hexachlorobutadiene	< 1.00
2-Butanone (MEK)	< 10.0	Iodomethane	< 5.00
n-Butylbenzene	< 1.00	Isopropylbenzene	< 1.00
sec-Butylbenzene	< 1.00	p-Isopropyltoluene	< 1.00
tert-Butylbenzene	< 1.00	Methylene chloride	7.09
Carbon Disulfide	< 10.0	4-Methyl-2-pentanone (MIBK)	< 10.0
Carbon tetrachloride	< 1.00	MTBE	< 1.00
Chlorobenzene	< 1.00	Naphthalene	< 1.00
Chlorodibromomethane	< 1.00	n-Propylbenzene	< 1.00
Chloroethane	< 1.00	Styrene	< 1.00
2-Chloroethyl Vinyl ether	< 10.0	1,1,1,2-Tetrachloroethane	< 1.00
Chloroform	< 1.00	1,1,2,2-Tetrachloroethane	< 1.00
Chloromethane	< 1.00	Tetrachloroethene	< 1.00
2-Chlorotoluene	< 1.00	Toluene	< 1.00
4-Chlorotoluene	< 1.00	Total Xylenes	< 2.00
1,2-Dibromo-3-Chloropropane (DBCP)	< 10.0	1,2,3-Trichlorobenzene	< 1.00
1,2-Dibromoethane (EDB)	< 1.00	1,2,4-Trichlorobenzene	< 1.00
Dibromomethane	< 1.00	1,1,1-Trichloroethane	< 1.00
1,2-Dichlorobenzene	< 1.00	1,1,2-Trichloroethane	< 1.00
1,3-Dichlorobenzene	< 1.00	Trichloroethene	< 1.00
1,4-Dichlorobenzene	< 1.00	Trichlorofluoromethane	< 1.00
Dichlorodifluoromethane	< 1.00	1,2,3-Trichloropropane	< 1.00
1,1-Dichloroethane	< 1.00	1,2,4-Trimethylbenzene	< 1.00
1,2-Dichloroethane	< 1.00	1,3,5-Trimethylbenzene	< 1.00
1,1-Dichloroethene	< 1.00	Vinyl Acetate	< 10.0
cis-1,2-Dichloroethene	< 1.00	Vinyl chloride	< 1.00

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	109	%
1,2-Dichloroethane-d4	111	%
Toluene-d8	102	%
4-Bromofluorobenzene	102	%

*Methylene chloride was detected in the method blank. However, as none of the samples for project 2021070691 were detects for Methylene chloride, results unaffected.

August 12, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Soil
 Spectra Project: 2021070691
 Date Analyzed: 8/10/2021
 Applies to Spectra #'s: 13-22

GCMS VOLATILE ORGANIC ANALYSIS
**METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK
 METHOD 5035 - DIRECT SPARGE**

COMPOUND	BLANK RESULT mg/Kg	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT mg/Kg	SPIKE RESULT mg/Kg	
Benzene	<0.0050	0.020	0.021	105
Ethylbenzene	<0.0050	0.020	0.021	105
Methyl tert-butyl ether	<0.0050	0.020	0.021	105
Toluene	<0.0050	0.020	0.022	110
m, p-Xylene	<0.010	0.040	0.044	110
o-Xylene	<0.0050	0.020	0.021	105
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	103	90	%	
1,2-Dichloroethane-d4	103	78	%	
Toluene-d8	100	102	%	
4-Bromofluorobenzene	97	93	%	

August 12, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Soil
Sample: Method Blank
Date Analyzed: 8/10/2021
Spectra Project: 2021070691
Applies to: #13-22

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK
METHOD 5035 - DIRECT SPARGE**

COMPOUND	mg/kg	COMPOUND	mg/kg
Acetone	< 0.050	trans-1,2,-Dichloroethene	< 0.0050
Acetonitrile	< 0.050	1,2-Dichloropropane	< 0.0050*
Acrolein	< 0.050	1,3-Dichloropropane	< 0.0050
Acrylonitrile	< 0.050	cis-1,3-Dichloropropene	< 0.0050*
Benzene	< 0.0050*	trans-1,3-Dichloropropene	< 0.0050
Bromobenzene	< 0.0050	2,2-Dichloropropane	< 0.0050
Bromochloromethane	< 0.0050	1,1-Dichloropropene	< 0.0050*
Bromodichloromethane	< 0.0050*	Ethylbenzene	< 0.0050
Bromoform	< 0.0050	2-Hexanone (MBK)	< 0.500
Bromomethane	< 0.0050	Hexachlorobutadiene	< 0.0050
2-Butanone (MEK)	< 0.050	Iodomethane	< 0.0050
n-Butylbenzene	< 0.0050	Isopropylbenzene	< 0.0050
sec-Butylbenzene	< 0.0050	p-Isopropyltoluene	< 0.0050
tert-Butylbenzene	< 0.0050	Methylene chloride	< 0.025
Carbon Disulfide	< 0.050	4-Methyl-2-pentanone (MIBK)	< 0.050*
Carbon tetrachloride	< 0.0050*	MTBE	< 0.0050
Chlorobenzene	< 0.0050	Naphthalene	< 0.010
Chlorodibromomethane	< 0.0050	n-Propylbenzene	< 0.0050
Chloroethane	< 0.0050	Styrene	< 0.0050
2-Chloroethyl Vinyl ether	< 0.050*	1,1,1,2-Tetrachloroethane	< 0.0050
Chloroform	< 0.0050	1,1,2,2-Tetrachloroethane	< 0.0050
Chloromethane	< 0.0050	Tetrachloroethene	< 0.0050
2-Chlorotoluene	< 0.0050	Toluene	< 0.0050
4-Chlorotoluene	< 0.0050	Total Xylenes	< 0.010
1,2-Dibromo-3-Chloropropane (DBCP)	< 0.050	1,2,3-Trichlorobenzene	< 0.0050
1,2-Dibromoethane (EDB)	< 0.0050	1,2,4-Trichlorobenzene	< 0.0050
Dibromomethane	< 0.0050*	1,1,1-Trichloroethane	< 0.0050
1,2-Dichlorobenzene	< 0.0050	1,1,2-Trichloroethane	< 0.0050
1,3-Dichlorobenzene	< 0.0050	Trichloroethene	< 0.0050*
1,4-Dichlorobenzene	< 0.0050	Trichlorofluoromethane	< 0.0050
Dichlorodifluoromethane	< 0.0050	1,2,3-Trichloropropane	< 0.0050
1,1-Dichloroethane	< 0.0050	1,2,4-Trimethylbenzene	< 0.0050
1,2-Dichloroethane	< 0.0050*	1,3,5-Trimethylbenzene	< 0.0050
1,1-Dichloroethene	< 0.0050	Vinyl Acetate	< 0.050
cis-1,2-Dichloroethene	< 0.0050	Vinyl chloride	< 0.0050

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	90	%
1,2-Dichloroethane-d4	78*	%
Toluene-d8	102	%
4-Bromofluorobenzene	93	%

*Recovery for this surrogate was less than the method defined lower limit. Reporting limits for associated analytes may be biased low.

August 12, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Soil
Date Analyzed: Method Blank
Spiked Sample: 8/10/2021
Spectra Project: 2021070691
Applies to: #13-22

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
METHOD 5035 - DIRECT SPARGE**

Volatile Laboratory Control Sample/Laboratory Control Sample Duplicate Results (LCS/LCSD)

COMPOUND	SAMPLE RESULT mg/Kg	SPIKE AMOUNT mg/Kg	MS RESULT mg/Kg	% REC	MSD RESULT mg/Kg	% REC	RPD
1,1-Dichloroethene	<0.0050	0.02	0.02	108	0.02	114	0.0
Benzene	<0.0050	0.02	0.02	105	0.02	103	0.0
Trichloroethene	<0.0050	0.02	0.02	106	0.02	103	0.0
Toluene	<0.0050	0.02	0.02	111	0.02	101	0.1
Chlorobenzene	<0.0050	0.02	0.02	109	0.02	93	0.2

Surrogates	MS	MSD	%
Dibromofluoromethane	103	101	%
1,2-Dichloroethane-d4	103	102	%
Toluene-d8	100	99	%
4-Bromofluorobenzene	97	98	%

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch W2021080201
 Date Extracted 8/2/2021
 Date Analyzed 8/3/2021
 Sample# 1
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result		625.1 criteria			Bias
		ug/mL	TV	%R	LCL	UCL	
1-Methylnaphthalene	N	0.65		1	65%	60%	140%
2-Methylnaphthalene	N	0.67		1	67%	60%	140%
Acenaphthene	Y	0.95		1	95%	70%	130%
Acenaphthylene	Y	0.98		1	98%	60%	130%
Anthracene	Y	0.93		1	93%	58%	130%
Benzo(a)anthracene	Y	1.00		1	100%	32%	138%
Benzo(a)pyrene	Y	0.85		1	85%	40%	133%
Benzo(b)Fluoranthene	Y	0.98		1	98%	42%	140%
Benzo(g,h,i)perylene	Y	1.07		1	107%	13%	195%
Benzo(k)Fluoranthene	Y	0.98		1	98%	25%	146%
Chrysene	Y	1.06		1	106%	44%	140%
Dibenzo(a,h)anthracene	Y	0.94		1	94%	13%	200%
Fluoranthene	Y	0.99		1	99%	47%	130%
Fluorene	Y	0.96		1	96%	70%	130%
Indeno(1,2,3-c,d)pyrene	Y	0.92		1	92%	13%	151%
Naphthalene	Y	0.85		1	85%	70%	130%
Phenanthrene	Y	0.94		1	94%	67%	130%
Pyrene	Y	1.02		1	102%	70%	130%

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	2.97		4	74%	25%	121%	1 Pass
Phenol-d5	A	1.86		4	47%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.51		2	76%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.97		2	99%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	4.06		4	102%	19%	122%	1 Pass
p-Terphenyl-d14	BN	2.29		2	115%	18%	137%	1 Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch W2021080201
 Date Extracted 8/2/2021
 Date Analyzed 8/3/2021
 SampleID MB
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.1		4	53%	25%	121% Pass
Phenol-d5	A	1.29		4	32%	24%	113% Pass
Nitrobenzene-d5	BN	1.62		2	81%	23%	120% Pass
2-Fluorobiphenyl	BN	1.64		2	82%	30%	115% Pass
2,4,6-Tribromophenol	A	1.9		4	48%	19%	122% Pass
p-Terphenyl-d14	BN	2.87		2	144%	18%	137% High

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch W2021080302
 Date Extracted 8/3/2021
 Date Analyzed 8/11/2021
 Sample# 1
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result ug/mL	TV	625.1 criteria			Bias
				%R	LCL	UCL	
1-Methylnaphthalene	N	0.79	1	79%	60%	140%	
2-Methylnaphthalene	N	0.80	1	80%	60%	140%	
Acenaphthene	Y	0.87	1	87%	70%	130%	
Acenaphthylene	Y	0.95	1	95%	60%	130%	
Anthracene	Y	0.96	1	96%	58%	130%	
Benzo(a)anthracene	Y	1.08	1	108%	32%	138%	
Benzo(a)pyrene	Y	0.93	1	93%	40%	133%	
Benzo(b)Fluoranthene	Y	1.18	1	118%	42%	140%	
Benzo(g,h,i)perylene	Y	1.00	1	100%	13%	195%	
Benzo(k)Fluoranthene	Y	1.07	1	107%	25%	146%	
Chrysene	Y	1.04	1	104%	44%	140%	
Dibenzo(a,h)anthracene	Y	0.95	1	95%	13%	200%	
Fluoranthene	Y	0.97	1	97%	47%	130%	
Fluorene	Y	0.81	1	81%	70%	130%	
Indeno(1,2,3-c,d)pyrene	Y	0.99	1	99%	13%	151%	
Naphthalene	Y	0.79	1	79%	70%	130%	
Phenanthrene	Y	0.93	1	93%	67%	130%	
Pyrene	Y	1.06	1	106%	70%	130%	

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	3.65		4	91%	25%	121%	1 Pass
Phenol-d5	A	1.71		4	43%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.54		2	77%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.9		2	95%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	4.84		4	121%	19%	122%	1 Pass
p-Terphenyl-d14	BN	2.68		2	134%	18%	137%	1 Pass

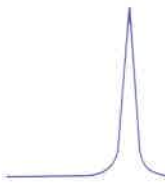
SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch W2021080302
 Date Extracted 8/3/2021
 Date Analyzed 8/11/2021
 SampleID MB
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.94		4	74%	25%	121% Pass
Phenol-d5	A	1.88		4	47%	24%	113% Pass
Nitrobenzene-d5	BN	2.02		2	101%	23%	120% Pass
2-Fluorobiphenyl	BN	1.89		2	95%	30%	115% Pass
2,4,6-Tribromophenol	A	3.47		4	87%	19%	122% Pass
p-Terphenyl-d14	BN	2.48		2	124%	18%	137% Pass



SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch 2021073001
 Date Extracted 7/30/2021
 Date Analyzed 8/11/2021
 SampleID MB
 Sample#
 Initial Amount 20
 final amount 5
 %TS 100%

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final mg/kg	DF
1-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
2-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
Acenaphthene	Y		N	0.2	0.2500	<0.05	1
Acenaphthylene	Y		N	0.2	0.2500	<0.05	1
Anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)pyrene	Y		N	0.2	0.2500	<0.05	1
Benzo(b)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Benzo(g,h,i)perylene	Y		N	0.2	0.2500	<0.05	1
Benzo(k)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Chrysene	Y		N	0.2	0.2500	<0.05	1
Dibenzo(a,h)anthracene	Y		N	0.2	0.2500	<0.05	1
Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Fluorene	Y		N	0.2	0.2500	<0.05	1
Indeno(1,2,3-c,d)pyrene	Y		N	0.2	0.2500	<0.05	1
Naphthalene	Y		N	0.2	0.2500	<0.05	1
Phenanthrene	Y		N	0.2	0.2500	<0.05	1
Pyrene	Y		N	0.2	0.2500	<0.05	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	3.89		4	97%	25%	121% Pass
Phenol-d5	A	4.03		4	101%	24%	113% Pass
Nitrobenzene-d5	BN	1.92		2	96%	23%	120% Pass
2-Fluorobiphenyl	BN	2.04		2	102%	30%	115% Pass
2,4,6-Tribromophenol	A	2.96		4	74%	19%	122% Pass
p-Terphenyl-d14	BN	2.1		2	105%	18%	137% Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch	2021073001				
Date Extracted	7/30/2021				
Date Analyzed	8/11/2021				
Sample#	LCS				
Initial Amount	20				
final amount	5				
%TS	LCS	%R	LCL	UCL	
Naphthalene	0.7500	75%	33%	147%	
2-Methylnaphthalene	0.7400	74%	40%	130%	
1-Methylnaphthalene	0.7400	74%	40%	130%	
Acenaphthylene	0.9200	92%	40%	130%	
Acenaphthene	0.8500	85%	40%	130%	
Fluorene	0.8100	81%	40%	130%	
Phenanthrene	0.8900	89%	40%	130%	
Anthracene	0.9200	92%	40%	130%	
Fluoranthene	0.9200	92%	40%	130%	
Pyrene	1.0100	101%	62%	202%	
Benzo(a)Anthracene	1.0600	106%	40%	130%	
Chrysene	1.0000	100%	40%	130%	
Benzo(b)Fluoranthene	1.1600	116%	40%	130%	
Benzo(k)Fluoranthene	0.9900	99%	40%	130%	
Benzo(a)Pyrene	0.8900	89%	40%	130%	
Indeno(1,2,3-cd)Pyrene	1.0400	104%	40%	130%	
Dibenz(a,h)Anthracene	0.9600	96%	40%	130%	
Benzo(ghi)Perylene	1.0100	101%	40%	130%	

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch 2021073001
 Date Extracted 7/30/2021
 Date Analyzed 8/11/2021
 Sample# MS/MSD
 Parent Sample

	Parent	MS	MS	MSD	MSD	LCL	UCL	RPD	CL
	Results	Results	%R	Results	%R				
Naphthalene	0.0000	0.55	55%	0.81	81%	33%	147%	38.24	20
2-Methylnaphthalene	0.0000	0.56	56%	0.85	85%	40%	130%	41.13	20
1-Methylnaphthalene	0.0000	0.55	55%	0.83	83%	40%	130%	40.58	20
Acenaphthylene	0.0000	0.64	64%	0.96	96%	40%	130%	40.00	20
Acenaphthene	0.0000	0.61	61%	0.90	90%	40%	130%	38.41	20
Fluorene	0.0000	0.63	63%	0.87	87%	40%	130%	32.00	20
Phenanthrene	0.0000	0.85	85%	0.95	95%	40%	130%	11.11	20
Anthracene	0.0000	0.85	85%	0.96	96%	40%	130%	12.15	20
Fluoranthene	0.0000	0.98	98%	1.03	103%	40%	130%	4.98	20
Pyrene	0.0000	1.05	105%	1.09	109%	62%	202%	3.74	20
Benzo(a)Anthracene	0.0000	1.07	107%	1.07	107%	40%	130%	0.00	20
Chrysene	0.0000	1.01	101%	1.01	101%	40%	130%	0.00	20
Benzo(b)Fluoranthene	0.0000	1.17	117%	1.19	119%	40%	130%	1.69	20
Benzo(k)Fluoranthene	0.0000	1.03	103%	1.02	102%	40%	130%	0.98	20
Benzo(a)Pyrene	0.0000	0.92	92%	0.94	94%	40%	130%	2.15	20
Indeno(1,2,3-cd)Pyrene	0.0000	1.01	101%	0.98	98%	40%	130%	3.02	20
Dibenz(a,h)Anthracene	0.0000	0.91	91%	0.87	87%	40%	130%	4.49	20
Benzo(ghi)Perylene	0.0000	0.95	95%	0.96	96%	40%	130%	1.05	20

Communications Record

Internal Document

Client: Panhandle

Client Contact: Dave

Date: 7-28-21

Time: 5:00

Spectra Contact: Marie Holt

Project: Progress Rail

Spectra Project: 2021070691

We noticed at the time samples were dropped off that SB-20 had 2- L HCl, and SB-5 didn't have a L-HCl. All times were correct, so we couldn't use process of elimination. At the time Dave decided to have us preserve the backup liter for SVOA with HCl and use it for the NWTPH-Dx. If there are no issues with the SVOA extract requiring re-analysis, we should be fine.

Later we wondered which HCl bottle labeled as SB-20 was correct? Could one of them be SB-5?

I called Dave and explained the situation. He agreed, one of them was in fact SB-5. We tried to determine by color which L HCl identified as SB-20 or SB-5, though they were too similar to determine. He decided to have us preserve the SVOA backup liter from SB-5 and use it for NWTPH-Dx.

SPECTRA LABORATORIES Sample Receiving Checklist

Client/Project: Panhandle Geo Spectra Project#: W21070691
 Date & Time Received: 7/28/21 4:30 Received by: Marie Holt
 Shipped by: Client Courier UPS USPS FedEx Other: _____
 Shipping Container Type(s): Cooler Box None Other: _____
 Sample temperatures (°C): _____

Unless noted, the following parameters were received within Spectra Laboratories sample acceptance policy requirements (checked item(s) is out of compliance):

Requirement	"X"	Comments: (indicate requirement number)
1. Sample temperature(s) outside of 0-6°C		<input type="checkbox"/> 1. Temperature >6°C but received within <u>various</u> hours of sample collection on ice and cooling. Soils - 11.2 to 19.8°C water - 7.4 to 18.3°C cooling was attempted
2. Custody seals absent (not required when hand delivered by sampler)		
3. Custody seals broken/damaged		
4. Chain-of-Custody (COC) absent		
5. COC improperly completed (describe in comments)		
6. Signatures/Dates/Times on COC absent or incorrect		
7. Sample IDs/Matrix/Tests absent or incorrect		
8. COC does not correspond to sample count	*	
9. COC info does not correspond to sample labels		
10. Samples received broken or leaking (describe in comments)		
11. Incorrect bottles used for test (describe)		
12. Samples improperly preserved (describe)		
13. Multi-phasic samples present (describe)		
14. VOA vials contain headspace (indicate amount)		
15. Other anomaly (describe)		

Microbiological Tests requested: MPN MF HPC
 Fecal Coliform Total Coliform E. coli Salmonella
 Did samples arrive within Holding Time? Yes No

Corrective Action Taken, if needed: *SB-5 No Pres. L amber, Client said to Pres. one of the SVOA liters - No backup for that sample.

Person Contacted: _____ Date: _____
 Form completed by: Nicole Mullena Date: 7/28/21 Time: 4:53

SPECIAL INSTRUCTIONS/COMMENTS:

Return Samples Y N Page 1 of 3

CHAIN of CUSTODY

SPECTRA PROJECT #

W21070691

STANDARD RUSH

CLIENT: **Panhandle Geotechnical & Env.** ADDRESS: _____ ADDRESS CHANGE

PROJECT: **Progress Rail**
 CONTACT: **Levi Allbaugh**
 SAMPLED BY: **Dave Schaff & Ryan Penn**
 PHONE: **308-641-6742 (field) 307-635-2828**
 e-MAIL: **lallbaugh@mcschaff.com**
 PURCHASE ORDER #: _____

NUMBER OF CONTAINERS	HYDROCARBONS						ORGANICS				METALS		OTHER										
	NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-Dx	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/624 VOA	8260 CHLOR SOLVENTS	8270/625 SEMI VOA	625 PAH/PNA 8MM	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY) <i>Pix, Met, RCRA-9</i>	TCLP METALS RCRA 8	TCLP METALS (SPECIFY)	PH 9040/9045	TX/TOX 9076	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)	
1					X			X		X		X	X										
2					X			X		X		X	X										
3					X			X		X		X	X										
4					X			X		X		X	X										
5					X			X		X		X	X										
6					X			X		X		X	X										
7					X			X		X		X	X										
8					X			X		X		X	X										
9					X			X		X		X	X										

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
SB-1	7/28/21	8:20	water
SB-2		9:00	
SB-5		11:15	
SB-21		10:00	
SB-16		10:45	
SB-20		11:50	
SB-17		12:30	
SB-18		1:10pm	
SB-11		3:00 pm	

	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
RELINQUISHED BY	<i>R. Penn</i>	Ryan Penn	PGE	7/28/21	16:30
RECEIVED BY	<i>Marie Holt</i>	MARIE HOLT	Spectra	7-28-21	4:30
RELINQUISHED BY					
RECEIVED BY					

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

SPECIAL INSTRUCTIONS/COMMENTS:

Return Samples Y N Page 2 of 3

CHAIN of CUSTODY

SPECTRA PROJECT #

2021070691

STANDARD

RUSH

ADDRESS CHANGE

CLIENT: **Panhandle Geotechnical & Env.**

ADDRESS:

PROJECT: **Progress Rail**

CONTACT: **Levi Allbaugh**

SAMPLED BY: **Dave Schaff & Ryan Penn**

PHONE: **308-641-6742 (field) 307-635-2828**

e-MAIL: **lallbaugh@mcschaff.com**

PURCHASE ORDER #:

NUMBER OF CONTAINERS	HYDROCARBONS					ORGANICS					METALS			OTHER						
	NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-Dx	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/624 VOA	8260 CHLOR SOLVENTS	8270/625 SEMI VOA	625 PAH/PNA - SIM	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY)	PH 9040/9045	TX/TOX 9076	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)
10					X			X		X			X	X						
12					X			X												
12								X												
4																				
5																				
6																				
7																				
8																				
9																				
0																				

	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
RELINQUISHED BY	<i>Ryan Penn</i>	Ryan Penn	PGE	7/28/21	16:30
RECEIVED BY	<i>Marie Holt</i>	MARIE HOLT	Spectra	7-28-21	4:30
RELINQUISHED BY					
RECEIVED BY					

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

08/16/2021

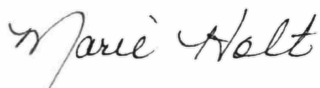
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-6
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.213	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.007	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.085	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

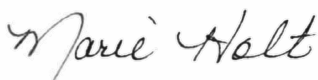
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-6
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

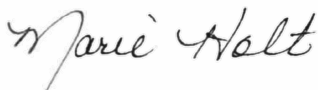
Project: Progress Rail
 Client ID: SB-6
 Sample Matrix: Water
 Date Sampled: 07/29/2021
 Date Received: 07/30/2021
 Spectra Project: 2021070727
 Spectra Number: 1

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

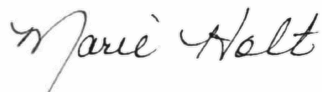
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.160	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.047	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

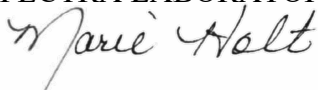
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

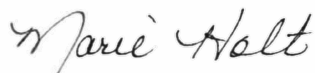
Project: Progress Rail
Client ID: SB-2
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 2

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 3

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	325	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.236	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.098	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

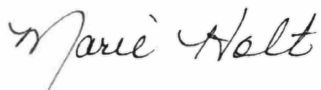
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 3

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

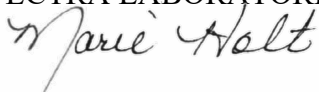
Project: Progress Rail
 Client ID: SB-4
 Sample Matrix: Water
 Date Sampled: 07/29/2021
 Date Received: 07/30/2021
 Spectra Project: 2021070727
 Spectra Number: 3

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

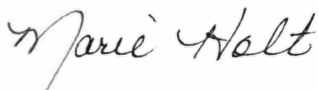
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:4

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	199	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.152	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.103	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

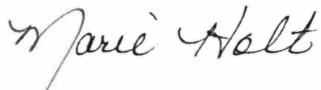
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:4

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00*	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	10.9*	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

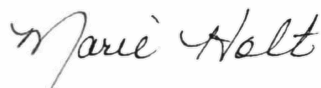
Project: Progress Rail
Client ID: SB-15
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:4

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

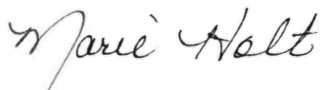
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-14
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 5

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.198	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.100	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

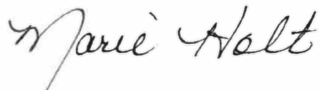
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-14
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 5

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.957	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.957	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.957	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

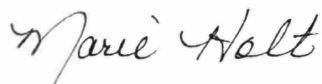
Project: Progress Rail
 Client ID: SB-14
 Sample Matrix: Water
 Date Sampled: 07/29/2021
 Date Received: 07/30/2021
 Spectra Project: 2021070727
 Spectra Number:5

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.957	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.957	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.957	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.957	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.957	µg/L	SW846 8270E
Chrysene	<0.957	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.957	µg/L	SW846 8270E
Fluoranthene	<0.957	µg/L	SW846 8270E
Fluorene	<0.957	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.957	µg/L	SW846 8270E
Naphthalene	<0.957	µg/L	SW846 8270E
Phenanthrene	<0.957	µg/L	SW846 8270E
Pyrene	<0.957	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

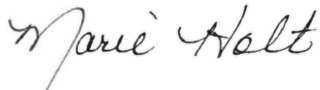
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 6

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.042	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.039	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

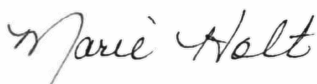
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 6

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

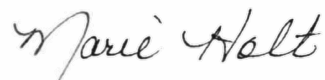
Project: Progress Rail
Client ID: SB-8
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:6

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

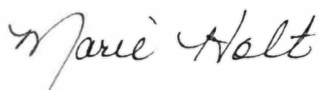
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 7

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.144	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.039	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

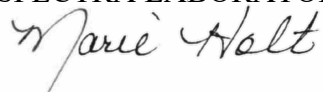
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 7

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

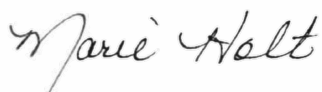
Project: Progress Rail
 Client ID: SB-13
 Sample Matrix: Water
 Date Sampled: 07/29/2021
 Date Received: 07/30/2021
 Spectra Project: 2021070727
 Spectra Number: 7

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

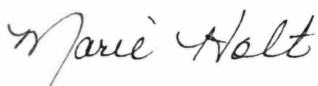
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 8

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.097	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	µg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.056	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	µg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	µg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	µg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

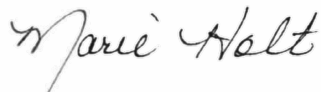
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 8

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.957	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.957	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.957	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

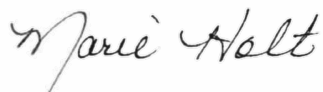
Project: Progress Rail
Client ID: SB-7
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 8

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.957	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.957	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.957	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.957	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.957	µg/L	SW846 8270E
Chrysene	<0.957	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.957	µg/L	SW846 8270E
Fluoranthene	<0.957	µg/L	SW846 8270E
Fluorene	<0.957	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.957	µg/L	SW846 8270E
Naphthalene	<0.957	µg/L	SW846 8270E
Phenanthrene	<0.957	µg/L	SW846 8270E
Pyrene	<0.957	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021


Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 9

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<5.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

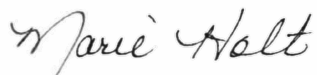
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:9

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Ethylbenzene	<1.00	µg/L	SW846 8260D				
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D				
Iodomethane	<5.00	µg/L	SW846 8260D				
Isopropylbenzene	<1.00	µg/L	SW846 8260D				
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D				
Methylene chloride	<5.00	µg/L	SW846 8260D				
Naphthalene	<1.00	µg/L	SW846 8260D				
Styrene	<1.00	µg/L	SW846 8260D				
Tetrachloroethene	<1.00**	µg/L	SW846 8260D				
Toluene	<1.00	µg/L	SW846 8260D				
Total Xylenes	<2.00	µg/L	SW846 8260D				
Trichloroethene	<1.00	µg/L	SW846 8260D				
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D				
Vinyl Acetate	<10.0	µg/L	SW846 8260D				
Vinyl chloride	<1.00	µg/L	SW846 8260D				
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D				
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D				
n-Butylbenzene	<1.00	µg/L	SW846 8260D				
n-Propylbenzene	<1.00	µg/L	SW846 8260D				
sec-Butylbenzene	<1.00	µg/L	SW846 8260D				
tert-Butylbenzene	<1.00	µg/L	SW846 8260D				
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D				
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D				

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 10

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	1.43	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	0.063	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	µg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.203	µg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	µg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	µg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	µg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	µg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	µg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	0.034	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES

Marie Holt
Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 10

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D				
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D				
Iodomethane	<5.00	µg/L	SW846 8260D				
Isopropylbenzene	<1.00	µg/L	SW846 8260D				
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D				

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

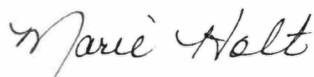
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 11

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.809	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	µg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.153	µg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	µg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	µg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	µg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	µg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	µg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	0.034	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

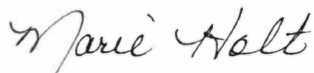
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 11

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D				
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D				
Iodomethane	<5.00	µg/L	SW846 8260D				
Isopropylbenzene	<1.00	µg/L	SW846 8260D				
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D				
Methylene chloride	<5.00	µg/L	SW846 8260D				
Naphthalene	<1.00	µg/L	SW846 8260D				

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

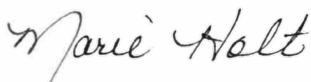
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-B
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 13

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	150*	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.102	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	µg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.073	µg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	µg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	µg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	µg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	µg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	µg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<5.00	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

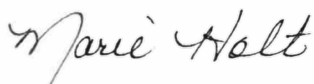
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-B
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 13

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<1.00	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	11.9*	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

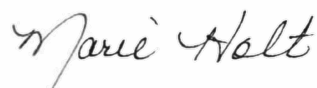
Project: Progress Rail
Client ID: Dup-B
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 13

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

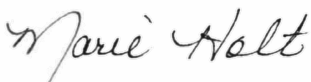
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-C
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 14

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.039	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	µg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.034	µg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	µg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	µg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	µg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	µg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	µg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021


Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-C
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 14

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.943	µg/L	SW846 8270E
Iodomethane	5.00	µg/L	SW846 8260D	Acenaphthene	<0.943	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.943	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.943	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: Dup-C
 Sample Matrix: Water
 Date Sampled: 07/29/2021
 Date Received: 07/30/2021
 Spectra Project: 2021070727
 Spectra Number: 14

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.943	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.943	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.943	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.943	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.943	µg/L	SW846 8270E
Chrysene	<0.943	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.943	µg/L	SW846 8270E
Fluoranthene	<0.943	µg/L	SW846 8270E
Fluorene	<0.943	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.943	µg/L	SW846 8270E
Naphthalene	<0.943	µg/L	SW846 8270E
Phenanthrene	<0.943	µg/L	SW846 8270E
Pyrene	<0.943	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

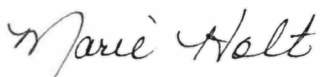
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-D
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 15

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.363	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D
Dissolved Barium	0.052	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

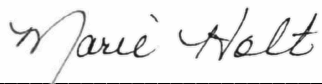
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-D
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 15

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00**	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<5.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.980	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.980	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.980	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.980	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.980	µg/L	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

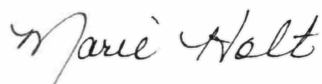
Project: Progress Rail
Client ID: Dup-D
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 15

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Benzo(a)Anthracene	<0.980	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.980	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.980	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.980	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.980	µg/L	SW846 8270E
Chrysene	<0.980	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.980	µg/L	SW846 8270E
Fluoranthene	<0.980	µg/L	SW846 8270E
Fluorene	<0.980	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.980	µg/L	SW846 8270E
Naphthalene	<0.980	µg/L	SW846 8270E
Phenanthrene	<0.980	µg/L	SW846 8270E
Pyrene	<0.980	µg/L	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

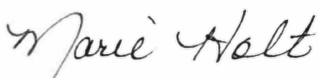
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: FB
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 16

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<5.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

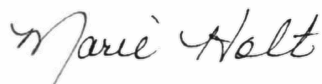
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: FB
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 16

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Ethylbenzene	<1.00	µg/L	SW846 8260D				
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D				
Iodomethane	<5.00	µg/L	SW846 8260D				
Isopropylbenzene	<1.00	µg/L	SW846 8260D				
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D				
Methylene chloride	<5.00	µg/L	SW846 8260D				
Naphthalene	<1.00	µg/L	SW846 8260D				
Styrene	<1.00	µg/L	SW846 8260D				
Tetrachloroethene	<1.00**	µg/L	SW846 8260D				
Toluene	<1.00	µg/L	SW846 8260D				
Total Xylenes	<2.00	µg/L	SW846 8260D				
Trichloroethene	<1.00	µg/L	SW846 8260D				
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D				
Vinyl Acetate	<10.0	µg/L	SW846 8260D				
Vinyl chloride	<1.00	µg/L	SW846 8260D				
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D				
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D				
n-Butylbenzene	<1.00	µg/L	SW846 8260D				
n-Propylbenzene	<1.00	µg/L	SW846 8260D				
sec-Butylbenzene	<1.00	µg/L	SW846 8260D				
tert-Butylbenzene	<1.00	µg/L	SW846 8260D				
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D				
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D				

*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

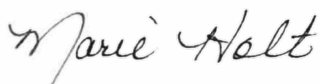
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 17

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<5.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00	µg/L	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

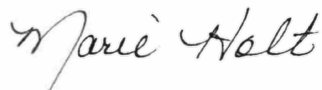
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 17

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Ethylbenzene	<1.00	µg/L	SW846 8260D				
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D				
Iodomethane	<5.00	µg/L	SW846 8260D				
Isopropylbenzene	<1.00	µg/L	SW846 8260D				
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D				
Methylene chloride	6.24*	µg/L	SW846 8260D				
Naphthalene	<1.00	µg/L	SW846 8260D				
Styrene	<1.00	µg/L	SW846 8260D				
Tetrachloroethene	<1.00**	µg/L	SW846 8260D				
Toluene	<1.00	µg/L	SW846 8260D				
Total Xylenes	<1.00	µg/L	SW846 8260D				
Trichloroethene	<1.00	µg/L	SW846 8260D				
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D				
Vinyl Acetate	<10.0	µg/L	SW846 8260D				
Vinyl chloride	<1.00	µg/L	SW846 8260D				
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D				
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D				
n-Butylbenzene	<1.00	µg/L	SW846 8260D				
n-Propylbenzene	<1.00	µg/L	SW846 8260D				
sec-Butylbenzene	<1.00	µg/L	SW846 8260D				
tert-Butylbenzene	<1.00	µg/L	SW846 8260D				
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D				
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-3
Sample Matrix: Water
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 18

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Diesel	<50.0	µg/L	NWTPH-Dx
Oil	<50.0	µg/L	NWTPH-Dx

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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08/16/2021

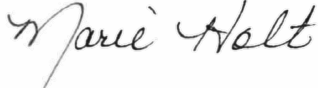
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-6 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 19

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0053	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0053	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0053	mg/Kg	SW846 8260D
Total Barium	14.0	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0053	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0053	mg/Kg	SW846 8260D
Total Chromium	5.4	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0053	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0053	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0053	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.053	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0053	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0053	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.053	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0053	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0053	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0053	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0053	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0053	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.053	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0053	mg/Kg	SW846 8260D	Acetone	<0.053	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0053	mg/Kg	SW846 8260D	Acrolein	<0.053	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0053	mg/Kg	SW846 8260D	Acrylonitrile	<0.053	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0053	mg/Kg	SW846 8260D	Benzene	<0.0053	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0053	mg/Kg	SW846 8260D	Bromobenzene	<0.0053	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0053	mg/Kg	SW846 8260D	Bromochloromethane	<0.0053	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0053	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0053	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.053	mg/Kg	SW846 8260D	Bromoform	<0.0053	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0053	mg/Kg	SW846 8260D	Bromomethane	<0.0053	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

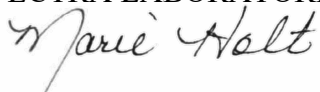
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-6 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 19

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0053	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0053	mg/Kg	SW846 8260D
Chlorobenzene	<0.0053	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0053	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0053	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0053	mg/Kg	SW846 8260D
Chloroethane	<0.0053	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0053	mg/Kg	SW846 8260D
Chloroform	<0.0053	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0053	mg/Kg	SW846 8260D
Chloromethane	<0.0053	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0053	mg/Kg	SW846 8260D
Dibromomethane	<0.0053	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0053	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0053	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E
Ethylbenzene	<0.0053	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0053	mg/Kg	SW846 8260D	Acenaphthene	<0.056	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0053	mg/Kg	SW846 8260D	Acenaphthylene	<0.056	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0053	mg/Kg	SW846 8260D	Anthracene	<0.056	mg/Kg	SW846 8270E
Methylene chloride	<0.027	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.056	mg/Kg	SW846 8270E
Naphthalene	<0.011	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.056	mg/Kg	SW846 8270E
Styrene	<0.0053	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0053	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.056	mg/Kg	SW846 8270E
Toluene	<0.0053	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Total Xylenes	<0.011	mg/Kg	SW846 8260D	Chrysene	<0.056	mg/Kg	SW846 8270E
Trichloroethene	<0.0053	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.056	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0053	mg/Kg	SW846 8260D	Fluoranthene	<0.056	mg/Kg	SW846 8270E
Vinyl Acetate	<0.053	mg/Kg	SW846 8260D	Fluorene	<0.056	mg/Kg	SW846 8270E
Vinyl chloride	<0.0053	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.056	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0053	mg/Kg	SW846 8260D	Naphthalene	<0.056	mg/Kg	SW846 8270E

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

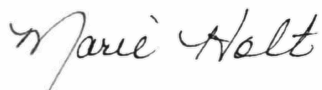
Project: Progress Rail
Client ID: SB-6 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 19

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.056	mg/Kg	SW846 8270E
Pyrene	<0.056	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

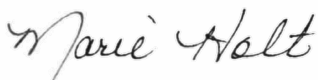
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-3 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:20

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichloroethane	<0.0050	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0050	mg/Kg	SW846 8260D
Total Barium	10.3	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0050	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D
Total Chromium	8.2	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0050	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.0050	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2-Butanone (MEK)	<0.050	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Chlorotoluene	<0.0050	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0050	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.050	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0050	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0050	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0050	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0050	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0050	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.050	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0050	mg/Kg	SW846 8260D	Acetone	<0.050	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0050	mg/Kg	SW846 8260D	Acrolein	<0.050	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0050	mg/Kg	SW846 8260D	Acrylonitrile	<0.050	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Benzene	<0.0050	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0050	mg/Kg	SW846 8260D	Bromobenzene	<0.0050	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Bromochloromethane	<0.0050	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0050	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0050	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.050	mg/Kg	SW846 8260D	Bromoform	<0.0050	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0050	mg/Kg	SW846 8260D	Bromomethane	<0.0050	mg/Kg	SW846 8260D

** Associated QC sample did not RPD requirements for this compound; sample results are estimated. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

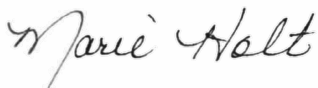
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-3 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:20

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Carbon Tetrachloride	<0.0050	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0050	mg/Kg	SW846 8260D
Chlorobenzene	<0.0050	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0050	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0050	mg/Kg	SW846 8260D
Chloroethane	<0.0050	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
Chloroform	<0.0050	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
Chloromethane	<0.0050	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0050	mg/Kg	SW846 8260D
Dibromomethane	<0.0050	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0050	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0050	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E
Ethylbenzene	<0.0050	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.0050	mg/Kg	SW846 8260D	Acenaphthene	<0.055	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0050	mg/Kg	SW846 8260D	Acenaphthylene	<0.055	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0050	mg/Kg	SW846 8260D	Anthracene	<0.055	mg/Kg	SW846 8270E
Methylene chloride	<0.025	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.055	mg/Kg	SW846 8270E
Naphthalene	<0.010	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.055	mg/Kg	SW846 8270E
Styrene	<0.0050	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0050	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.055	mg/Kg	SW846 8270E
Toluene	<0.0050	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Total Xylenes	<0.010	mg/Kg	SW846 8260D	Chrysene	<0.055	mg/Kg	SW846 8270E
Trichloroethene	<0.0050	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.055	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0050	mg/Kg	SW846 8260D	Fluoranthene	<0.055**	mg/Kg	SW846 8270E
Vinyl Acetate	<0.050	mg/Kg	SW846 8260D	Fluorene	<0.055	mg/Kg	SW846 8270E
Vinyl chloride	<0.0050	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.055	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0050	mg/Kg	SW846 8260D	Naphthalene	<0.055	mg/Kg	SW846 8270E

** Associated QC sample did not RPD requirements for this compound; sample results are estimated. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

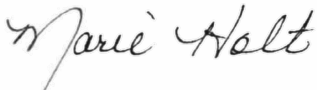
Project: Progress Rail
Client ID: SB-3 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:20

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
Phenanthrene	<0.055	mg/Kg	SW846 8270E
Pyrene	<0.055**	mg/Kg	SW846 8270E

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>
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** Associated QC sample did not RPD requirements for this compound; sample results are estimated. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

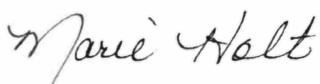
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0070	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0070	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.070	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0070	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0070	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0070	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0070	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0070	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.070	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0070	mg/Kg	SW846 8260D	Acetone	<0.070	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0070	mg/Kg	SW846 8260D	Acrolein	<0.070	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0070	mg/Kg	SW846 8260D	Acrylonitrile	<0.070	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Benzene	<0.0070	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0070	mg/Kg	SW846 8260D	Bromobenzene	<0.0070	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Bromochloromethane	<0.0070	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0070	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0070	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.070	mg/Kg	SW846 8260D	Bromoform	<0.0070	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0070	mg/Kg	SW846 8260D	Bromomethane	<0.0070	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0070	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0070	mg/Kg	SW846 8260D	Chlorobenzene	<0.0070	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0070	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0070	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0070	mg/Kg	SW846 8260D	Chloroethane	<0.0070	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Chloroform	<0.0070	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0070	mg/Kg	SW846 8260D	Chloromethane	<0.0070	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Dibromomethane	<0.0070	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0070	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0070	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.070	mg/Kg	SW846 8260D	Ethylbenzene	<0.0070	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

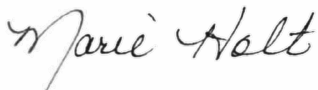
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0070	mg/Kg	SW846 8260D	Acenaphthene	<0.055	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0070	mg/Kg	SW846 8260D	Acenaphthylene	<0.055	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0070	mg/Kg	SW846 8260D	Anthracene	<0.055	mg/Kg	SW846 8270E
Methylene chloride	<0.035	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.055	mg/Kg	SW846 8270E
Naphthalene	<0.014	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.055	mg/Kg	SW846 8270E
Styrene	<0.0070	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0070	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.055	mg/Kg	SW846 8270E
Toluene	<0.0070	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Total Xylenes	<0.014	mg/Kg	SW846 8260D	Chrysene	<0.055	mg/Kg	SW846 8270E
Trichloroethene	<0.0070	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.055	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0070	mg/Kg	SW846 8260D	Fluoranthene	<0.055	mg/Kg	SW846 8270E
Vinyl Acetate	<0.070	mg/Kg	SW846 8260D	Fluorene	<0.055	mg/Kg	SW846 8270E
Vinyl chloride	<0.0070	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.055	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0070	mg/Kg	SW846 8260D	Naphthalene	<0.055	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0070	mg/Kg	SW846 8260D	Phenanthrene	<0.055	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0070	mg/Kg	SW846 8260D	Pyrene	<0.055	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0070	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0070	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0070	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0070	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0070	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E				

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:22

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0087	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0087	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.087	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0087	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0087	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0087	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0087	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0087	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.087	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0087	mg/Kg	SW846 8260D	Acetone	<0.087	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0087	mg/Kg	SW846 8260D	Acrolein	<0.087	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0087	mg/Kg	SW846 8260D	Acrylonitrile	<0.087	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Benzene	<0.0087	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0087	mg/Kg	SW846 8260D	Bromobenzene	<0.0087	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Bromochloromethane	<0.0087	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0087	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0087	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.087	mg/Kg	SW846 8260D	Bromoform	<0.0087	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0087	mg/Kg	SW846 8260D	Bromomethane	<0.0087	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0087	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0087	mg/Kg	SW846 8260D	Chlorobenzene	<0.0087	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0087	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0087	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0087	mg/Kg	SW846 8260D	Chloroethane	<0.0087	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Chloroform	<0.0087	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0087	mg/Kg	SW846 8260D	Chloromethane	<0.0087	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Dibromomethane	<0.0087	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0087	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0087	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.087	mg/Kg	SW846 8260D	Ethylbenzene	<0.0087	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

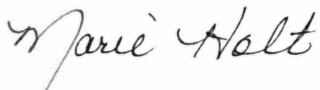
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:22

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0087	mg/Kg	SW846 8260D	Acenaphthene	<0.057	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0087	mg/Kg	SW846 8260D	Acenaphthylene	<0.057	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0087	mg/Kg	SW846 8260D	Anthracene	<0.057	mg/Kg	SW846 8270E
Methylene chloride	<0.044	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.057	mg/Kg	SW846 8270E
Naphthalene	<0.017	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.057	mg/Kg	SW846 8270E
Styrene	<0.0087	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.057	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0087	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.057	mg/Kg	SW846 8270E
Toluene	<0.0087	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.057	mg/Kg	SW846 8270E
Total Xylenes	<0.017	mg/Kg	SW846 8260D	Chrysene	<0.057	mg/Kg	SW846 8270E
Trichloroethene	<0.0087	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.057	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0087	mg/Kg	SW846 8260D	Fluoranthene	<0.057	mg/Kg	SW846 8270E
Vinyl Acetate	<0.087	mg/Kg	SW846 8260D	Fluorene	<0.057	mg/Kg	SW846 8270E
Vinyl chloride	<0.0087	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.057	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0087	mg/Kg	SW846 8260D	Naphthalene	<0.057	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0087	mg/Kg	SW846 8260D	Phenanthrene	<0.057	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0087	mg/Kg	SW846 8260D	Pyrene	<0.057	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0087	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0087	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0087	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0087	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0087	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.057	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.057	mg/Kg	SW846 8270E				

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

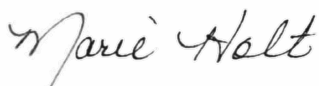
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 23

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.063	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0062	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.062	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0062	mg/Kg	SW846 8260D	Acetone	<0.062	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0062	mg/Kg	SW846 8260D	Acrolein	<0.062	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0062	mg/Kg	SW846 8260D	Acrylonitrile	<0.062	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Benzene	<0.0062	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0062	mg/Kg	SW846 8260D	Bromobenzene	<0.0062	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Bromochloromethane	<0.0062	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0062	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.062	mg/Kg	SW846 8260D	Bromoform	<0.0062	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0062	mg/Kg	SW846 8260D	Bromomethane	<0.0062	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0062	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0062	mg/Kg	SW846 8260D	Chlorobenzene	<0.0062	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0062	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D	Chloroethane	<0.0062	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Chloroform	<0.0062	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Chloromethane	<0.0062	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Dibromomethane	<0.0062	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0062	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.062	mg/Kg	SW846 8260D	Ethylbenzene	<0.0062	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

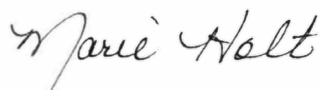
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:23

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0062	mg/Kg	SW846 8260D	Acenaphthene	<0.064	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0062	mg/Kg	SW846 8260D	Acenaphthylene	<0.064	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0062	mg/Kg	SW846 8260D	Anthracene	<0.064	mg/Kg	SW846 8270E
Methylene chloride	<0.031	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.064	mg/Kg	SW846 8270E
Naphthalene	<0.013	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.064	mg/Kg	SW846 8270E
Styrene	<0.0062	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.064	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0062	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.064	mg/Kg	SW846 8270E
Toluene	<0.0062	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.064	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.064	mg/Kg	SW846 8270E
Trichloroethene	<0.0062	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.064	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0062	mg/Kg	SW846 8260D	Fluoranthene	<0.064	mg/Kg	SW846 8270E
Vinyl Acetate	<0.062	mg/Kg	SW846 8260D	Fluorene	<0.064	mg/Kg	SW846 8270E
Vinyl chloride	<0.0062	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.064	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D	Naphthalene	<0.064	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D	Phenanthrene	<0.064	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0062	mg/Kg	SW846 8260D	Pyrene	<0.064	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0062	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0062	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0062	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E				

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

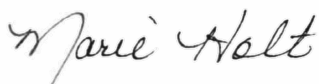
08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-14 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:24

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0058	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0058	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.058	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0058	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0058	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0058	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0058	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0058	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.058	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0058	mg/Kg	SW846 8260D	Acetone	0.14	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0058	mg/Kg	SW846 8260D	Acrolein	<0.068	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0058	mg/Kg	SW846 8260D	Acrylonitrile	<0.058	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Benzene	<0.0058	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0058	mg/Kg	SW846 8260D	Bromobenzene	<0.0058	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Bromochloromethane	<0.0058	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0058	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0058	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.058	mg/Kg	SW846 8260D	Bromoform	<0.0058	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0058	mg/Kg	SW846 8260D	Bromomethane	<0.0058	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0058	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0058	mg/Kg	SW846 8260D	Chlorobenzene	<0.0058	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0058	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0058	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0058	mg/Kg	SW846 8260D	Chloroethane	<0.0058	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Chloroform	<0.0058	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0058	mg/Kg	SW846 8260D	Chloromethane	<0.0058	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Dibromomethane	<0.0058	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0058	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0058	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.058	mg/Kg	SW846 8260D	Ethylbenzene	<0.0058	mg/Kg	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-14 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:24

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0058	mg/Kg	SW846 8260D	Acenaphthene	<0.061	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0058	mg/Kg	SW846 8260D	Acenaphthylene	<0.061	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0058	mg/Kg	SW846 8260D	Anthracene	<0.061	mg/Kg	SW846 8270E
Methylene chloride	0.029	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.061	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.061	mg/Kg	SW846 8270E
Styrene	<0.0058	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.061	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0058	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.061	mg/Kg	SW846 8270E
Toluene	<0.0058	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.061	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.061	mg/Kg	SW846 8270E
Trichloroethene	<0.0058	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.061	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0058	mg/Kg	SW846 8260D	Fluoranthene	<0.061	mg/Kg	SW846 8270E
Vinyl Acetate	<0.058	mg/Kg	SW846 8260D	Fluorene	<0.061	mg/Kg	SW846 8270E
Vinyl chloride	<0.0058	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.061	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0058	mg/Kg	SW846 8260D	Naphthalene	<0.061	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0058	mg/Kg	SW846 8260D	Phenanthrene	<0.061	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0058	mg/Kg	SW846 8260D	Pyrene	<0.061	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0058	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0058	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0058	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0058	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0058	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.061	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.061	mg/Kg	SW846 8270E				

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

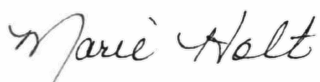
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 25

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.060	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0060	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.060	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0060	mg/Kg	SW846 8260D	Acetone	<0.016*	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0060	mg/Kg	SW846 8260D	Acrolein	<0.060	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0060	mg/Kg	SW846 8260D	Acrylonitrile	<0.060	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Benzene	<0.0060	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0060	mg/Kg	SW846 8260D	Bromobenzene	<0.0060	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Bromochloromethane	<0.0060	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0060	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.060	mg/Kg	SW846 8260D	Bromoform	<0.0060	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0060	mg/Kg	SW846 8260D	Bromomethane	<0.0060	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0060	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0060	mg/Kg	SW846 8260D	Chlorobenzene	<0.0060	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0060	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D	Chloroethane	<0.0060	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Chloroform	<0.0060	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0060	mg/Kg	SW846 8260D	Chloromethane	<0.0060	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Dibromomethane	<0.0060	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0060	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.060	mg/Kg	SW846 8260D	Ethylbenzene	<0.0060	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

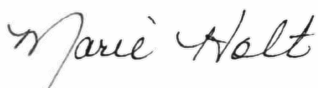
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 25

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0060	mg/Kg	SW846 8260D	Acenaphthene	<0.063	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0060	mg/Kg	SW846 8260D	Acenaphthylene	<0.063	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0060	mg/Kg	SW846 8260D	Anthracene	<0.063	mg/Kg	SW846 8270E
Methylene chloride	0.076*	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.063	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.063	mg/Kg	SW846 8270E
Styrene	<0.0060	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0060	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.063	mg/Kg	SW846 8270E
Toluene	<0.0060	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.063	mg/Kg	SW846 8270E
Trichloroethene	<0.0060	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.063	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0060	mg/Kg	SW846 8260D	Fluoranthene	<0.063	mg/Kg	SW846 8270E
Vinyl Acetate	<0.060	mg/Kg	SW846 8260D	Fluorene	<0.063	mg/Kg	SW846 8270E
Vinyl chloride	<0.0060	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.063	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D	Naphthalene	<0.063	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D	Phenanthrene	<0.063	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0060	mg/Kg	SW846 8260D	Pyrene	<0.063	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0060	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0060	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0060	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order

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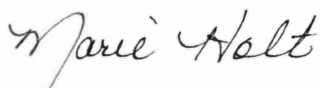
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 26

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.056	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0056	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.056	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0056	mg/Kg	SW846 8260D	Acetone	0.063*	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0056	mg/Kg	SW846 8260D	Acrolein	<0.056	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0056	mg/Kg	SW846 8260D	Acrylonitrile	<0.056	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Benzene	<0.0056	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0056	mg/Kg	SW846 8260D	Bromobenzene	<0.0056	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Bromochloromethane	<0.0056	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0056	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.056	mg/Kg	SW846 8260D	Bromoform	<0.0056	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0056	mg/Kg	SW846 8260D	Bromomethane	<0.0056	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0056	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0056	mg/Kg	SW846 8260D	Chlorobenzene	<0.0056	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0056	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D	Chloroethane	<0.0056	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Chloroform	<0.0056	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Chloromethane	<0.0056	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Dibromomethane	<0.0056	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0056	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.056	mg/Kg	SW846 8260D	Ethylbenzene	<0.0056	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the

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08/16/2021

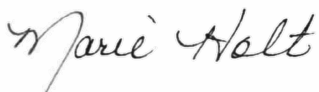
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 26

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0056	mg/Kg	SW846 8260D	Acenaphthene	<0.056	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0056	mg/Kg	SW846 8260D	Acenaphthylene	<0.056	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0056	mg/Kg	SW846 8260D	Anthracene	<0.056	mg/Kg	SW846 8270E
Methylene chloride	0.060*	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.056	mg/Kg	SW846 8270E
Naphthalene	<0.011	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.056	mg/Kg	SW846 8270E
Styrene	<0.0056	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0056	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.056	mg/Kg	SW846 8270E
Toluene	<0.0056	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Total Xylenes	<0.011	mg/Kg	SW846 8260D	Chrysene	<0.056	mg/Kg	SW846 8270E
Trichloroethene	<0.0056	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.056	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0056	mg/Kg	SW846 8260D	Fluoranthene	<0.056	mg/Kg	SW846 8270E
Vinyl Acetate	<0.056	mg/Kg	SW846 8260D	Fluorene	<0.056	mg/Kg	SW846 8270E
Vinyl chloride	<0.0056	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.056	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D	Naphthalene	<0.056	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D	Phenanthrene	<0.056	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0056	mg/Kg	SW846 8260D	Pyrene	<0.056	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0056	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0056	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0056	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the

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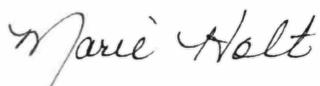
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:27

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	22.4	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.062	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0062	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.062	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0062	mg/Kg	SW846 8260D	Acetone	<0.062	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0062	mg/Kg	SW846 8260D	Acrolein	<0.062	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0062	mg/Kg	SW846 8260D	Acrylonitrile	<0.062	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Benzene	<0.0062	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0062	mg/Kg	SW846 8260D	Bromobenzene	<0.0062	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Bromochloromethane	<0.0062	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0062	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.062	mg/Kg	SW846 8260D	Bromoform	<0.0062	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0062	mg/Kg	SW846 8260D	Bromomethane	<0.0062	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0062	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0062	mg/Kg	SW846 8260D	Chlorobenzene	<0.0062	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0062	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D	Chloroethane	<0.0062	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Chloroform	<0.0062	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Chloromethane	<0.0062	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Dibromomethane	<0.0062	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0062	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.062	mg/Kg	SW846 8260D	Ethylbenzene	<0.0062	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

SPECTRA LABORATORIES



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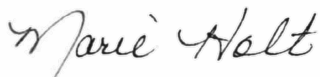
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:27

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0062	mg/Kg	SW846 8260D	Acenaphthene	<0.062	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0062	mg/Kg	SW846 8260D	Acenaphthylene	<0.062	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0062	mg/Kg	SW846 8260D	Anthracene	<0.062	mg/Kg	SW846 8270E
Methylene chloride	0.072*	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.062	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.062	mg/Kg	SW846 8270E
Styrene	<0.0062	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.062	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0062	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.062	mg/Kg	SW846 8270E
Toluene	<0.0062	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.062	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.062	mg/Kg	SW846 8270E
Trichloroethene	<0.0062	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.062	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0062	mg/Kg	SW846 8260D	Fluoranthene	<0.062	mg/Kg	SW846 8270E
Vinyl Acetate	<0.062	mg/Kg	SW846 8260D	Fluorene	<0.062	mg/Kg	SW846 8270E
Vinyl chloride	<0.0062	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.062	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D	Naphthalene	<0.062	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D	Phenanthrene	<0.062	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0062	mg/Kg	SW846 8260D	Pyrene	<0.062	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0062	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0062	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0062	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.062	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.062	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

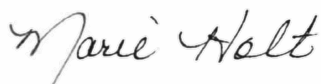
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 28

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	10.6	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.060	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0060	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.060	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0060	mg/Kg	SW846 8260D	Acetone	<0.060	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0060	mg/Kg	SW846 8260D	Acrolein	<0.060	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0060	mg/Kg	SW846 8260D	Acrylonitrile	<0.060	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Benzene	<0.0060	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0060	mg/Kg	SW846 8260D	Bromobenzene	<0.0060	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Bromochloromethane	<0.0060	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0060	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.060	mg/Kg	SW846 8260D	Bromoform	<0.0060	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0060	mg/Kg	SW846 8260D	Bromomethane	<0.0060	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0060	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0060	mg/Kg	SW846 8260D	Chlorobenzene	<0.0060	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0060	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D	Chloroethane	<0.0060	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Chloroform	<0.0060	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0060	mg/Kg	SW846 8260D	Chloromethane	<0.0060	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Dibromomethane	<0.0060	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0060	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.060	mg/Kg	SW846 8260D	Ethylbenzene	<0.0060	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021


Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 28

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0060	mg/Kg	SW846 8260D	Acenaphthene	<0.060**	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0060	mg/Kg	SW846 8260D	Acenaphthylene	<0.060**	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0060	mg/Kg	SW846 8260D	Anthracene	<0.060**	mg/Kg	SW846 8270E
Methylene chloride	0.068*	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.060	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.060	mg/Kg	SW846 8270E
Styrene	<0.0060	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.060	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0060	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.060	mg/Kg	SW846 8270E
Toluene	<0.0060	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.060	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.060	mg/Kg	SW846 8270E
Trichloroethene	<0.0060	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.060	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0060	mg/Kg	SW846 8260D	Fluoranthene	<0.060	mg/Kg	SW846 8270E
Vinyl Acetate	<0.060	mg/Kg	SW846 8260D	Fluorene	<0.060**	mg/Kg	SW846 8270E
Vinyl chloride	<0.0060	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.060	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D	Naphthalene	<0.060**	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D	Phenanthrene	<0.060	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0060	mg/Kg	SW846 8260D	Pyrene	<0.060	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0060	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0060	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0060	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.060**	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.060**	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 29

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	10.7	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0061	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0061	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.061	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0061	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0061	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0061	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0061	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0061	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.061	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0061	mg/Kg	SW846 8260D	Acetone	<0.061	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0061	mg/Kg	SW846 8260D	Acrolein	<0.061	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0061	mg/Kg	SW846 8260D	Acrylonitrile	<0.061	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Benzene	<0.0061	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0061	mg/Kg	SW846 8260D	Bromobenzene	<0.0061	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Bromochloromethane	<0.0061	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0061	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0061	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.061	mg/Kg	SW846 8260D	Bromoform	<0.0061	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0061	mg/Kg	SW846 8260D	Bromomethane	<0.0061	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0061	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0061	mg/Kg	SW846 8260D	Chlorobenzene	<0.0061	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0061	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0061	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0061	mg/Kg	SW846 8260D	Chloroethane	<0.0061	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Chloroform	<0.0061	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0061	mg/Kg	SW846 8260D	Chloromethane	<0.0061	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Dibromomethane	<0.0061	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0061	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0061	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.061	mg/Kg	SW846 8260D	Ethylbenzene	<0.0061	mg/Kg	SW846 8260D

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

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 29

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0061	mg/Kg	SW846 8260D	Acenaphthene	<0.055	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0061	mg/Kg	SW846 8260D	Acenaphthylene	<0.055	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0061	mg/Kg	SW846 8260D	Anthracene	<0.055	mg/Kg	SW846 8270E
Methylene chloride	<0.030	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.055	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.055	mg/Kg	SW846 8270E
Styrene	<0.0061	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0061	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.055	mg/Kg	SW846 8270E
Toluene	<0.0061	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Chrysene	<0.055	mg/Kg	SW846 8270E
Trichloroethene	<0.0061	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.055	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0061	mg/Kg	SW846 8260D	Fluoranthene	<0.055	mg/Kg	SW846 8270E
Vinyl Acetate	<0.061	mg/Kg	SW846 8260D	Fluorene	<0.055	mg/Kg	SW846 8270E
Vinyl chloride	<0.0061	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.055	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0061	mg/Kg	SW846 8260D	Naphthalene	<0.055	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0061	mg/Kg	SW846 8260D	Phenanthrene	<0.055	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0061	mg/Kg	SW846 8260D	Pyrene	<0.055	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0061	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0061	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0061	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0061	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0061	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E				

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

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:30

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Total Arsenic	3.1	mg/Kg	SW846 6010D	2-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.056	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0056	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.0056	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0056	mg/Kg	SW846 8260D	Acetone	<0.16	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0056	mg/Kg	SW846 8260D	Acrolein	<0.056	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0056	mg/Kg	SW846 8260D	Acrylonitrile	<0.056	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Benzene	<0.0056	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0056	mg/Kg	SW846 8260D	Bromobenzene	<0.0056	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Bromochloromethane	<0.0056	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0056	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.056	mg/Kg	SW846 8260D	Bromoform	<0.0056	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0056	mg/Kg	SW846 8260D	Bromomethane	<0.0056	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0056	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0056	mg/Kg	SW846 8260D	Chlorobenzene	<0.0056	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0056	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D	Chloroethane	<0.0056	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Chloroform	<0.0056	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Chloromethane	<0.0056	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Dibromomethane	<0.0056	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0056	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.056	mg/Kg	SW846 8260D	Ethylbenzene	<0.0056	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the

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Marie Holt, Customer Support & Proj. Manager

08/16/2021


Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:30

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Hexachlorobutadiene	<0.0056	mg/Kg	SW846 8260D	Acenaphthene	<0.051	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0056	mg/Kg	SW846 8260D	Acenaphthylene	<0.051	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0056	mg/Kg	SW846 8260D	Anthracene	<0.051	mg/Kg	SW846 8270E
Methylene chloride	<0.028	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.051	mg/Kg	SW846 8270E
Naphthalene	<0.011	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.051	mg/Kg	SW846 8270E
Styrene	<0.0056	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.051	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0056	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.051	mg/Kg	SW846 8270E
Toluene	<0.0056	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.051	mg/Kg	SW846 8270E
Total Xylenes	<0.011	mg/Kg	SW846 8260D	Chrysene	<0.051	mg/Kg	SW846 8270E
Trichloroethene	<0.0056	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.051	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.0056	mg/Kg	SW846 8260D	Fluoranthene	<0.051	mg/Kg	SW846 8270E
Vinyl Acetate	<0.056	mg/Kg	SW846 8260D	Fluorene	<0.051	mg/Kg	SW846 8270E
Vinyl chloride	<0.0056	mg/Kg	SW846 8260D	Indeno(1,2,3-cd)Pyrene	<0.051	mg/Kg	SW846 8270E
cis-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D	Naphthalene	<0.051	mg/Kg	SW846 8270E
cis-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D	Phenanthrene	<0.051	mg/Kg	SW846 8270E
n-Butylbenzene	<0.0056	mg/Kg	SW846 8260D	Pyrene	<0.051	mg/Kg	SW846 8270E
n-Propylbenzene	<0.0056	mg/Kg	SW846 8260D				
sec-Butylbenzene	<0.0056	mg/Kg	SW846 8260D				
tert-Butylbenzene	<0.0056	mg/Kg	SW846 8260D				
trans-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D				
trans-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D				
1-Methylnaphthalene	<0.051	mg/Kg	SW846 8270E				
2-Methylnaphthalene	<0.051	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the

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Marie Holt, Customer Support & Proj. Manager

08/16/2021

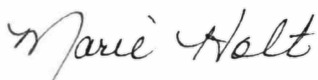
Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 31

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<0.0050	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.050	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0050	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0050	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0050	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0050	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0050	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.050	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0050	mg/Kg	SW846 8260D	Acetone	<0.050	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0050	mg/Kg	SW846 8260D	Acrolein	<0.050	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0050	mg/Kg	SW846 8260D	Acrylonitrile	<0.050	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Benzene	<0.0050	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0050	mg/Kg	SW846 8260D	Bromobenzene	<0.0050	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Bromochloromethane	<0.0050	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0050	mg/Kg	SW846 8260D	Bromodichloromethane	<0.0050	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.050	mg/Kg	SW846 8260D	Bromoform	<0.0050	mg/Kg	SW846 8260D
1,2-Dibromoethane (EDB)	<0.0050	mg/Kg	SW846 8260D	Bromomethane	<0.0050	mg/Kg	SW846 8260D
1,2-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Carbon Tetrachloride	<0.0050	mg/Kg	SW846 8260D
1,2-Dichloroethane	<0.0050	mg/Kg	SW846 8260D	Chlorobenzene	<0.0050	mg/Kg	SW846 8260D
1,2-Dichloropropane	<0.0050	mg/Kg	SW846 8260D	Chlorodibromomethane	<0.0050	mg/Kg	SW846 8260D
1,3,5-Trimethylbenzene	<0.0050	mg/Kg	SW846 8260D	Chloroethane	<0.0050	mg/Kg	SW846 8260D
1,3-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Chloroform	<0.0050	mg/Kg	SW846 8260D
1,3-Dichloropropane	<0.0050	mg/Kg	SW846 8260D	Chloromethane	<0.0050	mg/Kg	SW846 8260D
1,4-Dichlorobenzene	<0.0050	mg/Kg	SW846 8260D	Dibromomethane	<0.0050	mg/Kg	SW846 8260D
2,2-Dichloropropane	<0.0050	mg/Kg	SW846 8260D	Dichlorodifluoromethane	<0.0050	mg/Kg	SW846 8260D
2-Butanone (MEK)	<0.050	mg/Kg	SW846 8260D	Ethylbenzene	<0.0050	mg/Kg	SW846 8260D
2-Chlorotoluene	<0.0050	mg/Kg	SW846 8260D	Hexachlorobutadiene	<0.0050	mg/Kg	SW846 8260D

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

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh


Project: Progress Rail
Client ID: TB
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number:31

Analyte	Result	Units	Method
Isopropylbenzene	<0.0050	mg/Kg	SW846 8260D
Methyl-tert-Butyl Ether	<0.0050	mg/Kg	SW846 8260D
Methylene chloride	<0.025	mg/Kg	SW846 8260D
Naphthalene	<0.010	mg/Kg	SW846 8260D
Styrene	<0.0050	mg/Kg	SW846 8260D
Tetrachloroethene	<0.0050	mg/Kg	SW846 8260D
Toluene	<0.0050	mg/Kg	SW846 8260D
Total Xylenes	<0.010	mg/Kg	SW846 8260D
Trichloroethene	<0.0050	mg/Kg	SW846 8260D
Trichlorofluoromethane	<0.0050	mg/Kg	SW846 8260D
Vinyl Acetate	<0.050	mg/Kg	SW846 8260D
Vinyl chloride	<0.0050	mg/Kg	SW846 8260D
cis-1,2-Dichloroethene	<0.0050	mg/Kg	SW846 8260D
cis-1,3-Dichloropropene	<0.0050	mg/Kg	SW846 8260D
n-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
n-Propylbenzene	<0.0050	mg/Kg	SW846 8260D
sec-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
tert-Butylbenzene	<0.0050	mg/Kg	SW846 8260D
trans-1,2-Dichloroethene	<0.0050	mg/Kg	SW846 8260D
trans-1,3-Dichloropropene	<0.0050	mg/Kg	SW846 8260D

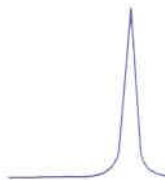
Analyte	Result	Units	Method
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*Recovery for this surrogate was greater than the method defined upper limit. As all associated analytes were not detected in this sample, results unaffected.

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager



August 11, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070727
Applies to Spectra # 7,8,10,13-15

NWTPH-DX ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/5/2021	Date Analyzed:	8/9/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	2500	1959.00	78%

METHOD BLANK

Date Extracted:	8/5/2021	Date Analyzed:	8/9/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 121%

Surrogate Recovery Limits: 50 -150%

August 5, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/L
Spectra Project: 2021070727
Applies to Spectra #'s 1-8,10,11,13-15
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010D - Total and Dissolved - Liquid/Water

Method Blank/Dissolved Filter Blank

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Element	Blank Result
Arsenic	< 0.025
Barium	< 0.002
Cadmium	< 0.003
Chromium	< 0.007
Lead	< 0.025
Selenium	< 0.025
Silver	< 0.007

Blank Spike (LCS)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Element	Spike	LCS	LCS
	Added	Conc.	%Rec
Arsenic	1.0	1.023	102.3
Barium	1.0	1.040	104.0
Cadmium	1.0	1.012	101.2
Chromium	1.0	0.989	98.9
Lead	1.0	0.996	99.6
Selenium	1.0	0.994	99.4
Silver	1.0	0.983	98.3

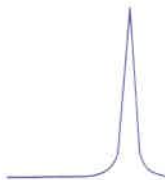
LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021
Sample Spiked: 2021080063-2

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Arsenic	0.000	1.0	1.056	105.6	1.054	105.4	0.2
Barium	0.019	1.0	1.050	103.1	1.048	102.9	0.2
Cadmium	0.000	1.0	1.059	105.9	1.055	105.5	0.4
Chromium	0.000	1.0	0.981	98.1	1.002	100.2	2.1
Lead	0.000	1.0	1.014	101.4	1.025	102.5	1.1
Selenium	0.000	1.0	1.035	103.5	1.041	104.1	0.6
Silver	0.000	1.0	1.024	102.4	1.016	101.6	0.8

Recovery Limits 75-125%
RPD Limit 20



8/11/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra #'s: 21-30
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

<u>Element</u>	<u>Blank Result</u>
Arsenic	< 2.5

Laboratory Control Sample (LCS)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

<u>Element</u>	<u>Spike Added</u>	<u>LCS Conc.</u>	<u>LCS %Rec</u>
Arsenic	200.0	196.5	98.3

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Sample Spiked: 2021080018-1

<u>Element</u>	<u>Sample Conc.</u>	<u>Spike Conc.</u>	<u>MS Conc.</u>	<u>MS %Rec</u>	<u>MSD Conc</u>	<u>MSD %Rec</u>	<u>RPD</u>
Arsenic	32.9	200.0	245.0	106.1	250.6	108.9	2.6

Comment:
Recovery Limits 75-125%
RPD Limit 20

August 5, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: ug/L
Spectra Project: 2021070727
Applies to Spectra #'s: 1-8, 10,11,13-15
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - Total and Dissolved - SW846 7470A - Water/Liquid

Dissolved Filter Blank/Laboratory Reagent Blank (LRB)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

	CAS #	Result
Mercury	7439-97-6	< 0.5

Laboratory Control Spike (LCS)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	2.0	1.95	97.5

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Sample Spiked: 2021080087-1

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.00	2.0	2.01	100.5	2.10	105.0	4.4

Recovery Limits 70-130%

RPD Limit 20

SPECTRA LABORATORIES

8/5/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra #'s 19-20
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Element	Blank Result
Arsenic	< 2.5
Barium	< 0.2
Cadmium	< 0.3
Chromium	< 0.7
Copper	< 0.6
Lead	< 2.5
Selenium	< 2.5
Silver	< 0.7

Laboratory Control Sample (LCS)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Element	Spike Addition	LCS Conc.	LCS %Rec
Arsenic	200.0	204.3	102.2
Barium	200.0	202.2	101.1
Cadmium	200.0	200.1	100.1
Chromium	200.0	204.9	102.5
Copper	200.0	206.4	103.2
Lead	200.0	194.7	97.4
Selenium	200.0	198.5	99.3
Silver	200.0	201.3	100.7

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021
Sample Spiked: 2021070603-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Arsenic	0.0	200.0	198.6	99.3	209.6	104.8	5.4
Barium	29.8	200.0	213.4	91.8	226.2	98.2	6.7
Cadmium	0.0	200.0	191.5	95.8	202.7	101.4	5.7
Chromium	0.0	200.0	166.8	83.4	175.6	87.8	5.1
Copper	0.0	200.0	184.4	92.2	195.6	97.8	5.9
Lead	0.0	200.0	194.1	97.1	206.0	103.0	5.9
Selenium	0.0	200.0	171.2	85.6	184.2	92.1	7.3
Silver	0.0	200.0	181.8	90.9	185.4	92.7	2.0

Recovery Limits 75-125%

RPD Limit 20

Comments:

August 4, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra #'s: 19-20
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - SW846 7471B - Soil/Solid

Method Blank (MBLK)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

	CAS #	Result
Mercury	7439-97-6	< 0.025

Laboratory Control Spike (LCS)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	0.2	1.970	985.0

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

Sample Spiked: 2021070649-1

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.076	0.2	0.247	85.6	0.267	95.6	11.0

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES

August 6, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070727
Applies to Spectra # 1-6

NWTPH-DX ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/4/2021	Date Analyzed:	8/5/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	2500	2172.00	87%

METHOD BLANK

Date Extracted:	8/4/2021	Date Analyzed:	8/5/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 69%

Surrogate Recovery Limits: 50 -150%

August 11, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070727
Applies to Spectra # 18

NWTPH-DX ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/9/2021	Date Analyzed:	8/10/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	2500	2175.00	87%

METHOD BLANK

Date Extracted:	8/9/2021	Date Analyzed:	8/10/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 81%

Surrogate Recovery Limits: 50 -150%

August 13, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-Dx
Sample Matrix: Soil
Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra # 19-20

NWTPH-Dx ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/12/2021	Date Analyzed:	8/12/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	125	100.2	80%

METHOD BLANK

Date Extracted:	8/12/2021	Date Analyzed:	8/12/2021
Diesel	<10.0		
Heavy Oil	<50.0		
Surrogate Recovery:			
p-Terphenyl	80%		

Surrogate Recovery Limits: 50 -150%

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch	W2021080401
Date Extracted	8/4/2021
Date Analyzed	8/9/2021
SampleID	MB
Initial Amount	1000
final amount	5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.88	4	72%	25%	121%	Pass
Phenol-d5	A	1.71	4	43%	24%	113%	Pass
Nitrobenzene-d5	BN	1.69	2	85%	23%	120%	Pass
2-Fluorobiphenyl	BN	1.73	2	87%	30%	115%	Pass
2,4,6-Tribromophenol	A	3.31	4	83%	19%	122%	Pass
p-Terphenyl-d14	BN	2	2	100%	18%	137%	Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch	W2021080401
Date Extracted	8/4/2021
Date Analyzed	8/9/2021
Sample#	1
Initial Amount	1000
final amount	5

Parameter	Analyte List	Result		625.1 criteria			Bias
		ug/mL	TV	%R	LCL	UCL	
1-Methylnaphthalene	N	0.70	1	70%	60%	140%	
2-Methylnaphthalene	N	0.70	1	70%	60%	140%	
Acenaphthene	Y	0.97	1	97%	70%	130%	
Acenaphthylene	Y	1.02	1	102%	60%	130%	
Anthracene	Y	0.97	1	97%	58%	130%	
Benzo(a)anthracene	Y	1.01	1	101%	32%	138%	
Benzo(a)pyrene	Y	0.85	1	85%	40%	133%	
Benzo(b)Fluoranthene	Y	0.94	1	94%	42%	140%	
Benzo(g,h,i)perylene	Y	1.19	1	119%	13%	195%	
Benzo(k)Fluoranthene	Y	1.06	1	106%	25%	146%	
Chrysene	Y	1.05	1	105%	44%	140%	
Dibenzo(a,h)anthracene	Y	1.08	1	108%	13%	200%	
Fluoranthene	Y	1.08	1	108%	47%	130%	
Fluorene	Y	1.01	1	101%	70%	130%	
Indeno(1,2,3-c,d)pyrene	Y	1.05	1	105%	13%	151%	
Naphthalene	Y	0.89	1	89%	70%	130%	
Phenanthrene	Y	0.93	1	93%	67%	130%	
Pyrene	Y	0.99	1	99%	70%	130%	

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	2.92		4	73%	25%	121%	1 Pass
Phenol-d5	A	1.76		4	44%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.74		2	87%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.73		2	87%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	3.79		4	95%	19%	122%	1 Pass
p-Terphenyl-d14	BN	1.86		2	93%	18%	137%	1 Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch 2021080902
 Date Extracted 8/9/2021
 Date Analyzed 8/9/2021
 SampleID MB
 Sample#
 Initial Amount 20
 final amount 5
 %TS 100%

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final mg/kg	DF
1-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
2-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
Acenaphthene	Y		N	0.2	0.2500	<0.05	1
Acenaphthylene	Y		N	0.2	0.2500	<0.05	1
Anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)pyrene	Y		N	0.2	0.2500	<0.05	1
Benzo(b)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Benzo(g,h,i)perylene	Y		N	0.2	0.2500	<0.05	1
Benzo(k)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Chrysene	Y		N	0.2	0.2500	<0.05	1
Dibenzo(a,h)anthracene	Y		N	0.2	0.2500	<0.05	1
Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Fluorene	Y		N	0.2	0.2500	<0.05	1
Indeno(1,2,3-c,d)pyrene	Y		N	0.2	0.2500	<0.05	1
Naphthalene	Y		N	0.2	0.2500	<0.05	1
Phenanthrene	Y		N	0.2	0.2500	<0.05	1
Pyrene	Y		N	0.2	0.2500	<0.05	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias	
2-Fluorophenol	A	3.89		4	97%	25%	121%	Pass
Phenol-d5	A	3.97		4	99%	24%	113%	Pass
Nitrobenzene-d5	BN	1.43		2	72%	23%	120%	Pass
2-Fluorobiphenyl	BN	1.82		2	91%	30%	115%	Pass
2,4,6-Tribromophenol	A	3.39		4	85%	19%	122%	Pass
p-Terphenyl-d14	BN	1.9		2	95%	18%	137%	Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch	2021080902					
Date Extracted	8/9/2021					
Date Analyzed	8/9/2021					
Sample#	LCS					
Initial Amount	20					
final amount	5					
%TS	LCS		%R	LCL	UCL	
Naphthalene	0.9400	1.00	94%	33%	147%	
2-Methylnaphthalene	0.7200	1.00	72%	60%	140%	
1-Methylnaphthalene	0.7300	1.00	73%	60%	140%	
Acenaphthylene	1.0400	1.00	104%	40%	130%	
Acenaphthene	0.9800	1.00	98%	40%	130%	
Fluorene	1.0400	1.00	104%	40%	130%	
Phenanthrene	0.9700	1.00	97%	40%	130%	
Anthracene	1.0100	1.00	101%	40%	130%	
Fluoranthene	1.1600	1.00	116%	40%	130%	
Pyrene	0.9100	1.00	91%	62%	202%	
Benzo(a)Anthracene	1.0300	1.00	103%	40%	130%	
Chrysene	1.0400	1.00	104%	40%	130%	
Benzo(b)Fluoranthene	1.0200	1.00	102%	40%	130%	
Benzo(k)Fluoranthene	1.0200	1.00	102%	40%	130%	
Benzo(a)Pyrene	0.9100	1.00	91%	40%	130%	
Indeno(1,2,3-cd)Pyrene	1.1800	1.00	118%	40%	130%	
Dibenz(a,h)Anthracene	1.1700	1.00	117%	40%	130%	
Benzo(ghi)Perylene	1.3100	1.00	131%	40%	130%	

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch 2021080902
 Date Extracted 8/9/2021
 Date Analyzed 8/9/2021
 Sample# MS/MSD
 Parent Sample

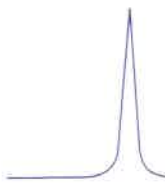
Parent Results	TV	MS Results	MS %R	MSD Results	MSD %R	LCL	UCL	RPD	CL
Naphthalene	1	0.97	97%	0.79	79%	33%	147%	20.45	20
2-Methylnaphthalene	1	0.76	76%	0.59	59%	40%	130%	25.19	20
1-Methylnaphthalene	1	0.77	77%	0.58	58%	40%	130%	28.15	20
Acenaphthylene	1	1.07	107%	0.86	86%	40%	130%	21.76	20
Acenaphthene	1	1.02	102%	0.82	82%	40%	130%	21.74	20
Fluorene	1	1.07	107%	0.85	85%	40%	130%	22.92	20
Phenanthrene	1	0.96	96%	0.79	79%	40%	130%	19.43	20
Anthracene	1	1.01	101%	0.80	80%	40%	130%	23.20	20
Fluoranthene	1	1.24	124%	1.11	111%	40%	130%	11.06	20
Pyrene	1	0.94	94%	0.87	87%	62%	202%	7.73	20
Benzo(a)Anthracene	1	1.03	103%	0.97	97%	40%	130%	6.00	20
Chrysene	1	1.05	105%	0.98	98%	40%	130%	6.90	20
Benzo(b)Fluoranthene	1	0.96	96%	0.91	91%	40%	130%	5.35	20
Benzo(k)Fluoranthene	1	1.09	109%	1.02	102%	40%	130%	6.64	20
Benzo(a)Pyrene	1	0.93	93%	0.87	87%	40%	130%	6.67	20
Indeno(1,2,3-cd)Pyrene	1	1.15	115%	1.07	107%	40%	130%	7.21	20
Dibenz(a,h)Anthracene	1	1.13	113%	1.06	106%	40%	130%	6.39	20
Benzo(ghi)Perylene	1	1.27	127%	1.18	118%	40%	130%	7.35	20

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch 2021080601
 Date Extracted 8/6/2021
 Date Analyzed 8/6/2021
 SampleID MB
 Sample#
 Initial Amount 20
 final amount 5
 %TS 100%

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final mg/kg	DF
1-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
2-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
Acenaphthene	Y		N	0.2	0.2500	<0.05	1
Acenaphthylene	Y		N	0.2	0.2500	<0.05	1
Anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)pyrene	Y		N	0.2	0.2500	<0.05	1
Benzo(b)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Benzo(g,h,i)perylene	Y		N	0.2	0.2500	<0.05	1
Benzo(k)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Chrysene	Y		N	0.2	0.2500	<0.05	1
Dibenzo(a,h)anthracene	Y		N	0.2	0.2500	<0.05	1
Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Fluorene	Y		N	0.2	0.2500	<0.05	1
Indeno(1,2,3-c,d)pyrene	Y		N	0.2	0.2500	<0.05	1
Naphthalene	Y		N	0.2	0.2500	<0.05	1
Phenanthrene	Y		N	0.2	0.2500	<0.05	1
Pyrene	Y		N	0.2	0.2500	<0.05	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.63		4	66%	25%	121% Pass
Phenol-d5	A	2.6		4	65%	24%	113% Pass
Nitrobenzene-d5	BN	0.94		2	47%	23%	120% Pass
2-Fluorobiphenyl	BN	1.17		2	59%	30%	115% Pass
2,4,6-Tribromophenol	A	3.08		4	77%	19%	122% Pass
p-Terphenyl-d14	BN	1.88		2	94%	18%	137% Pass



SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch	2021080601				
Date Extracted	8/6/2021				
Date Analyzed	8/6/2021				
Sample#	LCS				
Initial Amount	20				
final amount	5				
%TS	LCS	%R	LCL	UCL	
Naphthalene	0.8500	1.00	85%	33%	147%
2-Methylnaphthalene	0.6600	1.00	66%	60%	140%
1-Methylnaphthalene	0.6300	1.00	63%	60%	140%
Acenaphthylene	0.8900	1.00	89%	40%	130%
Acenaphthene	0.8500	1.00	85%	40%	130%
Fluorene	0.8900	1.00	89%	40%	130%
Phenanthrene	0.8700	1.00	87%	40%	130%
Anthracene	0.8800	1.00	88%	40%	130%
Fluoranthene	1.0800	1.00	108%	40%	130%
Pyrene	0.8700	1.00	87%	62%	202%
Benzo(a)Anthracene	0.9700	1.00	97%	40%	130%
Chrysene	1.0200	1.00	102%	40%	130%
Benzo(b)Fluoranthene	0.9400	1.00	94%	40%	130%
Benzo(k)Fluoranthene	1.0500	1.00	105%	40%	130%
Benzo(a)Pyrene	0.8500	1.00	85%	40%	130%
Indeno(1,2,3-cd)Pyrene	1.0800	1.00	108%	40%	130%
Dibenz(a,h)Anthracene	1.1100	1.00	111%	40%	130%
Benzo(ghi)Perylene	1.2500	1.00	125%	40%	130%

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch 2021080601
 Date Extracted 8/6/2021
 Date Analyzed 8/13/2021
 Sample# MS/MSD
 Parent Sample

	Parent Results	TV	MS Results	MS %R	MSD Results	MSD %R	LCL	UCL	RPD	CL
Naphthalene		1	0.39	39%	0.44	44%	33%	147%	12.05	20
2-Methylnaphthalene		1	0.4	40%	0.44	44%	40%	130%	9.52	20
1-Methylnaphthalene		1	0.4	40%	0.44	44%	40%	130%	9.52	20
Acenaphthylene		1	0.47	47%	0.51	51%	40%	130%	8.16	20
Acenaphthene		1	0.46	46%	0.49	49%	40%	130%	6.32	20
Fluorene		1	0.46	46%	0.46	46%	40%	130%	0.00	20
Phenanthrene		1	0.49	49%	0.51	51%	40%	130%	4.00	20
Anthracene		1	0.53	53%	0.53	53%	40%	130%	0.00	20
Fluoranthene		1	0.77	77%	0.61	61%	40%	130%	23.19	20
Pyrene		1	0.4	40%	0.54	54%	62%	202%	29.79	20
Benzo(a)Anthracene		1	0.68	68%	0.63	63%	40%	130%	7.63	20
Chrysene		1	0.62	62%	0.58	58%	40%	130%	6.67	20
Benzo(b)Fluoranthene		1	0.61	61%	0.55	55%	40%	130%	10.34	20
Benzo(k)Fluoranthene		1	0.62	62%	0.59	59%	40%	130%	4.96	20
Benzo(a)Pyrene		1	0.57	57%	0.53	53%	40%	130%	7.27	20
Indeno(1,2,3-cd)Pyrene		1	0.69	69%	0.67	67%	40%	130%	2.94	20
Dibenz(a,h)Anthracene		1	0.63	63%	0.61	61%	40%	130%	3.23	20
Benzo(ghi)Perylene		1	0.65	65%	0.62	62%	40%	130%	4.72	20

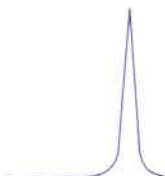
SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch W2021080401
 Date Extracted 8/4/2021
 Date Analyzed 8/9/2021
 Sample# 1
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result	TV	%R	625.1 criteria		Bias
		ug/mL			LCL	UCL	
1-Methylnaphthalene	N	0.70	1	70%	60%	140%	
2-Methylnaphthalene	N	0.70	1	70%	60%	140%	
Acenaphthene	Y	0.97	1	97%	70%	130%	
Acenaphthylene	Y	1.02	1	102%	60%	130%	
Anthracene	Y	0.97	1	97%	58%	130%	
Benzo(a)anthracene	Y	1.01	1	101%	32%	138%	
Benzo(a)pyrene	Y	0.85	1	85%	40%	133%	
Benzo(b)Fluoranthene	Y	0.94	1	94%	42%	140%	
Benzo(g,h,i)perylene	Y	1.19	1	119%	13%	195%	
Benzo(k)Fluoranthene	Y	1.06	1	106%	25%	146%	
Chrysene	Y	1.05	1	105%	44%	140%	
Dibenzo(a,h)anthracene	Y	1.08	1	108%	13%	200%	
Fluoranthene	Y	1.08	1	108%	47%	130%	
Fluorene	Y	1.01	1	101%	70%	130%	
Indeno(1,2,3-c,d)pyrene	Y	1.05	1	105%	13%	151%	
Naphthalene	Y	0.89	1	89%	70%	130%	
Phenanthrene	Y	0.93	1	93%	67%	130%	
Pyrene	Y	0.99	1	99%	70%	130%	

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	2.92		4	73%	25%	121%	1 Pass
Phenol-d5	A	1.76		4	44%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.74		2	87%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.73		2	87%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	3.79		4	95%	19%	122%	1 Pass
p-Terphenyl-d14	BN	1.86		2	93%	18%	137%	1 Pass



SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch W2021080401
 Date Extracted 8/4/2021
 Date Analyzed 8/9/2021
 SampleID MB
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.88	4	72%	25%	121%	Pass
Phenol-d5	A	1.71	4	43%	24%	113%	Pass
Nitrobenzene-d5	BN	1.69	2	85%	23%	120%	Pass
2-Fluorobiphenyl	BN	1.73	2	87%	30%	115%	Pass
2,4,6-Tribromophenol	A	3.31	4	83%	19%	122%	Pass
p-Terphenyl-d14	BN	2	2	100%	18%	137%	Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch W2021080302
 Date Extracted 8/3/2021
 Date Analyzed 8/11/2021
 Sample# 1
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result	TV	%R	625.1 criteria		Bias
		ug/mL			LCL	UCL	
1-Methylnaphthalene	N	0.79	1	79%	60%	140%	
2-Methylnaphthalene	N	0.80	1	80%	60%	140%	
Acenaphthene	Y	0.87	1	87%	70%	130%	
Acenaphthylene	Y	0.95	1	95%	60%	130%	
Anthracene	Y	0.96	1	96%	58%	130%	
Benzo(a)anthracene	Y	1.08	1	108%	32%	138%	
Benzo(a)pyrene	Y	0.93	1	93%	40%	133%	
Benzo(b)Fluoranthene	Y	1.18	1	118%	42%	140%	
Benzo(g,h,i)perylene	Y	1.00	1	100%	13%	195%	
Benzo(k)Fluoranthene	Y	1.07	1	107%	25%	146%	
Chrysene	Y	1.04	1	104%	44%	140%	
Dibenzo(a,h)anthracene	Y	0.95	1	95%	13%	200%	
Fluoranthene	Y	0.97	1	97%	47%	130%	
Fluorene	Y	0.81	1	81%	70%	130%	
Indeno(1,2,3-c,d)pyrene	Y	0.99	1	99%	13%	151%	
Naphthalene	Y	0.79	1	79%	70%	130%	
Phenanthrene	Y	0.93	1	93%	67%	130%	
Pyrene	Y	1.06	1	106%	70%	130%	

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	3.65		4	91%	25%	121%	1 Pass
Phenol-d5	A	1.71		4	43%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.54		2	77%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.9		2	95%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	4.84		4	121%	19%	122%	1 Pass
p-Terphenyl-d14	BN	2.68		2	134%	18%	137%	1 Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch	W2021080302
Date Extracted	8/3/2021
Date Analyzed	8/11/2021
SampleID	MB
Initial Amount	1000
final amount	5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.94		4	74%	25%	121% Pass
Phenol-d5	A	1.88		4	47%	24%	113% Pass
Nitrobenzene-d5	BN	2.02		2	101%	23%	120% Pass
2-Fluorobiphenyl	BN	1.89		2	95%	30%	115% Pass
2,4,6-Tribromophenol	A	3.47		4	87%	19%	122% Pass
p-Terphenyl-d14	BN	2.48		2	124%	18%	137% Pass

August 16, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Water
 Spectra Project: 2021070727
 Date Analyzed: 8/13/2021
 Applies to Spectra #'s: #1-17

GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK

COMPOUND	BLANK RESULT ug/L	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT ug/L	SPIKE RESULT ug/L	
Benzene	<1.00	20.0	18.5	93
Ethylbenzene	<1.00	20.0	21.2	99
Methyl tert-butyl ether	<1.00	20.0	19.5	98
Toluene	<1.00	20.0	19.74	99
m, p-Xylene	<1.00	40.0	41.3	103
o-Xylene	<1.00	20.0	20.5	103
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	102	104	%	
1,2-Dichloroethane-d4	96	98	%	
Toluene-d8	100	99	%	
4-Bromofluorobenzene	101	106	%	

August 16, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Water
Sample: Method Blank
Date Analyzed: 8/13/2021
Spectra Project: 2021080727
Applies to: #1-17

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK**

COMPOUND	µg/L	COMPOUND	µg/L
Acetone	< 10.0	trans-1,2,-Dichloroethene	< 1.00
Acetonitrile	< 10.0	1,2-Dichloropropane	< 1.00
Acrolein	< 10.0	1,3-Dichloropropane	< 1.00
Acrylonitrile	< 10.0	cis-1,3-Dichloropropene	< 1.00
Benzene	< 1.00	trans-1,3-Dichloropropene	< 1.00
Bromobenzene	< 1.00	2,2-Dichloropropane	< 1.00
Bromochloromethane	< 1.00	1,1-Dichloropropene	< 1.00
Bromodichloromethane	< 1.00	Ethylbenzene	< 1.00
Bromoform	< 1.00	2-Hexanone (MBK)	< 10.0
Bromomethane	< 5.00	Hexachlorobutadiene	< 1.00
2-Butanone (MEK)	< 10.0	Iodomethane	< 5.00
n-Butylbenzene	< 1.00	Isopropylbenzene	< 1.00
sec-Butylbenzene	< 1.00	p-Isopropyltoluene	< 1.00
tert-Butylbenzene	< 1.00	Methylene chloride	5.00
Carbon Disulfide	< 10.0	4-Methyl-2-pentanone (MIBK)	< 10.0
Carbon tetrachloride	< 1.00	MTBE	< 1.00
Chlorobenzene	< 1.00	Naphthalene	< 1.00
Chlorodibromomethane	< 1.00	n-Propylbenzene	< 1.00
Chloroethane	< 1.00	Styrene	< 1.00
2-Chloroethyl Vinyl ether	< 10.0	1,1,1,2-Tetrachloroethane	< 1.00
Chloroform	< 1.00	1,1,2,2-Tetrachloroethane	< 1.00
Chloromethane	< 1.00	Tetrachloroethene	< 1.00*
2-Chlorotoluene	< 1.00	Toluene	< 1.00
4-Chlorotoluene	< 1.00	Total Xylenes	< 2.00
1,2-Dibromo-3-Chloropropane (DBCP)	< 10.0	1,2,3-Trichlorobenzene	< 1.00
1,2-Dibromoethane (EDB)	< 1.00	1,2,4-Trichlorobenzene	< 1.00
Dibromomethane	< 1.00	1,1,1-Trichloroethane	< 1.00
1,2-Dichlorobenzene	< 1.00	1,1,2-Trichloroethane	< 1.00
1,3-Dichlorobenzene	< 1.00	Trichloroethene	< 1.00
1,4-Dichlorobenzene	< 1.00	Trichlorofluoromethane	< 1.00
Dichlorodifluoromethane	< 1.00	1,2,3-Trichloropropane	< 1.00
1,1-Dichloroethane	< 1.00	1,2,4-Trimethylbenzene	< 1.00
1,2-Dichloroethane	< 1.00	1,3,5-Trimethylbenzene	< 1.00
1,1-Dichloroethene	< 1.00	Vinyl Acetate	< 10.0
cis-1,2-Dichloroethene	< 1.00	Vinyl chloride	< 1.00

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	104	%
1,2-Dichloroethane-d4	98	%
Toluene-d8	99	%
4-Bromofluorobenzene	106	%

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

August 16, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Water
Date Analyzed: 8/13/2021
Spiked Sample: 2021080184
Spectra Project: 2021080727
Applies to: #1-17

GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)

COMPOUND	SAMPLE RESULT ug/L	SPIKE RESULT ug/L	MS RESULT ug/L	% REC	MSD RESULT ug/L	% REC	RPD
1,1-Dichloroethene	<1.00	20.0	20.6	103	20.9	105	0.00%
Benzene	<1.00	20.0	19.5	97	19.7	98	0.82%
Trichloroethene	<1.00	20.0	18.9	94	18.7	94	0.85%
Toluene	<1.00	20.0	21.2	106	21.4	107	0.99%
Chlorobenzene	<1.00	20.0	19.3	96	19.5	98	1.24%

Surrogates	MS	MSD	%
Dibromofluoromethane	108	108	%
1,2-Dichloroethane-d4	99	98	%
Toluene-d8	101	100	%
4-Bromofluorobenzene	101	101	%

August 16, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Soil
 Spectra Project: 2021070727
 Date Analyzed: 8/11/2021
 Applies to Spectra #'s: 19-29

GCMS VOLATILE ORGANIC ANALYSIS
**METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK
 METHOD 5035 - DIRECT SPARGE**

COMPOUND	BLANK RESULT mg/Kg	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT mg/Kg	SPIKE RESULT mg/Kg	
Benzene	<0.0050	0.020	0.022	111
Ethylbenzene	<0.0050	0.020	0.021	106
Methyl tert-butyl ether	<0.0050	0.020	0.021	106
Toluene	<0.0050	0.020	0.024	119
m, p-Xylene	<0.010	0.040	0.046	115
o-Xylene	<0.0050	0.020	0.022	109
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	96	110	%	
1,2-Dichloroethane-d4	110	121	%	
Toluene-d8	103	93	%	
4-Bromofluorobenzene	94	93	%	

August 16, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Soil
Sample: Method Blank
Date Analyzed: 8/11/2021
Spectra Project: 2021070727
Applies to: 19-29

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK
METHOD 5035 - DIRECT SPARGE**

COMPOUND	mg/kg	COMPOUND	mg/kg
Acetone	< 0.050	trans-1,2,-Dichloroethene	< 0.0050
Acetonitrile	< 0.050	1,2-Dichloropropane	< 0.0050
Acrolein	< 0.050	1,3-Dichloropropane	< 0.0050
Acrylonitrile	< 0.050	cis-1,3-Dichloropropene	< 0.0050
Benzene	< 0.0050	trans-1,3-Dichloropropene	< 0.0050
Bromobenzene	< 0.0050	2,2-Dichloropropane	< 0.0050
Bromochloromethane	< 0.0050	1,1-Dichloropropene	< 0.0050
Bromodichloromethane	< 0.0050	Ethylbenzene	< 0.0050
Bromoform	< 0.0050	2-Hexanone (MBK)	< 0.500
Bromomethane	< 0.0050	Hexachlorobutadiene	< 0.0050
2-Butanone (MEK)	< 0.050	Iodomethane	< 0.0050
n-Butylbenzene	< 0.0050	Isopropylbenzene	< 0.0050
sec-Butylbenzene	< 0.0050	p-Isopropyltoluene	< 0.0050
tert-Butylbenzene	< 0.0050	Methylene chloride	< 0.025
Carbon Disulfide	< 0.050	4-Methyl-2-pentanone (MIBK)	< 0.050*
Carbon tetrachloride	< 0.0050	MTBE	< 0.0050
Chlorobenzene	< 0.0050	Naphthalene	< 0.010
Chlorodibromomethane	< 0.0050	n-Propylbenzene	< 0.0050
Chloroethane	< 0.0050	Styrene	< 0.0050
2-Chloroethyl Vinyl ether	< 0.050	1,1,1,2-Tetrachloroethane	< 0.0050
Chloroform	< 0.0050	1,1,2,2-Tetrachloroethane	< 0.0050
Chloromethane	< 0.0050	Tetrachloroethene	< 0.0050
2-Chlorotoluene	< 0.0050	Toluene	< 0.0050
4-Chlorotoluene	< 0.0050	Total Xylenes	< 0.010
1,2-Dibromo-3-Chloropropane (DBCP)	< 0.050	1,2,3-Trichlorobenzene	< 0.0050
1,2-Dibromoethane (EDB)	< 0.0050	1,2,4-Trichlorobenzene	< 0.0050
Dibromomethane	< 0.0050	1,1,1-Trichloroethane	< 0.0050
1,2-Dichlorobenzene	< 0.0050	1,1,2-Trichloroethane	< 0.0050
1,3-Dichlorobenzene	< 0.0050	Trichloroethene	< 0.0050
1,4-Dichlorobenzene	< 0.0050	Trichlorofluoromethane	< 0.0050
Dichlorodifluoromethane	< 0.0050	1,2,3-Trichloropropane	< 0.0050
1,1-Dichloroethane	< 0.0050	1,2,4-Trimethylbenzene	< 0.0050
1,2-Dichloroethane	< 0.0050	1,3,5-Trimethylbenzene	< 0.0050
1,1-Dichloroethene	< 0.0050	Vinyl Acetate	< 0.050
cis-1,2-Dichloroethene	< 0.0050	Vinyl chloride	< 0.0050

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	110	%
1,2-Dichloroethane-d4	121*	%
Toluene-d8	93	%
4-Bromofluorobenzene	93	%

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

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 August 16, 2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

Sample Matrix: Soil
 Date Analyzed: Method Blank
 Spiked Sample: 8/11/2021
 Spectra Project: 2021070727
 Applies to: 19-29

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
 METHOD 5035 - DIRECT SPARGE**

Volatile Laboratory Control Sample/Laboratory Control Sample Duplicate Results (LCS/LCSD)

COMPOUND	SAMPLE RESULT mg/Kg	SPIKE AMOUNT mg/Kg	MS RESULT mg/Kg	% REC	MSD RESULT mg/Kg	% REC	RPD
1,1-Dichloroethene	<0.0050	0.020	0.024	119	0.023	115	0.0
Benzene	<0.0050	0.020	0.022	111	0.022	108	0.0
Trichloroethene	<0.0050	0.020	0.023	116	0.023	113	0.0
Toluene	<0.0050	0.020	0.024	119	0.023	115	0.0
Chlorobenzene	<0.0050	0.020	0.023	113	0.022	108	0.0

Surrogates	MS	MSD	
Dibromofluoromethane	96	94	%
1,2-Dichloroethane-d4	110	112	%
Toluene-d8	103	100	%
4-Bromofluorobenzene	94	92	%

August 16, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Soil
 Spectra Project: 2021070727
 Date Analyzed: 8/11/2021
 Applies to Spectra #'s: 19-29

GCMS VOLATILE ORGANIC ANALYSIS
**METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK
 METHOD 5035 - DIRECT SPARGE**

COMPOUND	BLANK RESULT mg/Kg	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT mg/Kg	SPIKE RESULT mg/Kg	
Benzene	<0.0050	0.020	0.022	111
Ethylbenzene	<0.0050	0.020	0.021	106
Methyl tert-butyl ether	<0.0050	0.020	0.021	106
Toluene	<0.0050	0.020	0.024	119
m, p-Xylene	<0.010	0.040	0.046	115
o-Xylene	<0.0050	0.020	0.022	109
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	96	110	%	
1,2-Dichloroethane-d4	110	121	%	
Toluene-d8	103	93	%	
4-Bromofluorobenzene	94	93	%	

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 August 16, 2021

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 Cheyenne, WY 82001

Sample Matrix: Soil
 Date Analyzed: Method Blank
 Spiked Sample: 8/12/2021
 Spectra Project: 2021070727
 Applies to: 30

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
 METHOD 5035 - DIRECT SPARGE**

Volatile Laboratory Control Sample/Laboratory Control Sample Duplicate Results (LCS/LCSD)

COMPOUND	SAMPLE RESULT mg/Kg	SPIKE AMOUNT mg/Kg	MS RESULT mg/Kg	% REC	MSD RESULT mg/Kg	% REC	RPD
1,1-Dichloroethene	<0.0050	0.020	0.025	124	0.023	114	7.6%
Benzene	<0.0050	0.020	0.024	121	0.023	117	3.1%
Trichloroethene	<0.0050	0.020	0.025	125	0.024	121	2.9%
Toluene	<0.0050	0.020	0.023	116	0.024	119	2.3%
Chlorobenzene	<0.0050	0.020	0.023	117	0.024	120	2.7%

Surrogates	MS	MSD	
Dibromofluoromethane	93	92	%
1,2-Dichloroethane-d4	102	102	%
Toluene-d8	96	99	%
4-Bromofluorobenzene	95	98	%

August 16, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Soil
Sample: Method Blank
Date Analyzed: 8/12/2021
Spectra Project: 2021070727
Applies to: 30

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK
METHOD 5035 - DIRECT SPARGE**

COMPOUND	mg/kg	COMPOUND	mg/kg
Acetone	< 0.050	trans-1,2,-Dichloroethene	< 0.0050
Acetonitrile	< 0.050	1,2-Dichloropropane	< 0.0050
Acrolein	< 0.050	1,3-Dichloropropane	< 0.0050
Acrylonitrile	< 0.050	cis-1,3-Dichloropropene	< 0.0050
Benzene	< 0.0050	trans-1,3-Dichloropropene	< 0.0050
Bromobenzene	< 0.0050	2,2-Dichloropropane	< 0.0050
Bromochloromethane	< 0.0050	1,1-Dichloropropene	< 0.0050
Bromodichloromethane	< 0.0050	Ethylbenzene	< 0.0050
Bromoform	< 0.0050	2-Hexanone (MBK)	< 0.500
Bromomethane	< 0.0050	Hexachlorobutadiene	< 0.0050
2-Butanone (MEK)	< 0.050	Iodomethane	< 0.0050
n-Butylbenzene	< 0.0050	Isopropylbenzene	< 0.0050
sec-Butylbenzene	< 0.0050	p-Isopropyltoluene	< 0.0050
tert-Butylbenzene	< 0.0050	Methylene chloride	< 0.025
Carbon Disulfide	< 0.050	4-Methyl-2-pentanone (MIBK)	< 0.050*
Carbon tetrachloride	< 0.0050	MTBE	< 0.0050
Chlorobenzene	< 0.0050	Naphthalene	< 0.010
Chlorodibromomethane	< 0.0050	n-Propylbenzene	< 0.0050
Chloroethane	< 0.0050	Styrene	< 0.0050
2-Chloroethyl Vinyl ether	< 0.050	1,1,1,2-Tetrachloroethane	< 0.0050
Chloroform	< 0.0050	1,1,2,2-Tetrachloroethane	< 0.0050
Chloromethane	< 0.0050	Tetrachloroethene	< 0.0050
2-Chlorotoluene	< 0.0050	Toluene	< 0.0050
4-Chlorotoluene	< 0.0050	Total Xylenes	< 0.010
1,2-Dibromo-3-Chloropropane (DBCP)	< 0.050	1,2,3-Trichlorobenzene	< 0.0050
1,2-Dibromoethane (EDB)	< 0.0050	1,2,4-Trichlorobenzene	< 0.0050
Dibromomethane	< 0.0050	1,1,1-Trichloroethane	< 0.0050
1,2-Dichlorobenzene	< 0.0050	1,1,2-Trichloroethane	< 0.0050
1,3-Dichlorobenzene	< 0.0050	Trichloroethene	< 0.0050
1,4-Dichlorobenzene	< 0.0050	Trichlorofluoromethane	< 0.0050
Dichlorodifluoromethane	< 0.0050	1,2,3-Trichloropropane	< 0.0050
1,1-Dichloroethane	< 0.0050	1,2,4-Trimethylbenzene	< 0.0050
1,2-Dichloroethane	< 0.0050	1,3,5-Trimethylbenzene	< 0.0050
1,1-Dichloroethene	< 0.0050	Vinyl Acetate	< 0.050
cis-1,2-Dichloroethene	< 0.0050	Vinyl chloride	< 0.0050

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	107	%
1,2-Dichloroethane-d4	109	%
Toluene-d8	94	%
4-Bromofluorobenzene	97	%

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

Sample Matrix: Soil
 Spectra Project: 2021070727
 Date Analyzed: 8/12/2021
 Applies to Spectra #'s: 30

GCMS VOLATILE ORGANIC ANALYSIS
**METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK
 METHOD 5035 - DIRECT SPARGE**

COMPOUND	BLANK RESULT mg/Kg	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT mg/Kg	SPIKE RESULT mg/Kg	
Benzene	<0.0050	0.020	0.024	121
Ethylbenzene	<0.0050	0.020	0.023	116
Methyl tert-butyl ether	<0.0050	0.020	0.023	117
Toluene	<0.0050	0.020	0.023	116
m, p-Xylene	<0.010	0.040	0.048	119
o-Xylene	<0.0050	0.020	0.023	116
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	93	107	%	
1,2-Dichloroethane-d4	102	109	%	
Toluene-d8	96	94	%	
4-Bromofluorobenzene	95	97	%	

SPECTRA LABORATORIES Sample Receiving Checklist

Client/Project: Panhandle Geo Spectra Project#: 2021070727

Date & Time Received: 7/30/21 8:30 Received by: Marie

Shipped by: Client Courier UPS USPS FedEx Other: _____

Shipping Container Type(s): Cooler Box None Other: _____

Sample temperatures (°C): waters = 5.0°C to 15.3°C soils = 14.0°C to 18.5°C

Unless noted, the following parameters were received within Spectra Laboratories sample acceptance policy requirements (checked item(s) is out of compliance):

Requirement	"X"	Comments: (indicate requirement number)
1. Sample temperature(s) outside of 0-6°C	*	<input checked="" type="checkbox"/> 1. Temperature >6°C but received within <u>24-21</u> hours of sample collection on ice and cooling.
2. Custody seals absent (not required when hand delivered by sampler)		
3. Custody seals broken/damaged		
4. Chain-of-Custody (COC) absent		*water samples = 5.0°C to 15.3°C
5. COC improperly completed (describe in comments)		
6. Signatures/Dates/Times on COC absent or incorrect		soil samples = 14.0°C to 18.5°C
7. Sample IDs/Matrix/Tests absent or incorrect	**	
8. COC does not correspond to sample count		** samples SB-9 and SB-17 contain bottles that are 2/3 or 1/2 full
9. COC info does not correspond to sample labels		
10. Samples received broken or leaking (describe in comments)		
11. Incorrect bottles used for test (describe)		
12. Samples improperly preserved (describe)		** Ryan said to run what we can on water samples - SB17, SB3 & SB12 they weren't sure what test to run marked.
13. Multi-phasic samples present (describe)		
14. VOA vials contain headspace (indicate amount)		
15. Other anomaly (describe)	***	Run NUTPH -D on min sample. MAX

Microbiological Tests requested: MPN MF HPC
 Fecal Coliform Total Coliform E. coli Salmonella

Did samples arrive within Holding Time? Yes No

Corrective Action Taken, if needed: informed client that reporting limits will be higher for samples SB-3 and SB-17 due to amount of sample provided

Person Contacted: _____ Date: _____

Form completed by: Ma Date: 7/30/21 Time: 9:55

Communications Record

Internal Document

Client: Panhandle Geotechnical

Client Contact: Ryan Penn

Date: 7-30-21

Time: 2:44

Spectra Contact: Marie Holt

Project: Progress Rail

Spectra Project: 2021070727

I called Dave and Ryan because DUP A is written on page 2 of 4 from 7-30-21 but no bottles were submitted.

After talking it through, this was a mistake, DUP A was submitted on 7-28-21

SPECTRA Laboratories

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SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY

SPECTRA PROJECT #

2021070322

Return Samples Y N Page 1 of 4

STANDARD RUSH

ADDRESS:

ADDRESS CHANGE

CLIENT: Panhandle Geotechnical & Env.
 PROJECT: Progress Rail

CONTACT: Levi Allbaugh

SAMPLED BY: Dave Schaff & Ryan Penn

PHONE: 308-641-6742 (field) 307-635-2828

e-MAIL: lallbaugh@mschaff.com

PURCHASE ORDER #:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
SB-6	7/27/21	9:30	water
SB-2		10:50	
SB-4		11:30	
SB-15		13:00	
SB-14		13:45	
SB-8		14:35	
SB-13		15:05	
SB-7		15:55	
SB-12		17:00	
SB-17		16:55	

NUMBER OF CONTAINERS

HYDROCARBONS	ORGANICS	METALS	OTHER
NWTPH-HCID	8260/624 VOA	TOTAL METALS RCRA 8	
BTEX	8260 CHLOR SOLVENTS	TOTAL METALS (SPECIFY)	
BTEX/NWTPH-G	8270/625 SEMI VOA	TCLP METALS RCRA 8	
NWTPH-G	625 PAH/PNA - SIM	TCLP METALS (SPECIFY)	
NWTPH-Dx	8082/608 PCB	PH 9040/9045	
1664 SGT-HEM (TPH)		TX/TOX 9076	
1664 HEM (FOG)		TURBIDITY	
		FLASH POINT	
		BOD	
		SOLIDS (SPECIFY)	

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS	HYDROCARBONS	ORGANICS	METALS	OTHER
SB-6	7/27/21	9:30	water	8				
SB-2		10:50		8				
SB-4		11:30		8				
SB-15		13:00		8				
SB-14		13:45		8				
SB-8		14:35		8				
SB-13		15:05		8				
SB-7		15:55		8				
SB-12		17:00		3				
SB-17		16:55		6				

SIGNATURE		PRINTED NAME		COMPANY		DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	RYAN PENN	PG&E	7/30/21	8:30		
RECEIVED BY	<i>[Signature]</i>	MAILE HOLT	SPECTRA	7-30-21	8:30		
RELINQUISHED BY							
RECEIVED BY							

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

SPECTRA Laboratories

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SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY

SPECTRA PROJECT #

2020070722

Return Samples Y N Page 2 of 4

STANDARD RUSH

CLIENT: Panhandle Geotechnical & Env.

ADDRESS:

ADDRESS CHANGE

PROJECT: Progress Rail

CONTACT: Levi Allbaugh

SAMPLED BY: Dave Schaff & Ryan Penn

PHONE: 308-641-6742 (field) 307-635-2828

e-MAIL: lalbaugh@mcschaff.com

PURCHASE ORDER #:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
SB-10	7/29/11	18:30	water
PP-4			
PP-13			
PP-C			
PP-D			
FB		18:00	
FB			
SB-3	7/29/11	10:10	water

NUMBER OF CONTAINERS		HYDROCARBONS	ORGANICS	METALS	OTHER
		NWTPH-HCID	8260/624 VOA	TOTAL METALS RCRA 8	PH 9040/9045
		BTEX	8260 CHLOR SOLVENTS	TOTAL METALS (SPECIFY)	TX/TOX 9076
		BTEX/NWTPH-G	8270/625 SEMI VOA	7/11 met. RCRA-8	TURBIDITY
		NWTPH-G	625 PAH/PNA - SIM	TCLP METALS RCRA 8	FLASH POINT
		NWTPH-Dx	8082/608 PCB	TCLP METALS (SPECIFY)	BOD
		1664 SGT-HEM (TPH)			SOLIDS (SPECIFY)
		1664 HEM (FOG)			

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS	HYDROCARBONS	ORGANICS	METALS	OTHER
SB-10	7/29/11	18:30	water	5	X	X	X	
PP-4				8	X	X	X	
PP-13				8	X	X	X	
PP-C				8	X	X	X	
PP-D				8	X	X	X	
FB		18:00		3				
FB				3				
SB-3	7/29/11	10:10	water	1	X	X		

*14 Sets of 3-Trip Blanks

RELINQUISHED BY	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	Ryan Penn	AGE	7/30/11	8:30
RECEIVED BY	<i>[Signature]</i>	MARIE HOLT	Spectra	7-30-11	8:30
RELINQUISHED BY					
RECEIVED BY					

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

SPECTRA Laboratories

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SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY

SPECTRA PROJECT #

202070727

Return Samples Y N Page 3 of 4

STANDARD RUSH

ADDRESS:

ADDRESS CHANGE

CLIENT: **Panhandle Geotechnical & Env.**
 PROJECT: **Progress Rail**

CONTACT: **Levi Allbaugh**

SAMPLED BY: **Dave Schaff & Ryan Penn**

PHONE: **308-641-6742 (field) 307-635-2828**

e-MAIL: **lallbaugh@mcscraft.com**

PURCHASE ORDER #:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
SB-6 4-G'	7/21/21	9:00	So:1
SB-3 4-G'		9:30	
SB-2 4-G'		10:00	
SB-4 4-G'		10:30	
SB-15 4-G'		11:00	
SB-14 4-G'		11:30	
SB-8 4-G'		13:00	
SB-13 4-G'		13:30	
SB-7 4-G'		13:45	
SB-12 6-8'		14:30	

NUMBER OF CONTAINERS		HYDROCARBONS	ORGANICS	METALS	OTHER
		NWTPH-HCID	8260/624 VOA	TOTAL METALS RCRA 8	
		BTEX	8260 CHLOR SOLVENTS	TOTAL METALS (SPECIFY)	
		BTEX/NWTPH-G	8270/625 SEMI VOA	TCLP METALS RCRA 8	
		NWTPH-G	625 PAH/PNA - SIM	TCLP METALS (SPECIFY)	
		NWTPH-Dx	8082/608 PCB	PH 9040/9045	
		1664 SGT-HEM (TPH)		TX/TOX 9076	
		1664 HEM (FOG)		TURBIDITY	
				FLASH POINT	
				BOD	
				SOLIDS (SPECIFY)	

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY
SB-6 4-G'	7/21/21	9:00	So:1				
SB-3 4-G'		9:30					
SB-2 4-G'		10:00					
SB-4 4-G'		10:30					
SB-15 4-G'		11:00					
SB-14 4-G'		11:30					
SB-8 4-G'		13:00					
SB-13 4-G'		13:30					
SB-7 4-G'		13:45					
SB-12 6-8'		14:30					

SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
<i>[Signature]</i>	Ryan Penn	PGE	7/30/21	8:30
<i>[Signature]</i>	MAILE HOLT	Spectra	7-30-21	8:30
RELINQUISHED BY	RECEIVED BY	RELINQUISHED BY	RECEIVED BY	

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
 (253) 272-4850 Fax (253) 572-9838
 www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY
 SPECTRA PROJECT # 2021070227

Return Samples N Page 4 of 4

STANDARD RUSH

CLIENT: Panhandle Geotechnical & Env. ADDRESS: ADDRESS CHANGE

PROJECT: Progress Rail

CONTACT: Levi Allbaugh

SAMPLED BY: Dave Schaff & Ryan Penn

PHONE: 308-641-6742 (field) 307-635-2828

e-MAIL: lallbaugh@mcschaff.com

PURCHASE ORDER #:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS			HYDROCARBONS			ORGANICS			METALS			OTHER																						
				NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-Dx	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/624 VOA	8260 CHLOR SOLVENTS	8270/625 SEMI VOA	625 PAH/PNA - SIM	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	TCLP METALS (SPECIFY)	PH 9040/9045	TX/TOX 9076	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)													
SB-17	7/29/21	15:00	Soil		X				X		X																											
SB-10	7/29/21	15:30	Soil		X				X		X																											
TRB	7/29/21	-																																				

SIGNATURE PRINTED NAME COMPANY DATE TIME

RELINQUISHED BY RECEIVED BY RELINQUISHED BY RECEIVED BY

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromo3Chloropropane	<0.070	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0070	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0070	mg/Kg	SW846 8260D
Total Barium	14.2	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0070	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0070	mg/Kg	SW846 8260D
Total Chromium	15.2	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0070	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0070	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0070	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0070	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0070	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0070	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.070	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0070	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0070	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0070	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.070	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0070	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0070	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0070	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0070	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0070	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.070	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0070	mg/Kg	SW846 8260D	Acetone	<0.070	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Acrolein	<0.070	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0070	mg/Kg	SW846 8260D	Acrylonitrile	<0.070	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0070	mg/Kg	SW846 8260D	Benzene	<0.0070	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0070	mg/Kg	SW846 8260D	Bromobenzene	<0.0070	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	64	SW846 8270E	p-Terphenyl	64	NWTPH-Dx
2-Fluorobiphenyl	82	SW846 8270E			
p-Terphenyl-d14	97	SW846 8270E			
Dibromofluoromethane	107	SW846 8260D			
Toluene-d8	98	SW846 8260D			
4-Bromofluorobenzene	100*	SW846 8260D			
1,2-Dichloroethane-d4	116	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromochloromethane	<0.0070	mg/Kg	SW846 8260D	Total Xylenes	<0.014	mg/Kg	SW846 8260D
Bromodichloromethane	<0.0070	mg/Kg	SW846 8260D	Trichloroethene	<0.0070	mg/Kg	SW846 8260D
Bromoform	<0.0070	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0070	mg/Kg	SW846 8260D
Bromomethane	<0.0070	mg/Kg	SW846 8260D	Vinyl Acetate	<0.070	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0070	mg/Kg	SW846 8260D	Vinyl chloride	<0.0070	mg/Kg	SW846 8260D
Chlorobenzene	<0.0070	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0070	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0070	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0070	mg/Kg	SW846 8260D
Chloroethane	<0.0070	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0070	mg/Kg	SW846 8260D
Chloroform	<0.0070	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0070	mg/Kg	SW846 8260D
Chloromethane	<0.0070	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0070	mg/Kg	SW846 8260D
Dibromomethane	<0.0070	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0070	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0070	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0070	mg/Kg	SW846 8260D
Ethylbenzene	<0.0070	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0070	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0070	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0070	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0070	mg/Kg	SW846 8260D	Acenaphthene	<0.055	mg/Kg	SW846 8270E
Methylene chloride	<0.035	mg/Kg	SW846 8260D	Acenaphthylene	<0.055	mg/Kg	SW846 8270E
Naphthalene	<0.014	mg/Kg	SW846 8260D	Anthracene	<0.055	mg/Kg	SW846 8270E
Styrene	<0.0070	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.055	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0070	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.055	mg/Kg	SW846 8270E
Toluene	<0.0070	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.055	mg/Kg	SW846 8270E

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	64	SW846 8270E	p-Terphenyl	64	NWTPH-Dx
2-Fluorobiphenyl	82	SW846 8270E			
p-Terphenyl-d14	97	SW846 8270E			
Dibromofluoromethane	107	SW846 8260D			
Toluene-d8	98	SW846 8260D			
4-Bromofluorobenzene	100*	SW846 8260D			
1,2-Dichloroethane-d4	116	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-2 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 21

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(ghi)Perylene	<0.055	mg/Kg	SW846 8270E				
Benzo(k)Fluoranthene	<0.055	mg/Kg	SW846 8270E				
Chrysene	<0.055	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.055	mg/Kg	SW846 8270E				
Fluoranthene	<0.055	mg/Kg	SW846 8270E				
Fluorene	<0.055	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.055	mg/Kg	SW846 8270E				
Naphthalene	<0.055	mg/Kg	SW846 8270E				
Phenanthrene	<0.055	mg/Kg	SW846 8270E				
Pyrene	<0.055	mg/Kg	SW846 8270E				

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	64	SW846 8270E	p-Terphenyl	64	NWTPH-Dx
2-Fluorobiphenyl	82	SW846 8270E			
p-Terphenyl-d14	97	SW846 8270E			
Dibromofluoromethane	107	SW846 8260D			
Toluene-d8	98	SW846 8260D			
4-Bromofluorobenzene	100*	SW846 8260D			
1,2-Dichloroethane-d4	116	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 22

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromo3Chloropropane	<0.087	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0087	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0087	mg/Kg	SW846 8260D
Total Barium	15.6	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0087	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0087	mg/Kg	SW846 8260D
Total Chromium	12.2	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0087	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0087	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0087	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0087	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0087	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0087	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.087	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0087	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0087	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0087	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.087	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0087	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0087	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0087	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0087	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0087	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.087	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0087	mg/Kg	SW846 8260D	Acetone	<0.087	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Acrolein	<0.087	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0087	mg/Kg	SW846 8260D	Acrylonitrile	<0.087	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0087	mg/Kg	SW846 8260D	Benzene	<0.0087	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0087	mg/Kg	SW846 8260D	Bromobenzene	<0.0087	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	78	SW846 8270E	p-Terphenyl	80	NWTPH-Dx
2-Fluorobiphenyl	96	SW846 8270E			
p-Terphenyl-d14	132	SW846 8270E			
Dibromofluoromethane	105	SW846 8260D			
Toluene-d8	99	SW846 8260D			
4-Bromofluorobenzene	97*	SW846 8260D			
1,2-Dichloroethane-d4	110	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 22

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromochloromethane	<0.0087	mg/Kg	SW846 8260D	Total Xylenes	<0.017	mg/Kg	SW846 8260D
Bromodichloromethane	<0.0087	mg/Kg	SW846 8260D	Trichloroethene	<0.0087	mg/Kg	SW846 8260D
Bromoform	<0.0087	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0087	mg/Kg	SW846 8260D
Bromomethane	<0.0087	mg/Kg	SW846 8260D	Vinyl Acetate	<0.087	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0087	mg/Kg	SW846 8260D	Vinyl chloride	<0.0087	mg/Kg	SW846 8260D
Chlorobenzene	<0.0087	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0087	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0087	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0087	mg/Kg	SW846 8260D
Chloroethane	<0.0087	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0087	mg/Kg	SW846 8260D
Chloroform	<0.0087	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0087	mg/Kg	SW846 8260D
Chloromethane	<0.0087	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0087	mg/Kg	SW846 8260D
Dibromomethane	<0.0087	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0087	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0087	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0087	mg/Kg	SW846 8260D
Ethylbenzene	<0.0087	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0087	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0087	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.057	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0087	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.057	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0087	mg/Kg	SW846 8260D	Acenaphthene	<0.057	mg/Kg	SW846 8270E
Methylene chloride	<0.044	mg/Kg	SW846 8260D	Acenaphthylene	<0.057	mg/Kg	SW846 8270E
Naphthalene	<0.017	mg/Kg	SW846 8260D	Anthracene	<0.057	mg/Kg	SW846 8270E
Styrene	<0.0087	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.057	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0087	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.057	mg/Kg	SW846 8270E
Toluene	<0.0087	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.057	mg/Kg	SW846 8270E

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	78	SW846 8270E	p-Terphenyl	80	NWTPH-Dx
2-Fluorobiphenyl	96	SW846 8270E			
p-Terphenyl-d14	132	SW846 8270E			
Dibromofluoromethane	105	SW846 8260D			
Toluene-d8	99	SW846 8260D			
4-Bromofluorobenzene	97*	SW846 8260D			
1,2-Dichloroethane-d4	110	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-4 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 22

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(ghi)Perylene	<0.057	mg/Kg	SW846 8270E				
Benzo(k)Fluoranthene	<0.057	mg/Kg	SW846 8270E				
Chrysene	<0.057	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.057	mg/Kg	SW846 8270E				
Fluoranthene	<0.057	mg/Kg	SW846 8270E				
Fluorene	<0.057	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.057	mg/Kg	SW846 8270E				
Naphthalene	<0.057	mg/Kg	SW846 8270E				
Phenanthrene	<0.057	mg/Kg	SW846 8270E				
Pyrene	<0.057	mg/Kg	SW846 8270E				

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	78	SW846 8270E	p-Terphenyl	80	NWTPH-Dx
2-Fluorobiphenyl	96	SW846 8270E			
p-Terphenyl-d14	132	SW846 8270E			
Dibromofluoromethane	105	SW846 8260D			
Toluene-d8	99	SW846 8260D			
4-Bromofluorobenzene	97*	SW846 8260D			
1,2-Dichloroethane-d4	110	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 23

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromo3Chloropropane	<0.062	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0062	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D
Total Barium	17.6	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0062	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D
Total Chromium	14.6	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0062	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.062	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.063	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0062	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0062	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0062	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.062	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0062	mg/Kg	SW846 8260D	Acetone	<0.062	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Acrolein	<0.062	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0062	mg/Kg	SW846 8260D	Acrylonitrile	<0.062	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Benzene	<0.0062	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D	Bromobenzene	<0.0062	mg/Kg	SW846 8260D

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	68	SW846 8270E	p-Terphenyl	73	NWTPH-Dx
2-Fluorobiphenyl	78	SW846 8270E			
p-Terphenyl-d14	111	SW846 8270E			
Dibromofluoromethane	113	SW846 8260D			
Toluene-d8	97	SW846 8260D			
4-Bromofluorobenzene	96*	SW846 8260D			
1,2-Dichloroethane-d4	117	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 23

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromochloromethane	<0.0062	mg/Kg	SW846 8260D	Total Xylenes	<0.012	mg/Kg	SW846 8260D
Bromodichloromethane	<0.0062	mg/Kg	SW846 8260D	Trichloroethene	<0.0062	mg/Kg	SW846 8260D
Bromoform	<0.0062	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0062	mg/Kg	SW846 8260D
Bromomethane	<0.0062	mg/Kg	SW846 8260D	Vinyl Acetate	<0.062	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0062	mg/Kg	SW846 8260D	Vinyl chloride	<0.0062	mg/Kg	SW846 8260D
Chlorobenzene	<0.0062	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0062	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D
Chloroethane	<0.0062	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0062	mg/Kg	SW846 8260D
Chloroform	<0.0062	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0062	mg/Kg	SW846 8260D
Chloromethane	<0.0062	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0062	mg/Kg	SW846 8260D
Dibromomethane	<0.0062	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0062	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0062	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D
Ethylbenzene	<0.0062	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0062	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0062	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.064	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0062	mg/Kg	SW846 8260D	Acenaphthene	<0.064	mg/Kg	SW846 8270E
Methylene chloride	<0.031	mg/Kg	SW846 8260D	Acenaphthylene	<0.064	mg/Kg	SW846 8270E
Naphthalene	<0.013	mg/Kg	SW846 8260D	Anthracene	<0.064	mg/Kg	SW846 8270E
Styrene	<0.0062	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.064	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0062	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.064	mg/Kg	SW846 8270E
Toluene	<0.0062	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.064	mg/Kg	SW846 8270E

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	68	SW846 8270E	p-Terphenyl	73	NWTPH-Dx
2-Fluorobiphenyl	78	SW846 8270E			
p-Terphenyl-d14	111	SW846 8270E			
Dibromofluoromethane	113	SW846 8260D			
Toluene-d8	97	SW846 8260D			
4-Bromofluorobenzene	96*	SW846 8260D			
1,2-Dichloroethane-d4	117	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-15 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 23

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(ghi)Perylene	<0.064	mg/Kg	SW846 8270E				
Benzo(k)Fluoranthene	<0.064	mg/Kg	SW846 8270E				
Chrysene	<0.064	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.064	mg/Kg	SW846 8270E				
Fluoranthene	<0.064	mg/Kg	SW846 8270E				
Fluorene	<0.064	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.064	mg/Kg	SW846 8270E				
Naphthalene	<0.064	mg/Kg	SW846 8270E				
Phenanthrene	<0.064	mg/Kg	SW846 8270E				
Pyrene	<0.064	mg/Kg	SW846 8270E				

*Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	68	SW846 8270E	p-Terphenyl	73	NWTPH-Dx
2-Fluorobiphenyl	78	SW846 8270E			
p-Terphenyl-d14	111	SW846 8270E			
Dibromofluoromethane	113	SW846 8260D			
Toluene-d8	97	SW846 8260D			
4-Bromofluorobenzene	96*	SW846 8260D			
1,2-Dichloroethane-d4	117	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-14 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 24

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromo3Chloropropane	<0.058	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0058	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D
Total Barium	14.6	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0058	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0058	mg/Kg	SW846 8260D
Total Chromium	18.3	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0058	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0058	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0058	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0058	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0058	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.058	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0058	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0058	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0058	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.058	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0058	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0058	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0058	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0058	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0058	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.058	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0058	mg/Kg	SW846 8260D	Acetone	0.14	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Acrolein	<0.068	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0058	mg/Kg	SW846 8260D	Acrylonitrile	<0.058	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0058	mg/Kg	SW846 8260D	Benzene	<0.0058	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0058	mg/Kg	SW846 8260D	Bromobenzene	<0.0058	mg/Kg	SW846 8260D

Surrogate	Recovery	Method
Nitrobenzene-d5	51	SW846 8270E
2-Fluorobiphenyl	64	SW846 8270E
p-Terphenyl-d14	94	SW846 8270E
Dibromofluoromethane	118	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	124	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	75	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-14 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 24

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromochloromethane	<0.0058	mg/Kg	SW846 8260D	Total Xylenes	<0.012	mg/Kg	SW846 8260D
Bromodichloromethane	<0.0058	mg/Kg	SW846 8260D	Trichloroethene	<0.0058	mg/Kg	SW846 8260D
Bromoform	<0.0058	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0058	mg/Kg	SW846 8260D
Bromomethane	<0.0058	mg/Kg	SW846 8260D	Vinyl Acetate	<0.058	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0058	mg/Kg	SW846 8260D	Vinyl chloride	<0.0058	mg/Kg	SW846 8260D
Chlorobenzene	<0.0058	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0058	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0058	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0058	mg/Kg	SW846 8260D
Chloroethane	<0.0058	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0058	mg/Kg	SW846 8260D
Chloroform	<0.0058	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0058	mg/Kg	SW846 8260D
Chloromethane	<0.0058	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0058	mg/Kg	SW846 8260D
Dibromomethane	<0.0058	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0058	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0058	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0058	mg/Kg	SW846 8260D
Ethylbenzene	<0.0058	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0058	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0058	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.061	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0058	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.061	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0058	mg/Kg	SW846 8260D	Acenaphthene	<0.061	mg/Kg	SW846 8270E
Methylene chloride	0.029	mg/Kg	SW846 8260D	Acenaphthylene	<0.061	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Anthracene	<0.061	mg/Kg	SW846 8270E
Styrene	<0.0058	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.061	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0058	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.061	mg/Kg	SW846 8270E
Toluene	<0.0058	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.061	mg/Kg	SW846 8270E

Surrogate	Recovery	Method
Nitrobenzene-d5	51	SW846 8270E
2-Fluorobiphenyl	64	SW846 8270E
p-Terphenyl-d14	94	SW846 8270E
Dibromofluoromethane	118	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	124	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	75	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: SB-14 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/29/2021
 Date Received: 07/30/2021
 Spectra Project: 2021070727
 Spectra Number: 24

Analyte	Result	Units	Method
Benzo(ghi)Perylene	<0.061	mg/Kg	SW846 8270E
Benzo(k)Fluoranthene	<0.061	mg/Kg	SW846 8270E
Chrysene	<0.061	mg/Kg	SW846 8270E
Dibenz(a,h)Anthracene	<0.061	mg/Kg	SW846 8270E
Fluoranthene	<0.061	mg/Kg	SW846 8270E
Fluorene	<0.061	mg/Kg	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.061	mg/Kg	SW846 8270E
Naphthalene	<0.061	mg/Kg	SW846 8270E
Phenanthrene	<0.061	mg/Kg	SW846 8270E
Pyrene	<0.061	mg/Kg	SW846 8270E

Analyte	Result	Units	Method
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Surrogate	Recovery	Method
Nitrobenzene-d5	51	SW846 8270E
2-Fluorobiphenyl	64	SW846 8270E
p-Terphenyl-d14	94	SW846 8270E
Dibromofluoromethane	118	SW846 8260D
Toluene-d8	97	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	124	SW846 8260D

Surrogate	Recovery	Method
p-Terphenyl	75	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
 Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 25

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0060	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D
Total Barium	12.8	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0060	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D
Total Chromium	8.8	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0060	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.060	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.060	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0060	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0060	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0060	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.060	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0060	mg/Kg	SW846 8260D	Acetone	<0.016*	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Acrolein	<0.060	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0060	mg/Kg	SW846 8260D	Acrylonitrile	<0.060	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Benzene	<0.0060	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D	Bromobenzene	<0.0060	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.060	mg/Kg	SW846 8260D	Bromochloromethane	<0.0060	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	47	SW846 8270E	p-Terphenyl	60	NWTPH-Dx
2-Fluorobiphenyl	54	SW846 8270E			
p-Terphenyl-d14	58	SW846 8270E			
Dibromofluoromethane	127*	SW846 8260D			
Toluene-d8	97**	SW846 8260D			
4-Bromofluorobenzene	103**	SW846 8260D			
1,2-Dichloroethane-d4	144**	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 25

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromodichloromethane	<0.0060	mg/Kg	SW846 8260D	Trichloroethene	<0.0060	mg/Kg	SW846 8260D
Bromoform	<0.0060	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0060	mg/Kg	SW846 8260D
Bromomethane	<0.0060	mg/Kg	SW846 8260D	Vinyl Acetate	<0.060	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0060	mg/Kg	SW846 8260D	Vinyl chloride	<0.0060	mg/Kg	SW846 8260D
Chlorobenzene	<0.0060	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0060	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D
Chloroethane	<0.0060	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0060	mg/Kg	SW846 8260D
Chloroform	<0.0060	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0060	mg/Kg	SW846 8260D
Chloromethane	<0.0060	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0060	mg/Kg	SW846 8260D
Dibromomethane	<0.0060	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0060	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0060	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D
Ethylbenzene	<0.0060	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0060	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0060	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0060	mg/Kg	SW846 8260D	Acenaphthene	<0.063	mg/Kg	SW846 8270E
Methylene chloride	0.076*	mg/Kg	SW846 8260D	Acenaphthylene	<0.063	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Anthracene	<0.063	mg/Kg	SW846 8270E
Styrene	<0.0060	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.063	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0060	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.063	mg/Kg	SW846 8270E
Toluene	<0.0060	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.063	mg/Kg	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	47	SW846 8270E	p-Terphenyl	60	NW/TPH-Dx
2-Fluorobiphenyl	54	SW846 8270E			
p-Terphenyl-d14	58	SW846 8270E			
Dibromofluoromethane	127*	SW846 8260D			
Toluene-d8	97**	SW846 8260D			
4-Bromofluorobenzene	103**	SW846 8260D			
1,2-Dichloroethane-d4	144**	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-8 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 25

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(k)Fluoranthene	<0.063	mg/Kg	SW846 8270E				
Chrysene	<0.063	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.063	mg/Kg	SW846 8270E				
Fluoranthene	<0.063	mg/Kg	SW846 8270E				
Fluorene	<0.063	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.063	mg/Kg	SW846 8270E				
Naphthalene	<0.063	mg/Kg	SW846 8270E				
Phenanthrene	<0.063	mg/Kg	SW846 8270E				
Pyrene	<0.063	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	47	SW846 8270E	p-Terphenyl	60	NWTPH-Dx
2-Fluorobiphenyl	54	SW846 8270E			
p-Terphenyl-d14	58	SW846 8270E			
Dibromofluoromethane	127*	SW846 8260D			
Toluene-d8	97**	SW846 8260D			
4-Bromofluorobenzene	103**	SW846 8260D			
1,2-Dichloroethane-d4	144**	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 26

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0056	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D
Total Barium	19.0	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0056	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D
Total Chromium	15.0	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0056	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D
Total Mercury	0.034	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.056	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.056	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0056	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0056	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0056	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.056	mg/Kg	SW846 8260D
1,1-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Acetone	0.063*	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Acrolein	<0.056	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0056	mg/Kg	SW846 8260D	Acrylonitrile	<0.056	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Benzene	<0.0056	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D	Bromobenzene	<0.0056	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.056	mg/Kg	SW846 8260D	Bromochloromethane	<0.0056	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	44	SW846 8270E	p-Terphenyl	61	NWTPH-Dx
2-Fluorobiphenyl	53	SW846 8270E			
p-Terphenyl-d14	57	SW846 8270E			
Dibromofluoromethane	214*	SW846 8260D			
Toluene-d8	98	SW846 8260D			
4-Bromofluorobenzene	103**	SW846 8260D			
1,2-Dichloroethane-d4	134*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 26

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromodichloromethane	<0.0056	mg/Kg	SW846 8260D	Trichloroethene	<0.0056	mg/Kg	SW846 8260D
Bromoform	<0.0056	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0056	mg/Kg	SW846 8260D
Bromomethane	<0.0056	mg/Kg	SW846 8260D	Vinyl Acetate	<0.056	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0056	mg/Kg	SW846 8260D	Vinyl chloride	<0.0056	mg/Kg	SW846 8260D
Chlorobenzene	<0.0056	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0056	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D
Chloroethane	<0.0056	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0056	mg/Kg	SW846 8260D
Chloroform	<0.0056	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0056	mg/Kg	SW846 8260D
Chloromethane	<0.0056	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0056	mg/Kg	SW846 8260D
Dibromomethane	<0.0056	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0056	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0056	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D
Ethylbenzene	<0.0056	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0056	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0056	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.056	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0056	mg/Kg	SW846 8260D	Acenaphthene	<0.056	mg/Kg	SW846 8270E
Methylene chloride	0.060*	mg/Kg	SW846 8260D	Acenaphthylene	<0.056	mg/Kg	SW846 8270E
Naphthalene	<0.011	mg/Kg	SW846 8260D	Anthracene	<0.056	mg/Kg	SW846 8270E
Styrene	<0.0056	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.056	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0056	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.056	mg/Kg	SW846 8270E
Toluene	<0.0056	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.056	mg/Kg	SW846 8270E
Total Xylenes	<0.011	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.056	mg/Kg	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	44	SW846 8270E	p-Terphenyl	61	NWTPH-Dx
2-Fluorobiphenyl	53	SW846 8270E			
p-Terphenyl-d14	57	SW846 8270E			
Dibromofluoromethane	214*	SW846 8260D			
Toluene-d8	98	SW846 8260D			
4-Bromofluorobenzene	103**	SW846 8260D			
1,2-Dichloroethane-d4	134*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-13 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 26

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(k)Fluoranthene	<0.056	mg/Kg	SW846 8270E				
Chrysene	<0.056	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.056	mg/Kg	SW846 8270E				
Fluoranthene	<0.056	mg/Kg	SW846 8270E				
Fluorene	<0.056	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.056	mg/Kg	SW846 8270E				
Naphthalene	<0.056	mg/Kg	SW846 8270E				
Phenanthrene	<0.056	mg/Kg	SW846 8270E				
Pyrene	<0.056	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. **Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	44	SW846 8270E	p-Terphenyl	61	NWTPH-Dx
2-Fluorobiphenyl	53	SW846 8270E			
p-Terphenyl-d14	57	SW846 8270E			
Dibromofluoromethane	214*	SW846 8260D			
Toluene-d8	98	SW846 8260D			
4-Bromofluorobenzene	103**	SW846 8260D			
1,2-Dichloroethane-d4	134*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 27

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0062	mg/Kg	SW846 8260D
Total Arsenic	22.4	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D
Total Barium	36.1	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0062	mg/Kg	SW846 8260D
Total Cadmium	2.0	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D
Total Chromium	17.1	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D
Total Lead	35.6	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0062	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0062	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0062	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.062	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0062	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.062	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0062	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0062	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0062	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0062	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0062	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.062	mg/Kg	SW846 8260D
1,1-Dichloropropane	<0.0062	mg/Kg	SW846 8260D	Acetone	<0.062	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Acrolein	<0.062	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0062	mg/Kg	SW846 8260D	Acrylonitrile	<0.062	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0062	mg/Kg	SW846 8260D	Benzene	<0.0062	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0062	mg/Kg	SW846 8260D	Bromobenzene	<0.0062	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.062	mg/Kg	SW846 8260D	Bromochloromethane	<0.0062	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	36	SW846 8270E	p-Terphenyl	68	NWTPH-Dx
2-Fluorobiphenyl	51	SW846 8270E			
p-Terphenyl-d14	35	SW846 8270E			
Dibromofluoromethane	126*	SW846 8260D			
Toluene-d8	94	SW846 8260D			
4-Bromofluorobenzene	99	SW846 8260D			
1,2-Dichloroethane-d4	146*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 27

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromodichloromethane	<0.0062	mg/Kg	SW846 8260D	Trichloroethene	<0.0062	mg/Kg	SW846 8260D
Bromoform	<0.0062	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0062	mg/Kg	SW846 8260D
Bromomethane	<0.0062	mg/Kg	SW846 8260D	Vinyl Acetate	<0.062	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0062	mg/Kg	SW846 8260D	Vinyl chloride	<0.0062	mg/Kg	SW846 8260D
Chlorobenzene	<0.0062	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0062	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D
Chloroethane	<0.0062	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0062	mg/Kg	SW846 8260D
Chloroform	<0.0062	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0062	mg/Kg	SW846 8260D
Chloromethane	<0.0062	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0062	mg/Kg	SW846 8260D
Dibromomethane	<0.0062	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0062	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0062	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0062	mg/Kg	SW846 8260D
Ethylbenzene	<0.0062	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0062	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0062	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.062	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0062	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.062	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0062	mg/Kg	SW846 8260D	Acenaphthene	<0.062	mg/Kg	SW846 8270E
Methylene chloride	0.072*	mg/Kg	SW846 8260D	Acenaphthylene	<0.062	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Anthracene	<0.062	mg/Kg	SW846 8270E
Styrene	<0.0062	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.062	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0062	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.062	mg/Kg	SW846 8270E
Toluene	<0.0062	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.062	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.062	mg/Kg	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	36	SW846 8270E	p-Terphenyl	68	NWTPH-Dx
2-Fluorobiphenyl	51	SW846 8270E			
p-Terphenyl-d14	35	SW846 8270E			
Dibromofluoromethane	126*	SW846 8260D			
Toluene-d8	94	SW846 8260D			
4-Bromofluorobenzene	99	SW846 8260D			
1,2-Dichloroethane-d4	146*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-7 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 27

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(k)Fluoranthene	<0.062	mg/Kg	SW846 8270E				
Chrysene	<0.062	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.062	mg/Kg	SW846 8270E				
Fluoranthene	<0.062	mg/Kg	SW846 8270E				
Fluorene	<0.062	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.062	mg/Kg	SW846 8270E				
Naphthalene	<0.062	mg/Kg	SW846 8270E				
Phenanthrene	<0.062	mg/Kg	SW846 8270E				
Pyrene	<0.062	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	36	SW846 8270E	p-Terphenyl	68	NWTPH-Dx
2-Fluorobiphenyl	51	SW846 8270E			
p-Terphenyl-d14	35	SW846 8270E			
Dibromofluoromethane	126*	SW846 8260D			
Toluene-d8	94	SW846 8260D			
4-Bromofluorobenzene	99	SW846 8260D			
1,2-Dichloroethane-d4	146*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 28

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0060	mg/Kg	SW846 8260D
Total Arsenic	10.6	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D
Total Barium	22.8	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0060	mg/Kg	SW846 8260D
Total Cadmium	0.8	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D
Total Chromium	16.6	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D
Total Lead	11.8	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0060	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0060	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0060	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.060	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0060	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.060	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0060	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0060	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0060	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0060	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0060	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.060	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0060	mg/Kg	SW846 8260D	Acetone	<0.060	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Acrolein	<0.060	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0060	mg/Kg	SW846 8260D	Acrylonitrile	<0.060	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0060	mg/Kg	SW846 8260D	Benzene	<0.0060	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0060	mg/Kg	SW846 8260D	Bromobenzene	<0.0060	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.060	mg/Kg	SW846 8260D	Bromochloromethane	<0.0060	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	45	SW846 8270E	p-Terphenyl	63	NWTPH-Dx
2-Fluorobiphenyl	48	SW846 8270E			
p-Terphenyl-d14	57	SW846 8270E			
Dibromofluoromethane	123*	SW846 8260D			
Toluene-d8	94	SW846 8260D			
4-Bromofluorobenzene	102	SW846 8260D			
1,2-Dichloroethane-d4	144*	SW846 8260D			

SPECTRA LABORATORIES


Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 28

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromodichloromethane	<0.0060	mg/Kg	SW846 8260D	Trichloroethene	<0.0060	mg/Kg	SW846 8260D
Bromoform	<0.0060	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0060	mg/Kg	SW846 8260D
Bromomethane	<0.0060	mg/Kg	SW846 8260D	Vinyl Acetate	<0.060	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0060	mg/Kg	SW846 8260D	Vinyl chloride	<0.0060	mg/Kg	SW846 8260D
Chlorobenzene	<0.0060	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0060	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D
Chloroethane	<0.0060	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0060	mg/Kg	SW846 8260D
Chloroform	<0.0060	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0060	mg/Kg	SW846 8260D
Chloromethane	<0.0060	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0060	mg/Kg	SW846 8260D
Dibromomethane	<0.0060	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0060	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0060	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0060	mg/Kg	SW846 8260D
Ethylbenzene	<0.0060	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0060	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0060	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.060**	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0060	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.060**	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0060	mg/Kg	SW846 8260D	Acenaphthene	<0.060**	mg/Kg	SW846 8270E
Methylene chloride	0.068*	mg/Kg	SW846 8260D	Acenaphthylene	<0.060**	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Anthracene	<0.060**	mg/Kg	SW846 8270E
Styrene	<0.0060	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.060	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0060	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.060	mg/Kg	SW846 8270E
Toluene	<0.0060	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.060	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.060	mg/Kg	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	45	SW846 8270E	p-Terphenyl	63	NWTPH-Dx
2-Fluorobiphenyl	48	SW846 8270E			
p-Terphenyl-d14	57	SW846 8270E			
Dibromofluoromethane	123*	SW846 8260D			
Toluene-d8	94	SW846 8260D			
4-Bromofluorobenzene	102	SW846 8260D			
1,2-Dichloroethane-d4	144*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-12 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 28

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(k)Fluoranthene	<0.060	mg/Kg	SW846 8270E				
Chrysene	<0.060	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.060	mg/Kg	SW846 8270E				
Fluoranthene	<0.060	mg/Kg	SW846 8270E				
Fluorene	<0.060**	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.060	mg/Kg	SW846 8270E				
Naphthalene	<0.060**	mg/Kg	SW846 8270E				
Phenanthrene	<0.060	mg/Kg	SW846 8270E				
Pyrene	<0.060	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	45	SW846 8270E	p-Terphenyl	63	NWTPH-Dx
2-Fluorobiphenyl	48	SW846 8270E			
p-Terphenyl-d14	57	SW846 8270E			
Dibromofluoromethane	123*	SW846 8260D			
Toluene-d8	94	SW846 8260D			
4-Bromofluorobenzene	102	SW846 8260D			
1,2-Dichloroethane-d4	144*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 29

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0061	mg/Kg	SW846 8260D
Total Arsenic	10.7	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0061	mg/Kg	SW846 8260D
Total Barium	29.7	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0061	mg/Kg	SW846 8260D
Total Cadmium	0.8	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0061	mg/Kg	SW846 8260D
Total Chromium	23.8	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0061	mg/Kg	SW846 8260D
Total Lead	15.1	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0061	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0061	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0061	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0061	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0061	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.061	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0061	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0061	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0061	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.061	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0061	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0061	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0061	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0061	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0061	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.061	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.0061	mg/Kg	SW846 8260D	Acetone	<0.061	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Acrolein	<0.061	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0061	mg/Kg	SW846 8260D	Acrylonitrile	<0.061	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0061	mg/Kg	SW846 8260D	Benzene	<0.0061	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0061	mg/Kg	SW846 8260D	Bromobenzene	<0.0061	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.061	mg/Kg	SW846 8260D	Bromochloromethane	<0.0061	mg/Kg	SW846 8260D

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	<0.055	SW846 8270E	p-Terphenyl	60	NWTPH-Dx
2-Fluorobiphenyl	<0.055	SW846 8270E			
p-Terphenyl-d14	<0.055	SW846 8270E			
Dibromofluoromethane	123*	SW846 8260D			
Toluene-d8	96	SW846 8260D			
4-Bromofluorobenzene	95	SW846 8260D			
1,2-Dichloroethane-d4	122*	SW846 8260D			

SPECTRA LABORATORIES


Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 29

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromodichloromethane	<0.0061	mg/Kg	SW846 8260D	Trichloroethene	<0.0061	mg/Kg	SW846 8260D
Bromoform	<0.0061	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0061	mg/Kg	SW846 8260D
Bromomethane	<0.0061	mg/Kg	SW846 8260D	Vinyl Acetate	<0.061	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0061	mg/Kg	SW846 8260D	Vinyl chloride	<0.0061	mg/Kg	SW846 8260D
Chlorobenzene	<0.0061	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0061	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0061	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0061	mg/Kg	SW846 8260D
Chloroethane	<0.0061	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0061	mg/Kg	SW846 8260D
Chloroform	<0.0061	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0061	mg/Kg	SW846 8260D
Chloromethane	<0.0061	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0061	mg/Kg	SW846 8260D
Dibromomethane	<0.0061	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0061	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0061	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0061	mg/Kg	SW846 8260D
Ethylbenzene	<0.0061	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0061	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0061	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0061	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.055	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0061	mg/Kg	SW846 8260D	Acenaphthene	<0.055	mg/Kg	SW846 8270E
Methylene chloride	<0.030	mg/Kg	SW846 8260D	Acenaphthylene	<0.055	mg/Kg	SW846 8270E
Naphthalene	<0.012	mg/Kg	SW846 8260D	Anthracene	<0.055	mg/Kg	SW846 8270E
Styrene	<0.0061	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.055	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0061	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.055	mg/Kg	SW846 8270E
Toluene	<0.0061	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.055	mg/Kg	SW846 8270E
Total Xylenes	<0.012	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.055	mg/Kg	SW846 8270E

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	<0.055	SW846 8270E	p-Terphenyl	60	NWTPH-Dx
2-Fluorobiphenyl	<0.055	SW846 8270E			
p-Terphenyl-d14	<0.055	SW846 8270E			
Dibromofluoromethane	123*	SW846 8260D			
Toluene-d8	96	SW846 8260D			
4-Bromofluorobenzene	95	SW846 8260D			
1,2-Dichloroethane-d4	122*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-17 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 29

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(k)Fluoranthene	<0.055	mg/Kg	SW846 8270E				
Chrysene	<0.055	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.055	mg/Kg	SW846 8270E				
Fluoranthene	<0.055	mg/Kg	SW846 8270E				
Fluorene	<0.055	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.055	mg/Kg	SW846 8270E				
Naphthalene	<0.055	mg/Kg	SW846 8270E				
Phenanthrene	<0.055	mg/Kg	SW846 8270E				
Pyrene	<0.055	mg/Kg	SW846 8270E				

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

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	<0.055	SW846 8270E	p-Terphenyl	60	NWTPH-Dx
2-Fluorobiphenyl	<0.055	SW846 8270E			
p-Terphenyl-d14	<0.055	SW846 8270E			
Dibromofluoromethane	123*	SW846 8260D			
Toluene-d8	96	SW846 8260D			
4-Bromofluorobenzene	95	SW846 8260D			
1,2-Dichloroethane-d4	122*	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 30

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.0056	mg/Kg	SW846 8260D
Total Arsenic	3.1	mg/Kg	SW846 6010D	1,2-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D
Total Barium	42.0	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.0056	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D
Total Chromium	26.8	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D
Total Lead	< 2.5	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.0056	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.0056	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2,2-Dichloropropane	<0.0056	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	2-Butanone (MEK)	<0.056	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.0056	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.056	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.0056	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.0056	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.0056	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.0056	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.0056	mg/Kg	SW846 8260D	4-methyl-2-pentanone (MIBK)	<0.0056	mg/Kg	SW846 8260D
1,1-Dichloropropane	<0.0056	mg/Kg	SW846 8260D	Acetone	<0.16	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Acrolein	<0.056	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.0056	mg/Kg	SW846 8260D	Acrylonitrile	<0.056	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.0056	mg/Kg	SW846 8260D	Benzene	<0.0056	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.0056	mg/Kg	SW846 8260D	Bromobenzene	<0.0056	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.056	mg/Kg	SW846 8260D	Bromochloromethane	<0.0056	mg/Kg	SW846 8260D

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	45	SW846 8270E	p-Terphenyl	68	NWTPH-Dx
2-Fluorobiphenyl	46	SW846 8270E			
p-Terphenyl-d14	61	SW846 8270E			
Dibromofluoromethane	124*	SW846 8260D			
Toluene-d8	97	SW846 8260D			
4-Bromofluorobenzene	99**	SW846 8260D			
1,2-Dichloroethane-d4	117	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 30

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromodichloromethane	<0.0056	mg/Kg	SW846 8260D	Trichloroethene	<0.0056	mg/Kg	SW846 8260D
Bromoform	<0.0056	mg/Kg	SW846 8260D	Trichlorofluoromethane	<0.0056	mg/Kg	SW846 8260D
Bromomethane	<0.0056	mg/Kg	SW846 8260D	Vinyl Acetate	<0.056	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.0056	mg/Kg	SW846 8260D	Vinyl chloride	<0.0056	mg/Kg	SW846 8260D
Chlorobenzene	<0.0056	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.0056	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D
Chloroethane	<0.0056	mg/Kg	SW846 8260D	n-Butylbenzene	<0.0056	mg/Kg	SW846 8260D
Chloroform	<0.0056	mg/Kg	SW846 8260D	n-Propylbenzene	<0.0056	mg/Kg	SW846 8260D
Chloromethane	<0.0056	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.0056	mg/Kg	SW846 8260D
Dibromomethane	<0.0056	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.0056	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.0056	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.0056	mg/Kg	SW846 8260D
Ethylbenzene	<0.0056	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.0056	mg/Kg	SW846 8260D
Hexachlorobutadiene	<0.0056	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.051	mg/Kg	SW846 8270E
Isopropylbenzene	<0.0056	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.051	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.0056	mg/Kg	SW846 8260D	Acenaphthene	<0.051	mg/Kg	SW846 8270E
Methylene chloride	<0.028	mg/Kg	SW846 8260D	Acenaphthylene	<0.051	mg/Kg	SW846 8270E
Naphthalene	<0.011	mg/Kg	SW846 8260D	Anthracene	<0.051	mg/Kg	SW846 8270E
Styrene	<0.0056	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.051	mg/Kg	SW846 8270E
Tetrachloroethene	<0.0056	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.051	mg/Kg	SW846 8270E
Toluene	<0.0056	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.051	mg/Kg	SW846 8270E
Total Xylenes	<0.011	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.051	mg/Kg	SW846 8270E

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	45	SW846 8270E	p-Terphenyl	68	NWTPH-Dx
2-Fluorobiphenyl	46	SW846 8270E			
p-Terphenyl-d14	61	SW846 8270E			
Dibromofluoromethane	124*	SW846 8260D			
Toluene-d8	97	SW846 8260D			
4-Bromofluorobenzene	99**	SW846 8260D			
1,2-Dichloroethane-d4	117	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

09/17/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: SB-10 4-6'
Sample Matrix: Soil
Date Sampled: 07/29/2021
Date Received: 07/30/2021
Spectra Project: 2021070727
Spectra Number: 30

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Benzo(k)Fluoranthene	<0.051	mg/Kg	SW846 8270E				
Chrysene	<0.051	mg/Kg	SW846 8270E				
Dibenz(a,h)Anthracene	<0.051	mg/Kg	SW846 8270E				
Fluoranthene	<0.051	mg/Kg	SW846 8270E				
Fluorene	<0.051	mg/Kg	SW846 8270E				
Indeno(1,2,3-cd)Pyrene	<0.051	mg/Kg	SW846 8270E				
Naphthalene	<0.051	mg/Kg	SW846 8270E				
Phenanthrene	<0.051	mg/Kg	SW846 8270E				
Pyrene	<0.051	mg/Kg	SW846 8270E				

*Recovery for this surrogate was greater than the method defined upper limit. All positive results for all associated analytes may be biased high. Non detected associated analytes are unaffected. *Due to the presence of solids in the threads of the VOA vial this sample was received in, recovery of the internal standard associated with this surrogate was lower than the method defined limit. The sample was re-ran in order to confirm results. All associated non-detect results are unaffected.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
Nitrobenzene-d5	45	SW846 8270E	p-Terphenyl	68	NWTPH-Dx
2-Fluorobiphenyl	46	SW846 8270E			
p-Terphenyl-d14	61	SW846 8270E			
Dibromofluoromethane	124*	SW846 8260D			
Toluene-d8	97	SW846 8260D			
4-Bromofluorobenzene	99**	SW846 8260D			
1,2-Dichloroethane-d4	117	SW846 8260D			

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

September 8, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra #'s: 21-30
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - SW846 7471B - Soil/Solid

Method Blank (MBLK)

Date Digested: 9/8/2021 Date Analyzed: 9/8/2021

	CAS #	Result
Mercury	7439-97-6	< 0.025

Laboratory Control Spike (LCS)

Date Digested: 9/8/2021 Date Analyzed: 9/8/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	0.2	0.220	110.0

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 9/8/2021 Date Analyzed: 9/8/2021

Sample Spiked: 2021070727-21

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.028	0.2	0.230	101.3	0.202	87.3	14.9

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES

8/11/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra #'s: 21-30
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Element	Blank Result
Arsenic	< 2.5
Barium	< 0.2
Cadmium	< 0.3
Chromium	< 0.7
Lead	< 2.5
Selenium	< 2.5
Silver	< 0.7

Laboratory Control Sample (LCS)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021

Element	Spike Addition	LCS Conc.	LCS %Rec
Arsenic	200.0	207.4	103.7
Barium	200.0	194.5	97.3
Cadmium	200.0	187.8	93.9
Chromium	200.0	205.7	102.9
Lead	200.0	194.0	97.0
Selenium	200.0	198.4	99.2
Silver	200.0	184.3	92.2

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/11/2021 Date Analyzed: 8/11/2021
Sample Spiked: 2021080018-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Arsenic	35.0	200.0	255.1	110.1	261.7	113.4	3.0
Barium	89.8	200.0	294.2	102.2	281.6	95.9	6.4
Cadmium	13.3	200.0	199.8	93.3	201.5	94.1	0.9
Chromium	38.0	200.0	241.3	101.7	238.8	100.4	1.2
Lead	18.9	200.0	226.1	103.6	231.2	106.2	2.4
Selenium	0.0	200.0	189.4	94.7	192.6	96.3	1.7
Silver	0.0	200.0	187.1	93.6	193.3	96.7	3.3

Comment:
Recovery Limits 75-125%
RPD Limit 20

September 17, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi AllbaughMethod: NWTPH-Dx
Sample Matrix: Soil
Units: mg/Kg
Spectra Project: 2021070727
Applies to Spectra # 21-30**NWTPH-Dx ANALYSIS
QUALITY CONTROL RESULTS****BLANK SPIKE (LCS)**

Date Extracted:	9/8/2021	Date Analyzed:	9/8/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	125	117.4	94%

METHOD BLANK

Date Extracted:	9/8/2021	Date Analyzed:	9/8/2021
Diesel	<15.0		
Heavy Oil	<50.0		
Surrogate Recovery:			
p-Terphenyl	63%		

Surrogate Recovery Limits: 50 -150%

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
 (253) 272-4850 Fax (253) 572-9838
 www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY
 SPECTRA PROJECT #

2021070727

Return Samples N Page 2 of 4

STANDARD RUSH

CLIENT: Panhandle Geotechnical & Env.

ADDRESS:

ADDRESS CHANGE

PROJECT: Progress Rail

CONTACT: Levi Allbaugh

SAMPLED BY: Dave Schaff & Ryan Penn

PHONE: 308-641-6742 (field) 307-635-2828

e-MAIL: lallbaugh@mcschaff.com

PURCHASE ORDER #:

SAMPLE ID

DATE SAMPLED

TIME SAMPLED

MATRIX

NUMBER OF CONTAINERS

NWTPH-HCID

BTEX

BTEX/NWTPH-G

NWTPH-G

NWTPH-Dx

1664 SGT-HEM (TPH)

1664 HEM (FOG)

8260/624 VOA

8260 CHLOR SOLVENTS

8270/625 SEMI VOA

625 PAH/PNA - SIM

8082/608 PCB

TOTAL METALS RCRA 8

TOTAL METALS (SPECIFY)

Di. Met. RCRA-8

TCLP METALS RCRA 8

TCLP METALS (SPECIFY)

PH 9040/9045

TX/TOX 9076

TURBIDITY

FLASH POINT

BOD

SOLIDS (SPECIFY)

HYDROCARBONS

ORGANICS

METALS

OTHER

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS	HYDROCARBONS	ORGANICS	METALS	OTHER
11 SB-10	7/29/11	18:30	wtw	5	X	X	X	
12 Dup-A				8	X	X	X	
13 Dup-B				8	X	X	X	
14 Dup-C				8	X	X	X	
15 Dup-D				8	X	X	X	
16 FB		18:00		3	X	X	X	
17 FB				3	X	X	X	
18 SB-3	7/29/11	10:10	wtw	1	X	X	X	

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

R. R.

Ryan Penn

AGE

7/30/11

8:30

RECEIVED BY

Maria Holt

MARIA HOLT

SPECTRA

7-30-11

RELINQUISHED BY

RECEIVED BY

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
 (253) 272-4850 Fax (253) 572-9838
 www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY

SPECTRA PROJECT #

224070727

Return Samples Y N Page 3 of 4

STANDARD RUSH

ADDRESS CHANGE

CLIENT: Panhandle Geotechnical & Env.

ADDRESS:

PROJECT: Progress Rail

CONTACT: Levi Allbaugh

SAMPLED BY: Dave Schaff & Ryan Penn

PHONE: 308-641-6742 (field) 307-635-2828

e-MAIL: lallbaugh@mcshaff.com

PURCHASE ORDER #:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
SB-6	7/21/21	9:00	So:1
SB-3		9:30	
SB-2		10:00	
SB-4		10:30	
SB-15		11:00	
SB-14		11:30	
SB-8		13:00	
SB-13		13:30	
SB-7		13:45	
SB-12		14:30	

NUMBER OF CONTAINERS	HYDROCARBONS			ORGANICS			METALS			OTHER													
	NWTPH-HCID	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-Dx	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/824 VOA	8260 CHLOR SOLVENTS	8270/825 SEMI VOA	625 PAH/PNA - SIM	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	TCLP METALS (SPECIFY)	PH 9040/9045	TX/TOX 9076	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)	
5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

SIGNATURE PRINTED NAME COMPANY DATE TIME

RELINQUISHED BY [Signature] RYAN PENN PGE 7/30/21 8:30

RECEIVED BY [Signature] MARIE HOLT SPECTRA 7-28-21 8:30

RELINQUISHED BY RECEIVED BY

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

SPECTRA LABORATORIES Sample Receiving Checklist

Client/Project: Panhandle Geo Spectra Project#: 2021070727

Date & Time Received: 7/30/21 8:30 Received by: Marie

Shipped by: Client Courier UPS USPS FedEx Other: _____

Shipping Container Type(s): Cooler Box None Other: _____

Sample temperatures (°C): water = 5.0°C to 15.3°C soils = 14.0°C to 18.5°C

Unless noted, the following parameters were received within Spectra Laboratories sample acceptance policy requirements (checked item(s) is out of compliance):

Requirement	"X"	Comments: (indicate requirement number)
1. Sample temperature(s) outside of 0-6°C	*	<input checked="" type="checkbox"/> 1. Temperature >6°C but received within <u>24-21</u> hours of sample collection on ice and cooling.
2. Custody seals absent (not required when hand delivered by sampler)		
3. Custody seals broken/damaged		*water samples = 5.0°C to 15.3°C
4. Chain-of-Custody (COC) absent		
5. COC improperly completed (describe in comments)		
6. Signatures/Dates/Times on COC absent or incorrect		soil samples = 14.0°C to 18.5°C
7. Sample IDs/Matrix/Tests absent or incorrect	**	
8. COC does not correspond to sample count		** samples SB-3 and SB-17 contain bottles that are 2/3 or 1/2 full
9. COC info does not correspond to sample labels		
10. Samples received broken or leaking (describe in comments)		
11. Incorrect bottles used for test (describe)		** Ryan said to run what we can on water samples - SB17, SB3 & SB12 they weren't sure what test to run marked. Run NUTPH-D on min sample.
12. Samples improperly preserved (describe)		
13. Multi-phasic samples present (describe)		
14. VOA vials contain headspace (indicate amount)		
15. Other anomaly (describe)	***	

Microbiological Tests requested: MPN MF HPC

Fecal Coliform Total Coliform E. coli Salmonella

Did samples arrive within Holding Time? Yes No

Corrective Action Taken, if needed: informed client that reporting limits will be higher for samples SB-3 and SB-17 due to amount of sample provided

Person Contacted: _____ Date: _____

Form completed by: Ma Date: 7/30/21 Time: 9:55

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-3R
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	57.2**	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.015	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	0.022	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.014	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

**Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	120	NWTPH-Dx	Dibromofluoromethane	112	SW846 8260D
Nitrobenzene-d5	74	SW846 8270E	1,2-Dichloroethane-d4	110	SW846 8260D
2-Fluorobiphenyl	88	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	113	SW846 8270E	4-Bromofluorobenzene	95	SW846 8260D

SPECTRA LABORATORIES

Marie Holt
Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-3R
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.957	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.957	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.957	µg/L	SW846 8270E

**Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	120	NWTPH-Dx	Dibromofluoromethane	112	SW846 8260D
Nitrobenzene-d5	74	SW846 8270E	1,2-Dichloroethane-d4	110	SW846 8260D
2-Fluorobiphenyl	88	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	113	SW846 8270E	4-Bromofluorobenzene	95	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-3R
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 1

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.957	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.957	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.957	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.957	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.957	µg/L	SW846 8270E
Chrysene	<0.957	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.957	µg/L	SW846 8270E
Fluoranthene	<0.957	µg/L	SW846 8270E
Fluorene	<0.957	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.957	µg/L	SW846 8270E
Naphthalene	<0.957	µg/L	SW846 8270E
Phenanthrene	<0.957	µg/L	SW846 8270E
Pyrene	<0.957	µg/L	SW846 8270E

Analyte	Result	Units	Method
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**Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	120	NWTPH-Dx	Dibromofluoromethane	112	SW846 8260D
Nitrobenzene-d5	74	SW846 8270E	1,2-Dichloroethane-d4	110	SW846 8260D
2-Fluorobiphenyl	88	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	113	SW846 8270E	4-Bromofluorobenzene	95	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-1R
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	80.6**	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.127	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	0.014	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.104	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

**Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	121	NWTPH-Dx	Dibromofluoromethane	115	SW846 8260D
Nitrobenzene-d5	50	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	55	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	64	SW846 8270E	4-Bromofluorobenzene	97	SW846 8260D

SPECTRA LABORATORIES

Marie Holt
Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-1R
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

**Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	121	NWTPH-Dx	Dibromofluoromethane	115	SW846 8260D
Nitrobenzene-d5	50	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	55	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	64	SW846 8270E	4-Bromofluorobenzene	97	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-1R
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 2

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

Analyte	Result	Units	Method
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**Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. *Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	121	NWTPH-Dx	Dibromofluoromethane	115	SW846 8260D
Nitrobenzene-d5	50	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	55	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	64	SW846 8270E	4-Bromofluorobenzene	97	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-4
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 3

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	275*	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.060	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0**	µg/L	SW846 8260D
Dissolved Barium	0.025	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	115	NWTPH-Dx	Dibromofluoromethane	114	SW846 8260D
Nitrobenzene-d5	56	SW846 8270E	1,2-Dichloroethane-d4	114	SW846 8260D
2-Fluorobiphenyl	50	SW846 8270E	Toluene-d8	101	SW846 8260D
p-Terphenyl-d14	63	SW846 8270E	4-Bromofluorobenzene	99	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-4
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 3

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0**	µg/L	SW846 8260D	Naphthalene	<5.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00**	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.971	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.971	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.971	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.971	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.971	µg/L	SW846 8270E

*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	115	NWTPH-Dx	Dibromofluoromethane	114	SW846 8260D
Nitrobenzene-d5	56	SW846 8270E	1,2-Dichloroethane-d4	114	SW846 8260D
2-Fluorobiphenyl	50	SW846 8270E	Toluene-d8	101	SW846 8260D
p-Terphenyl-d14	63	SW846 8270E	4-Bromofluorobenzene	99	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-4
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 3

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.971	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.971	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.971	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.971	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.971	µg/L	SW846 8270E
Chrysene	<0.971	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.971	µg/L	SW846 8270E
Fluoranthene	<0.971	µg/L	SW846 8270E
Fluorene	<0.971	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.971	µg/L	SW846 8270E
Naphthalene	<0.971	µg/L	SW846 8270E
Phenanthrene	<0.971	µg/L	SW846 8270E
Pyrene	<0.971	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	115	NWTPH-Dx	Dibromofluoromethane	114	SW846 8260D
Nitrobenzene-d5	56	SW846 8270E	1,2-Dichloroethane-d4	114	SW846 8260D
2-Fluorobiphenyl	50	SW846 8270E	Toluene-d8	101	SW846 8260D
p-Terphenyl-d14	63	SW846 8270E	4-Bromofluorobenzene	99	SW846 8260D

SPECTRA LABORATORIES

Marie Holt
Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-5
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number:4

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	623***	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	1.47	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	0.050	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0**	µg/L	SW846 8260D
Dissolved Barium	0.072	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	0.039	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

***Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. * Some sample was spilled during decant; sample results are estimated. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	115	NWTPH-Dx	Dibromofluoromethane	116	SW846 8260D
Nitrobenzene-d5	24*	SW846 8270E	1,2-Dichloroethane-d4	115	SW846 8260D
2-Fluorobiphenyl	20*	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	24*	SW846 8270E	4-Bromofluorobenzene	95	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-5
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number:4

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<1.12*	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<1.12*	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<1.12*	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<1.12*	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<1.12*	µg/L	SW846 8270E

***Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. * Some sample was spilled during decant; sample results are estimated. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	115	NWTPH-Dx	Dibromofluoromethane	116	SW846 8260D
Nitrobenzene-d5	24*	SW846 8270E	1,2-Dichloroethane-d4	115	SW846 8260D
2-Fluorobiphenyl	20*	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	24*	SW846 8270E	4-Bromofluorobenzene	95	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-5
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number:4

Analyte	Result	Units	Method
Benzo(a)Anthracene	<1.12*	µg/L	SW846 8270E
Benzo(a)Pyrene	<1.12*	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<1.12*	µg/L	SW846 8270E
Benzo(ghi)Perylene	<1.12*	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<1.12*	µg/L	SW846 8270E
Chrysene	<1.12*	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<1.12*	µg/L	SW846 8270E
Fluoranthene	<1.12*	µg/L	SW846 8270E
Fluorene	<1.12*	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<1.12*	µg/L	SW846 8270E
Naphthalene	<1.12*	µg/L	SW846 8270E
Phenanthrene	<1.12*	µg/L	SW846 8270E
Pyrene	<1.12*	µg/L	SW846 8270E

Analyte	Result	Units	Method
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***Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. * Some sample was spilled during decant; sample results are estimated. **Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	115	NWTPH-Dx	Dibromofluoromethane	116	SW846 8260D
Nitrobenzene-d5	24*	SW846 8270E	1,2-Dichloroethane-d4	115	SW846 8260D
2-Fluorobiphenyl	20*	SW846 8270E	Toluene-d8	99	SW846 8260D
p-Terphenyl-d14	24*	SW846 8270E	4-Bromofluorobenzene	95	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-6
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 5

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	546*	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.061	mg/L	SW846 6010D	1,2,3-Trichloropropane	<1.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	0.018	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0***	µg/L	SW846 8260D
Dissolved Barium	0.044	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	0.008	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. ** Surrogate recovery biased high due to matrix interference. ***Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	128**	NWTPH-Dx	Dibromofluoromethane	116	SW846 8260D
Nitrobenzene-d5	69	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	75	SW846 8270E	Toluene-d8	101	SW846 8260D
p-Terphenyl-d14	95	SW846 8270E	4-Bromofluorobenzene	100	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-6
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 5

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<1.00	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0***	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00***	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.957	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.957	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.957	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.957	µg/L	SW846 8270E

*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. ** Surrogate recovery biased high due to matrix interference. ***Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	128**	NWTPH-Dx	Dibromofluoromethane	116	SW846 8260D
Nitrobenzene-d5	69	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	75	SW846 8270E	Toluene-d8	101	SW846 8260D
p-Terphenyl-d14	95	SW846 8270E	4-Bromofluorobenzene	100	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-6
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 5

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.957	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.957	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.957	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.957	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.957	µg/L	SW846 8270E
Chrysene	<0.957	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.957	µg/L	SW846 8270E
Fluoranthene	<0.957	µg/L	SW846 8270E
Fluorene	<0.957	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.957	µg/L	SW846 8270E
Naphthalene	<0.957	µg/L	SW846 8270E
Phenanthrene	<0.957	µg/L	SW846 8270E
Pyrene	<0.957	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Sample contains diesel range organics that do not resemble diesel reference pattern. Sample was quantified using diesel range response. ** Surrogate recovery biased high due to matrix interference. ***Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	128**	NWTPH-Dx	Dibromofluoromethane	116	SW846 8260D
Nitrobenzene-d5	69	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	75	SW846 8270E	Toluene-d8	101	SW846 8260D
p-Terphenyl-d14	95	SW846 8270E	4-Bromofluorobenzene	100	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: FB
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 6

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0*	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<1.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
Dibromofluoromethane	117	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	103	SW846 8260D
4-Bromofluorobenzene	100	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: FB
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 6

Analyte	Result	Units	Method
Ethylbenzene	<1.00	µg/L	SW846 8260D
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D
Iodomethane	<5.00	µg/L	SW846 8260D
Isopropylbenzene	<1.00	µg/L	SW846 8260D
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D
Methylene chloride	<5.00	µg/L	SW846 8260D
Naphthalene	<1.00	µg/L	SW846 8260D
Styrene	<1.00	µg/L	SW846 8260D
Tetrachloroethene	<1.00	µg/L	SW846 8260D
Toluene	<1.00	µg/L	SW846 8260D
Total Xylenes	<2.00	µg/L	SW846 8260D
Trichloroethene	<1.00	µg/L	SW846 8260D
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Vinyl Acetate	<10.0	µg/L	SW846 8260D
Vinyl chloride	<1.00	µg/L	SW846 8260D
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
n-Butylbenzene	<1.00	µg/L	SW846 8260D
n-Propylbenzene	<1.00	µg/L	SW846 8260D
sec-Butylbenzene	<1.00	µg/L	SW846 8260D
tert-Butylbenzene	<1.00	µg/L	SW846 8260D
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D

Analyte Result Units Method

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
Dibromofluoromethane	117	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	103	SW846 8260D
4-Bromofluorobenzene	100	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 7

Analyte	Result	Units	Method	Analyte	Result	Units	Method
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethene	<1.00	µg/L	SW846 8260D	Acetonitrile	<10.0	µg/L	SW846 8260D
1,1-Dichloropropene	<1.00	µg/L	SW846 8260D	Acrolein	<10.0*	µg/L	SW846 8260D
1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Acrylonitrile	<10.0	µg/L	SW846 8260D
1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D	Benzene	<1.00	µg/L	SW846 8260D
1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D	Bromobenzene	<1.00	µg/L	SW846 8260D
1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Bromochloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D	Bromodichloromethane	<1.00	µg/L	SW846 8260D
1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D	Bromoform	<1.00	µg/L	SW846 8260D
1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Bromomethane	<1.00	µg/L	SW846 8260D
1,2-Dichloroethane	<1.00	µg/L	SW846 8260D	Carbon Disulfide	<10.0	µg/L	SW846 8260D
1,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Carbon Tetrachloride	<1.00	µg/L	SW846 8260D
1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D	Chlorobenzene	<1.00	µg/L	SW846 8260D
1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chlorodibromomethane	<1.00	µg/L	SW846 8260D
1,3-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloroethane	<1.00	µg/L	SW846 8260D
1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D	Chloroform	<1.00	µg/L	SW846 8260D
2,2-Dichloropropane	<1.00	µg/L	SW846 8260D	Chloromethane	<1.00	µg/L	SW846 8260D
2-Butanone (MEK)	<10.0	µg/L	SW846 8260D	Dibromomethane	<1.00	µg/L	SW846 8260D
2-Chlorotoluene	<1.00	µg/L	SW846 8260D	Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
Dibromofluoromethane	113	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	101	SW846 8260D
4-Bromofluorobenzene	98	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: TB
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 7

Analyte	Result	Units	Method
Ethylbenzene	<1.00	µg/L	SW846 8260D
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D
Iodomethane	<5.00	µg/L	SW846 8260D
Isopropylbenzene	<1.00	µg/L	SW846 8260D
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D
Methylene chloride	<5.00	µg/L	SW846 8260D
Naphthalene	<1.00	µg/L	SW846 8260D
Styrene	<1.00	µg/L	SW846 8260D
Tetrachloroethene	<1.00	µg/L	SW846 8260D
Toluene	<1.00	µg/L	SW846 8260D
Total Xylenes	<2.00	µg/L	SW846 8260D
Trichloroethene	<1.00	µg/L	SW846 8260D
Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Vinyl Acetate	<10.0	µg/L	SW846 8260D
Vinyl chloride	<1.00	µg/L	SW846 8260D
cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
n-Butylbenzene	<1.00	µg/L	SW846 8260D
n-Propylbenzene	<1.00	µg/L	SW846 8260D
sec-Butylbenzene	<1.00	µg/L	SW846 8260D
tert-Butylbenzene	<1.00	µg/L	SW846 8260D
trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
Dibromofluoromethane	113	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	101	SW846 8260D
4-Bromofluorobenzene	98	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-E
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 8

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<50.0	µg/L	NWTPH-Dx	1,1-Dichloroethene	<1.00	µg/L	SW846 8260D
Oil	<50.0	µg/L	NWTPH-Dx	1,1-Dichloropropene	<1.00	µg/L	SW846 8260D
Arsenic	< 0.025	mg/L	SW846 6010D	1,2,3-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Barium	0.023	mg/L	SW846 6010D	1,2,3-Trichloropropane	<5.00	µg/L	SW846 8260D
Cadmium	< 0.003	mg/L	SW846 6010D	1,2,4-Trichlorobenzene	<1.00	µg/L	SW846 8260D
Chromium	< 0.007	mg/L	SW846 6010D	1,2,4-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Arsenic	< 0.025	mg/L	SW846 6010D	1,2-Dibromo3Chloropropane	<10.0*	µg/L	SW846 8260D
Dissolved Barium	0.018	mg/L	SW846 6010D	1,2-Dibromoethane (EDB)	<1.00	µg/L	SW846 8260D
Dissolved Cadmium	< 0.003	mg/L	SW846 6010D	1,2-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Dissolved Chromium	< 0.007	mg/L	SW846 6010D	1,2-Dichloroethane	<1.00	µg/L	SW846 8260D
Dissolved Lead	< 0.025	mg/L	SW846 6010D	1,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Selenium	< 0.025	mg/L	SW846 6010D	1,3,5-Trimethylbenzene	<1.00	µg/L	SW846 8260D
Dissolved Silver	< 0.007	mg/L	SW846 6010D	1,3-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Lead	< 0.025	mg/L	SW846 6010D	1,3-Dichloropropane	<1.00	µg/L	SW846 8260D
Selenium	< 0.025	mg/L	SW846 6010D	1,4-Dichlorobenzene	<1.00	µg/L	SW846 8260D
Silver	< 0.007	mg/L	SW846 6010D	2,2-Dichloropropane	<1.00	µg/L	SW846 8260D
Dissolved Mercury	< 0.0005	mg/L	SW846 7470A	2-Butanone (MEK)	<10.0	µg/L	SW846 8260D
Mercury	< 0.0005	mg/L	SW846 7470A	2-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,1,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	2-Hexanone (MBK)	<10.0	µg/L	SW846 8260D
1,1,1-Trichloroethane	<1.00	µg/L	SW846 8260D	4-Chlorotoluene	<1.00	µg/L	SW846 8260D
1,1,2,2-Tetrachloroethane	<1.00	µg/L	SW846 8260D	4-Isopropyltoluene	<1.00	µg/L	SW846 8260D
1,1,2-Trichloroethane	<1.00	µg/L	SW846 8260D	4-methyl-2-pentanone	<10.0	µg/L	SW846 8260D
1,1-Dichloroethane	<1.00	µg/L	SW846 8260D	Acetone	<10.0	µg/L	SW846 8260D

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	65	NWTPH-Dx	Dibromofluoromethane	115	SW846 8260D
Nitrobenzene-d5	74	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	85	SW846 8270E	Toluene-d8	102	SW846 8260D
p-Terphenyl-d14	121	SW846 8270E	4-Bromofluorobenzene	99	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-E
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 8

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Acetonitrile	<10.0	µg/L	SW846 8260D	Methylene chloride	<5.00	µg/L	SW846 8260D
Acrolein	<10.0*	µg/L	SW846 8260D	Naphthalene	<1.00	µg/L	SW846 8260D
Acrylonitrile	<10.0	µg/L	SW846 8260D	Styrene	<1.00	µg/L	SW846 8260D
Benzene	<1.00	µg/L	SW846 8260D	Tetrachloroethene	<1.00	µg/L	SW846 8260D
Bromobenzene	<1.00	µg/L	SW846 8260D	Toluene	<1.00	µg/L	SW846 8260D
Bromochloromethane	<1.00	µg/L	SW846 8260D	Total Xylenes	<2.00	µg/L	SW846 8260D
Bromodichloromethane	<1.00	µg/L	SW846 8260D	Trichloroethene	<1.00	µg/L	SW846 8260D
Bromoform	<1.00	µg/L	SW846 8260D	Trichlorofluoromethane	<1.00	µg/L	SW846 8260D
Bromomethane	<1.00	µg/L	SW846 8260D	Vinyl Acetate	<10.0	µg/L	SW846 8260D
Carbon Disulfide	<10.0	µg/L	SW846 8260D	Vinyl chloride	<1.00	µg/L	SW846 8260D
Carbon Tetrachloride	<1.00	µg/L	SW846 8260D	cis-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Chlorobenzene	<1.00	µg/L	SW846 8260D	cis-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Chlorodibromomethane	<1.00	µg/L	SW846 8260D	n-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloroethane	<1.00	µg/L	SW846 8260D	n-Propylbenzene	<1.00	µg/L	SW846 8260D
Chloroform	<1.00	µg/L	SW846 8260D	sec-Butylbenzene	<1.00	µg/L	SW846 8260D
Chloromethane	<1.00	µg/L	SW846 8260D	tert-Butylbenzene	<1.00	µg/L	SW846 8260D
Dibromomethane	<1.00	µg/L	SW846 8260D	trans-1,2-Dichloroethene	<1.00	µg/L	SW846 8260D
Dichlorodifluoromethane	<1.00*	µg/L	SW846 8260D	trans-1,3-Dichloropropene	<1.00	µg/L	SW846 8260D
Ethylbenzene	<1.00	µg/L	SW846 8260D	1-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Hexachlorobutadiene	<1.00	µg/L	SW846 8260D	2-Methylnaphthalene	<0.952	µg/L	SW846 8270E
Iodomethane	<5.00	µg/L	SW846 8260D	Acenaphthene	<0.952	µg/L	SW846 8270E
Isopropylbenzene	<1.00	µg/L	SW846 8260D	Acenaphthylene	<0.952	µg/L	SW846 8270E
Methyl-tert-Butyl Ether	<1.00	µg/L	SW846 8260D	Anthracene	<0.952	µg/L	SW846 8270E

*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	65	NWTPH-Dx	Dibromofluoromethane	115	SW846 8260D
Nitrobenzene-d5	74	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D
2-Fluorobiphenyl	85	SW846 8270E	Toluene-d8	102	SW846 8260D
p-Terphenyl-d14	121	SW846 8270E	4-Bromofluorobenzene	99	SW846 8260D

SPECTRA LABORATORIES



Marie Holt, Customer Support & Proj. Manager

08/16/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: Dup-E
Sample Matrix: Water
Date Sampled: 07/30/2021
Date Received: 07/30/2021
Spectra Project: 2021070740
Spectra Number: 8

Analyte	Result	Units	Method
Benzo(a)Anthracene	<0.952	µg/L	SW846 8270E
Benzo(a)Pyrene	<0.952	µg/L	SW846 8270E
Benzo(b)Fluoranthene	<0.952	µg/L	SW846 8270E
Benzo(ghi)Perylene	<0.952	µg/L	SW846 8270E
Benzo(k)Fluoranthene	<0.952	µg/L	SW846 8270E
Chrysene	<0.952	µg/L	SW846 8270E
Dibenz (a,h)Anthracene	<0.952	µg/L	SW846 8270E
Fluoranthene	<0.952	µg/L	SW846 8270E
Fluorene	<0.952	µg/L	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.952	µg/L	SW846 8270E
Naphthalene	<0.952	µg/L	SW846 8270E
Phenanthrene	<0.952	µg/L	SW846 8270E
Pyrene	<0.952	µg/L	SW846 8270E

Analyte	Result	Units	Method
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*Reporting limit may be biased low due to recovery less than the control limits for the continuing calibration verification for this analyte.

Surrogate	Recovery	Method
p-Terphenyl	65	NWTPH-Dx
Nitrobenzene-d5	74	SW846 8270E
2-Fluorobiphenyl	85	SW846 8270E
p-Terphenyl-d14	121	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	115	SW846 8260D
1,2-Dichloroethane-d4	113	SW846 8260D
Toluene-d8	102	SW846 8260D
4-Bromofluorobenzene	99	SW846 8260D

SPECTRA LABORATORIES


Marie Holt, Customer Support & Proj. Manager

August 10, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: ug/L
Spectra Project: 2021070740
Applies to Spectra #'s: 1-5, 8
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - Total and Dissolved - SW846 7470A - Water/Liquid

Dissolved Filter Blank/Laboratory Reagent Blank (LRB)

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021

	CAS #	Result
Mercury	7439-97-6	< 0.5

Laboratory Control Spike (LCS)

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	2.0	2.09	104.5

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021
Sample Spiked: 2021070740-1

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.00	2.0	2.03	101.5	1.96	98.0	3.5

Recovery Limits 70-130%

RPD Limit 20

SPECTRA LABORATORIES

August 10, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/L
Spectra Project: 2021070740
Applies to Spectra #'s 1-5, 8
Analyst: SCJ

QUALITY CONTROL RESULTS

ICP Metals SW846 6010D - Total and Dissolved - Liquid/Water

Method Blank/Dissolved Filter Blank

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021

Element	Blank Result
Arsenic	< 0.025
Barium	< 0.002
Cadmium	< 0.003
Chromium	< 0.007
Lead	< 0.025
Selenium	< 0.025
Silver	< 0.007

Blank Spike (LCS)

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021

Element	Spike	LCS	LCS
	Added	Conc.	%Rec
Arsenic	1.0	1.057	105.7
Barium	1.0	1.055	105.5
Cadmium	1.0	1.024	102.4
Chromium	1.0	1.005	100.5
Lead	1.0	1.030	103.0
Selenium	1.0	1.023	102.3
Silver	1.0	0.964	96.4

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/10/2021 Date Analyzed: 8/10/2021
Sample Spiked: 2021080149-1

Element	Sample	Spike	MS	MS	MSD	MSD	RPD
	Conc.	Conc.	Conc.	%Rec	Conc	%Rec	
Arsenic	0.000	1.0	1.071	107.1	1.093	109.3	2.0
Barium	0.004	1.0	1.068	106.4	1.078	107.4	0.9
Cadmium	0.000	1.0	1.035	103.5	1.027	102.7	0.8
Chromium	0.000	1.0	1.057	105.7	1.054	105.4	0.3
Lead	0.000	1.0	1.020	102.0	1.026	102.6	0.6
Selenium	0.000	1.0	1.046	104.6	1.049	104.9	0.3
Silver	0.000	1.0	0.941	94.1	0.922	92.2	2.0

Recovery Limits 75-125%
RPD Limit 20

August 11, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070740
Applies to Spectra # 1-5

NWTPH-DX ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/9/2021	Date Analyzed:	8/10/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	2500	2175.00	87%

METHOD BLANK

Date Extracted:	8/9/2021	Date Analyzed:	8/10/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 81%

Surrogate Recovery Limits: 50 -150%

August 12, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-DX
Sample Matrix: Water
Units: µg/L
Spectra Project: 2021070740
Applies to Spectra # 8

**NWTPH-DX ANALYSIS
QUALITY CONTROL RESULTS**

BLANK SPIKE (LCS)

Date Extracted:	8/10/2021	Date Analyzed:	8/12/2021
	Spike Amount	Spike Amount	Percent
<u>Compound</u>	<u>Added</u>	<u>Found</u>	<u>Recovery</u>
Diesel	2500	1774.00	71%

METHOD BLANK

Date Extracted:	8/10/2021	Date Analyzed:	8/12/2021
Diesel	<50.0		
Heavy Oil	<50.0		

Surrogate Recovery:
p-Terphenyl 70%

Surrogate Recovery Limits: 50 -150%

August 13, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Water
 Spectra Project: 2021070740
 Date Analyzed: 8/6/2021
 Applies to Spectra #'s: #1-8

GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK

COMPOUND	BLANK RESULT ug/L	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT ug/L	SPIKE RESULT ug/L	
Benzene	<1.00	20.0	22.4	112
Ethylbenzene	<1.00	20.0	21.7	109
Methyl tert-butyl ether	<1.00	20.0	19.5	97
Toluene	<1.00	20.0	21.75	109
m, p-Xylene	<1.00	40.0	44.2	110
o-Xylene	<1.00	20.0	21.5	107
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	110	113		%
1,2-Dichloroethane-d4	109	113		%
Toluene-d8	5	100		%
4-Bromofluorobenzene	94	98		%

August 13, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Water
 Date Analyzed: 8/6/2021
 Spiked Sample: 2021080102
 Spectra Project: 2021070740
 Applies to: #1-8

**GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
 Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)**

COMPOUND	SAMPLE RESULT ug/L	SPIKE RESULT ug/L	MS RESULT ug/L	% REC	MSD RESULT ug/L	% REC	RPD
1,1-Dichloroethene	<1.00	75.0	75.4	101	78.6	105	0.00%
Benzene	<1.00	75.0	79.1	105	85.1	113	7.22%
Trichloroethene	<1.00	75.0	64.9	87	69.9	93	7.38%
Toluene	<1.00	75.0	77.4	103	85.3	114	9.70%
Chlorobenzene	<1.00	75.0	73.8	98	81.5	109	9.95%

Surrogates	MS	MSD	
Dibromofluoromethane	112	114	%
1,2-Dichloroethane-d4	111	113	%
Toluene-d8	100	101	%
4-Bromofluorobenzene	99	98	%

August 13, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Water
Sample: Method Blank
Date Analyzed: 8/6/2021
Spectra Project: 2021070740
Applies to: #1-8

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK**

COMPOUND	µg/L	COMPOUND	µg/L
Acetone	< 10.0	trans-1,2,-Dichloroethene	< 1.00
Acetonitrile	< 10.0	1,2-Dichloropropane	< 1.00
Acrolein	< 10.0	1,3-Dichloropropane	< 1.00
Acrylonitrile	< 10.0	cis-1,3-Dichloropropene	< 1.00
Benzene	< 1.00	trans-1,3-Dichloropropene	< 1.00
Bromobenzene	< 1.00	2,2-Dichloropropane	< 1.00
Bromochloromethane	< 1.00	1,1-Dichloropropene	< 1.00
Bromodichloromethane	< 1.00	Ethylbenzene	< 1.00
Bromoform	< 1.00	2-Hexanone (MBK)	< 10.0
Bromomethane	< 1.00	Hexachlorobutadiene	< 1.00
2-Butanone (MEK)	< 10.0	Iodomethane	< 5.00
n-Butylbenzene	< 1.00	Isopropylbenzene	< 1.00
sec-Butylbenzene	< 1.00	p-Isopropyltoluene	< 1.00
tert-Butylbenzene	< 1.00	Methylene chloride	9.20
Carbon Disulfide	< 10.0	4-Methyl-2-pentanone (MIBK)	< 10.0
Carbon tetrachloride	< 1.00	MTBE	< 1.00
Chlorobenzene	< 1.00	Naphthalene	< 1.00
Chlorodibromomethane	< 1.00	n-Propylbenzene	< 1.00
Chloroethane	< 1.00	Styrene	< 1.00
2-Chloroethyl Vinyl ether	< 10.0	1,1,1,2-Tetrachloroethane	< 1.00
Chloroform	< 1.00	1,1,2,2-Tetrachloroethane	< 1.00
Chloromethane	< 1.00	Tetrachloroethene	< 1.00
2-Chlorotoluene	< 1.00	Toluene	< 1.00
4-Chlorotoluene	< 1.00	Total Xylenes	< 2.00
1,2-Dibromo-3-Chloropropane (DBCP)	< 10.0	1,2,3-Trichlorobenzene	< 1.00
1,2-Dibromoethane (EDB)	< 1.00	1,2,4-Trichlorobenzene	< 1.00
Dibromomethane	< 1.00	1,1,1-Trichloroethane	< 1.00
1,2-Dichlorobenzene	< 1.00	1,1,2-Trichloroethane	< 1.00
1,3-Dichlorobenzene	< 1.00	Trichloroethene	< 1.00
1,4-Dichlorobenzene	< 1.00	Trichlorofluoromethane	< 1.00
Dichlorodifluoromethane	< 1.00	1,2,3-Trichloropropane	< 5.00
1,1-Dichloroethane	< 1.00	1,2,4-Trimethylbenzene	< 1.00
1,2-Dichloroethane	< 1.00	1,3,5-Trimethylbenzene	< 1.00
1,1-Dichloroethene	< 1.00	Vinyl Acetate	< 10.0
cis-1,2-Dichloroethene	< 1.00	Vinyl chloride	< 1.00

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	113	%
1,2-Dichloroethane-d4	113	%
Toluene-d8	100	%
4-Bromofluorobenzene	98	%

*Methylene chloride was detected in the method blank. However, as none of the samples for project 2021070740 were detects for Methylene chloride, results unaffected.

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch W2021080401
 Date Extracted 8/4/2021
 Date Analyzed 8/9/2021
 SampleID MB
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.88		4	72%	25%	121% Pass
Phenol-d5	A	1.71		4	43%	24%	113% Pass
Nitrobenzene-d5	BN	1.69		2	85%	23%	120% Pass
2-Fluorobiphenyl	BN	1.73		2	87%	30%	115% Pass
2,4,6-Tribromophenol	A	3.31		4	83%	19%	122% Pass
p-Terphenyl-d14	BN	2		2	100%	18%	137% Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch W2021080401
 Date Extracted 8/4/2021
 Date Analyzed 8/9/2021
 Sample# 1
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result		625.1 criteria			Bias
		ug/mL	TV	%R	LCL	UCL	
1-Methylnaphthalene	N	0.70		1	70%	60%	140%
2-Methylnaphthalene	N	0.70		1	70%	60%	140%
Acenaphthene	Y	0.97		1	97%	70%	130%
Acenaphthylene	Y	1.02		1	102%	60%	130%
Anthracene	Y	0.97		1	97%	58%	130%
Benzo(a)anthracene	Y	1.01		1	101%	32%	138%
Benzo(a)pyrene	Y	0.85		1	85%	40%	133%
Benzo(b)Fluoranthene	Y	0.94		1	94%	42%	140%
Benzo(g,h,i)perylene	Y	1.19		1	119%	13%	195%
Benzo(k)Fluoranthene	Y	1.06		1	106%	25%	146%
Chrysene	Y	1.05		1	105%	44%	140%
Dibenzo(a,h)anthracene	Y	1.08		1	108%	13%	200%
Fluoranthene	Y	1.08		1	108%	47%	130%
Fluorene	Y	1.01		1	101%	70%	130%
Indeno(1,2,3-c,d)pyrene	Y	1.05		1	105%	13%	151%
Naphthalene	Y	0.89		1	89%	70%	130%
Phenanthrene	Y	0.93		1	93%	67%	130%
Pyrene	Y	0.99		1	99%	70%	130%

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	2.92		4	73%	25%	121%	1 Pass
Phenol-d5	A	1.76		4	44%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.74		2	87%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.73		2	87%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	3.79		4	95%	19%	122%	1 Pass
p-Terphenyl-d14	BN	1.86		2	93%	18%	137%	1 Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

LCS

Batch W2021080501
 Date Extracted 8/5/2021
 Date Analyzed 8/9/2021
 Sample# 1
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result		625.1 criteria			Bias
		ug/mL	TV	%R	LCL	UCL	
1-Methylnaphthalene	N	0.68		1	68%	60%	140%
2-Methylnaphthalene	N	0.69		1	69%	60%	140%
Acenaphthene	Y	0.91		1	91%	70%	130%
Acenaphthylene	Y	1.00		1	100%	60%	130%
Anthracene	Y	0.99		1	99%	58%	130%
Benzo(a)anthracene	Y	1.05		1	105%	32%	138%
Benzo(a)pyrene	Y	0.92		1	92%	40%	133%
Benzo(b)Fluoranthene	Y	1.07		1	107%	42%	140%
Benzo(g,h,i)perylene	Y	0.81		1	81%	13%	195%
Benzo(k)Fluoranthene	Y	1.09		1	109%	25%	146%
Chrysene	Y	1.00		1	100%	44%	140%
Dibenzo(a,h)anthracene	Y	0.84		1	84%	13%	200%
Fluoranthene	Y	1.05		1	105%	47%	130%
Fluorene	Y	1.01		1	101%	70%	130%
Indeno(1,2,3-c,d)pyrene	Y	0.83		1	83%	13%	151%
Naphthalene	Y	0.86		1	86%	70%	130%
Phenanthrene	Y	0.94		1	94%	67%	130%
Pyrene	Y	1.14		1	114%	70%	130%

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	DF	Bias
2-Fluorophenol	A	2.4		4	60%	25%	121%	1 Pass
Phenol-d5	A	1.41		4	35%	24%	113%	1 Pass
Nitrobenzene-d5	BN	1.43		2	72%	23%	120%	1 Pass
2-Fluorobiphenyl	BN	1.7		2	85%	30%	115%	1 Pass
2,4,6-Tribromophenol	A	4.01		4	100%	19%	122%	1 Pass
p-Terphenyl-d14	BN	2.28		2	114%	18%	137%	1 Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Method Blank

Batch W2021080501
 Date Extracted 8/5/2021
 Date Analyzed 8/9/2021
 SampleID MB
 Initial Amount 1000
 final amount 5

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final ug/L	DF
1-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
2-Methylnaphthalene	N		N	0.2	5.0000	1.000	1
Acenaphthene	N		N	0.2	5.0000	1.000	1
Acenaphthylene	N		N	0.2	5.0000	1.000	1
Anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)anthracene	N		N	0.2	5.0000	1.000	1
Benzo(a)pyrene	N		N	0.2	5.0000	1.000	1
Benzo(b)Fluoranthene	N		N	0.2	5.0000	1.000	1
Benzo(g,h,i)perylene	N		N	0.2	5.0000	1.000	1
Benzo(k)Fluoranthene	N		N	0.2	5.0000	1.000	1
Chrysene	N		N	0.2	5.0000	1.000	1
Dibenzo(a,h)anthracene	N		N	0.2	5.0000	1.000	1
Fluoranthene	N		N	0.2	5.0000	1.000	1
Fluorene	N		N	0.2	5.0000	1.000	1
Indeno(1,2,3-c,d)pyrene	N		N	0.2	5.0000	1.000	1
Naphthalene	N		N	0.2	5.0000	1.000	1
Phenanthrene	N		N	0.2	5.0000	1.000	1
Pyrene	N		N	0.2	5.0000	1.000	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.52		4	63%	25%	121% Pass
Phenol-d5	A	1.53		4	38%	24%	113% Pass
Nitrobenzene-d5	BN	1.5		2	75%	23%	120% Pass
2-Fluorobiphenyl	BN	1.71		2	86%	30%	115% Pass
2,4,6-Tribromophenol	A	3.67		4	92%	19%	122% Pass
p-Terphenyl-d14	BN	2.37		2	119%	18%	137% Pass

SPECTRA LABORATORIES
Sample Receiving Checklist

Client/Project: Panhandle Spectra Project#: 2021070740
 Date & Time Received: 7-30-21 11:20 Received by: MVN
 Shipped by: Client Courier UPS USPS FedEx Other: _____
 Shipping Container Type(s): Cooler Box None Other: _____
 Sample temperatures (°C): 12.3 to 18.2

Unless noted, the following parameters were received within Spectra Laboratories sample acceptance policy requirements (checked item(s) is out of compliance):

Requirement	"X"	Comments: (indicate requirement number)
1. Sample temperature(s) outside of 0-6°C	X	1. Temperature >6°C but received within <u>2-3</u> hours of sample collection on ice and cooling. 12.3 to 18.2 13. MN-5 there is quite a bit of sediment in these samples. MN-5 ^{MN-5} 7-30-21
2. Custody seals absent (not required when hand delivered by sampler)		
3. Custody seals broken/damaged		
4. Chain-of-Custody (COC) absent		
5. COC improperly completed (describe in comments)		
6. Signatures/Dates/Times on COC absent or incorrect		
7. Sample IDs/Matrix/Tests absent or incorrect		
8. COC does not correspond to sample count		
9. COC info does not correspond to sample labels		
10. Samples received broken or leaking (describe in comments)		
11. Incorrect bottles used for test (describe)		
12. Samples improperly preserved (describe)		
13. Multi-phasic samples present (describe)	X	
14. VOA vials contain headspace (indicate amount)		
15. Other anomaly (describe)		

Microbiological Tests requested: MPN MF HPC
 Fecal Coliform Total Coliform E. coli Salmonella

Did samples arrive within Holding Time? Yes No

Corrective Action Taken, if needed: _____

Person Contacted: _____ Date: _____

Form completed by: Maree Holt Date: 7-30-21 Time: 11:20

SPECIAL INSTRUCTIONS/COMMENTS:

CHAIN of CUSTODY

SPECTRA PROJECT #

2021070740

Return Samples Y N Page _____ of _____

STANDARD

RUSH

CLIENT: Panhandle Geotechnical & Env.

ADDRESS:

ADDRESS CHANGE

PROJECT: Progress Rail
 CONTACT: Levi Allbaugh
 SAMPLED BY: Dave Schaff & Ryan Penn
 PHONE: 308-641-6742 (field) 307-635-2828
 e-MAIL: lallbaugh@mcschaff.com
 PURCHASE ORDER #:

NUMBER OF CONTAINERS	HYDROCARBONS				ORGANICS				METALS		OTHER													
	NWTPH-HCD	BTEX	BTEX/NWTPH-G	NWTPH-G	NWTPH-DX	1664 SGT-HEM (TPH)	1664 HEM (FOG)	8260/624 VOA	8260 CHLOR SOLVENTS	8270/625 SEMI VOA	625 PAH/PNA - SIM	8082/608 PCB	TOTAL METALS RCRA 8	TOTAL METALS (SPECIFY)	TCLP METALS RCRA 8	TCLP METALS (SPECIFY)	PH 9040/9045	TX/TOX 9076	TURBIDITY	FLASH POINT	BOD	SOLIDS (SPECIFY)		
1				X				X		X			X	X										
2				X				X		X			X	X										
3				X				X		X			X	X										
4				X				X		X			X	X										
5				X				X		X			X	X										
6								X																
7								X																
8				X				X		X			X	X										
9																								
0																								

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
Mw-3R	7/30/21	9:30	water
Mw-1R		10:00	
Mw-4		10:45	
Mw-5		9:25	
Mw-6		10:15	
FB		10:45	
TB			
Dy-E	7/30/21		water

* 2 sets of 3 Trip Blanks	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME	
	RELINQUISHED BY	<i>R Ryan Penn</i>	Ryan Penn	PGE	7/30/21	11:20
	RECEIVED BY	<i>Marie Holt</i>	MARIE HOLT	Spectra	7-30-21	11:20
	RELINQUISHED BY					
	RECEIVED BY					

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

10/06/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-5
Sample Matrix: Water
Date Sampled: 09/27/2021
Date Received: 09/28/2021
Spectra Project: 2021090817
Spectra Number: 1
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyst</u>	<u>Date Analyzed</u>
Diesel	<24.3*	µg/L	NWTPH-Dx	RBF	10/05/2021
Oil	<48.5*	µg/L	NWTPH-Dx	RBF	10/05/2021

* Silica gel cleanup was performed on sample. Method blank surrogate was less than the lower control limit. Sample surrogate within control limits. No affect on the results.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	77	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

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a6/klh

10/06/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

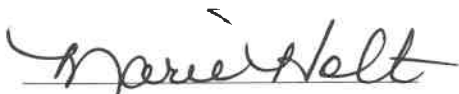
Project: Progress Rail
Client ID: MW-6
Sample Matrix: Water
Date Sampled: 09/27/2021
Date Received: 09/28/2021
Spectra Project: 2021090817
Spectra Number: 2
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyst</u>	<u>Date Analyzed</u>
Diesel	<24.3*	µg/L	NWTPH-Dx	RBF	10/05/2021
Oil	<48.5*	µg/L	NWTPH-Dx	RBF	10/05/2021

* Silica gel cleanup was performed on sample. Method blank surrogate was less than the lower control limit. Sample surrogate within control limits. No affect on the results.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	70	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

10/06/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-5 Dup
Sample Matrix: Water
Date Sampled: 09/27/2021
Date Received: 09/28/2021
Spectra Project: 2021090817
Spectra Number: 3
Rush

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyst</u>	<u>Date Analyzed</u>
Diesel	<24*	µg/L	NWTPH-Dx	RBF	10/05/2021
Oil	<48*	µg/L	NWTPH-Dx	RBF	10/05/2021

* Silica gel cleanup was performed on sample. Method blank surrogate was less than the lower control limit. Sample surrogate within control limits. No affect on the results.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	52	NWTPH-Dx

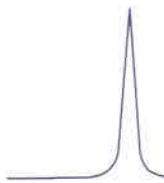
SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

Page 3 of 3

a6/klh



October 6, 2021

Panhandle Geotechnical & Env
2116 Pioneer Ave
Cheyenne, WY 82001

Method: NWTPH-Dx
Sample Matrix: liquid
Units: ug/L
Spectra Project: 2021090817
Batch DX20210928

NWTPH-Dx ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	9/28/2021			Date Analyzed:	10/5/2021
		Spike	Spike		
		Amount	Amount	Percent	
<u>Compound</u>		<u>Added</u>	<u>Found</u>	<u>Recovery</u>	
Diesel		2000.00	1767.00	88%	

METHOD BLANK

Date Extracted:	9/28/2021			Date Analyzed:	10/5/2021
Total Pet. Hydrocarbons	<25				
Surrogate Recovery:					
p-Terphenyl	46%*				

Surrogate Recovery Limits: 50 -150%

Marie Holt

2021090817

From: Marie Holt
Sent: Tuesday, September 28, 2021 8:27 AM
To: Levi Allbaugh
Cc: Ben Frans
Subject: RE: Silica Gel Acid Cleanup 2021070740

Hi Levi,

Shawn collected the samples last night. Ben did recommend you have the Silica Gel Cleanup performed to help remove any interferences. I will put the order through on a rush.

Let me know if you have any other questions.

Marie Holt

Customer Support and Project Manager

SPECTRA Laboratories

2221 Ross Way
Tacoma, WA 98421
(253) 272-4850

MarieH@Spectra-Lab.com

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From: Levi Allbaugh <LAllbaugh@mcschaff.com>
Sent: Friday, September 24, 2021 12:15 PM
To: Marie Holt <MarieH@spectra-lab.com>
Cc: Ben Frans <BenF@spectra-lab.com>
Subject: RE: Silica Gel Acid Cleanup 2021070740

Hi Marie,

Shawn with Lombardini Environmental told me he was in contact with you about the sampling for the two wells. I was planning on doing the acid gel extract on them but I wanted to check with you and see if you knew of any reason I might not want to do that just to be safe. I was also wanting to do a rush turnaround on them. Please let me know if you need anything else.

Thanks,

LEVI ALLBAUGH
P.G.

SPECTRA LABORATORIES
Sample Receiving Checklist

Client/Project: Panhandle Geo Spectra Project#: 2021090817 Progress Rail
 Date & Time Received: 9-28-21 Received by: MN
 Shipped by: Client Courier UPS USPS FedEx Other: Shawn Lombardini
 Shipping Container Type(s): Cooler Box None Other: _____
 Sample temperatures (°C): 3.0

Unless noted, the following parameters were received within Spectra Laboratories sample acceptance policy requirements (checked item(s) is out of compliance):

Requirement	"X"	Comments: (indicate requirement number)
1. Sample temperature(s) outside of 0-6°C		<input type="checkbox"/> 1. Temperature >6°C but received within _____ hours of sample collection on ice and cooling.
2. Custody seals absent (not required when hand delivered by sampler)		
3. Custody seals broken/damaged		
4. Chain-of-Custody (COC) absent		
5. COC improperly completed (describe in comments)		
6. Signatures/Dates/Times on COC absent or incorrect		
7. Sample IDs/Matrix/Tests absent or incorrect		
8. COC does not correspond to sample count		
9. COC info does not correspond to sample labels		
10. Samples received broken or leaking (describe in comments)		
11. Incorrect bottles used for test (describe)		
12. Samples improperly preserved (describe)		
13. Multi-phasic samples present (describe)		
14. VOA vials contain headspace (indicate amount)		
15. Other anomaly (describe)		

Microbiological Tests requested: MPN MF HPC
 Fecal Coliform Total Coliform E. coli Salmonella

Did samples arrive within Holding Time? Yes No

Corrective Action Taken, if needed: _____

Person Contacted: _____ Date: _____

Form completed by: Maria Holt Date: 9-28-21 Time: 8:42

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
 (253) 272-4850 Fax (253) 572-9838

www.spectra-lab.com info@spectra-lab.com

ParHandler Geo Whg 9-27-21

SPECIAL INSTRUCTIONS/COMMENTS:

Silica Gel Cleanup

CHAIN OF CUSTODY

SPECTRA PROJECT # 2021090817

9-28-21
 MAX

Return Samples: Y N Page ___ of ___

STANDARD

RUSH

CLIENT: Mr. Serrano & Associates ADDRESS: 2116 Pioneer Ave Cheyenne, WY 82001

ADDRESS CHANGE

HYDROCARBONS

ORGANICS

METALS

OTHER

NWTPH-HCID	
BTEX	
BTEX/NWTPH-G	
NWTPH-G	
NWTPH-Dx	
1664 SGT-HEM (TPH)	
1664 HEM (FOG)	
8260/624 VOA	
8260 CHLOR SOLVENTS	
8270-625 SEMI VOA	
8270 PAH/PNA	
8082/608 PCB	
TOTAL METALS RCRA 8	
TOTAL METALS (SPECIFY)	
TCLP METALS RCRA 8	
TCLP METALS (SPECIFY)	
PH 9040/9045	
TX/TOX/EOX	
TURBIDITY	
FLASH POINT	
BOD	
SOLIDS (SPECIFY)	
DUPLICATE	

PROJECT: Process Pit
 CONTACT: LEVI ALUBAUGH
 SAMPLED BY: SHAWN DMBARDINO
 PHONE: 307.635.2928 FAX:
 e-MAIL: LALUBAUGH@EMSCORP.COM or e-MAIL
 PURCHASE ORDER #

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS
1 WW-5	9.27.21	1810	W	2
2 WW-6	9.27.21	1910	W	1
3				
4				
5				
6				
7				
8				
9				
10				

LAB USE ONLY

RELINQUISHED BY	SIGNATURE	PRINTED NAME	COMPANY	DATE	TIME
RECEIVED BY					
RELINQUISHED BY					
RECEIVED BY					

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Laboratories, LLC

08/31/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-1R 4-6'
Sample Matrix: Soil
Date Sampled: 07/27/2021
Date Received: 07/27/2021
Spectra Project: 2021070649
Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.061	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.061	mg/Kg	SW846 8260D
Total Arsenic	5.8	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.061	mg/Kg	SW846 8260D
Total Barium	23.8	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.061	mg/Kg	SW846 8260D
Total Cadmium	0.5	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.061	mg/Kg	SW846 8260D
Total Chromium	19.4	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.061	mg/Kg	SW846 8260D
Total Lead	9.0	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.061	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.061	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.061	mg/Kg	SW846 8260D
Total Mercury	0.038	mg/Kg	SW846 7471B	2-Butanone (MEK)	<0.61	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.061	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.061	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.061	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.61	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.061	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.061	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.061	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.061	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.061	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.61	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.061	mg/Kg	SW846 8260D	Acetone	<0.61	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.061	mg/Kg	SW846 8260D	Acrolein	<0.61	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.061	mg/Kg	SW846 8260D	Acrylonitrile	<0.61	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.061	mg/Kg	SW846 8260D	Benzene	<0.061	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.061	mg/Kg	SW846 8260D	Bromobenzene	<0.061	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.061	mg/Kg	SW846 8260D	Bromochloromethane	<0.061	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.61	mg/Kg	SW846 8260D	Bromodichloromethane	<0.061	mg/Kg	SW846 8260D

*Methylene Chloride was found in the method blank greater than the recovery limit. Associated samples with positive results less than ten times the method blank result have a potential high bias.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	86	NWTPH-Dx	Dibromofluoromethane	112	SW846 8260D
Nitrobenzene-d5	91	SW846 8270E	Toluene-d8	103	SW846 8260D
2-Fluorobiphenyl	80	SW846 8270E	4-Bromofluorobenzene	97	SW846 8260D
p-Terphenyl-d14	101	SW846 8270E	1,2-Dichloroethane-d4	111	SW846 8260D

SPECTRA LABORATORIES

Marie Holt
Ben Frans, Laboratory Manager

Marie Holt, Customer Support & Proj. Manager

08/31/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progress Rail
Client ID: MW-1R 4-6'
Sample Matrix: Soil
Date Sampled: 07/27/2021
Date Received: 07/27/2021
Spectra Project: 2021070649
Spectra Number: 1

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromoform	<0.061	mg/Kg	SW846 8260D	Vinyl Acetate	<0.61	mg/Kg	SW846 8260D
Bromomethane	<0.061	mg/Kg	SW846 8260D	Vinyl chloride	<0.061	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.061	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.061	mg/Kg	SW846 8260D
Chlorobenzene	<0.061	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.061	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.061	mg/Kg	SW846 8260D	n-Butylbenzene	<0.061	mg/Kg	SW846 8260D
Chloroethane	<0.061	mg/Kg	SW846 8260D	n-Propylbenzene	<0.061	mg/Kg	SW846 8260D
Chloroform	<0.061	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.061	mg/Kg	SW846 8260D
Chloromethane	<0.061	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.061	mg/Kg	SW846 8260D
Dibromomethane	<0.061	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.061	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.061	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.061	mg/Kg	SW846 8260D
Ethylbenzene	<0.061	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.060	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.061	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.060	mg/Kg	SW846 8270E
Isopropylbenzene	<0.061	mg/Kg	SW846 8260D	Acenaphthene	<0.060	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.061	mg/Kg	SW846 8260D	Acenaphthylene	<0.060	mg/Kg	SW846 8270E
Methylene chloride	0.49*	mg/Kg	SW846 8260D	Anthracene	<0.060	mg/Kg	SW846 8270E
Naphthalene	<0.061	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.060	mg/Kg	SW846 8270E
Styrene	<0.061	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.060	mg/Kg	SW846 8270E
Tetrachloroethene	<0.061	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.060	mg/Kg	SW846 8270E
Toluene	<0.061	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.060	mg/Kg	SW846 8270E
Total Xylenes	<0.12	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.060	mg/Kg	SW846 8270E
Trichloroethene	<0.061	mg/Kg	SW846 8260D	Chrysene	<0.060	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.061	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.060	mg/Kg	SW846 8270E

*Methylene Chloride was found in the method blank greater than the recovery limit. Associated samples with positive results less than ten times the method blank result have a potential high bias.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	86	NWTPH-Dx	Dibromofluoromethane	112	SW846 8260D
Nitrobenzene-d5	91	SW846 8270E	Toluene-d8	103	SW846 8260D
2-Fluorobiphenyl	80	SW846 8270E	4-Bromofluorobenzene	97	SW846 8260D
p-Terphenyl-d14	101	SW846 8270E	1,2-Dichloroethane-d4	111	SW846 8260D

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Marie Holt, Customer Support & Proj. Manager

08/31/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: MW-1R 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/27/2021
 Date Received: 07/27/2021
 Spectra Project: 2021070649
 Spectra Number: 1

Analyte	Result	Units	Method
Fluoranthene	<0.060	mg/Kg	SW846 8270E
Fluorene	<0.060	mg/Kg	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.060	mg/Kg	SW846 8270E
Naphthalene	<0.060	mg/Kg	SW846 8270E
Phenanthrene	<0.060	mg/Kg	SW846 8270E
Pyrene	<0.060	mg/Kg	SW846 8270E

Analyte	Result	Units	Method
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*Methylene Chloride was found in the method blank greater than the recovery limit. Associated samples with positive results less than ten times the method blank result have a potential high bias.

Surrogate	Recovery	Method
p-Terphenyl	86	NWTPH-Dx
Nitrobenzene-d5	91	SW846 8270E
2-Fluorobiphenyl	80	SW846 8270E
p-Terphenyl-d14	101	SW846 8270E

Surrogate	Recovery	Method
Dibromofluoromethane	112	SW846 8260D
Toluene-d8	103	SW846 8260D
4-Bromofluorobenzene	97	SW846 8260D
1,2-Dichloroethane-d4	111	SW846 8260D

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08/31/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

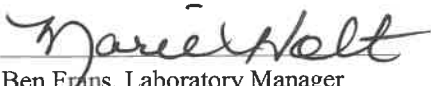
Project: Progress Rail
Client ID: MW-3R 4-6'
Sample Matrix: Soil
Date Sampled: 07/27/2021
Date Received: 07/27/2021
Spectra Project: 2021070649
Spectra Number: 2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Diesel	<10.0	mg/Kg	NWTPH-Dx	1,2-Dibromoethane (EDB)	<0.053	mg/Kg	SW846 8260D
Oil	<50.0	mg/Kg	NWTPH-Dx	1,2-Dichlorobenzene	<0.053	mg/Kg	SW846 8260D
Total Arsenic	< 2.5	mg/Kg	SW846 6010D	1,2-Dichloroethane	<0.053	mg/Kg	SW846 8260D
Total Barium	10.4	mg/Kg	SW846 6010D	1,2-Dichloropropane	<0.053	mg/Kg	SW846 8260D
Total Cadmium	< 0.3	mg/Kg	SW846 6010D	1,3,5-Trimethylbenzene	<0.053	mg/Kg	SW846 8260D
Total Chromium	7.8	mg/Kg	SW846 6010D	1,3-Dichlorobenzene	<0.053	mg/Kg	SW846 8260D
Total Lead	3.0	mg/Kg	SW846 6010D	1,3-Dichloropropane	<0.053	mg/Kg	SW846 8260D
Total Selenium	< 2.5	mg/Kg	SW846 6010D	1,4-Dichlorobenzene	<0.053	mg/Kg	SW846 8260D
Total Silver	< 0.7	mg/Kg	SW846 6010D	2,2-Dichloropropane	<0.053	mg/Kg	SW846 8260D
Total Mercury	< 0.025	mg/Kg	SW846 7471B	2-Butanone (MEK)	<0.53	mg/Kg	SW846 8260D
1,1,1,2-Tetrachloroethane	<0.053	mg/Kg	SW846 8260D	2-Chlorotoluene	<0.053	mg/Kg	SW846 8260D
1,1,1-Trichloroethane	<0.053	mg/Kg	SW846 8260D	2-Hexanone (MBK)	<0.53	mg/Kg	SW846 8260D
1,1,2,2-Tetrachloroethane	<0.053	mg/Kg	SW846 8260D	4-Chlorotoluene	<0.053	mg/Kg	SW846 8260D
1,1,2-Trichloroethane	<0.053	mg/Kg	SW846 8260D	4-Isopropyltoluene	<0.053	mg/Kg	SW846 8260D
1,1-Dichloroethane	<0.053	mg/Kg	SW846 8260D	4-methyl-2-pentanone	<0.53	mg/Kg	SW846 8260D
1,1-Dichloroethene	<0.053	mg/Kg	SW846 8260D	Acetone	<0.53	mg/Kg	SW846 8260D
1,1-Dichloropropene	<0.053	mg/Kg	SW846 8260D	Acrolein	<0.53	mg/Kg	SW846 8260D
1,2,3-Trichlorobenzene	<0.053	mg/Kg	SW846 8260D	Acrylonitrile	<0.53	mg/Kg	SW846 8260D
1,2,3-Trichloropropane	<0.053	mg/Kg	SW846 8260D	Benzene	<0.053	mg/Kg	SW846 8260D
1,2,4-Trichlorobenzene	<0.053	mg/Kg	SW846 8260D	Bromobenzene	<0.053	mg/Kg	SW846 8260D
1,2,4-Trimethylbenzene	<0.053	mg/Kg	SW846 8260D	Bromochloromethane	<0.053	mg/Kg	SW846 8260D
1,2-Dibromo3Chloropropane	<0.53	mg/Kg	SW846 8260D	Bromodichloromethane	<0.053	mg/Kg	SW846 8260D

*Methylene Chloride was found in the method blank greater than the recovery limit. Associated samples with positive results less than ten times the method blank result have a potential high bias.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	92	NWTPH-Dx	Dibromofluoromethane	114	SW846 8260D
Nitrobenzene-d5	80	SW846 8270E	Toluene-d8	105	SW846 8260D
2-Fluorobiphenyl	130	SW846 8270E	4-Bromofluorobenzene	101	SW846 8260D
p-Terphenyl-d14	103	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D

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Marie Holt, Customer Support & Proj. Manager

08/31/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh


Project: Progress Rail
Client ID: MW-3R 4-6'
Sample Matrix: Soil
Date Sampled: 07/27/2021
Date Received: 07/27/2021
Spectra Project: 2021070649
Spectra Number:2

Analyte	Result	Units	Method	Analyte	Result	Units	Method
Bromoform	<0.053	mg/Kg	SW846 8260D	Vinyl Acetate	<0.53	mg/Kg	SW846 8260D
Bromomethane	<0.053	mg/Kg	SW846 8260D	Vinyl chloride	<0.053	mg/Kg	SW846 8260D
Carbon Tetrachloride	<0.053	mg/Kg	SW846 8260D	cis-1,2-Dichloroethene	<0.053	mg/Kg	SW846 8260D
Chlorobenzene	<0.053	mg/Kg	SW846 8260D	cis-1,3-Dichloropropene	<0.053	mg/Kg	SW846 8260D
Chlorodibromomethane	<0.053	mg/Kg	SW846 8260D	n-Butylbenzene	<0.053	mg/Kg	SW846 8260D
Chloroethane	<0.053	mg/Kg	SW846 8260D	n-Propylbenzene	<0.053	mg/Kg	SW846 8260D
Chloroform	<0.053	mg/Kg	SW846 8260D	sec-Butylbenzene	<0.053	mg/Kg	SW846 8260D
Chloromethane	<0.053	mg/Kg	SW846 8260D	tert-Butylbenzene	<0.053	mg/Kg	SW846 8260D
Dibromomethane	<0.053	mg/Kg	SW846 8260D	trans-1,2-Dichloroethene	<0.053	mg/Kg	SW846 8260D
Dichlorodifluoromethane	<0.053	mg/Kg	SW846 8260D	trans-1,3-Dichloropropene	<0.053	mg/Kg	SW846 8260D
Ethylbenzene	<0.053	mg/Kg	SW846 8260D	1-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E
Hexachlorobutadiene	<0.053	mg/Kg	SW846 8260D	2-Methylnaphthalene	<0.063	mg/Kg	SW846 8270E
Isopropylbenzene	<0.053	mg/Kg	SW846 8260D	Acenaphthene	<0.063	mg/Kg	SW846 8270E
Methyl-tert-Butyl Ether	<0.053	mg/Kg	SW846 8260D	Acenaphthylene	<0.063	mg/Kg	SW846 8270E
Methylene chloride	0.402*	mg/Kg	SW846 8260D	Anthracene	<0.063	mg/Kg	SW846 8270E
Naphthalene	<0.053	mg/Kg	SW846 8260D	Benzo(a)Anthracene	<0.063	mg/Kg	SW846 8270E
Styrene	<0.053	mg/Kg	SW846 8260D	Benzo(a)Pyrene	<0.063	mg/Kg	SW846 8270E
Tetrachloroethene	<0.053	mg/Kg	SW846 8260D	Benzo(b)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Toluene	<0.053	mg/Kg	SW846 8260D	Benzo(ghi)Perylene	<0.063	mg/Kg	SW846 8270E
Total Xylenes	<0.11	mg/Kg	SW846 8260D	Benzo(k)Fluoranthene	<0.063	mg/Kg	SW846 8270E
Trichloroethene	<0.053	mg/Kg	SW846 8260D	Chrysene	<0.063	mg/Kg	SW846 8270E
Trichlorofluoromethane	<0.053	mg/Kg	SW846 8260D	Dibenz(a,h)Anthracene	<0.063	mg/Kg	SW846 8270E

*Methylene Chloride was found in the method blank greater than the recovery limit. Associated samples with positive results less than ten times the method blank result have a potential high bias.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
p-Terphenyl	92	NWTPH-Dx	Dibromofluoromethane	114	SW846 8260D
Nitrobenzene-d5	80	SW846 8270E	Toluene-d8	105	SW846 8260D
2-Fluorobiphenyl	130	SW846 8270E	4-Bromofluorobenzene	101	SW846 8260D
p-Terphenyl-d14	103	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D

SPECTRA LABORATORIES


Ben Frans, Laboratory Manager
Marie Holt, Customer Support & Proj. Manager

08/31/2021

Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001
 Attn: Levi Allbaugh

Project: Progress Rail
 Client ID: MW-3R 4-6'
 Sample Matrix: Soil
 Date Sampled: 07/27/2021
 Date Received: 07/27/2021
 Spectra Project: 2021070649
 Spectra Number:2

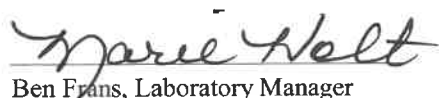
Analyte	Result	Units	Method
Fluoranthene	<0.063	mg/Kg	SW846 8270E
Fluorene	<0.063	mg/Kg	SW846 8270E
Indeno(1,2,3-cd)Pyrene	<0.063	mg/Kg	SW846 8270E
Naphthalene	<0.063	mg/Kg	SW846 8270E
Phenanthrene	<0.063	mg/Kg	SW846 8270E
Pyrene	<0.063	mg/Kg	SW846 8270E

Analyte	Result	Units	Method
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*Methylene Chloride was found in the method blank greater than the recovery limit. Associated samples with positive results less than ten times the method blank result have a potential high bias.

Surrogate	Recovery	Method	Surrogate	Recovery	Method
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2-Fluorobiphenyl	130	SW846 8270E	4-Bromofluorobenzene	101	SW846 8260D
p-Terphenyl-d14	103	SW846 8270E	1,2-Dichloroethane-d4	113	SW846 8260D

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager
 Marie Holt, Customer Support & Proj. Manager

August 4, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070649
Applies to Spectra #'s: 1-2
Analyst: SCJ

QUALITY CONTROL RESULTS

Mercury by Cold Vapor - SW846 7471B - Soil/Solid

Method Blank (MBLK)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

	CAS #	Result
Mercury	7439-97-6	< 0.025

Laboratory Control Spike (LCS)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

	Spike Added	LCS Conc.	LCS %Rec
Mercury	0.2	1.970	985.0

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/4/2021 Date Analyzed: 8/4/2021

Sample Spiked: 2021070649-1

	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Mercury	0.076	0.2	0.247	85.6	0.267	95.6	11.0

Comment:

Recovery Limits 75-125%

RPD Limit 20

SPECTRA LABORATORIES

8/5/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave.
Cheyenne, WY 82001

Units: mg/Kg
Spectra Project: 2021070649
Applies to Spectra #'s 1-2
Analyst: SCJ

QUALITY CONTROL RESULTS
ICP Metals SW846 6010D - Soil/Solid

Method Blank

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Element	Blank Result
Arsenic	< 2.5
Barium	< 0.2
Cadmium	< 0.3
Chromium	< 0.7
Copper	< 0.6
Lead	< 2.5
Selenium	< 2.5
Silver	< 0.7

Laboratory Control Sample (LCS)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021

Element	Spike Addition	LCS Conc.	LCS %Rec
Arsenic	200.0	204.3	102.2
Barium	200.0	202.2	101.1
Cadmium	200.0	200.1	100.1
Chromium	200.0	204.9	102.5
Copper	200.0	206.4	103.2
Lead	200.0	194.7	97.4
Selenium	200.0	198.5	99.3
Silver	200.0	201.3	100.7

LCS Recovery limits 80-120%

Matrix Spike/Matrix Spike Duplicate (MS/MSD)

Date Digested: 8/5/2021 Date Analyzed: 8/5/2021
Sample Spiked: 2021070603-1

Element	Sample Conc.	Spike Conc.	MS Conc.	MS %Rec	MSD Conc.	MSD %Rec	RPD
Arsenic	0.0	200.0	198.6	99.3	209.6	104.8	5.4
Barium	29.8	200.0	213.4	91.8	226.2	98.2	6.7
Cadmium	0.0	200.0	191.5	95.8	202.7	101.4	5.7
Chromium	0.0	200.0	166.8	83.4	175.6	87.8	5.1
Copper	0.0	200.0	184.4	92.2	195.6	97.8	5.9
Lead	0.0	200.0	194.1	97.1	206.0	103.0	5.9
Selenium	0.0	200.0	171.2	85.6	184.2	92.1	7.3
Silver	0.0	200.0	181.8	90.9	185.4	92.7	2.0

Recovery Limits 75-125%

RPD Limit 20

Comments:

August 13, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Method: NWTPH-Dx
Sample Matrix: Soil
Units: mg/Kg
Spectra Project: 2021070649
Applies to Spectra # 1-2

NWTPH-Dx ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	8/12/2021	Date Analyzed:	8/12/2021
	Spike Amount	Spike Amount	Percent Recovery
<u>Compound</u>	<u>Added</u>	<u>Found</u>	
Diesel	125	100.2	80%

METHOD BLANK

Date Extracted:	8/12/2021	Date Analyzed:	8/12/2021
Diesel	<10.0		
Heavy Oil	<50.0		
Surrogate Recovery:			
p-Terphenyl	80%		

Surrogate Recovery Limits: 50 -150%

August 11, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Soil
Sample: Method Blank
Date Analyzed: 8/4/2021
Spectra Project: 2021070649
Applies to: #1-2

**GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - METHOD BLANK**

COMPOUND	mg/kg	COMPOUND	mg/kg
Acetone	< 0.50	trans-1,2,-Dichloroethene	< 0.050
Acetonitrile	< 0.50	1,2-Dichloropropane	< 0.050
Acrolein	< 0.50	1,3-Dichloropropane	< 0.050
Acrylonitrile	< 0.50	cis-1,3-Dichloropropene	< 0.050
Benzene	< 0.050	trans-1,3-Dichloropropene	< 0.050
Bromobenzene	< 0.050	2,2-Dichloropropane	< 0.050
Bromochloromethane	< 0.050	1,1-Dichloropropene	< 0.050
Bromodichloromethane	< 0.050	Ethylbenzene	< 0.050
Bromoform	< 0.050	2-Hexanone (MBK)	< 0.50
Bromomethane	< 0.050	Hexachlorobutadiene	< 0.050
2-Butanone (MEK)	< 0.50	Iodomethane	< 0.25
n-Butylbenzene	< 0.050	Isopropylbenzene	< 0.050
sec-Butylbenzene	< 0.050	p-Isopropyltoluene	< 0.050
tert-Butylbenzene	< 0.050	Methylene chloride	0.42
Carbon Disulfide	< 0.50	4-Methyl-2-pentanone (MIBK)	< 0.50
Carbon tetrachloride	< 0.050	MTBE	< 0.050
Chlorobenzene	< 0.050	Naphthalene	< 0.050
Chlorodibromomethane	< 0.050	n-Propylbenzene	< 0.050
Chloroethane	< 0.050	Styrene	< 0.050
2-Chloroethyl Vinyl ether	< 0.50	1,1,1,2-Tetrachloroethane	< 0.050
Chloroform	< 0.050	1,1,2,2-Tetrachloroethane	< 0.050
Chloromethane	< 0.050	Tetrachloroethene	< 0.050
2-Chlorotoluene	< 0.050	Toluene	< 0.050
4-Chlorotoluene	< 0.050	Total Xylenes	< 0.10
1,2-Dibromo-3-Chloropropane (DBCP)	< 0.50	1,2,3-Trichlorobenzene	< 0.050
1,2-Dibromoethane (EDB)	< 0.050	1,2,4-Trichlorobenzene	< 0.050
Dibromomethane	< 0.050	1,1,1-Trichloroethane	< 0.050
1,2-Dichlorobenzene	< 0.050	1,1,2-Trichloroethane	< 0.050
1,3-Dichlorobenzene	< 0.050	Trichloroethene	< 0.050
1,4-Dichlorobenzene	< 0.050	Trichlorofluoromethane	< 0.050
Dichlorodifluoromethane	< 0.050	1,2,3-Trichloropropane	< 0.050
1,1-Dichloroethane	< 0.050	1,2,4-Trimethylbenzene	< 0.050
1,2-Dichloroethane	< 0.050	1,3,5-Trimethylbenzene	< 0.050
1,1-Dichloroethene	< 0.050	Vinyl Acetate	< 0.50
cis-1,2-Dichloroethene	< 0.050	Vinyl chloride	< 0.050

SURROGATE RECOVERIES	BLANK	
Dibromofluoromethane	114	%
1,2-Dichloroethane-d4	113	%
Toluene-d8	102	%
4-Bromofluorobenzene	102	%

August 9, 2021

 Panhandle Geotechnical & Env.
 2116 Pioneer Ave
 Cheyenne, WY 82001

 Sample Matrix: Soil
 Spectra Project: 2021070649
 Date Analyzed: 8/4/2021
 Applies to Spectra #'s: #1-2

GCMS VOLATILE ORGANIC ANALYSIS
METHOD 8260D - LAB CONTROL SPIKE/METHOD BLANK

COMPOUND	BLANK RESULT mg/Kg	Blank Spike Results (LCS)		% REC
		SPIKE AMOUNT mg/Kg	SPIKE RESULT mg/Kg	
Benzene	<0.050	1.0	1.1	106
Ethylbenzene	<0.050	1.0	1.0	97
Methyl tert-butyl ether	<0.050	1.0	1.0	98
Toluene	<0.050	1.0	0.97	97
m, p-Xylene	<0.050	2.0	2.0	99
o-Xylene	<0.050	1.0	1.0	97
Surrogates	8260D LCS	BLANK		
Dibromofluoromethane	112	114		%
1,2-Dichloroethane-d4	109	113		%
Toluene-d8	101	102		%
4-Bromofluorobenzene	94	102		%

August 9, 2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001

Sample Matrix: Soil
Date Analyzed: 8/4/2021
Spiked Sample: 2021080063
Spectra Project: 2021070649
Applies to: #1-2

GCMS VOLATILE ORGANIC ANALYSIS METHOD 8260D
Volatile Matrix Spike/Matrix Spike Duplicate Results (MS/MSD)

COMPOUND	SAMPLE RESULT mg/Kg	SPIKE AMOUNT mg/Kg	MS RESULT mg/Kg	% REC	MSD RESULT mg/Kg	% REC	RPD
1,1-Dichloroethene	<0.050	3.75	4.14	110	4.08	109	0.0
Benzene	<0.050	3.75	4.09	109	4.10	109	0.0
Trichloroethene	<0.050	3.75	3.36	90	3.34	89	0.0
Toluene	<0.050	3.75	3.98	106	3.90	104	0.0
Chlorobenzene	<0.050	3.75	3.79	101	3.72	99	0.0

Surrogates	MS	MSD	
Dibromofluoromethane	114	115	%
1,2-Dichloroethane-d4	113	115	%
Toluene-d8	101	99	%
4-Bromofluorobenzene	102	98	%

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch S2021072902
 Date Extracted 7/29/2021
 Date Analyzed 7/30/2021
 SampleID MB
 Sample#
 Initial Amount 20
 final amount 5
 %TS 100%

Parameter	Analyte List	Result ug/mL	Detect (Y/N)	PQL ug/mL	Prep Factor	Final mg/kg	DF
1-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
2-Methylnaphthalene	Y		N	0.2	0.2500	<0.05	1
Acenaphthene	Y		N	0.2	0.2500	<0.05	1
Acenaphthylene	Y		N	0.2	0.2500	<0.05	1
Anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)anthracene	Y		N	0.2	0.2500	<0.05	1
Benzo(a)pyrene	Y		N	0.2	0.2500	<0.05	1
Benzo(b)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Benzo(g,h,i)perylene	Y		N	0.2	0.2500	<0.05	1
Benzo(k)Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Chrysene	Y		N	0.2	0.2500	<0.05	1
Dibenzo(a,h)anthracene	Y		N	0.2	0.2500	<0.05	1
Fluoranthene	Y		N	0.2	0.2500	<0.05	1
Fluorene	Y		N	0.2	0.2500	<0.05	1
Indeno(1,2,3-c,d)pyrene	Y		N	0.2	0.2500	<0.05	1
Naphthalene	Y		N	0.2	0.2500	<0.05	1
Pentachlorophenol	Y		N	0.5	0.2500	<0.125	1
Phenanthrene	Y		N	0.2	0.2500	<0.05	1
Pyrene	Y		N	0.2	0.2500	<0.05	1

SURROGATE RECOVERIES	Fraction	Result	TV	%R	LCL	UCL	Bias
2-Fluorophenol	A	2.84		4	71%	25%	121% Pass
Phenol-d5	A	3.05		4	76%	24%	113% Pass
Nitrobenzene-d5	BN	1.65		2	83%	23%	120% Pass
2-Fluorobiphenyl	BN	1.56		2	78%	30%	115% Pass
2,4,6-Tribromophenol	A	2.97		4	74%	19%	122% Pass
p-Terphenyl-d14	BN	2.17		2	109%	18%	137% Pass

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch	S2021072902			
Date Extracted	7/29/2021			
Date Analyzed	7/30/2021			
Sample#	LCS			
Initial Amount	20			
final amount	5			
%TS	LCS	%R	LCL	UCL
Naphthalene	0.7600	76%	33%	147%
2-Methylnaphthalene	0.7500	75%	40%	130%
1-Methylnaphthalene	0.7400	74%	40%	130%
Acenaphthylene	0.7100	71%	40%	130%
Acenaphthene	0.7700	77%	40%	130%
Fluorene	0.7700	77%	40%	130%
Pentachlorophenol	0.5000	50%	40%	130%
Phenanthrene	0.8300	83%	40%	130%
Anthracene	0.7800	78%	40%	130%
Fluoranthene	0.9800	98%	40%	130%
Pyrene	0.9600	96%	62%	202%
Benzo(a)Anthracene	1.0200	102%	40%	130%
Chrysene	0.9100	91%	40%	130%
Benzo(b)Fluoranthene	0.9100	91%	40%	130%
Benzo(k)Fluoranthene	0.8400	84%	40%	130%
Benzo(a)Pyrene	0.8400	84%	40%	130%
Indeno(1,2,3-cd)Pyrene	0.8900	89%	40%	130%
Dibenz(a,h)Anthracene	0.9200	92%	40%	130%
Benzo(ghi)Perylene	0.8400	84%	40%	130%

SEMIVOLATILE ORGANIC ANALYSIS QC RESULTS

Batch S2021072902
 Date Extracted 7/29/2021
 Date Analyzed 7/30/2021
 Sample# MS/MSD
 Parent Sample

Parent Results	TV	MS Results	MS %R	MSD Results	MSD %R	LCL	UCL	RPD	CL
Naphthalene	1	0.76	76%	0.80	80%	33%	147%	5.13	20
2-Methylnaphthalene	1	0.9	90%	0.79	79%	40%	130%	13.02	20
1-Methylnaphthalene	1	0.91	91%	0.76	76%	40%	130%	17.96	20
Acenaphthylene	1	0.72	72%	0.80	80%	40%	130%	10.53	20
Acenaphthene	1	0.78	78%	0.83	83%	40%	130%	6.21	20
Fluorene	1	0.82	82%	0.86	86%	40%	130%	4.76	20
Phenanthrene	1	0.86	86%	0.85	85%	40%	130%	1.17	20
Anthracene	1	0.84	84%	0.82	82%	40%	130%	2.41	20
Fluoranthene	1	1.05	105%	1.00	100%	40%	130%	4.88	20
Pyrene	1	1.04	104%	1.05	105%	62%	202%	0.96	20
Benzo(a)Anthracene	1	1.05	105%	0.96	96%	40%	130%	8.96	20
Chrysene	1	0.9	90%	0.81	81%	40%	130%	10.53	20
Benzo(b)Fluoranthene	1	0.94	94%	0.85	85%	40%	130%	10.06	20
Benzo(k)Fluoranthene	1	0.88	88%	0.69	69%	40%	130%	24.20	20
Benzo(a)Pyrene	1	0.91	91%	0.85	85%	40%	130%	6.82	20
Indeno(1,2,3-cd)Pyrene	1	1.11	111%	1.31	131%	40%	130%	16.53	20
Dibenz(a,h)Anthracene	1	1.11	111%	1.34	134%	40%	130%	18.78	20
Benzo(ghi)Perylene	1	1.04	104%	1.23	123%	40%	130%	16.74	20

SPECTRA LABORATORIES
Sample Receiving Checklist

Client/Project: Panhandle Gro Progress Rail Spectra Project#: 2021070649
 Date & Time Received: 7/27/21 4:57 Received by: [Signature]
 Shipped by: Client Courier UPS USPS FedEx Other: _____
 Shipping Container Type(s): Cooler Box None Other: _____
 Sample temperatures (°C): 8.5°C - 18.1°C

Unless noted, the following parameters were received within Spectra Laboratories sample acceptance policy requirements (checked item(s) is out of compliance):

Requirement	"X"	Comments: (indicate requirement number)
1. Sample temperature(s) outside of 0-6°C	X	<input checked="" type="checkbox"/> 1. Temperature >6°C but received within <u>8</u> hours of sample collection on ice and cooling. <u>8.5 - 18.1°C</u>
2. Custody seals absent (not required when hand delivered by sampler)		
3. Custody seals broken/damaged		
4. Chain-of-Custody (COC) absent		
5. COC improperly completed (describe in comments)		
6. Signatures/Dates/Times on COC absent or incorrect		
7. Sample IDs/Matrix/Tests absent or incorrect		
8. COC does not correspond to sample count		
9. COC info does not correspond to sample labels		
10. Samples received broken or leaking (describe in comments)		
11. Incorrect bottles used for test (describe)		
12. Samples improperly preserved (describe)		
13. Multi-phasic samples present (describe)		
14. VOA vials contain headspace (indicate amount)		
15. Other anomaly (describe)		

Microbiological Tests requested: MPN MF HPC
 Fecal Coliform Total Coliform E. coli Salmonella

Did samples arrive within Holding Time? Yes No

Corrective Action Taken, if needed: Samples going into freezer

Person Contacted: _____ Date: _____

Form completed by: Nicole Miller Date: 7/27/21 Time: 4:57

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
 (253) 272-4850 Fax (253) 572-9838
 www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

Return Samples N Page of

CHAIN of CUSTODY

SPECTRA PROJECT #

2021070449

STANDARD RUSH

ADDRESS CHANGE

CLIENT: Panhandle Geotechnical & Env. ADDRESS:

PROJECT: Progress Rail

CONTACT: Levi Allbaugh

SAMPLED BY: Dave Schaff & Ryan Penn

PHONE: 308-641-6742 (field) 307-635-2828

e-MAIL: lallbaugh@mschaff.com

PURCHASE ORDER #:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
1 MW-1R 4-6'	7/27/21	9:15	S S
2 MW-3R 4-6'	7/27/21	10:45	S S
3			
4			
5			
6			
7			
8			
9			
0			

NUMBER OF CONTAINERS				HYDROCARBONS	ORGANICS	METALS	OTHER
				NWTPH-HCID			
				BTEX			
				BTEX/NWTPH-G			
				NWTPH-G			
				NWTPH-Dx			
				1664 SGT-HEM (TPH)			
				1664 HEM (FOG)			
				8260/624 VOA			
				8260 CHLOR SOLVENTS			
				8270/625 SEMI VOA			
				625 PAH/PNA -SIM			
				8082/608 PCB			
				TOTAL METALS RCRA 8			
				TOTAL METALS (SPECIFY)			
				TCLP METALS RCRA 8			
				TCLP METALS (SPECIFY)			
				PH 9040/9045			
				TX/TOX 9076			
				TURBIDITY			
				FLASH POINT			
				BOD			
				SOLIDS (SPECIFY)			

SIGNATURE PRINTED NAME COMPANY DATE TIME

RELINQUISHED BY *R. Pen* RYAN PENN PGE 7/27/21 17:00

RECEIVED BY *MARIE HOLT* SPECTRA 7-27-21 5:00

RELINQUISHED BY RECEIVED BY

RECEIVED BY

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2 % per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Analytical, LLC

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\4\data\0821\0810\

Data File : TPH000012.D

Signal(s) : FID1A.ch

Acq On : 10 Aug 2021 7:39 pm

Operator :

Sample : 070740-3

Misc :

ALS Vial : 69 Sample Multiplier: 1

MW-4

Integration File: events.e

Quant Time: Aug 11 14:20:49 2021

Quant Method : C:\msdchem\4\methods\NWTPH-DX_20210712_RT080921.M

Quant Title :

QLast Update : Thu Jul 08 16:29:03 2021

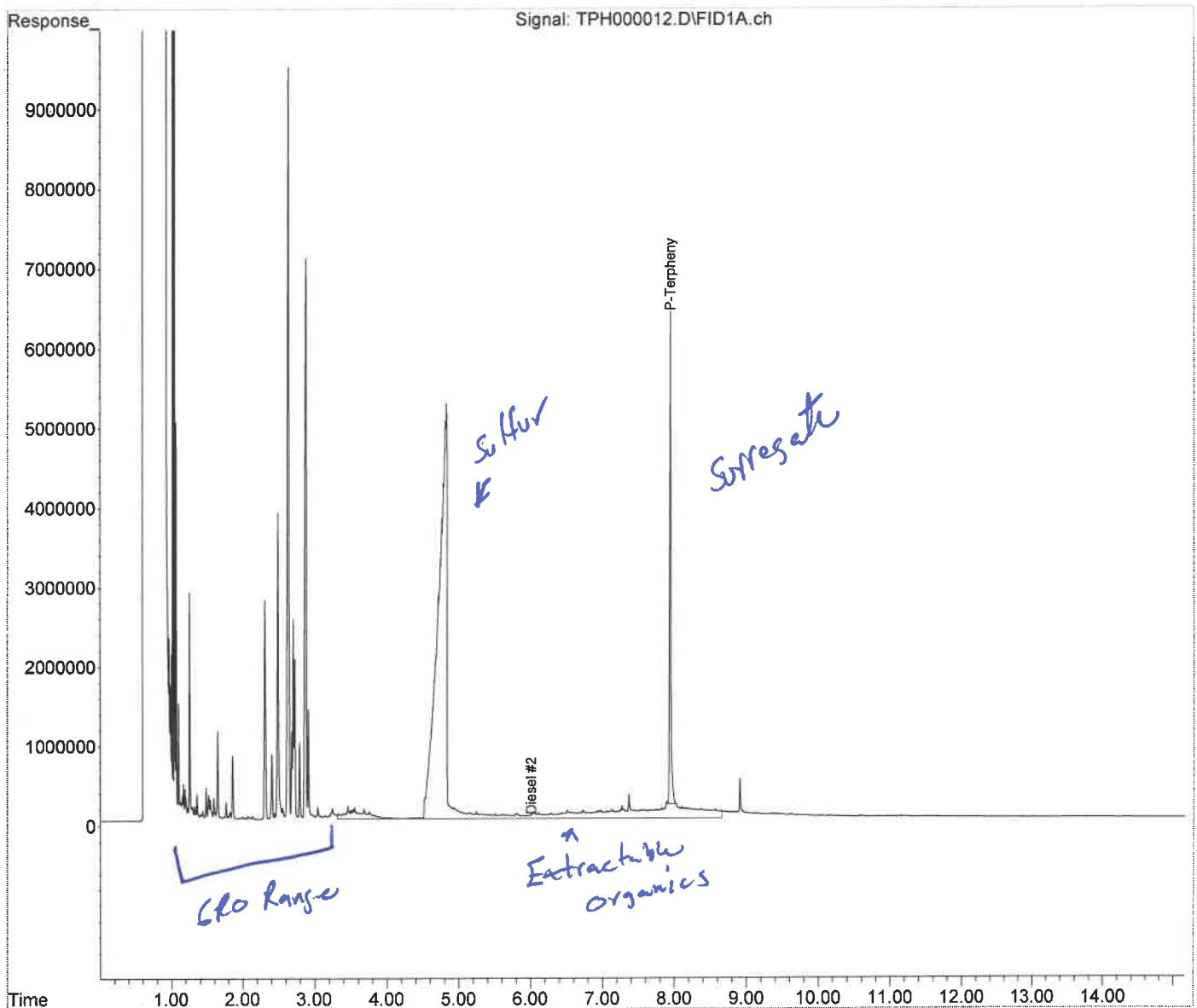
Response via : Initial Calibration

Integrator: ChemStation

Volume Inj. :

Signal Phase :

Signal Info :

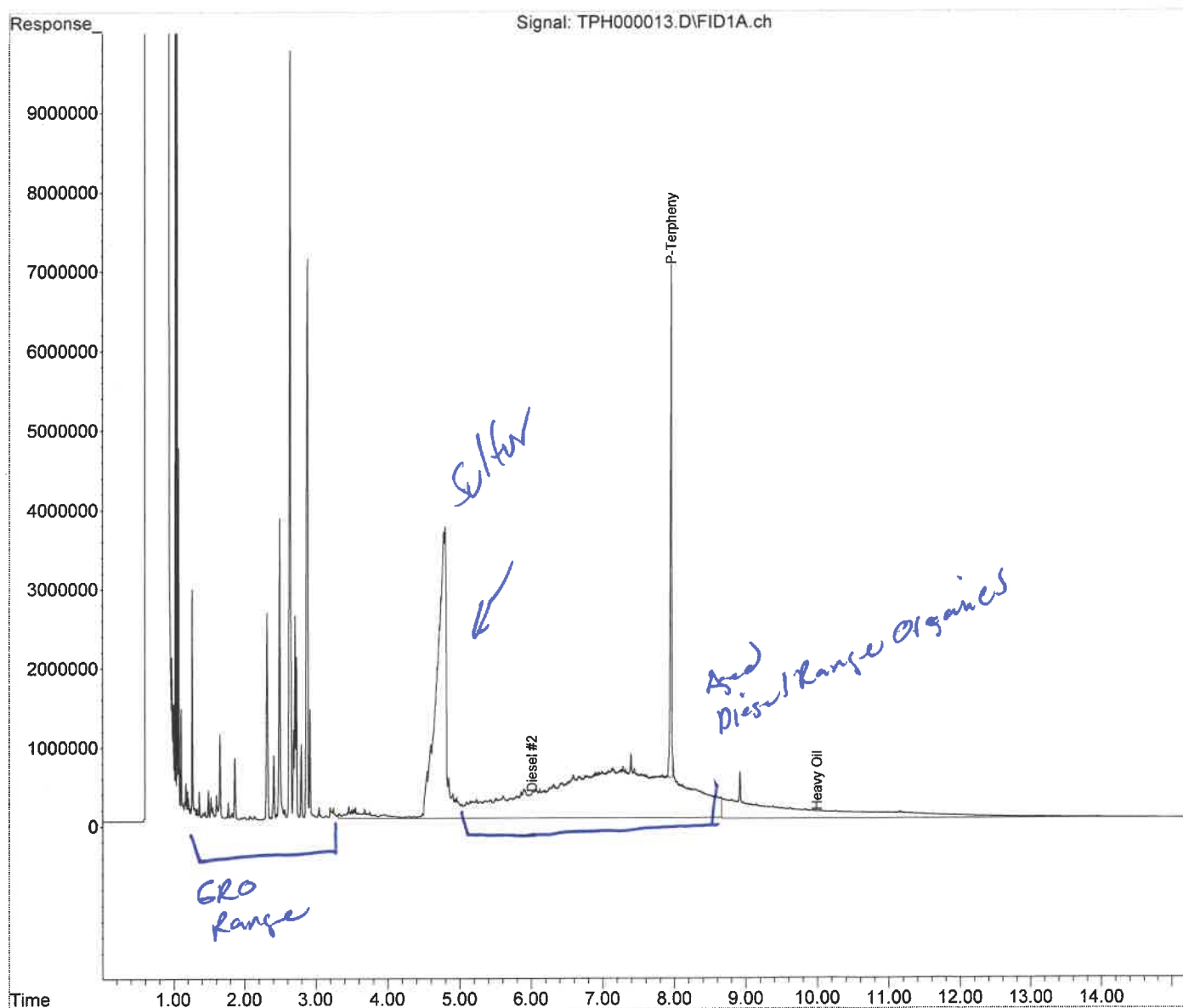


Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\4\data\0821\0810\
Data File : TPH000013.D
Signal(s) : FID1A.ch
Acq On : 10 Aug 2021 8:02 pm
Operator :
Sample : 070740-4 *mw-5*
Misc :
ALS Vial : 70 Sample Multiplier: 1

Integration File: events.e
Quant Time: Aug 11 14:22:05 2021
Quant Method : C:\msdchem\4\methods\NWTPH-DX_20210712_RT080921.M
Quant Title :
QLast Update : Thu Jul 08 16:29:03 2021
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :

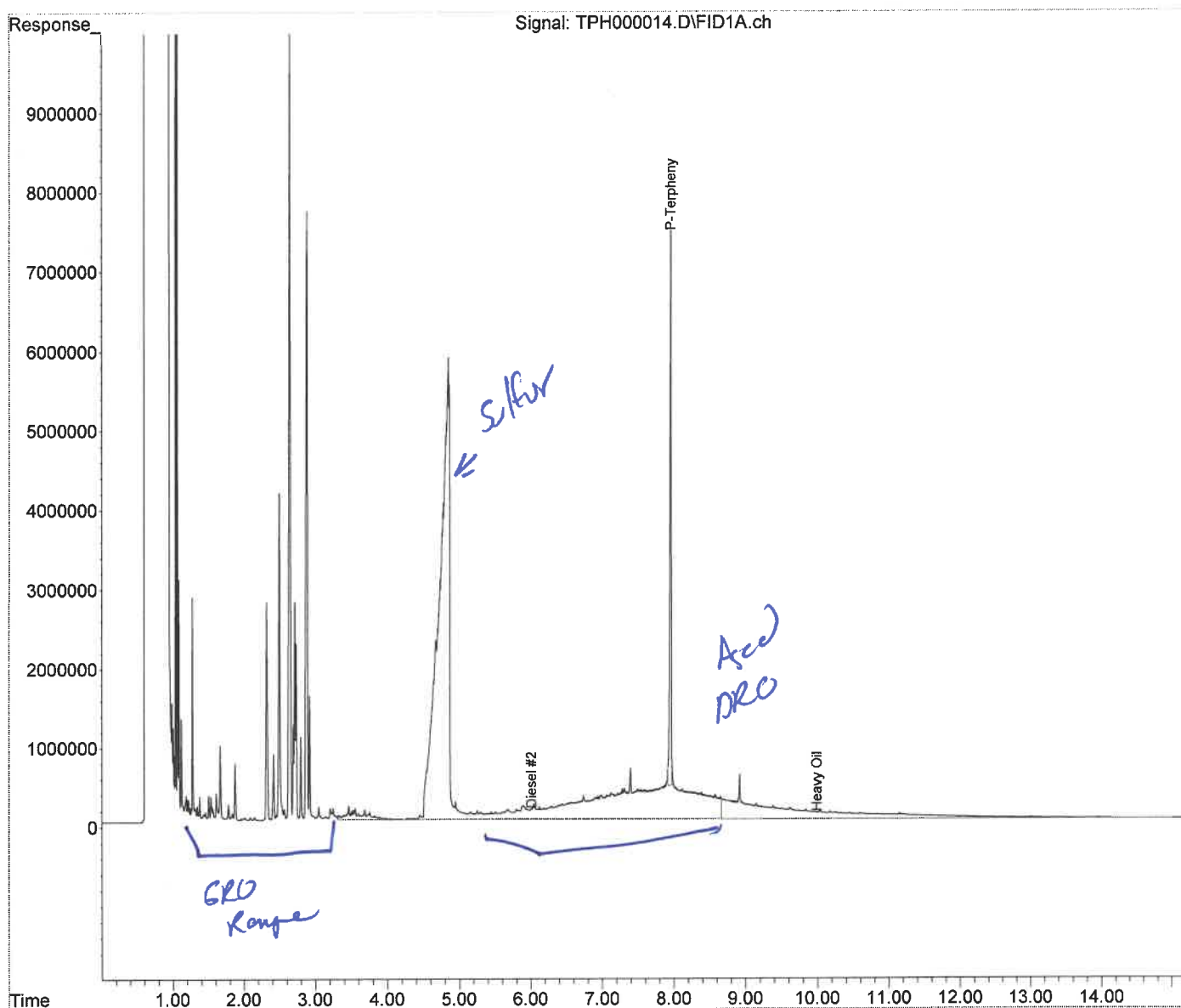


Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\4\data\0821\0810\
Data File : TPH000014.D
Signal(s) : FID1A.ch
Acq On : 10 Aug 2021 8:25 pm
Operator :
Sample : 070740-5 *mw-6*
Misc :
ALS Vial : 71 Sample Multiplier: 1

Integration File: events.e
Quant Time: Aug 11 14:23:15 2021
Quant Method : C:\msdchem\4\methods\NWTPH-DX_20210712_RT080921.M
Quant Title :
QLast Update : Thu Jul 08 16:29:03 2021
Response via : Initial Calibration
Integrator: ChemStation

Volume Inj. :
Signal Phase :
Signal Info :



12/06/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progressive Rail Services (PRS)
Client ID: MW-5
Sample Matrix: Water
Date Sampled: 11/22/2021
Date Received: 11/22/2021
Spectra Project: 2021110597
Spectra Number: 1

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyst</u>	<u>Date Analyzed</u>
Diesel	495	µg/L	NWTPH-Dx	RBF	12/03/2021
Diesel	<100*	µg/L	NWTPH-Dx	RBF	12/06/2021
Oil	390	µg/L	NWTPH-Dx	RBF	12/03/2021
Oil	<250*	µg/L	NWTPH-Dx	RBF	12/06/2021

* Acid/Silica Gel cleanup.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	130	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager

12/06/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progressive Rail Services (PRS)
Client ID: MW-6
Sample Matrix: Water
Date Sampled: 11/22/2021
Date Received: 11/22/2021
Spectra Project: 2021110597
Spectra Number: 2

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyst</u>	<u>Date Analyzed</u>
Diesel	260	µg/L	NWTPH-Dx	RBF	12/03/2021
Diesel	<100*	µg/L	NWTPH-Dx	RBF	12/06/2021
Oil	315	µg/L	NWTPH-Dx	RBF	12/03/2021
Oil	<250*	µg/L	NWTPH-Dx	RBF	12/06/2021

* Acid/Silica Gel cleanup.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	138	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager

12/06/2021

Panhandle Geotechnical & Env.
2116 Pioneer Ave
Cheyenne, WY 82001
Attn: Levi Allbaugh

Project: Progressive Rail Services (PRS)
Client ID: MW-5 Duplicate
Sample Matrix: Water
Date Sampled: 11/22/2021
Date Received: 11/22/2021
Spectra Project: 2021110597
Spectra Number: 3

<u>Analyte</u>	<u>Result</u>	<u>Units</u>	<u>Method</u>	<u>Analyst</u>	<u>Date Analyzed</u>
Diesel	550	µg/L	NWTPH-Dx	RBF	12/03/2021
Diesel	<100*	µg/L	NWTPH-Dx	RBF	12/06/2021
Oil	405	µg/L	NWTPH-Dx	RBF	12/03/2021
Oil	<250*	µg/L	NWTPH-Dx	RBF	12/06/2021

** The surrogate recovery was greater than the upper control limit; results are estimated may have a potential high bias. * Acid/Silica Gel cleanup.

<u>Surrogate</u>	<u>Recovery</u>	<u>Method</u>
p-Terphenyl	155**	NWTPH-Dx

SPECTRA LABORATORIES



Ben Frans, Laboratory Manager

Method: NWTPH-Dx
Sample Matrix: liquid
Units: mg/L
Spectra Project: 2021110597
Batch DX20211123-1

NWTPH-Dx ANALYSIS QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	11/23/2021	Date Analyzed:	12/3/2021
	Spike Amount	Spike Amount	Percent
<u>Compound</u>	<u>Added</u>	<u>Found</u>	<u>Recovery</u>
Diesel	2.50	2.34	93%

METHOD BLANK

Date Extracted:	11/23/2021	Date Analyzed:	12/3/2021
Total Pet. Hydrocarbons	<0.1		
Surrogate Recovery:			
p-Terphenyl	135%		

Surrogate Recovery Limits: 50 -150%

LCS Control limits 50-150%

Method: NWTPH-Dx
 Sample Matrix: liquid
 Units: mg/L
 Spectra Project: 2021110597
 Batch DX20211123-1

NWTPH-Dx ANALYSIS with silica gel acid clean up
QUALITY CONTROL RESULTS

BLANK SPIKE (LCS)

Date Extracted:	11/23/2021	Date Analyzed:	12/6/2021
	Spike Amount Added	Spike Amount Found	Percent Recovery
Compound			
Diesel	2.50	2.49	99%

METHOD BLANK

Date Extracted:	11/23/2021	Date Analyzed:	12/6/2021
Total Pet. Hydrocarbons	<0.1		
Surrogate Recovery:			
p-Terphenyl	155%	*	

Surrogate Recovery Limits: 50 -150%
 LCS Control limits 50-150%

Communications Record

Internal Document

Client: Panhandle Geotechnical & Env.

Client Contact: Shawn

Client Project: PRS

Date: 11.22.21

Time: 12:56

Spectra Contact: Taylor

Project Number: 202110597

Note: Client is Panhandle Geotechnical & Env. (conglomeration with McShaff & Associates)

SPECTRA Laboratories

2221 Ross Way, Tacoma, WA 98421
 (253) 272-4850 Fax (253) 572-9838
 www.spectra-lab.com info@spectra-lab.com

SPECIAL INSTRUCTIONS/COMMENTS:

Return Samples: Y N Page 1 of 1

CHAIN OF CUSTODY
 SPECTRA PROJECT # 202110597
 STANDARD RUSH

CLIENT: MC SHAMFE & ASSOCIATES

ADDRESS:

ADDRESS CHANGE

PROJECT: PROGRESSIVE LINE SERVICES (PLS)

HYDROCARBONS

ORGANICS

METALS

OTHER

CONTACT: LEIF ALVAREZ

SAMPLED BY: SHAWN LOMBARDONE

PHONE: 360 334 4782 FAX:

e-MAIL: LEVI@SPECTRA-LAB.COM Prefer FAX or e-MAIL

PURCHASE ORDER #

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX
1 MW-5	11/22/21	10:40	Water 2
2 MW-6	11/22/21	11:40	Water 1
3			
4			
5			
6			
7			
8			
9			
10			

NUMBER OF CONTAINERS

NWTPH-HCID

BTEX

BTEX/NWTPH-G

NWTPH-G

NWTPH-Dx

1664 SGT-HEM (TPH)

1664 HEM (FOG)

8260/624 VOA

8260 CHLOR SOLVENTS

8270-625 SEMI VOA

8270 PAH/PNA

8082/608 PCB

TOTAL METALS RCRA 8

TOTAL METALS (SPECIFY)

TCLP METALS RCRA 8

TCLP METALS (SPECIFY)

PH 9040/9045

TX/TOX/EOX

TURBIDITY

FLASH POINT

BOD

SOLIDS (SPECIFY)

SGT
DUPLICATE

NOTES:

SAMPLE ID	DATE SAMPLED	TIME SAMPLED	MATRIX	NUMBER OF CONTAINERS	HYDROCARBONS	ORGANICS	METALS	OTHER
1 MW-5	11/22/21	10:40	Water 2					
2 MW-6	11/22/21	11:40	Water 1				X	
3								
4								
5								
6								
7								
8								
9								
10								

*CONTACT LEVI FOR TAT

LAB USE ONLY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RECEIVED BY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RELINQUISHED BY

SIGNATURE

PRINTED NAME

COMPANY

DATE

TIME

RECEIVED BY

SIGNATURE

PRINTED NAME

COMPANY

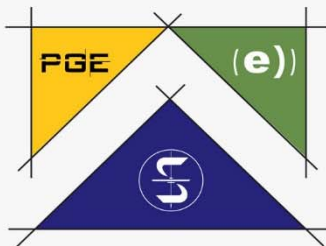
DATE

TIME

T = 8.7°C

Payment Terms: Net 30 days. Past due accounts subject to 1 1/2% per month interest. Customer agrees to pay all costs of collection including reasonable attorney's fees and all other costs of collection regardless of whether suit is filed in Pierce Co., WA venue. Spectra Laboratories, LLC

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