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Focused Environmental Site Assessment— Proposed Community Wellness Center

Livingston, Montana



LIVINGSTON
Montana

Prepared for:

**City of Livingston on behalf of
4 Ranges Foundation**

220 E. Park St.
Livingston, Montana 59047

March 5, 2024

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY	ii
2	INTRODUCTION	1
3	FIELD ACTIVITIES.....	1
3.1	SOIL VAPOR INVESTIGATION	1
3.2	SOIL INVESTIGATION	2
3.3	INVESTIGATION-DERIVED WASTE.....	3
3.4	DEVIATIONS FROM WP.....	3
4	RESULTS.....	3
4.1	SOIL VAPOR INVESTIGATION	3
4.2	SOIL INVESTIGATION	3
5	CONCLUSIONS AND RECOMMENDATIONS.....	4
6	REFERENCES.....	5

List of Tables

Table 1.	Soil Vapor Analytical Results
Table 2.	Soil Analytical Results

List of Figures

Figure 1.	Site Map
Figure 2.	Soil Vapor & Soil Sample Locations

List of Appendices

Appendix A	Soil Vapor Field Data
Appendix B	Soil Vapor Laboratory Analytical Report
Appendix C	Soil Vapor Laboratory Analytical Report Data Validation
Appendix D	Soil Field Data
Appendix E	Soil Laboratory Analytical Report
Appendix F	Soil Laboratory Analytical Report Data Validation

EXECUTIVE SUMMARY

Water and Environmental Technologies (WET) conducted a focused Environmental Site Assessment (ESA) on behalf of the 4 Ranges Foundation and the City of Livingston at the Katie Bonnell Park in Livingston, Montana. The park and adjacent one-acre parcel, referred to throughout this report as the Subject Property, are the proposed locations for a community wellness center building and parking lot. The purpose of the focused ESA was to evaluate potential risks associated with the Subject Property's proximity to the adjacent Livingston Railyard Facility (Railyard), owned by BNSF Railway Company, which is a maximum priority Comprehensive Environmental Cleanup and Responsibility Act site (CECRA, also known as State Superfund Facility). According to the Montana Department of Environmental Quality's Record of Decision (ROD) for the State Superfund Facility, the Railyard is currently known, or has been known to contain elevated levels of volatile organic compounds (VOCs), petroleum, polycyclic aromatic hydrocarbons (PAHs), and lead in soil, soil vapor, and groundwater (DEQ, 2001).

This focused ESA included an investigation of surface soil, subsurface soil, and soil vapor. Groundwater directly underlying the Subject Property was not investigated for three reasons: 1) construction of the wellness center would not extend deep enough to contact the groundwater table, which is approximately 30 feet below ground, 2) the water supply for the future wellness center would be piped city water, not groundwater, and 3) the ongoing groundwater monitoring program associated with the adjacent Superfund site indicates groundwater contamination does not extend to the proposed locations of any occupied structures, as depicted with the yellow contour line on Figures 1 and 2.

Summary of Soil Testing

Concentrations of all metals detected in Subject Property soil samples are commensurate with established natural background metals concentrations in Montana soils (Hydrometrics, 2013). Of all the metals detected in soil, lead is the only one that is known to be associated with contamination from historical Railyard activities. Concentrations of lead in soil samples collected as part of this ESA ranged from 4 mg/kg to 37 mg/kg, all below the Railyard Superfund cleanup level of 750 mg/kg. Concentrations of all VOCs, hydrocarbons, and PAHs in all samples were below laboratory detection limits and/or Railyard cleanup levels and all applicable screening levels.

Summary of Soil Vapor Testing

Results of soil vapor testing indicate that all known air and soil vapor constituents of concern associated with the adjacent Superfund Facility are not present beneath the Subject Property at levels that would present a risk to future building occupants. Chloroform, however, was detected in all three soil vapor samples, and one of the three samples contained chloroform at an elevated level. Two potential sources of chloroform in soil vapor include irrigation with a chlorinated water supply (EPA, 2000) and degradation of chlorinated solvents such as tetrachloroethene (PCE) (Reductive Dichlorination, 2023). Although PCE is a known contaminant related to the adjacent Railyard, chloroform is routinely sampled for, but rarely detected in groundwater samples

collected from wells closest to Katie Bonnell Park. When chloroform has been detected in groundwater underlying the Railyard Facility, it has been at trace concentrations and below all applicable regulatory screening levels. Chloroform is not a listed Contaminant of Concern for the Railyard Superfund Facility in soil, soil vapor, or groundwater.

Recommendation

Regardless of the actual source of chloroform detected in soil vapor underlying the Subject Property, and assuming the Subject Property is selected as the location for the community wellness center, WET recommends that occupied structures on the Subject Property be equipped with a vapor barrier and/or active sub-slab mitigation system (generally similar to a radon mitigation system) out of an abundance of caution to protect indoor air quality in the future wellness center from any subsurface soil vapor contaminant. A properly designed and constructed vapor barrier and/or active mitigation system would effectively prevent vapor intrusion that could be caused by irrigation with chlorinated water, or the adjacent Railyard, or other unknown factors.

1 INTRODUCTION

The Subject Property is located at the existing Katie Bonnell Park in Livingston, Montana and includes the adjacent 1-acre lot to the east, which is owned by Montana Rail Link (MRL) (**Figure 1**) according to Montana Cadastral records. The Subject Property is located northeast of the Railyard, which is a maximum priority CECRA site. The intent for the property is to develop a community wellness center that will serve the City of Livingston.

According to the Record of Decision (ROD), the Railyard located southwest of the Subject Property is known to contain soils contaminated with volatile organic constituents (VOCs), petroleum, polycyclic aromatic hydrocarbons (PAHs), and lead (DEQ, 2001). Additionally, a soil vapor survey conducted by WET for the Railyard in 2016 revealed potential for vapor intrusion in the vicinity of the Subject Property. Groundwater contaminated with tetrachloroethene (PCE) is estimated to extend onto the southern portion of Subject Property as shown in Figures 1 and 2. Due to the Subject Property's proximity to the Railyard, a Phase I ESA was forgone in lieu of conducting a focused Phase II ESA to ensure the health and safety of workers who would be involved in construction of the center as well as future employees and users of the center.

The scope of work for this ESA included assessment of the following contaminants of potential concern (COPCs):

- VOCs in Subject Property soils and soil vapor,
- PAHs in Subject Property soils,
- Extractable Petroleum Hydrocarbons (EPH) in Subject Property soils,
- Resource Conservation and Recovery Act (RCRA) metals in Subject Property soils.

2 FIELD ACTIVITIES

Field activities were conducted in accordance with the American Society for Testing and Materials (ASTM) standard for Phase II ESAs (ASTM E1903-19), WET standard operating procedures (SOPs), and Occupational Safety and Health Act (OSHA) regulations. Prior to investigation activities, utility locates were performed using Montana's One Call system. All test pit and soil vapor monitoring point (VMP) locations were found to be free of underground utilities.

2.1 SOIL VAPOR INVESTIGATION

The soil vapor investigation activities included soil VMP installation, seal testing of VMPs, and collection of soil vapor samples for laboratory analysis.

WET installed two SVPs at the Subject Property (VW-1 and VW-2) using Geoprobe with direct push technology on January 19th, 2024. The location of VMPs were selected based on the proposed building location and are shown on Figure 2.

To detect potential breakthrough of surface air in the soil vapor points, seal checks were performed in accordance with the procedures described in Montana Department of Environmental Quality's (DEQ) Vapor Intrusion Guidance (MDEQ, 2021). High purity helium was introduced into a shroud placed over each VMP until the concentration of helium under the

shroud was at least 20% as measured with a helium meter. Three tubing volumes of air from each probe were then purged while monitoring for the presence of helium to demonstrate the integrity of VMP seal. No helium was detected in the air purged from any of the VMPs; therefore, the seals were considered adequate. The soil vapor samples were collected into individually certified, 6-liter summa canisters, fitted with flow controllers set to 200 milliliters per minute (mL/min).

After collection, all samples were placed in the laboratory provided carrier using the original protective carton, along with the regulators and shipped to Pace Analytical Services, LLC in Mount Juliet, TN for analysis of VOCs. Field forms and notes taken during the soil vapor investigation activities are included as **Appendix A**. Soil vapor laboratory analytical results are included as **Appendix B**, and the associated data validation report of analytical data is included as **Appendix C**.

2.2 SOIL INVESTIGATION

The soil investigation activities included oversight of test pit excavation, field screening soils for VOCs using a calibrated photoionization detector (PID); field screening soils for metals using a calibrated handheld X-ray fluorescence (XRF) analyzer, and soil sample collection for laboratory analysis. Locations of test pits were selected based on the proposed wellness center building footprint and proximity to the estimated extent of groundwater contamination originating from the Railyard.

WET personnel oversaw test pit excavation activities on January 24th, 2024. Three test pits (TP1, TP-2 and TP-3) were excavated to a total depth of 10 feet below ground surface (ft bgs). Two test pits were located within the anticipated wellness center building footprint; one test pit was located near the estimated extent of groundwater PCE contamination. Additionally, two five-point composite surface soil samples were collected from the east side of the Subject Property within the proposed parking lot footprint. Test pit and composite sample points are depicted on Figure 2.

A sample for laboratory analysis was collected from the surface soil (0-2 ft bgs) of each test pit. Soil from the 2–10 ft bgs interval was field screened for the presence of VOCs and metals. Screening for VOCs included using a PID and visual and olfactory observations. Soils were field screened for metals using a handheld XRF. If soils exhibited evidence of contamination, a sample was collected for laboratory analysis. Evidence of contamination was defined as elevated PID readings (≥ 100 parts per million [ppm]), elevated XRF readings (Arsenic ≥ 18 ppm, Lead ≥ 320 ppm), or evidence of staining or order. No evidence of contamination was noted in any test pit; therefore, only surface soil samples were collected for laboratory analysis.

Due to frozen ground conditions, the five-point composite surface soil samples were obtained by using an excavator to scrape surface soil in the approximate locations depicted on Figure 2. Samples C-1 and C-2 were composites of five sub-samples (each) collected at the approximate locations depicted on Figure 2.

Immediately after collection, samples were placed on ice and shipped to Energy Laboratories in Helena, Montana for analysis of VOCs, PAHs, EPHs and RCRA metals. Field forms and notes taken during the soil investigation activities are included as **Appendix D**. Soil laboratory analytical results are included as **Appendix E**, and the associated data validation report of analytical data is included as **Appendix F**.

2.3 INVESTIGATION-DERIVED WASTE

Sampling activities utilized disposable equipment. The non-indigenous IDW such as used sample scoops, ziplock bags, and nitrile gloves was disposed of as standard municipal waste. Soils were segregated into surface and subsurface during excavation. Following the completion of sampling activities, test pits were backfilled by placing subsurface followed by surface soil into the pit it was excavated from.

2.4 DEVIATIONS FROM WP

No deviations were encountered during field activities.

3 RESULTS

Analytical laboratory results from soil vapor and soil sampling are summarized in **Tables 1** and **2**, respectively.

3.1 SOIL VAPOR INVESTIGATION

The analytical soil vapor results indicate detection of VOCs. The indoor air screening levels presented in **Table 1** are not appropriate to screen soil vapor results. However, they are included on the table and are used for reference to evaluate the potential risk of vapor intrusion. Concentrations of all ROD constituents were below all applicable screening levels for all soil vapor samples. Because screening levels have not been developed for soil vapor, results were compared to EPA regional screening levels (RSLs) to evaluate whether further evaluation was warranted. Concentrations of chloroform in all soil vapor samples were above the EPA residential ($0.12 \mu\text{g}/\text{m}^3$) and industrial ($0.53 \mu\text{g}/\text{m}^3$) RSL screening levels for indoor air, so additional evaluation was warranted. In accordance with DEQ's Vapor Intrusion Guidance (MDEQ, 2021) an attenuation factor of 0.03 was applied to the chloroform concentrations to conservatively estimate the resulting concentration of chloroform in indoor air from the soil vapor samples collected. When these attenuated concentrations were compared to the EPA RSLs the concentration in the sample collected from VW-2 (SV-2) exceeds the EPA residential screening level. The anticipated future use of the building is commercial/industrial.

3.2 SOIL INVESTIGATION

Concentrations of analytes in soil samples were compared to Montana DEQ risk-based screening levels (RBSLs) and EPA RSLs. All concentrations of VOCs, PAHs, and total extractable hydrocarbons were below Railyard ROD cleanup levels and all applicable screening levels, indicating impacts of these constituents are not present at the Subject Property.

Concentrations of arsenic in soil samples were above the EPA RSL; however, they were below the Montana Background Threshold Value (BTM) for arsenic, indicating the arsenic is naturally occurring. Concentrations of lead and barium in the composite soil samples (C-1 and C-2) were

commensurate with BTVs and were below the EPA RSLs, indicating the metals are likely due to natural sources. With the exception of the sample collected from TP-3, all soil samples were commensurate with the BTV for total chromium (41.7 mg/kg). No screening level has been developed for total chromium and it is not a ROD constituent.

4 CONCLUSIONS AND RECOMMENDATIONS

The focused ESA for the Subject Property indicated that impacts related to the BN Livingston Shop Complex are not present in soil and will not pose a risk to human health during wellness center construction or use.

Chloroform was detected in all soil vapor samples; the chlorination of drinking water is a potential source of chloroform in soil vapor. Another potential source of chloroform is degradation of chlorinated solvents such as PCE (Reductive Dichlorination, 2023). Although PCE is a known contaminant related to the Railyard, chloroform is routinely sampled for but rarely detected in groundwater. When it has been detected in groundwater, it has been at concentrations well below all applicable screening levels. Regardless of the source of chloroform detected in soil vapor at the Subject Property, WET recommends installation of a vapor barrier and/or active mitigation system out of an abundance of caution to protect indoor air quality in the future wellness center. A properly designed and constructed vapor barrier and/or active mitigation system would be effective at preventing potential vapor intrusion from any subsurface source whether that source is related to irrigation activities or the adjacent railyard.

5 REFERENCES

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- MDEQ, 2001. Record of Decision, Burlington Northern Livingston Shop Complex. September 2001.*
- MDEQ, 2018a. Montana DEQ – Waste Management and Remediation Division Data Validation Summary Form. Montana Department of Environmental Quality. Version 1.3.0.*
- MDEQ, 2018b. “Table 4 – Master Table, All Potential Tier 1 RBSLs for Soil (mg/kg),” Risk-Based Corrective Action Guidance for Petroleum Releases, Montana Department of Environmental Quality, May 2018.*
- MDEQ, 2018b. “Table 4 – 4,” Background Threshold Values for Inorganics in Montana Surface Soils, Montana Department of Environmental Quality, November 2018.*
- MDEQ, 2018b. “Table 4 – Master Table, All Potential Tier 1 RBSLs for Soil (mg/kg),” Leaching RBSLs are based on the distance from the bottom of the contamination to the groundwater, Montana Department of Environmental Quality, May 2018.*
- Montana Department of Environmental Quality (DEQ), 2021. Montana Vapor Intrusion Guide. September 2021.*
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- Wikipedia contributors. (2023, September 28). Reductive dechlorination. In Wikipedia, The Free Encyclopedia. Retrieved 20:42, March 4, 2024, from https://en.wikipedia.org/w/index.php?title=Reductive_dechlorination&oldid=1177624497*

Tables

Table 1. Soil Vapor - Volatile Organic Compounds

Sample ID	Sample Date	1,1,1-trichloroethane	1,1,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,2-dibromoethane	1,2-dichloroethane	1,2-dichloropropane	1,4-dichlorobenzene	Benzene	Carbon tetrachloride	Chloroethane	Chloroform	Chloroform from Indoor Air* (predicted)	Chloromethane	cis-1,2-dichloroethene	cis-1,3-dichloropropene	Trichloroethene	Tetrachloroethene	Ethylbenzene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Vinyl acetate	Vinyl chloride	
	USEPA RSL Industrial	2,200	0.21	0.088	7.7	88	0.02	0.47	1.8	1.1	1.6	2	1,800	0.53	39	18	-	0.88	18	4.9	18	-	-	88	2.8	
	USEPA RSL Residential	520	0.048	0.021	1.8	21	0.0047	0.11	0.42	0.26	0.36	0.47	420	0.12	9.4	4.2	0.7	0.21	4.2	1.1	4.2	-	-	21	0.17	
	Montana DEQ Final Task I Indoor Air Cleanup Levels Commercial**	-	-	-	-	-	-	-	-	-	4.0	-	-	-	-	-	-	-	7.0	105	11	-	-	-	-	
	Montana DEQ Final Task I Indoor Air Cleanup Levels Residential**	-	-	-	-	-	-	-	-	-	2.2	-	-	-	-	-	-	-	2.0	42	2.3	-	-	-	-	
		µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	Q	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	µg/m³	
FD1-SV-24-01-25	01 25 2024	<0.109	<0.137	<0.163	<0.0802	<0.0793	<0.154	<0.081	<0.139	<0.12	<0.0639	<0.126	0.140	0.759	J	0.02	0.0834	<0.0793	<0.0908	<0.107	0.644	0.132	<0.0793	<0.136	<0.0704	<0.0511
SV-1	01 25 2024	<0.109	<0.137	<0.163	<0.0802	<0.0793	<0.154	<0.081	<0.139	<0.12	0.100	<0.126	0.285	0.857	J	0.03	0.124	<0.0793	<0.0908	<0.107	0.699	0.300	<0.0793	<0.136	<0.0704	<0.0511
SV-2	01 25 2024	<0.109	<0.137	<0.163	<0.0802	<0.0793	<0.154	<0.081	<0.139	<0.12	0.0757	<0.126	0.206	4.83	J	0.14	0.0808	<0.0793	<0.0908	<0.107	0.439	0.280	<0.0793	<0.136	<0.0704	<0.0511

* Indicates predicted concentration was calculated by applying an attenuation factor of 0.03 (MDEQ VI Guidance, 2021)

** Indicates the most conservative value for either cancer or non-cancer risk is presented

< indicates analyte not detected

Bold indicates detection

- indicates no applicable screening level or analysis not performed

Fill indicates potential exceedance of indoor air screening level

µg/m³ indicates microgram per meter cubed

Screening Levels included for reference only: soil vapor samples collected do not represent indoor air.

Environmental Standards

USEPA, Nov 2023, USEPA RSLs Resident Air THQ=0.1

USEPA, Nov 2023, USEPA RSLs Industrial Air THQ=0.1

MT DEQ, 2012 Risk Assessment Amendment

Q Data validation qualifier:

J Estimated

J+ Overestimated

U Non-Detect

UJ Estimated Non-Detect

J- Underestimated

R Unusable

Table 2. Soil

Method		D2974	SW6020							SW7471B	SW8015M
Analyses		Ph. Char.	Total Metals - EPA SW846							EPH Screen	
Sample Date	Sample ID	Moisture Content (dried @ 105°C)	Arsenic	Barium	Cadmium	Chromium (III+VI)	Lead	Selenium	Silver	Mercury	Total Extractable Hydrocarbons
		wt%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Montana DEQ Soil RBSLs: Direct Contact Commercial		-	-	-	-	-	-	-	-	-	-
Montana DEQ Soil RBSLs: Direct Contact Construction		-	-	-	-	-	-	-	-	-	-
Montana DEQ Soil RBSLs: Direct Contact Residential		-	-	-	-	-	-	-	-	-	-
Montana DEQ Soil RBSLs: Leaching > 20 feet		-	-	-	-	-	-	-	-	-	-
Montana Background Threshold (BTVs)		-	22.5	429	0.7	41.7	29.8	0.7	0.3	-	-
EPA RSLs Industrial		-	3	220,000	100	-	800	5,800	5,800	46	-
EPA RSLs Residential		-	0.68	15,000	7.1	-	400	390	390	11	-
Railyard ROD Cleanup Level		-	-	-	-	-	750	-	-	-	5000
01 25 2024	C-1	18.3	8	502	<1	45	37	<1	<1	<0.50	42 J-
	C-2	18.5	8	438	<1	46	36	<1	<1	<0.50	33 J-
	FD1-TP-24-01-25	18.6	7	279	<1	48	16	<1	<1	<0.50	<20 UJ
	FD2-C-24-01-25	17.0	8	430	<1	47	37	<1	<1	<0.50	32 J-
	TP-1:1-2	17.8	7	297	<1	51	16	<1	<1	<0.50	<20 UJ
	TP-2:1-2	18.5	6	281	<1	51	16	<1	<1	<0.50	8.4 J-
	TP-3:1-2	17.1	2	59	<1	10	4	<1	<1	<0.50	<20 UJ

RBSL indicates Risk-Based Screening Level

< indicates analyte not detected

Bold indicates detection

- indicates no applicable screening level or analysis not performed

Fill indicates exceedance of screening level

mg/kg indicates milligram per kilogram

indicates the analyte was included in the Railyard ROD. MT DEQ 2001.

Q Data validation qualifier:

J Estimated

J+ Overestimated

U Non-Detect

UJ Estimated Non-Detect

J- Underestimated

Environmental Standards

MT DEQ, May 2018, Risk-Based Corrective Action Guidance for Petroleum Releases: Table 4

MT DEQ, November 2018, BTVs for Inorganics in MT Surface Soils: Table 4-4

MT DEQ, September 2001, Record of Decision, Burlington Northern Livingston Shop Complex

USEPA, Nov 2023, USEPA RSLs Industrial Soil THQ=1.0

USEPA, Nov 2023, USEPA RSLs Resident Soil THQ=1.0

Table 2. Soil

Method		SW8260B															
Analyses		Volatile Organic Compounds															
Sample Date	Sample ID	1,1,1,2-tetrachloroethane	1,1,1-trichloroethane	1,1,2,2-tetrachloroethane	1,1,2-trichloroethane	1,1-dichloroethane	1,1-dichloroethene	1,1-dichloropropene	1,2,3-trichloropropane	1,2-dibromoethane	1,2-dichlorobenzene	1,2-dichloroethane	1,2-dichloropropane	2-Chloroethylvinyl ether	1,3-dichlorobenzene	1,3-dichloropropane	1,4-dichlorobenzene
		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	mg/kg
Montana DEQ Soil RBSLs: Direct Contact Commercial		-	-	-	-	-	-	-	-	0.18	-	2.3	-	-	-	-	-
Montana DEQ Soil RBSLs: Direct Contact Construction		-	-	-	-	-	-	-	-	7.8	-	110	-	-	-	-	-
Montana DEQ Soil RBSLs: Direct Contact Residential		-	-	-	-	-	-	-	-	0.04	-	0.52	-	-	-	-	-
Montana DEQ Soil RBSLs: Leaching > 20 feet		-	-	-	-	-	-	-	-	0.00033	-	0.079	-	-	-	-	-
Montana Background Threshold (BTVs)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA RSLs Industrial		8.8	36,000	2.7	5	16	1,000	-	0.11	0.16	9,300	2	11	-	-	23,000	11
EPA RSLs Residential		2	8,100	0.6	1.1	3.6	230	-	0.0051	0.036	1,800	0.46	2.5	-	-	1,600	2.6
Railyard ROD Cleanup Level		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	264
01 25 2024	C-1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	C-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	FD1-TP-24-01-25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	FD2-C-24-01-25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	TP-1:1-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	TP-2:1-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	TP-3:1-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

RBSL indicates Risk-Based Screening Level

< indicates analyte not detected

Bold indicates detection

- indicates no applicable screening level or analysis not performed

Fill indicates exceedance of screening level

mg/kg indicates milligram per kilogram

indicates the analyte was included in the Railyard ROD. MT DEQ 2001.

Q Data validation qualifier:

J Estimated

J+ Overestimated

U Non-Detect

UJ Estimated Non-Detect

J- Underestimated

Environmental Standards

MT DEQ, May 2018, Risk-Based Corrective Action Guidance for Petroleum Releases: Table

MT DEQ, November 2018, BTVs for Inorganics in MT Surface Soils: Table 4-4

MT DEQ, September 2001, Record of Decision, Burlington Northern Livingston Shop Comp

USEPA, Nov 2023, USEPA RSLs Industrial Soil THQ=1.0

USEPA, Nov 2023, USEPA RSLs Resident Soil THQ=1.0

Table 2. Soil

Method		SW8260B [continued]																	
Analyses		Volatile Organic Compounds [continued]																	
Sample Date	Sample ID	2,2-dichloropropane	Methyl Ethyl Ketone	2-chlorotoluene	4-chlorotoluene	Benzene	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Carbon tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,2-dichloroethene	
		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	mg/kg	mg/kg	mg/kg
Montana DEQ Soil RBSLs: Direct Contact Commercial		-	-	-	-	5.7	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana DEQ Soil RBSLs: Direct Contact Construction		-	-	-	-	240	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana DEQ Soil RBSLs: Direct Contact Residential		-	-	-	-	1.3	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana DEQ Soil RBSLs: Leaching > 20 feet		-	-	-	-	0.33	-	-	-	-	-	-	-	-	-	-	-	-	-
Montana Background Threshold (BTVs)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA RSLs Industrial		-	190,000	23,000	23,000	5.1	1,800	630	1.3	86	30	2.9	1,300	39	23,000	1.4	460	370	
EPA RSLs Residential		-	27,000	1,600	1,600	1.2	290	150	0.29	19	6.8	0.65	280	8.3	5,400	0.32	110	63	
Railyard ROD Cleanup Level		-	-	-	-	-	-	-	-	-	-	-	124	-	-	-	-	14	
01 25 2024	C-1	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
	C-2	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
	FD1-TP-24-01-25	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
	FD2-C-24-01-25	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
	TP-1:1-2	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
	TP-2:1-2	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
	TP-3:1-2	<0.20	<4.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	

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Fill indicates exceedance of screening level

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indicates the analyte was included in the Railyard ROD. MT DEQ 2001.

Q Data validation qualifier:

J Estimated

J+ Overestimated

U Non-Detect

UJ Estimated Non-Detect

J- Underestimated

Environmental Standards

MT DEQ, May 2018, Risk-Based Corrective Action Guidance for Petroleum Releases: Table

MT DEQ, November 2018, BTVs for Inorganics in MT Surface Soils: Table 4-4

MT DEQ, September 2001, Record of Decision, Burlington Northern Livingston Shop Comp

USEPA, Nov 2023, USEPA RSLs Industrial Soil THQ=1.0

USEPA, Nov 2023, USEPA RSLs Resident Soil THQ=1.0

Table 2. Soil

Method		SW8260B [continued]																
Analyses		Volatile Organic Compounds [continued]																
Sample Date	Sample ID	dis-1,3-dichloropropene	Dibromomethane	Dichlorodifluoromethane	Dichloromethane	MTBE	Styrene	Trichloroethene	Tetrachloroethene	Toluene	Ethylbenzene	trans-1,2-dichloroethene	trans-1,3-dichloropropene	Trichlorofluoromethane	Vinyl chloride	Xylene (o)	1,3 + 1,4-Xylene	Xylene Total
		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	mg/kg	mg/kg
Montana DEQ Soil RBSLs: Direct Contact Commercial		-	-	-	-	230	-	-	-	5,500	28	-	-	-	-	-	-	310
Montana DEQ Soil RBSLs: Direct Contact Construction		-	-	-	-	8,900	-	-	-	5,500	1,300	-	-	-	-	-	-	610
Montana DEQ Soil RBSLs: Direct Contact Residential		-	-	-	-	52	-	-	-	610	6.4	-	-	-	-	-	-	72
Montana DEQ Soil RBSLs: Leaching > 20 feet		-	-	-	-	0.25	-	-	-	100	130	-	-	-	-	-	-	1,600
Montana Background Threshold (BTVs)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EPA RSLs Industrial		-	99	370	1,000	210	35,000	6	100	47,000	25	300	-	350,000	1.7	2,800	-	2,500
EPA RSLs Residential		-	24	87	57	47	6,000	0.94	24	4,900	5.8	70	-	23,000	0.059	640	-	580
Railyard ROD Cleanup Level		-	-	-	-	-	-	2	4	-	-	-	-	-	0.02	-	-	-
01 25 2024	C-1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	C-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	FD1-TP-24-01-25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	FD2-C-24-01-25	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	TP-1:1-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	TP-2:1-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
	TP-3:1-2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

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USEPA, Nov 2023, USEPA RSLs Industrial Soil THQ=1.0

USEPA, Nov 2023, USEPA RSLs Resident Soil THQ=1.0

Table 2. Soil

Method		SW8270E																		
Analyses		Semi-Volatile Organic Compounds (Low Level) by Sim																		
Sample Date	Sample ID	1-Methylnaphthalene	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	
		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	mg/kg	mg/kg	mg/kg	mg/kg
Montana DEQ Soil RBSLs: Direct Contact Commercial		81	250	3,800	-	19,000	24	2.4	24	-	240	2,400	2.4	2,500	2,500	24	19	-	1,900	
Montana DEQ Soil RBSLs: Direct Contact Construction		1,400	250	3,800	-	19,000	390	39	390	-	3,900	39,000	39	2,500	2,500	390	140	-	1,900	
Montana DEQ Soil RBSLs: Direct Contact Residential		20	30	450	-	2,200	1.3	0.13	1.3	-	13	130	0.13	300	300	1.3	4.3	-	220	
Montana DEQ Soil RBSLs: Leaching > 20 feet		11	35	140	-	14,000	35	12	120	-	1,200	3,500	38	440	180	380	62	-	430	
Montana Background Threshold (BTVs)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
EPA RSLs Industrial		73	3,000	45,000	-	230,000	21	2.1	21	-	210	2,100	2.1	30,000	30,000	21	8.6	-	23,000	
EPA RSLs Residential		18	240	3,600	-	18,000	1.1	0.11	1.1	-	11	110	0.11	2,400	2,400	1.1	2	-	1,800	
Railyard ROD Cleanup Level		-	-	160	-	3700	13	3	45	-	450	1400	6	1000	160	130	3	-	1100	
01 25 2024	C-1	<0.020	<0.020	<0.020	<0.020	<0.020	0.051	0.067	0.095	0.044	0.042	0.073	<0.020	0.12	<0.020	0.050	<0.020	0.058	0.096	
	C-2	<0.020	<0.020	<0.020	<0.020	<0.020	0.051	0.065	0.094	0.045	0.040	0.074	<0.020	0.12	<0.020	0.051	<0.020	0.055	0.098	
	FD1-TP-24-01-25	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ	<0.061 UJ
	FD2-C-24-01-25	<0.020	<0.020	<0.020	<0.020	<0.020	0.041	0.053	0.075	0.038	0.026	0.061	<0.020	0.097	<0.020	0.040	<0.020	0.042	0.079	
	TP-1:1-2	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ
	TP-2:1-2	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ	<0.057 UJ
	TP-3:1-2	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ	<0.054 UJ

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Environmental Standards

MT DEQ, May 2018, Risk-Based Corrective Action Guidance for Petroleum Releases: Table

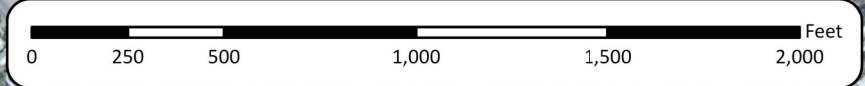
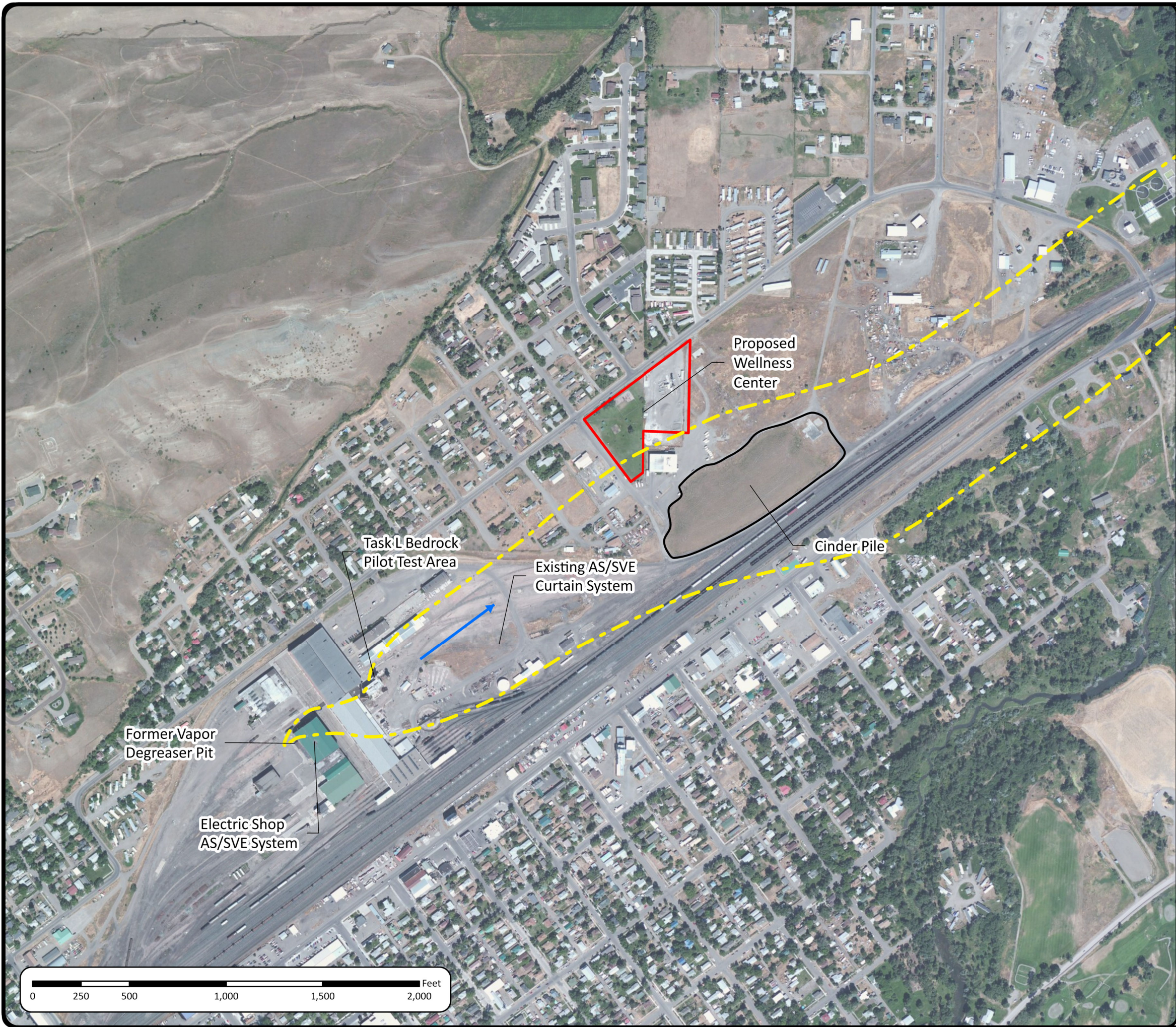
MT DEQ, November 2018, BTVs for Inorganics in MT Surface Soils: Table 4-4

MT DEQ, September 2001, Record of Decision, Burlington Northern Livingston Shop Comp

USEPA, Nov 2023, USEPA RSLs Industrial Soil THQ=1.0

USEPA, Nov 2023, USEPA RSLs Resident Soil THQ=1.0

Figures



NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATION	7/24/23	EK	TD
2	ADDED AIR SAMPLES/TABLE	7/25/23	JH	TD
3				
4				
5				

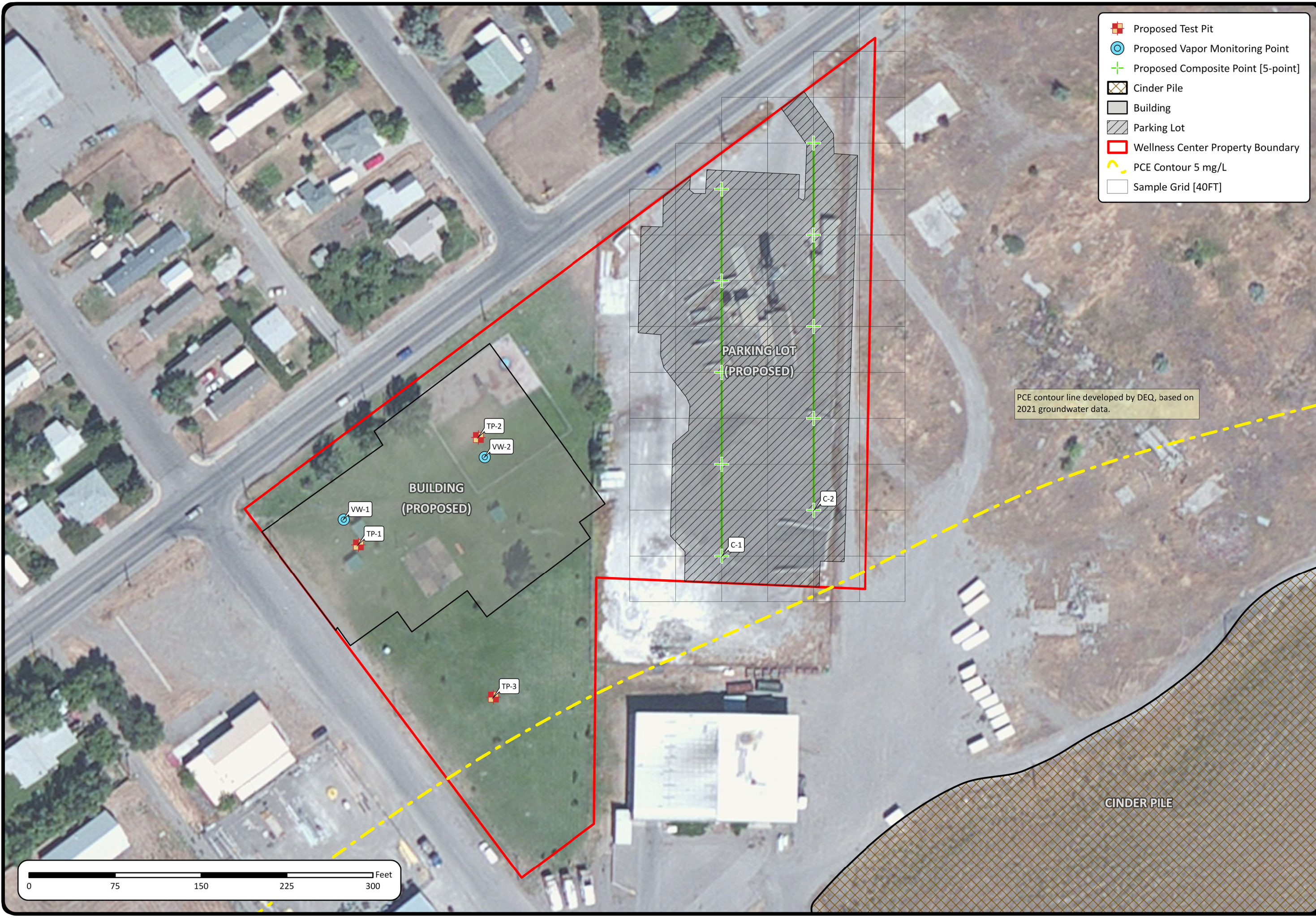
NOTES
 Typical depth to groundwater: 20 feet below ground surface

SITE MAP
 BURLINGTON NORTHERN LIVINGSTON SHOP COMPLEX
 JOB#: LRG011
 DATE: 3/4/2024
FIGURE 1
 Path: M:\LRG\LRG011\Task1\GIS\SiteMap\SiteMap.aprx, Author: jpolies

- Alluvial Groundwater Flow Direction
- PCE Contour 5 mg/L
- Wellness Center Property Boundary

PCE contour line developed by DEQ, based on 2021 groundwater data.





- Proposed Test Pit
- Proposed Vapor Monitoring Point
- Proposed Composite Point [5-point]
- Cinder Pile
- Building
- Parking Lot
- Wellness Center Property Boundary
- PCE Contour 5 mg/L
- Sample Grid [40FT]



NO.	DESCRIPTION	DATE	DRAFT	REVIEW
1	MAP CREATION	12/6/23	KK	RS
2	PROPOSED TEST PITS AND VMPS	12/15/23	KK	RS
3	VMPS/TEST PIT LOCATIONS, BUILDING/PARKING LOT	1/2/24	KK	RS
4	UPDATED SAMPLING POINTS	1/22/24	JO	RS
5				

NOTES

SOIL VAPOR & SOIL SAMPLE LOCATIONS
 PROPOSED WELLNESS CENTER - LIVINGSTON, MT
 JOB#: 2024.2021
 DATE: 3/4/2024
FIGURE 2
 Path: M:\LUG\UGM01\Task1\GIS\SiteMap\SiteMap.aprx, Author: jpolies



Appendix A

Soil Vapor Field Data



Water & Environmental Technologies
 Consulting Scientists and Engineers
 151 Evergreen Drive, Suite C
 Bozeman, Montana 59718
 Phone: (406) 782-5220

AIR SAMPLING FORM

Project Name/Location: LIVINGSTON WELLNESS C. Sample Date: 1-25-24
 Project Number: 2024-2021 Sampler(s): JESSICA ONLES
 Sampling Method: GRAB
 Field Conditions: PARTLY CLOUDY 48°F

Air Sampling Data

Sample Location/ ID	Can ID	Flow Controller ID	Pre-Vac Pressure (in Hg)	START Sample Time	STOP Sample Time	Post-Vac Pressure (in Hg)	Notes
SV-1	7242	28827	-23.5	1202	1237	-4	
SV-2	12130	28219	-25	1222	1257	-4	
FD	8084	28930	-24	1250	1330	-4	

Sample Collection

Containers	Size	Analytes	Method	Comments
Summa Cannister	6 liter	VOCs	EPA TO-15 SIM	

NOTES: FD → FIELD DUPLICATE: FDI-SV-24-01-25

Signature: Jessica Onles Date: 1/25/24

HELIUM TEST

SV-1: start @ 1130 helium - 20% @ 1131 - 0ppm **PASS**
 SV-2: start @ 1145 helium - 20% @ 1146 - 0ppm **PASS**

Appendix B

Soil Vapor Laboratory Analytical Report

Water & Environmental Technologies

Sample Delivery Group: L1699209
Samples Received: 01/26/2024
Project Number: 2024.2021: T4
Description: 4RangesM01: 2024.2021: T4

Report To: Jessica Oules
480 East Park Street
Butte, MT 59701

Entire Report Reviewed By:



Jennifer A McCurdy
Project Manager

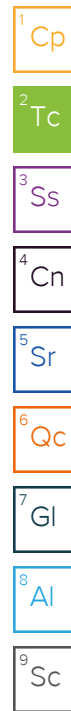
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
SV-1 L1699209-01	5
SV-2 L1699209-02	6
FD1-SV-24-01-25 L1699209-03	7
CERT SUMMA 7242 L1699209-04	8
CERT SUMMA 12130 L1699209-05	9
CERT SUMMA 8084 L1699209-06	10
Qc: Quality Control Summary	11
Volatile Organic Compounds (MS) by Method TO-15-SIM	11
Gl: Glossary of Terms	19
Al: Accreditations & Locations	20
Sc: Sample Chain of Custody	21



SAMPLE SUMMARY

SV-1 L1699209-01 Air

Collected by Jessica Oules
 Collected date/time 01/25/24 12:37
 Received date/time 01/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15-SIM	WG2213935	1	01/27/24 00:02	01/27/24 00:02	MBF	Mt. Juliet, TN

1 Cp

2 Tc

SV-2 L1699209-02 Air

Collected by Jessica Oules
 Collected date/time 01/25/24 12:57
 Received date/time 01/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15-SIM	WG2213935	1	01/27/24 00:42	01/27/24 00:42	MBF	Mt. Juliet, TN

3 Ss

4 Cn

5 Sr

FD1-SV-24-01-25 L1699209-03 Air

Collected by Jessica Oules
 Collected date/time 01/25/24 13:30
 Received date/time 01/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15-SIM	WG2214929	1	01/28/24 13:09	01/28/24 13:09	MBF	Mt. Juliet, TN

6 Qc

7 Gl

8 Al

CERT SUMMA 7242 L1699209-04 Air

Collected by Jessica Oules
 Collected date/time 01/25/24 00:00
 Received date/time 01/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15-SIM	WG2207254	1	01/14/24 21:36	01/14/24 21:36	MNP	Mt. Juliet, TN

9 Sc

CERT SUMMA 12130 L1699209-05 Air

Collected by Jessica Oules
 Collected date/time 01/25/24 00:00
 Received date/time 01/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15-SIM	WG2218614	1	01/16/24 15:27	01/16/24 15:27	MNP	Mt. Juliet, TN

CERT SUMMA 8084 L1699209-06 Air

Collected by Jessica Oules
 Collected date/time 01/25/24 00:00
 Received date/time 01/26/24 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method TO-15-SIM	WG2207254	1	01/14/24 22:54	01/14/24 22:54	MNP	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Jennifer A McCurdy
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Volatile Organic Compounds (MS) by Method TO-15-SIM

Analyte	CAS #	Mol. Wt.	RDL ug/m3	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	0.0639	0.100		1	WG2213935
Carbon tetrachloride	56-23-5	154	0.126	ND		1	WG2213935
Chloroethane	75-00-3	64.50	0.106	0.285		1	WG2213935
Chloroform	67-66-3	119	0.0973	0.857		1	WG2213935
Chloromethane	74-87-3	50.50	0.0620	0.124	B	1	WG2213935
1,2-Dibromoethane	106-93-4	188	0.154	ND		1	WG2213935
1,4-Dichlorobenzene	106-46-7	147	0.120	ND		1	WG2213935
1,1-Dichloroethane	75-34-3	98	0.0802	ND		1	WG2213935
1,2-Dichloroethane	107-06-2	99	0.0810	ND		1	WG2213935
1,1-Dichloroethene	75-35-4	96.90	0.0793	ND		1	WG2213935
cis-1,2-Dichloroethene	156-59-2	96.90	0.0793	ND		1	WG2213935
trans-1,2-Dichloroethene	156-60-5	96.90	0.0793	ND		1	WG2213935
1,2-Dichloropropane	78-87-5	113	0.139	ND		1	WG2213935
cis-1,3-Dichloropropene	10061-01-5	111	0.0908	ND		1	WG2213935
trans-1,3-Dichloropropene	10061-02-6	111	0.136	ND		1	WG2213935
Ethylbenzene	100-41-4	106	0.130	0.300		1	WG2213935
1,1,2,2-Tetrachloroethane	79-34-5	168	0.137	ND		1	WG2213935
Tetrachloroethylene	127-18-4	166	0.136	0.699		1	WG2213935
1,1,1-Trichloroethane	71-55-6	133	0.109	ND		1	WG2213935
1,1,2-Trichloroethane	79-00-5	133	0.163	ND		1	WG2213935
Trichloroethylene	79-01-6	131	0.107	ND		1	WG2213935
Vinyl chloride	75-01-4	62.50	0.0511	ND		1	WG2213935
Vinyl acetate	108-05-4	86.10	0.0704	ND		1	WG2213935
(S) 1,4-Bromofluorobenzene	460-00-4	175		121		60.0-140	WG2213935

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15-SIM

Analyte	CAS #	Mol. Wt.	RDL ug/m3	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	0.0639	0.0757		1	WG2213935
Carbon tetrachloride	56-23-5	154	0.126	ND		1	WG2213935
Chloroethane	75-00-3	64.50	0.106	0.206		1	WG2213935
Chloroform	67-66-3	119	0.0973	4.83		1	WG2213935
Chloromethane	74-87-3	50.50	0.0620	0.0808	B	1	WG2213935
1,2-Dibromoethane	106-93-4	188	0.154	ND		1	WG2213935
1,4-Dichlorobenzene	106-46-7	147	0.120	ND		1	WG2213935
1,1-Dichloroethane	75-34-3	98	0.0802	ND		1	WG2213935
1,2-Dichloroethane	107-06-2	99	0.0810	ND		1	WG2213935
1,1-Dichloroethene	75-35-4	96.90	0.0793	ND		1	WG2213935
cis-1,2-Dichloroethene	156-59-2	96.90	0.0793	ND		1	WG2213935
trans-1,2-Dichloroethene	156-60-5	96.90	0.0793	ND		1	WG2213935
1,2-Dichloropropane	78-87-5	113	0.139	ND		1	WG2213935
cis-1,3-Dichloropropene	10061-01-5	111	0.0908	ND		1	WG2213935
trans-1,3-Dichloropropene	10061-02-6	111	0.136	ND		1	WG2213935
Ethylbenzene	100-41-4	106	0.130	0.280		1	WG2213935
1,1,2,2-Tetrachloroethane	79-34-5	168	0.137	ND		1	WG2213935
Tetrachloroethylene	127-18-4	166	0.136	0.439		1	WG2213935
1,1,1-Trichloroethane	71-55-6	133	0.109	ND		1	WG2213935
1,1,2-Trichloroethane	79-00-5	133	0.163	ND		1	WG2213935
Trichloroethylene	79-01-6	131	0.107	ND		1	WG2213935
Vinyl chloride	75-01-4	62.50	0.0511	ND		1	WG2213935
Vinyl acetate	108-05-4	86.10	0.0704	ND		1	WG2213935
(S) 1,4-Bromofluorobenzene	460-00-4	175		122		60.0-140	WG2213935

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (MS) by Method TO-15-SIM

Analyte	CAS #	Mol. Wt.	RDL ug/m3	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	0.0639	ND		1	WG2214929
Carbon tetrachloride	56-23-5	154	0.126	ND		1	WG2214929
Chloroethane	75-00-3	64.50	0.106	0.140		1	WG2214929
Chloroform	67-66-3	119	0.0973	0.759		1	WG2214929
Chloromethane	74-87-3	50.50	0.0620	0.0834		1	WG2214929
1,2-Dibromoethane	106-93-4	188	0.154	ND		1	WG2214929
1,4-Dichlorobenzene	106-46-7	147	0.120	ND		1	WG2214929
1,1-Dichloroethane	75-34-3	98	0.0802	ND		1	WG2214929
1,2-Dichloroethane	107-06-2	99	0.0810	ND		1	WG2214929
1,1-Dichloroethene	75-35-4	96.90	0.0793	ND		1	WG2214929
cis-1,2-Dichloroethene	156-59-2	96.90	0.0793	ND		1	WG2214929
trans-1,2-Dichloroethene	156-60-5	96.90	0.0793	ND		1	WG2214929
1,2-Dichloropropane	78-87-5	113	0.139	ND		1	WG2214929
cis-1,3-Dichloropropene	10061-01-5	111	0.0908	ND		1	WG2214929
trans-1,3-Dichloropropene	10061-02-6	111	0.136	ND		1	WG2214929
Ethylbenzene	100-41-4	106	0.130	0.132		1	WG2214929
1,1,2,2-Tetrachloroethane	79-34-5	168	0.137	ND		1	WG2214929
Tetrachloroethylene	127-18-4	166	0.136	0.644		1	WG2214929
1,1,1-Trichloroethane	71-55-6	133	0.109	ND		1	WG2214929
1,1,2-Trichloroethane	79-00-5	133	0.163	ND		1	WG2214929
Trichloroethylene	79-01-6	131	0.107	ND		1	WG2214929
Vinyl chloride	75-01-4	62.50	0.0511	ND		1	WG2214929
Vinyl acetate	108-05-4	86.10	0.0704	ND		1	WG2214929
(S) 1,4-Bromofluorobenzene	460-00-4	175		114		60.0-140	WG2214929

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Volatile Organic Compounds (MS) by Method TO-15-SIM

Analyte	CAS #	Mol. Wt.	RDL ug/m3	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	0.0639	ND		1	WG2218614
Carbon tetrachloride	56-23-5	154	0.126	ND		1	WG2218614
Chloroethane	75-00-3	64.50	0.106	ND		1	WG2218614
Chloroform	67-66-3	119	0.0973	ND		1	WG2218614
Chloromethane	74-87-3	50.50	0.0620	ND		1	WG2218614
1,2-Dibromoethane	106-93-4	188	0.154	ND		1	WG2218614
1,4-Dichlorobenzene	106-46-7	147	0.120	ND		1	WG2218614
1,1-Dichloroethane	75-34-3	98	0.0802	ND		1	WG2218614
1,2-Dichloroethane	107-06-2	99	0.0810	ND		1	WG2218614
1,1-Dichloroethene	75-35-4	96.90	0.0793	ND		1	WG2218614
cis-1,2-Dichloroethene	156-59-2	96.90	0.0793	ND		1	WG2218614
trans-1,2-Dichloroethene	156-60-5	96.90	0.0793	ND		1	WG2218614
1,2-Dichloropropane	78-87-5	113	0.139	ND		1	WG2218614
cis-1,3-Dichloropropene	10061-01-5	111	0.0908	ND		1	WG2218614
trans-1,3-Dichloropropene	10061-02-6	111	0.136	ND		1	WG2218614
Ethylbenzene	100-41-4	106	0.130	ND		1	WG2218614
1,1,2,2-Tetrachloroethane	79-34-5	168	0.137	ND		1	WG2218614
Tetrachloroethylene	127-18-4	166	0.136	ND		1	WG2218614
1,1,1-Trichloroethane	71-55-6	133	0.109	ND		1	WG2218614
1,1,2-Trichloroethane	79-00-5	133	0.163	ND		1	WG2218614
Trichloroethylene	79-01-6	131	0.107	ND		1	WG2218614
Vinyl chloride	75-01-4	62.50	0.0511	ND		1	WG2218614
Vinyl acetate	108-05-4	86.10	0.0704	ND		1	WG2218614
(S) 1,4-Bromofluorobenzene	460-00-4	175		99.4		60.0-140	WG2218614

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Volatile Organic Compounds (MS) by Method TO-15-SIM

Analyte	CAS #	Mol. Wt.	RDL ug/m3	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	0.0639	ND		1	WG2207254
Carbon tetrachloride	56-23-5	154	0.126	ND		1	WG2207254
Chloroethane	75-00-3	64.50	0.106	ND		1	WG2207254
Chloroform	67-66-3	119	0.0973	ND		1	WG2207254
Chloromethane	74-87-3	50.50	0.0620	ND		1	WG2207254
1,2-Dibromoethane	106-93-4	188	0.154	ND		1	WG2207254
1,4-Dichlorobenzene	106-46-7	147	0.120	ND		1	WG2207254
1,1-Dichloroethane	75-34-3	98	0.0802	ND		1	WG2207254
1,2-Dichloroethane	107-06-2	99	0.0810	ND		1	WG2207254
1,1-Dichloroethene	75-35-4	96.90	0.0793	ND		1	WG2207254
cis-1,2-Dichloroethene	156-59-2	96.90	0.0793	ND		1	WG2207254
trans-1,2-Dichloroethene	156-60-5	96.90	0.0793	ND		1	WG2207254
1,2-Dichloropropane	78-87-5	113	0.139	ND		1	WG2207254
cis-1,3-Dichloropropene	10061-01-5	111	0.0908	ND		1	WG2207254
trans-1,3-Dichloropropene	10061-02-6	111	0.136	ND		1	WG2207254
Ethylbenzene	100-41-4	106	0.130	ND		1	WG2207254
1,1,2,2-Tetrachloroethane	79-34-5	168	0.137	ND		1	WG2207254
Tetrachloroethylene	127-18-4	166	0.136	ND		1	WG2207254
1,1,1-Trichloroethane	71-55-6	133	0.109	ND		1	WG2207254
1,1,2-Trichloroethane	79-00-5	133	0.163	ND		1	WG2207254
Trichloroethylene	79-01-6	131	0.107	ND		1	WG2207254
Vinyl chloride	75-01-4	62.50	0.0511	ND		1	WG2207254
Vinyl acetate	108-05-4	86.10	0.0704	ND		1	WG2207254
(S) 1,4-Bromofluorobenzene	460-00-4	175		99.5		60.0-140	WG2207254

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R4023198-3 01/14/24 11:15

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.00570	0.0200
Carbon tetrachloride	U		0.00590	0.0200
Chloroethane	U		0.00820	0.0400
Chloroform	U		0.00520	0.0200
Chloromethane	U		0.00690	0.0300
1,2-Dibromoethane	U		0.00570	0.0200
1,4-Dichlorobenzene	U		0.00220	0.0200
1,1-Dichloroethane	U		0.00410	0.0200
1,2-Dichloroethane	U		0.00460	0.0200
1,1-Dichloroethene	U		0.00360	0.0200
cis-1,2-Dichloroethene	U		0.00540	0.0200
trans-1,2-Dichloroethene	U		0.00280	0.0200
1,2-Dichloropropane	U		0.00580	0.0300
cis-1,3-Dichloropropene	0.0140	U	0.00580	0.0200
trans-1,3-Dichloropropene	U		0.00640	0.0300
Ethylbenzene	U		0.00250	0.0300
1,1,2,2-Tetrachloroethane	U		0.00750	0.0200
Tetrachloroethylene	U		0.00610	0.0200
1,1,1-Trichloroethane	U		0.00460	0.0200
1,1,2-Trichloroethane	U		0.00660	0.0300
Trichloroethylene	U		0.00770	0.0200
Vinyl chloride	U		0.00450	0.0200
Vinyl acetate	U		0.00360	0.0200
(S) 1,4-Bromofluorobenzene	102			60.0-140

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4023198-1 01/14/24 09:53 • (LCSD) R4023198-2 01/14/24 10:36

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.500	0.393	0.400	78.6	80.0	70.0-130			1.77	25
Carbon tetrachloride	0.500	0.523	0.533	105	107	70.0-130			1.89	25
Chloroethane	0.500	0.561	0.571	112	114	70.0-130			1.77	25
Chloroform	0.500	0.500	0.510	100	102	70.0-130			1.98	25
Chloromethane	0.500	0.513	0.521	103	104	70.0-130			1.55	25
1,2-Dibromoethane	0.500	0.416	0.421	83.2	84.2	70.0-130			1.19	25
1,4-Dichlorobenzene	0.500	0.462	0.463	92.4	92.6	70.0-130			0.216	25
1,1-Dichloroethane	0.500	0.520	0.527	104	105	70.0-130			1.34	25
1,2-Dichloroethane	0.500	0.596	0.604	119	121	70.0-130			1.33	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4023198-1 01/14/24 09:53 • (LCSD) R4023198-2 01/14/24 10:36

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.532	0.543	106	109	70.0-130			2.05	25
cis-1,2-Dichloroethene	0.500	0.449	0.458	89.8	91.6	70.0-130			1.98	25
trans-1,2-Dichloroethene	0.500	0.521	0.535	104	107	70.0-130			2.65	25
1,2-Dichloropropane	0.500	0.439	0.450	87.8	90.0	70.0-130			2.47	25
cis-1,3-Dichloropropene	0.500	0.470	0.473	94.0	94.6	70.0-130			0.636	25
trans-1,3-Dichloropropene	0.500	0.464	0.469	92.8	93.8	70.0-130			1.07	25
Ethylbenzene	0.500	0.474	0.482	94.8	96.4	70.0-130			1.67	25
1,1,2-Tetrachloroethane	0.500	0.426	0.432	85.2	86.4	70.0-130			1.40	25
Tetrachloroethylene	0.500	0.386	0.391	77.2	78.2	70.0-130			1.29	25
1,1,1-Trichloroethane	0.500	0.527	0.536	105	107	70.0-130			1.69	25
1,1,2-Trichloroethane	0.500	0.410	0.417	82.0	83.4	70.0-130			1.69	25
Trichloroethylene	0.500	0.434	0.439	86.8	87.8	70.0-130			1.15	25
Vinyl chloride	0.500	0.503	0.513	101	103	70.0-130			1.97	25
Vinyl acetate	0.500	0.561	0.559	112	112	70.0-130			0.357	25
(S) 1,4-Bromofluorobenzene				104	104	60.0-140				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Method Blank (MB)

(MB) R4027132-3 01/26/24 11:33

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ppbv		ppbv	ppbv
Benzene	U		0.00570	0.0200
Carbon tetrachloride	U		0.00590	0.0200
Chloroethane	U		0.00820	0.0400
Chloroform	U		0.00520	0.0200
Chloromethane	0.00724	U	0.00690	0.0300
1,2-Dibromoethane	U		0.00570	0.0200
1,4-Dichlorobenzene	U		0.00220	0.0200
1,1-Dichloroethane	U		0.00410	0.0200
1,2-Dichloroethane	U		0.00460	0.0200
1,1-Dichloroethene	U		0.00360	0.0200
cis-1,2-Dichloroethene	U		0.00540	0.0200
trans-1,2-Dichloroethene	U		0.00280	0.0200
1,2-Dichloropropane	U		0.00580	0.0300
cis-1,3-Dichloropropene	U		0.00580	0.0200
trans-1,3-Dichloropropene	U		0.00640	0.0300
Ethylbenzene	U		0.00250	0.0300
1,1,2,2-Tetrachloroethane	U		0.00750	0.0200
Tetrachloroethylene	U		0.00610	0.0200
1,1,1-Trichloroethane	U		0.00460	0.0200
1,1,2-Trichloroethane	U		0.00660	0.0300
Trichloroethylene	U		0.00770	0.0200
Vinyl chloride	U		0.00450	0.0200
Vinyl acetate	U		0.00360	0.0200
(S) 1,4-Bromofluorobenzene	94.2			60.0-140

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4027132-1 01/26/24 10:12 • (LCSD) R4027132-2 01/26/24 10:54

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ppbv	ppbv	ppbv	%	%	%			%	%
Benzene	0.500	0.506	0.514	101	103	70.0-130			1.57	25
Carbon tetrachloride	0.500	0.531	0.524	106	105	70.0-130			1.33	25
Chloroethane	0.500	0.483	0.483	96.6	96.6	70.0-130			0.000	25
Chloroform	0.500	0.498	0.494	99.6	98.8	70.0-130			0.806	25
Chloromethane	0.500	0.398	0.399	79.6	79.8	70.0-130			0.251	25
1,2-Dibromoethane	0.500	0.587	0.597	117	119	70.0-130			1.69	25
1,4-Dichlorobenzene	0.500	0.569	0.578	114	116	70.0-130			1.57	25
1,1-Dichloroethane	0.500	0.479	0.474	95.8	94.8	70.0-130			1.05	25
1,2-Dichloroethane	0.500	0.465	0.460	93.0	92.0	70.0-130			1.08	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4027132-1 01/26/24 10:12 • (LCSD) R4027132-2 01/26/24 10:54

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.469	0.466	93.8	93.2	70.0-130			0.642	25
cis-1,2-Dichloroethene	0.500	0.496	0.490	99.2	98.0	70.0-130			1.22	25
trans-1,2-Dichloroethene	0.500	0.481	0.481	96.2	96.2	70.0-130			0.000	25
1,2-Dichloropropane	0.500	0.508	0.515	102	103	70.0-130			1.37	25
cis-1,3-Dichloropropene	0.500	0.540	0.549	108	110	70.0-130			1.65	25
trans-1,3-Dichloropropene	0.500	0.518	0.528	104	106	70.0-130			1.91	25
Ethylbenzene	0.500	0.527	0.538	105	108	70.0-130			2.07	25
1,1,2-Tetrachloroethane	0.500	0.553	0.550	111	110	70.0-130			0.544	25
Tetrachloroethylene	0.500	0.577	0.583	115	117	70.0-130			1.03	25
1,1,1-Trichloroethane	0.500	0.508	0.504	102	101	70.0-130			0.791	25
1,1,2-Trichloroethane	0.500	0.560	0.567	112	113	70.0-130			1.24	25
Trichloroethylene	0.500	0.555	0.565	111	113	70.0-130			1.79	25
Vinyl chloride	0.500	0.456	0.459	91.2	91.8	70.0-130			0.656	25
Vinyl acetate	0.500	0.454	0.461	90.8	92.2	70.0-130			1.53	25
<i>(S) 1,4-Bromofluorobenzene</i>				103	102	60.0-140				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R4027176-2 01/28/24 11:31

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.00570	0.0200
Carbon tetrachloride	U		0.00590	0.0200
Chloroethane	U		0.00820	0.0400
Chloroform	U		0.00520	0.0200
Chloromethane	U		0.00690	0.0300
1,2-Dibromoethane	U		0.00570	0.0200
1,4-Dichlorobenzene	U		0.00220	0.0200
1,1-Dichloroethane	U		0.00410	0.0200
1,2-Dichloroethane	U		0.00460	0.0200
1,1-Dichloroethene	U		0.00360	0.0200
cis-1,2-Dichloroethene	U		0.00540	0.0200
trans-1,2-Dichloroethene	U		0.00280	0.0200
1,2-Dichloropropane	U		0.00580	0.0300
cis-1,3-Dichloropropene	U		0.00580	0.0200
trans-1,3-Dichloropropene	U		0.00640	0.0300
Ethylbenzene	U		0.00250	0.0300
1,1,2,2-Tetrachloroethane	U		0.00750	0.0200
Tetrachloroethylene	U		0.00610	0.0200
1,1,1-Trichloroethane	U		0.00460	0.0200
1,1,2-Trichloroethane	U		0.00660	0.0300
Trichloroethylene	U		0.00770	0.0200
Vinyl chloride	U		0.00450	0.0200
Vinyl acetate	U		0.00360	0.0200
(S) 1,4-Bromofluorobenzene	103			60.0-140

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4027176-1 01/28/24 10:33 • (LCSD) R4027176-3 01/28/24 12:13

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.500	0.443	0.439	88.6	87.8	70.0-130			0.907	25
Carbon tetrachloride	0.500	0.468	0.471	93.6	94.2	70.0-130			0.639	25
Chloroethane	0.500	0.458	0.463	91.6	92.6	70.0-130			1.09	25
Chloroform	0.500	0.437	0.440	87.4	88.0	70.0-130			0.684	25
Chloromethane	0.500	0.359	0.361	71.8	72.2	70.0-130			0.556	25
1,2-Dibromoethane	0.500	0.487	0.486	97.4	97.2	70.0-130			0.206	25
1,4-Dichlorobenzene	0.500	0.472	0.473	94.4	94.6	70.0-130			0.212	25
1,1-Dichloroethane	0.500	0.425	0.426	85.0	85.2	70.0-130			0.235	25
1,2-Dichloroethane	0.500	0.423	0.431	84.6	86.2	70.0-130			1.87	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4027176-1 01/28/24 10:33 • (LCSD) R4027176-3 01/28/24 12:13

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.424	0.429	84.8	85.8	70.0-130			1.17	25
cis-1,2-Dichloroethene	0.500	0.432	0.436	86.4	87.2	70.0-130			0.922	25
trans-1,2-Dichloroethene	0.500	0.433	0.438	86.6	87.6	70.0-130			1.15	25
1,2-Dichloropropane	0.500	0.427	0.431	85.4	86.2	70.0-130			0.932	25
cis-1,3-Dichloropropene	0.500	0.464	0.479	92.8	95.8	70.0-130			3.18	25
trans-1,3-Dichloropropene	0.500	0.450	0.461	90.0	92.2	70.0-130			2.41	25
Ethylbenzene	0.500	0.457	0.468	91.4	93.6	70.0-130			2.38	25
1,1,2-Tetrachloroethane	0.500	0.439	0.437	87.8	87.4	70.0-130			0.457	25
Tetrachloroethylene	0.500	0.472	0.467	94.4	93.4	70.0-130			1.06	25
1,1,1-Trichloroethane	0.500	0.455	0.457	91.0	91.4	70.0-130			0.439	25
1,1,2-Trichloroethane	0.500	0.458	0.456	91.6	91.2	70.0-130			0.438	25
Trichloroethylene	0.500	0.464	0.467	92.8	93.4	70.0-130			0.644	25
Vinyl chloride	0.500	0.416	0.413	83.2	82.6	70.0-130			0.724	25
Vinyl acetate	0.500	0.438	0.435	87.6	87.0	70.0-130			0.687	25
<i>(S) 1,4-Bromofluorobenzene</i>				103	103	60.0-140				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R4029067-3 01/16/24 11:59

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.00570	0.0200
Carbon tetrachloride	U		0.00590	0.0200
Chloroethane	U		0.00820	0.0400
Chloroform	U		0.00520	0.0200
Chloromethane	0.0193	U	0.00690	0.0300
1,2-Dibromoethane	U		0.00570	0.0200
1,4-Dichlorobenzene	U		0.00220	0.0200
1,1-Dichloroethane	U		0.00410	0.0200
1,2-Dichloroethane	U		0.00460	0.0200
1,1-Dichloroethene	U		0.00360	0.0200
cis-1,2-Dichloroethene	U		0.00540	0.0200
trans-1,2-Dichloroethene	U		0.00280	0.0200
1,2-Dichloropropane	U		0.00580	0.0300
cis-1,3-Dichloropropene	U		0.00580	0.0200
trans-1,3-Dichloropropene	U		0.00640	0.0300
Ethylbenzene	U		0.00250	0.0300
1,1,2,2-Tetrachloroethane	U		0.00750	0.0200
Tetrachloroethylene	U		0.00610	0.0200
1,1,1-Trichloroethane	U		0.00460	0.0200
1,1,2-Trichloroethane	U		0.00660	0.0300
Trichloroethylene	U		0.00770	0.0200
Vinyl chloride	U		0.00450	0.0200
Vinyl acetate	U		0.00360	0.0200
(S) 1,4-Bromofluorobenzene	101			60.0-140

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4029067-1 01/16/24 10:34 • (LCSD) R4029067-2 01/16/24 11:20

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.500	0.411	0.408	82.2	81.6	70.0-130			0.733	25
Carbon tetrachloride	0.500	0.541	0.538	108	108	70.0-130			0.556	25
Chloroethane	0.500	0.589	0.580	118	116	70.0-130			1.54	25
Chloroform	0.500	0.516	0.513	103	103	70.0-130			0.583	25
Chloromethane	0.500	0.530	0.530	106	106	70.0-130			0.000	25
1,2-Dibromoethane	0.500	0.432	0.428	86.4	85.6	70.0-130			0.930	25
1,4-Dichlorobenzene	0.500	0.469	0.465	93.8	93.0	70.0-130			0.857	25
1,1-Dichloroethane	0.500	0.534	0.530	107	106	70.0-130			0.752	25
1,2-Dichloroethane	0.500	0.614	0.610	123	122	70.0-130			0.654	25

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R4029067-1 01/16/24 10:34 • (LCSD) R4029067-2 01/16/24 11:20

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
1,1-Dichloroethene	0.500	0.543	0.538	109	108	70.0-130			0.925	25
cis-1,2-Dichloroethene	0.500	0.463	0.498	92.6	99.6	70.0-130			7.28	25
trans-1,2-Dichloroethene	0.500	0.528	0.531	106	106	70.0-130			0.567	25
1,2-Dichloropropane	0.500	0.457	0.451	91.4	90.2	70.0-130			1.32	25
cis-1,3-Dichloropropene	0.500	0.479	0.473	95.8	94.6	70.0-130			1.26	25
trans-1,3-Dichloropropene	0.500	0.476	0.475	95.2	95.0	70.0-130			0.210	25
Ethylbenzene	0.500	0.482	0.483	96.4	96.6	70.0-130			0.207	25
1,1,2-Tetrachloroethane	0.500	0.439	0.433	87.8	86.6	70.0-130			1.38	25
Tetrachloroethylene	0.500	0.402	0.399	80.4	79.8	70.0-130			0.749	25
1,1,1-Trichloroethane	0.500	0.545	0.543	109	109	70.0-130			0.368	25
1,1,2-Trichloroethane	0.500	0.428	0.425	85.6	85.0	70.0-130			0.703	25
Trichloroethylene	0.500	0.447	0.443	89.4	88.6	70.0-130			0.899	25
Vinyl chloride	0.500	0.525	0.519	105	104	70.0-130			1.15	25
Vinyl acetate	0.500	0.583	0.583	117	117	70.0-130			0.000	25
(S) 1,4-Bromofluorobenzene				102	102	60.0-140				

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

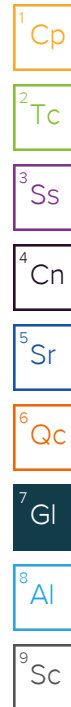
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Pace Pace* Location Requested (City/State): **Air CHAIN-OF-CUSTODY Analytical Request Document**
 Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

Company Name: **Water & Environmental Technologies**
 Street Address: **480 East Park Street**
Butte, MT 59701
 City, State Zip: _____

Contact/Report To: **Jessica Oules / RAYE SURRATT**
 Phone #: **406-703-1815 / (406) 431-2447**
 E-Mail: **joules@waterenvtech.com / RSURRATT@**
 Cc E-Mail: **WATERENVTECH.COM**

Customer Project #: **2024.2021: T4**
 Project Name: **4RangesM01: 2024.2021: T4**
 Site Collection Info/Facility ID (as applicable): **WATENVBMT-4RANGESM01**
 Time Zone Collected: [] AK [] PT [x] MT [] CT [] ET

Invoice to: **ACCOUNTING@WATERENVTECH.COM**
 Invoice: **ACCOUNTING**
 E-Mail: _____
 Purchase Order # (if applicable): _____
 Quote #: _____
 State origin of sample(s): **MT**

Regulatory Program (CAA, RCRA, etc.) as applicable: _____
 Rush (Pre-approval required): 2 Day 3 day 5 day Other _____
 Permit # as applicable: _____
 Date Results Requested: _____
 Units for Reporting: ug/m³ PPBV mg/m³ PPMV

* Matrix Codes (Insert in Matrix box below): Ambient (A), Indoor (I), Soil Vapor (SV), Other (O)

Customer Sample ID	Matrix*	Summa Canister ID	Flow Controller ID	Begin Collection		End Collection		Start Pressure / Vacuum (in Hg)	End Pressure / Vacuum (in Hg)	Duration (minutes)	Flow Rate (m ³ /min or L/min)	Total Volume Sampled (m ³ or L)	TO-15SIM Summa
				Date	Time	Date	Time						
SV-1		7242	28827	1-25-24	1202	1-25-24	1237	-23.5	-4				X
SV-2		12130	28219	1-25-24	1222	1-25-24	1257	-25	-4				X
FDSV-24-01-25		8084	28930	1-25-24	1250	1-25-24	1330	-24	-4				X

Sample Receipt Checklist
 COC Seal Present/Intact: Y N
 COC Signed/Accurate: Y N Size: 3 6L 1.4L
 Bottles arrive intact: Y N Tare Color: G W P B
 Correct bottles used: Y N Tubing: Shunt

Customer Remarks / Special Conditions / Possible Hazards: _____
 Collected By: **Jessica Oules**
 Printed Name: **Jessica Oules**
 Signature: _____
 Received by/Company: (Signature) _____
 Date/Time: _____

Additional Instructions from Pace*: _____
 # Coolers: _____ Thermometer ID: _____ Correction Factor (°C): _____ Obs. Temp. (°C): _____ Corrected Temp. (°C): _____
 Tracking Number: _____
 Delivered by: In-Person Courier
 FedEX UPS Other

Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace* Terms and Conditions found at <https://www.pacelabs.com/resource-library/resource/pace-terms-and-conditions/>



Scan QR code for instructions

J120

AN 1/22/24

Proj. Manager:
3828 - Jennifer A McCurdy
 AcctNum / Client ID:
WATENVBMT
 Table #:
 Profile / Template:
T245251
 Prelog / Bottle Ord. ID:
P1049625

U699209
 Sample Comment
 -01
 -02
 -03

Volatile Organic Compounds (MS) by Method TO-15-SIM

Analyte	CAS #	Mol. Wt.	RDL ug/m3	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	0.0639	ND		1	WG2207254
Carbon tetrachloride	56-23-5	154	0.126	ND		1	WG2207254
Chloroethane	75-00-3	64.50	0.106	ND		1	WG2207254
Chloroform	67-66-3	119	0.0973	ND		1	WG2207254
Chloromethane	74-87-3	50.50	0.0620	ND		1	WG2207254
1,2-Dibromoethane	106-93-4	188	0.154	ND		1	WG2207254
1,4-Dichlorobenzene	106-46-7	147	0.120	ND		1	WG2207254
1,1-Dichloroethane	75-34-3	98	0.0802	ND		1	WG2207254
1,2-Dichloroethane	107-06-2	99	0.0810	ND		1	WG2207254
1,1-Dichloroethene	75-35-4	96.90	0.0793	ND		1	WG2207254
cis-1,2-Dichloroethene	156-59-2	96.90	0.0793	ND		1	WG2207254
trans-1,2-Dichloroethene	156-60-5	96.90	0.0793	ND		1	WG2207254
1,2-Dichloropropane	78-87-5	113	0.139	ND		1	WG2207254
cis-1,3-Dichloropropene	10061-01-5	111	0.0908	ND		1	WG2207254
trans-1,3-Dichloropropene	10061-02-6	111	0.136	ND		1	WG2207254
Ethylbenzene	100-41-4	106	0.130	ND		1	WG2207254
1,1,2,2-Tetrachloroethane	79-34-5	168	0.137	ND		1	WG2207254
Tetrachloroethylene	127-18-4	166	0.136	ND		1	WG2207254
1,1,1-Trichloroethane	71-55-6	133	0.109	ND		1	WG2207254
1,1,2-Trichloroethane	79-00-5	133	0.163	ND		1	WG2207254
Trichloroethylene	79-01-6	131	0.107	ND		1	WG2207254
Vinyl chloride	75-01-4	62.50	0.0511	ND		1	WG2207254
Vinyl acetate	108-05-4	86.10	0.0704	ND		1	WG2207254
(S) 1,4-Bromofluorobenzene	460-00-4	175		99.5		60.0-140	WG2207254

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Appendix C

Soil Vapor Laboratory Analytical Report Data Validation



Data Verification/Validation Checklist and Summary Report

PROJECT AND LABORATORY INFORMATION	
Project/Task/Sub-Task #:	4RangesM01/005: Livingston Wellness Center
Site & Location:	Katie Bonnel Park – Livingston, MT
Sample Collection Date(s):	January 25, 2024
Laboratory & Location:	Pace Analytical National – Mount Juliet, TN
Sample Delivery Group (SDG):	Soil Vapor Investigation
Work Order (WO):	L1699209
Extraction/Prep Date(s):	January 27-28, 2024
Analysis Date(s):	January 27-28, 2024
Laboratory Report Date(s):	February 2, 2024
Data Validator:	Laurel Bitterman
Data Validation Date(s):	February 6, 2024
Data Validation Reviewer:	Janelle Garza
Data Validation Review Date(s):	February 6, 2024

SDG/WO					
Sample ID	Lab ID	Sample Date	Sample Time	Matrix	Notes
SV-1	L1699209-01	January 25, 2024	12:37	Air	
SV-2	L1699209-02	January 25, 2024	12:57	Air	
FD1-SV-24-01-25	L1699209-03	January 25, 2024	13:30	Air	SV-2 Duplicate

METHOD(S)/ANALYSES	
TO-15SIM: Volatile Organic Compounds (VOCs)	VOCs by MS – Selected Ion Monitoring

QUALIFIER DEFINITIONS	
U	The analyte was analyzed for but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J-	The result is an estimated quantity, but the result may be biased low.
J+	The result is an estimated quantity, but the result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

GUIDANCE DOCUMENTS			
List any/all Environmental Protection Agency (EPA) or state Department of Environmental Quality (DEQ) guidance documents referenced/resourced.			N/A
			X
List any/all project quality assurance plan (QAP), sampling and analysis plan (SAP), or work plan (WP) referenced/resourced.			N/A
	4 Ranges Foundation Environmental Investigation Work Plan		
List any/all data validation (DV) standard operating guideline (SOG) or procedure (SOP) referenced/resourced.			N/A
	Water & Environmental Technologies (WET) Data Verification & Validation (DVV): Standard Operating Guidelines (SOG) Inorganic, Organic, High Resolution, & Radioanalytical (January 18, 2024)		
Select the applicable United States Environmental Protection Agency (USEPA) National Functional Guidelines (NFGs) Superfund Methods Data Review (SMDR) referenced/resourced:	Inorganic	Organic	N/A
		X	

Select the applicable USEPA Guideline for Data Review referenced/resourced:	High Resolution	Asbestos	N/A
			X
Was the Idaho National Engineering and Environmental Laboratory (INEEL) Radioanalytical DV Guide referenced/resourced? If no, enter any/all radioanalytical DV SOG/SOP referenced/resourced:	Yes	No	N/A
			X

CHECKLIST

A. Field QA/QC

A1. Was field documentation provided and complete?	Yes	No	N/A
	X		
A2. Were calibration checks within project stabilization criteria (or other applicable range)?	Yes	No	N/A
	X		
A3. Was chain-of-custody (COC) and container label documentation accurate and complete?	Yes	No	N/A
	X		
A4. Were all planned samples able to be collected?	Yes	No	N/A
	X		
A5. Were samples submitted received by the laboratory in good condition?	Yes	No	N/A
	X		
A6. Other issues? If yes, detail below.	Yes	No	N/A
		X	

Field Preservation

A7. Were samples submitted within a reasonable time frame to meet extraction/prep and/or analytical hold times (HT)? If no, detail below.	Yes	No	N/A
	X		
A8. Were samples submitted properly filtered and/or preserved?	Yes	No	N/A
			X
A9. Were samples received by the laboratory within temperature and/or pH requirements? If no, detail below.	Yes	No	N/A
			X
A10. Were volatile samples collected with zero headspace, or was enough volume available for analysis without using any containers with bubbles? If no, detail below.	Yes	No	N/A
			X

Field Precision

A11. Were field duplicate (FD) samples required?	Yes	No	N/A
	X		
A12. Were FD samples collected at the correct frequency? If no, all field data points are qualified as estimated (J/UJ) due to lack of field precision QA/QC (FDX).	Yes	No	N/A
	X		
A13. Were FD relative percent difference (RPD) results at or below control limits (CLs)? If no, detail below.	Yes	No	N/A
		X	

- ❖ Benzene: The original sample result was detected (<5xRL) while the duplicate sample result was ND and replaced with zero to produce an RPD of 200%, >25% CL. The absolute difference between the detection original sample result and zero (ND duplicate sample result) was ≤2xRL.
 - No qualification required.
- ❖ Chloroethane RPD was 38.2%, >25% CL. The original and duplicate sample results were <5xRL. The absolute difference between the original and duplicate sample results was ≤2xRL.
 - No qualification required.

- ❖ Chloroform RPD was 145%, >25% CL. The original and duplicate sample results were >5xRL.
 - All samples were qualified as estimated (J) due to detected results.
- ❖ Ethylbenzene RPD was 71.8%, >25% CL. The original and duplicate sample results were <5xRL. The absolute difference between the original and duplicate sample results was ≤2xRL.
 - No qualification required.
- ❖ Tetrachloroethylene RPD was 37.9%, >25% CL. The original and duplicate sample results were <5xRL. The absolute difference between the original and duplicate sample results was ≤2xRL.
 - No qualification required.

Field Blanks

	Yes	No	N/A
A14. Was field decontamination of sampling equipment required?		X	
A15. Were equipment rinse blank (ERB) samples required?	Yes	No	N/A
			X
A16. Were ERB samples collected at the correct frequency? If no, all field data points are qualified (J/U/J) as estimated due to lack of field QA/QC (ERBX).	Yes	No	N/A
			X
A17. Were all ERB results non-detect (ND)? If no, detail below.	Yes	No	N/A
			X
A18. Were field blank (FB) samples required?	Yes	No	N/A
		X	
A19. Were FB samples collected at the correct frequency? If no, all data is qualified as estimated due to lack of field QA/QC (FBX).	Yes	No	N/A
			X
A20. Were all FB results ND? If no, detail below.	Yes	No	N/A
			X
A21. Were trip blank (TB) samples required (volatiles analyses)?	Yes	No	N/A
		X	
A22. Were TB samples submitted as required (one per shipping container)? If no, all data is qualified as estimated due to lack of TB (TBX).	Yes	No	N/A
			X

Field QA/QC Summary

- Out of 69 total data points:
- 66 data points (95.7% of total) remain unqualified.
 - Out of 3 data points (4.3% of total) qualified as estimated:
 - No data points were due to preservation issues.
 - No data points were due to blank contamination.
 - All 3 data points were due to poor replication.
 - No data points were rejected.

B. Laboratory QA/QC

	Yes	No	N/A
B1. Did the laboratory use appropriate methods to extract/prep and analyze all samples within HT?	X		
B2. Were there any results reported below the RL (J) or in exceedance of (E) or over (O) instrument calibration? If yes, detail below.	Yes	No	N/A
		X	
B3. Were there any laboratory qualifiers that will not affect the data quality? If so, please list below.	Yes	No	N/A
		X	
B4. Other issues? If yes, detail below.	Yes	No	N/A
			X

Laboratory Blanks

	Yes	No	N/A
B5. Were TB results ND? If no, detail below.			X
	Yes	No	N/A

B6. Were method blank (MB) samples analyzed at a frequency of one per 20 samples or one per batch?		X	
B7. Were MB results ND? If no, detail below.	Yes	No	N/A
		X	
<ul style="list-style-type: none"> ❖ R4023198-3: Lab IDs 04 & 06 <ul style="list-style-type: none"> ➢ Cis-1,3-dichloropropene was detected at 0.0140 ppbv, <RL of 0.0200 ppbv. <ul style="list-style-type: none"> ▪ The associated samples were laboratory certified summa cannisters and are not reported in this DVVCSR. ❖ R4027132-3: Lab IDs 01 & 02 <ul style="list-style-type: none"> ➢ Chloromethane was detected at 0.00724 ppbv, <RL of 0.0300 ppbv. <ul style="list-style-type: none"> ▪ No qualification was required for any samples due to all results ≥RL and ≥MB. ❖ R4029067-3: Lab ID 05 <ul style="list-style-type: none"> ➢ Chloromethane was detected at 0.0193 ppbv, <RL of 0.0300 ppbv. <ul style="list-style-type: none"> ▪ The associated sample was a laboratory certified summa cannister and is not reported in this DVVCSR. 			
Laboratory Accuracy			
B8. Were initial/continuing calibration verification (ICV/CCV) analyses performed at the appropriate frequency?	Yes	No	N/A
			X
B9. Were ICV/CCV percent recoveries within CLs? If no, detail below.	Yes	No	N/A
			X
B10. Were laboratory control samples (LCS) / fortified blanks (LFB) analyzed at a frequency of one per 20 samples or one per batch?	Yes	No	N/A
	X		
B11. Were LFB/LCS percent recoveries within CLs? If no, detail below.	Yes	No	N/A
	X		
B12. Were matrix spike (MS) samples analyzed at a frequency of one per 20 samples or one per batch?	Yes	No	N/A
			X
B13. Were there any MS or MSDs where the result was >4x the spike amount and were therefore not calculated by the laboratory or are exempt from qualification?	Yes	No	N/A
			X
B14. Were MS percent recoveries within CLs? If no, detail below.	Yes	No	N/A
			X
B15. Were surrogate recoveries within CLs (organics only)? If no, detail below.	Yes	No	N/A
			X
Laboratory Precision			
B16. Were laboratory duplicates analyzed at a frequency of one per 20 samples or one per batch, either through laboratory sample duplicates (LSD), LCS duplicates (LCSD), or MS duplicates (MSD)?	Yes	No	N/A
	X		
B17. Were laboratory duplicate RPD results at or below CLs? If no, detail below.	Yes	No	N/A
	X		
B16. Were serial dilution (SD) samples analyzed at a frequency of one per 20 samples or one per batch (metals only)?	Yes	No	N/A
			X
B17. Were SD RPD results at or below CLs? If no, detail below.	Yes	No	N/A
			X
Laboratory QA/QC Summary			
Out of 69 total data points, all 69 data points (100%) remain unqualified.			

OVERALL SUMMARY

Data Quality

- Out of 69 total data points:
- 66 data points (95.7%) remain unqualified and are considered quantitative.
 - Out of 3 data points (4.3%) qualified as estimated and assigned as qualitative:
 - All 3 data points were due to field QA/QC.
 - No data points were due to laboratory QA/QC.

- No data points were rejected.

Completeness

Out of 3 samples planned, 3 samples were completed. This sample delivery group is 100% complete.
Out of 3 analyses planned, 3 analyses were completed. This work order is 100% complete.
Out of 69 data points produced, 69 data points were useable. This data package is 100% complete.

Appendix D










Soil Field Data

XRF AND PID - SOIL SAMPLING

Date: 1-25-24

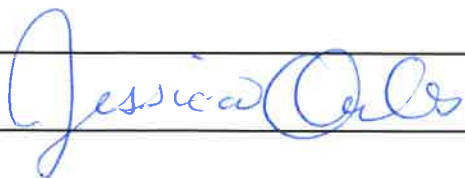
Sampler(s): JESSICA ONLES

Weather Conditions: PARTLY CLOUDY H: 47°F L: 31°F

Location	Time	Lead (ppm)	Arsenic	PID	
TP-1: 2-10	920	25	9		NO SAMPLE
		22	< LOD		
		30	< LOD		
		19	8	4.2	
TP-2: 2-10 1-25-24					
TP-2: 2-10	940	20	< LOD	2.3	NO SAMPLE
		24	< LOD		
		25	< LOD		
		38	< LOD		
TP-3: 2-10	1010	28	< LOD	3.2	NO SAMPLE
		30	< LOD		
		28	7		
		27	< LOD		
C-1				0.8	
C-2				3.0	

Notes:

Signature:



Date:

1-25-24

Appendix E

Soil Laboratory Analytical Report



ANALYTICAL SUMMARY REPORT

February 14, 2024

Water and Environmental Technologies

480 E Park St Ste 200

Butte, MT 59701-1923

Work Order: H24010643

Project Name: 4RANGESM01/2024.2021

Energy Laboratories Inc Helena MT received the following 8 samples for Water and Environmental Technologies on 1/26/2024 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
H24010643-001	TP-1:1-2	01/25/24 9:20	01/26/24	Soil	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA EPH-Ultrasonic Extraction SW3550C Hydrocarbons, Extractable Petroleum-Scrn Percent Moisture Total Metals Digestion by SW3050B Mercury Digestion by SW7471B Soil Preparation USDA1 Soil Sonication SW3550C Extraction Low Level PAH by 8270E SIM Volatile Organics, Methanol Extraction SW5035 8260-Volatile Organic Compounds - Short List
H24010643-002	TP-2:1-2	01/25/24 9:40	01/26/24	Soil	Metals by ICP/ICPMS, Total Mercury in Solid By CVAA EPH-Ultrasonic Extraction SW3550C Hydrocarbons, Extractable Petroleum-Scrn Percent Moisture Total Metals Digestion by SW3050B Mercury Digestion by SW7471B Soil Sonication SW3550C Extraction Low Level PAH by 8270E SIM Volatile Organics, Methanol Extraction SW5035 8260-Volatile Organic Compounds - Short List
H24010643-003	TP-3:1-2	01/25/24 10:10	01/26/24	Soil	Same As Above
H24010643-004	FD1-TP-24-01-25	01/25/24 9:21	01/26/24	Soil	Same As Above
H24010643-005	C-1	01/25/24 11:00	01/26/24	Soil	Same As Above
H24010643-006	C-2	01/25/24 11:10	01/26/24	Soil	Same As Above
H24010643-007	FD2-C-24-01-25	01/25/24 11:11	01/26/24	Soil	Same As Above
H24010643-008	TB1-24-01-25	01/25/24 9:20	01/26/24	Trip Blank	8260-Volatile Organic Compounds- Short List

The analyses presented in this report were performed by Energy Laboratories, Inc., 3161 E. Lyndale Ave., Helena, MT 59604, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.



ANALYTICAL SUMMARY REPORT

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:



CLIENT: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Work Order: H24010643

Report Date: 02/14/24

CASE NARRATIVE

Tests associated with analyst identified as ELI-B were subcontracted to Energy Laboratories, 1120 S. 27th St., Billings, MT, EPA Number MT00005.



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-001
Client Sample ID: TP-1:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 09:20
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	17.8	wt%		0.2		D2974	01/26/24 14:28 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	7	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
Barium	297	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
Chromium	51	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
Lead	16	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 15:43 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 14:27 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-001
Client Sample ID: TP-1:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 09:20
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 19:13 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:13 / tmj
Surr: p-Bromofluorobenzene	119	%REC		60-143		SW8260B	01/30/24 19:13 / tmj
Surr: Dibromofluoromethane	112	%REC		71-135		SW8260B	01/30/24 19:13 / tmj
Surr: 1,2-Dichloroethane-d4	109	%REC		65-147		SW8260B	01/30/24 19:13 / tmj
Surr: Toluene-d8	114	%REC		76-133		SW8260B	01/30/24 19:13 / tmj
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS							
Total Extractable Hydrocarbons	ND	mg/kg-dry		20	200	SW8015M	02/01/24 16:01 / OSD
Surr: o-Terphenyl	75.0	%REC		40-140		SW8015M	02/01/24 16:01 / OSD
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
1-Methylnaphthalene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Anthracene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Benzo(a)anthracene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Benzo(a)pyrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Benzo(b)fluoranthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Benzo(g,h,i)perylene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Benzo(k)fluoranthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Chrysene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-001
Client Sample ID: TP-1:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 09:20
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Fluorene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Indeno(1,2,3-cd)pyrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Phenanthrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Pyrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 02:35 / eli-b
Surr: 2-Fluorobiphenyl	47.0	%REC		47-110		SW8270E	02/03/24 02:35 / eli-b
Surr: Nitrobenzene-d5	38.0	%REC	S	43-105		SW8270E	02/03/24 02:35 / eli-b
Surr: Terphenyl-d14	53.0	%REC		51-117		SW8270E	02/03/24 02:35 / eli-b

- Due to the sample matrix, 2 g of sample were extracted, as opposed to a normal 30 g. The Reporting Limit reflects the initial sample mass.

Report Definitions:	RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
	QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
	D - Reporting Limit (RL) increased due to sample matrix	S - Spike recovery outside of advisory limits



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-002
Client Sample ID: TP-2:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 09:40
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	18.5	wt%		0.2		D2974	01/26/24 14:29 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	6	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
Barium	281	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
Chromium	51	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
Lead	16	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 15:51 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 14:58 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-002
Client Sample ID: TP-2:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 09:40
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 19:43 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 19:43 / tmj
Surr: p-Bromofluorobenzene	101	%REC		60-143		SW8260B	01/30/24 19:43 / tmj
Surr: Dibromofluoromethane	98.0	%REC		71-135		SW8260B	01/30/24 19:43 / tmj
Surr: 1,2-Dichloroethane-d4	95.0	%REC		65-147		SW8260B	01/30/24 19:43 / tmj
Surr: Toluene-d8	98.0	%REC		76-133		SW8260B	01/30/24 19:43 / tmj

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS

Total Extractable Hydrocarbons	8.4	mg/kg-dry	J	20	200	SW8015M	02/01/24 16:45 / OSD
Surr: o-Terphenyl	119	%REC		40-140		SW8015M	02/01/24 16:45 / OSD

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM

1-Methylnaphthalene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Anthracene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Benzo(a)anthracene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Benzo(a)pyrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Benzo(b)fluoranthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Benzo(g,h,i)perylene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Benzo(k)fluoranthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Chrysene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b

Report Definitions:
 RL - Analyte Reporting Limit
 QCL - Quality Control Limit
 D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level
 ND - Not detected at the Reporting Limit (RL)
 J - Estimated value - analyte was present but less than the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-002
Client Sample ID: TP-2:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 09:40
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Fluorene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Indeno(1,2,3-cd)pyrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Phenanthrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Pyrene	ND	mg/kg-dry	D	0.057		SW8270E	02/03/24 03:05 / eli-b
Surr: 2-Fluorobiphenyl	47.0	%REC		47-110		SW8270E	02/03/24 03:05 / eli-b
Surr: Nitrobenzene-d5	39.0	%REC	S	43-105		SW8270E	02/03/24 03:05 / eli-b
Surr: Terphenyl-d14	55.0	%REC		51-117		SW8270E	02/03/24 03:05 / eli-b

- Due to the sample matrix, 2 g of sample were extracted, as opposed to a normal 30 g. The Reporting Limit reflects the initial sample mass.

Report Definitions:	RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
	QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
	D - Reporting Limit (RL) increased due to sample matrix	S - Spike recovery outside of advisory limits



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-003
Client Sample ID: TP-3:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 10:10
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	17.1	wt%		0.2		D2974	01/26/24 14:29 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	2	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
Barium	59	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
Chromium	10	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
Lead	4	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 15:53 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 15:01 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-003
Client Sample ID: TP-3:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 10:10
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 20:14 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:14 / tmj
Surr: p-Bromofluorobenzene	109	%REC		60-143		SW8260B	01/30/24 20:14 / tmj
Surr: Dibromofluoromethane	104	%REC		71-135		SW8260B	01/30/24 20:14 / tmj
Surr: 1,2-Dichloroethane-d4	103	%REC		65-147		SW8260B	01/30/24 20:14 / tmj
Surr: Toluene-d8	106	%REC		76-133		SW8260B	01/30/24 20:14 / tmj
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS							
Total Extractable Hydrocarbons	ND	mg/kg-dry		20	200	SW8015M	02/01/24 17:30 / OSD
Surr: o-Terphenyl	76.0	%REC		40-140		SW8015M	02/01/24 17:30 / OSD
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
1-Methylnaphthalene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Anthracene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Benzo(a)anthracene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Benzo(a)pyrene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Benzo(b)fluoranthene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Benzo(g,h,i)perylene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Benzo(k)fluoranthene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Chrysene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-003
Client Sample ID: TP-3:1-2

Report Date: 02/14/24
Collection Date: 01/25/24 10:10
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Fluorene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Indeno(1,2,3-cd)pyrene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Phenanthrene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Pyrene	ND	mg/kg-dry	D	0.054		SW8270E	02/03/24 03:36 / eli-b
Surr: 2-Fluorobiphenyl	47.0	%REC		47-110		SW8270E	02/03/24 03:36 / eli-b
Surr: Nitrobenzene-d5	36.0	%REC	S	43-105		SW8270E	02/03/24 03:36 / eli-b
Surr: Terphenyl-d14	53.0	%REC		51-117		SW8270E	02/03/24 03:36 / eli-b

- Due to the sample matrix, 2 g of sample were extracted, as opposed to a normal 30 g. The Reporting Limit reflects the initial sample mass.

Report Definitions:	RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
	QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
	D - Reporting Limit (RL) increased due to sample matrix	S - Spike recovery outside of advisory limits



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-004
Client Sample ID: FD1-TP-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 09:21
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	18.6	wt%		0.2		D2974	01/26/24 14:29 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	7	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
Barium	279	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
Chromium	48	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
Lead	16	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 15:55 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 15:05 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-004
Client Sample ID: FD1-TP-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 09:21
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 20:45 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 20:45 / tmj
Surr: p-Bromofluorobenzene	104	%REC		60-143		SW8260B	01/30/24 20:45 / tmj
Surr: Dibromofluoromethane	96.0	%REC		71-135		SW8260B	01/30/24 20:45 / tmj
Surr: 1,2-Dichloroethane-d4	95.0	%REC		65-147		SW8260B	01/30/24 20:45 / tmj
Surr: Toluene-d8	99.0	%REC		76-133		SW8260B	01/30/24 20:45 / tmj
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS							
Total Extractable Hydrocarbons	ND	mg/kg-dry		20	200	SW8015M	02/01/24 18:14 / OSD
Surr: o-Terphenyl	74.0	%REC		40-140		SW8015M	02/01/24 18:14 / OSD
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
1-Methylnaphthalene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Anthracene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Benzo(a)anthracene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Benzo(a)pyrene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Benzo(b)fluoranthene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Benzo(g,h,i)perylene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Benzo(k)fluoranthene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Chrysene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-004
Client Sample ID: FD1-TP-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 09:21
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Fluorene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Indeno(1,2,3-cd)pyrene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Phenanthrene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Pyrene	ND	mg/kg-dry	D	0.061		SW8270E	02/03/24 04:06 / eli-b
Surr: 2-Fluorobiphenyl	49.0	%REC		47-110		SW8270E	02/03/24 04:06 / eli-b
Surr: Nitrobenzene-d5	40.0	%REC	S	43-105		SW8270E	02/03/24 04:06 / eli-b
Surr: Terphenyl-d14	59.0	%REC		51-117		SW8270E	02/03/24 04:06 / eli-b

- Due to the sample matrix, 2 g of sample were extracted, as opposed to a normal 30 g. The Reporting Limit reflects the initial sample mass.

Report Definitions:	RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
	QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
	D - Reporting Limit (RL) increased due to sample matrix	S - Spike recovery outside of advisory limits



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-005
Client Sample ID: C-1

Report Date: 02/14/24
Collection Date: 01/25/24 11:00
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	18.3	wt%		0.2		D2974	01/26/24 14:29 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	8	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
Barium	502	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
Chromium	45	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
Lead	37	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 15:57 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 15:08 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-005
Client Sample ID: C-1

Report Date: 02/14/24
Collection Date: 01/25/24 11:00
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 21:16 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:16 / tmj
Surr: p-Bromofluorobenzene	100	%REC		60-143		SW8260B	01/30/24 21:16 / tmj
Surr: Dibromofluoromethane	96.0	%REC		71-135		SW8260B	01/30/24 21:16 / tmj
Surr: 1,2-Dichloroethane-d4	94.0	%REC		65-147		SW8260B	01/30/24 21:16 / tmj
Surr: Toluene-d8	99.0	%REC		76-133		SW8260B	01/30/24 21:16 / tmj
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS							
Total Extractable Hydrocarbons	42	mg/kg-dry		20	200	SW8015M	02/01/24 18:59 / OSD
Surr: o-Terphenyl	101	%REC		40-140		SW8015M	02/01/24 18:59 / OSD
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
1-Methylnaphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
Anthracene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
Benzo(a)anthracene	0.051	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Benzo(a)pyrene	0.067	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Benzo(b)fluoranthene	0.095	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Benzo(g,h,i)perylene	0.044	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Benzo(k)fluoranthene	0.042	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Chrysene	0.073	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-005
Client Sample ID: C-1

Report Date: 02/14/24
Collection Date: 01/25/24 11:00
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	0.12	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Fluorene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
Indeno(1,2,3-cd)pyrene	0.050	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 08:08 / eli-b
Phenanthrene	0.058	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Pyrene	0.096	mg/kg-dry		0.020		SW8270E	02/03/24 08:08 / eli-b
Surr: 2-Fluorobiphenyl	80.0	%REC		47-110		SW8270E	02/03/24 08:08 / eli-b
Surr: Nitrobenzene-d5	64.0	%REC		43-105		SW8270E	02/03/24 08:08 / eli-b
Surr: Terphenyl-d14	88.0	%REC		51-117		SW8270E	02/03/24 08:08 / eli-b

- The sample extract was diluted 5 times at analysis due to non-target compound sample matrix interference. The Reporting Limit reflects this dilution.

Report Definitions:	RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
	QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
	D - Reporting Limit (RL) increased due to sample matrix	



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-006
Client Sample ID: C-2

Report Date: 02/14/24
Collection Date: 01/25/24 11:10
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	18.5	wt%		0.2		D2974	01/26/24 14:30 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	8	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
Barium	438	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
Chromium	46	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
Lead	36	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 15:59 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 15:12 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-006
Client Sample ID: C-2

Report Date: 02/14/24
Collection Date: 01/25/24 11:10
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 21:46 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 21:46 / tmj
Surr: p-Bromofluorobenzene	102	%REC		60-143		SW8260B	01/30/24 21:46 / tmj
Surr: Dibromofluoromethane	99.0	%REC		71-135		SW8260B	01/30/24 21:46 / tmj
Surr: 1,2-Dichloroethane-d4	98.0	%REC		65-147		SW8260B	01/30/24 21:46 / tmj
Surr: Toluene-d8	99.0	%REC		76-133		SW8260B	01/30/24 21:46 / tmj

EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS

Total Extractable Hydrocarbons	33	mg/kg-dry		20	200	SW8015M	02/01/24 19:43 / OSD
Surr: o-Terphenyl	96.0	%REC		40-140		SW8015M	02/01/24 19:43 / OSD

- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.

SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM

1-Methylnaphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
Anthracene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
Benzo(a)anthracene	0.051	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Benzo(a)pyrene	0.065	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Benzo(b)fluoranthene	0.094	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Benzo(g,h,i)perylene	0.045	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Benzo(k)fluoranthene	0.040	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Chrysene	0.074	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b

Report RL - Analyte Reporting Limit

MCL - Maximum Contaminant Level

Definitions: QCL - Quality Control Limit

ND - Not detected at the Reporting Limit (RL)

D - Reporting Limit (RL) increased due to sample matrix



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-006
Client Sample ID: C-2

Report Date: 02/14/24
Collection Date: 01/25/24 11:10
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	0.12	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Fluorene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
Indeno(1,2,3-cd)pyrene	0.051	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 11:30 / eli-b
Phenanthrene	0.055	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Pyrene	0.098	mg/kg-dry		0.020		SW8270E	02/03/24 11:30 / eli-b
Surr: 2-Fluorobiphenyl	77.0	%REC		47-110		SW8270E	02/03/24 11:30 / eli-b
Surr: Nitrobenzene-d5	56.0	%REC		43-105		SW8270E	02/03/24 11:30 / eli-b
Surr: Terphenyl-d14	91.0	%REC		51-117		SW8270E	02/03/24 11:30 / eli-b

- The sample extract was diluted 5 times at analysis due to non-target compound sample matrix interference. The Reporting Limit reflects this dilution.

Report Definitions:

RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix	



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-007
Client Sample ID: FD2-C-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 11:11
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
PHYSICAL CHARACTERISTICS							
Moisture	17.0	wt%		0.2		D2974	01/26/24 14:30 / jjp
METALS, TOTAL - EPA SW846							
Arsenic	8	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
Barium	430	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
Cadmium	ND	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
Chromium	47	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
Lead	37	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
Mercury	ND	mg/kg-dry		0.50		SW7471B	01/30/24 16:01 / kjb
Selenium	ND	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
Silver	ND	mg/kg-dry		1		SW6020	02/06/24 15:15 / slj
VOLATILE ORGANIC COMPOUNDS							
Bromoform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Benzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Bromobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Bromochloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Bromodichloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Bromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Carbon tetrachloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Chlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Chloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
2-Chloroethyl vinyl ether	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Chloroform	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Chloromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
2-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
4-Chlorotoluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Chlorodibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,2-Dibromoethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Dibromomethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,2-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,3-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,4-Dichlorobenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Dichlorodifluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,2-Dichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
cis-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
trans-1,2-Dichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,3-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
2,2-Dichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-007
Client Sample ID: FD2-C-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 11:11
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
cis-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
trans-1,3-Dichloropropene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Ethylbenzene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Methyl tert-butyl ether (MTBE)	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Methylene chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Methyl ethyl ketone	ND	mg/kg-dry		4.0		SW8260B	01/30/24 22:17 / tmj
Styrene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1,1,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1,2,2-Tetrachloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Tetrachloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Toluene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1,1-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,1,2-Trichloroethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Trichloroethene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Trichlorofluoromethane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
1,2,3-Trichloropropane	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Vinyl chloride	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
m+p-Xylenes	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
o-Xylene	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Xylenes, Total	ND	mg/kg-dry		0.20		SW8260B	01/30/24 22:17 / tmj
Surr: p-Bromofluorobenzene	87.0	%REC		60-143		SW8260B	01/30/24 22:17 / tmj
Surr: Dibromofluoromethane	85.0	%REC		71-135		SW8260B	01/30/24 22:17 / tmj
Surr: 1,2-Dichloroethane-d4	84.0	%REC		65-147		SW8260B	01/30/24 22:17 / tmj
Surr: Toluene-d8	85.0	%REC		76-133		SW8260B	01/30/24 22:17 / tmj
EXTRACTABLE PETROLEUM HYDROCARBONS-SCREEN ANALYSIS							
Total Extractable Hydrocarbons	32	mg/kg-dry		20	200	SW8015M	02/01/24 20:27 / OSD
Surr: o-Terphenyl	91.0	%REC		40-140		SW8015M	02/01/24 20:27 / OSD
- Note: Total Extractable Hydrocarbons are defined as the total hydrocarbon responses regardless of elution time.							
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
1-Methylnaphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
2-Methylnaphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
Acenaphthene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
Acenaphthylene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
Anthracene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
Benzo(a)anthracene	0.041	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Benzo(a)pyrene	0.053	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Benzo(b)fluoranthene	0.075	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Benzo(g,h,i)perylene	0.038	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Benzo(k)fluoranthene	0.026	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Chrysene	0.061	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Dibenzo(a,h)anthracene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

D - Reporting Limit (RL) increased due to sample matrix

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-007
Client Sample ID: FD2-C-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 11:11
Date Received: 01/26/24
Matrix: Soil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
SEMI-VOLATILE ORGANIC COMPOUNDS (LOW LEVEL) BY SIM							
Fluoranthene	0.097	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Fluorene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
Indeno(1,2,3-cd)pyrene	0.040	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Naphthalene	ND	mg/kg-dry	D	0.020		SW8270E	02/03/24 12:00 / eli-b
Phenanthrene	0.042	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Pyrene	0.079	mg/kg-dry		0.020		SW8270E	02/03/24 12:00 / eli-b
Surr: 2-Fluorobiphenyl	74.0	%REC		47-110		SW8270E	02/03/24 12:00 / eli-b
Surr: Nitrobenzene-d5	53.0	%REC		43-105		SW8270E	02/03/24 12:00 / eli-b
Surr: Terphenyl-d14	83.0	%REC		51-117		SW8270E	02/03/24 12:00 / eli-b

- The sample extract was diluted 5 times at analysis due to non-target compound sample matrix interference. The Reporting Limit reflects this dilution.

Report Definitions:

RL - Analyte Reporting Limit	MCL - Maximum Contaminant Level
QCL - Quality Control Limit	ND - Not detected at the Reporting Limit (RL)
D - Reporting Limit (RL) increased due to sample matrix	



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-008
Client Sample ID: TB1-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 09:20
Date Received: 01/26/24
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Benzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Bromobenzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Bromochloromethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Bromodichloromethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Bromoform	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Bromomethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Carbon tetrachloride	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Chlorobenzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Chlorodibromomethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Chloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Chloroform	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Chloromethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,2-Dibromoethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
2-Chlorotoluene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
4-Chlorotoluene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Dibromomethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,2-Dichlorobenzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,3-Dichlorobenzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,4-Dichlorobenzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Dichlorodifluoromethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1-Dichloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,2-Dichloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1-Dichloroethene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
cis-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
trans-1,2-Dichloroethene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,2-Dichloropropane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,3-Dichloropropane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
2,2-Dichloropropane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1-Dichloropropene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
cis-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
trans-1,3-Dichloropropene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Ethylbenzene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Methyl ethyl ketone	ND	ug/L		20		SW8260B	01/30/24 18:42 / tmj
Methyl tert-butyl ether (MTBE)	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Methylene chloride	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Styrene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1,1,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1,2,2-Tetrachloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Tetrachloroethene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Toluene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1,1-Trichloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,1,2-Trichloroethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Trichloroethene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj

Report RL - Analyte Reporting Limit
Definitions: QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



LABORATORY ANALYTICAL REPORT

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies
Project: 4RANGESM01/2024.2021
Lab ID: H24010643-008
Client Sample ID: TB1-24-01-25

Report Date: 02/14/24
Collection Date: 01/25/24 09:20
Date Received: 01/26/24
Matrix: Trip Blank

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
VOLATILE ORGANIC COMPOUNDS							
Trichlorofluoromethane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
1,2,3-Trichloropropane	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Vinyl chloride	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
m+p-Xylenes	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
o-Xylene	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Xylenes, Total	ND	ug/L		1.0		SW8260B	01/30/24 18:42 / tmj
Surr: Dibromofluoromethane	93.0	%REC		70-125		SW8260B	01/30/24 18:42 / tmj
Surr: 1,2-Dichloroethane-d4	95.0	%REC		69-131		SW8260B	01/30/24 18:42 / tmj
Surr: Toluene-d8	97.0	%REC		80-119		SW8260B	01/30/24 18:42 / tmj
Surr: p-Bromofluorobenzene	98.0	%REC		76-123		SW8260B	01/30/24 18:42 / tmj

Report Definitions: RL - Analyte Reporting Limit
QCL - Quality Control Limit

MCL - Maximum Contaminant Level
ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: D2974										Batch: PMOIST_240126_A
Lab ID: H24010643-007A DUP		Sample Duplicate					Run: SOIL DRYING OVEN 2_24012			01/26/24 14:30
Moisture		17.7	wt%	0.20				4.2	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW6020		Analytical Run: ICPMS206-H_240206A									
Lab ID: ICV	7	Initial Calibration Verification Standard							02/06/24 13:32		
Arsenic		0.0586	mg/L	0.0010	98	90	110				
Barium		0.0563	mg/L	0.0010	94	90	110				
Cadmium		0.0286	mg/L	0.0010	95	90	110				
Chromium		0.0588	mg/L	0.0010	98	90	110				
Lead		0.0559	mg/L	0.0010	93	90	110				
Selenium		0.0587	mg/L	0.0010	98	90	110				
Silver		0.0288	mg/L	0.0010	96	90	110				
Lab ID: ICSA	7	Interference Check Sample A							02/06/24 13:43		
Arsenic		-0.0000176	mg/L	0.0010							
Barium		0.000198	mg/L	0.0010							
Cadmium		0.000223	mg/L	0.0010							
Chromium		0.00133	mg/L	0.0010							
Lead		-9.64E-06	mg/L	0.0010							
Selenium		0.0000713	mg/L	0.0010							
Silver		0.0000122	mg/L	0.0010							
Lab ID: ICSAB	7	Interference Check Sample AB							02/06/24 13:50		
Arsenic		0.0104	mg/L	0.0010	104	70	130				
Barium		0.000194	mg/L	0.0010		0	0				
Cadmium		0.0103	mg/L	0.0010	103	70	130				
Chromium		0.0218	mg/L	0.0010	109	70	130				
Lead		-0.0000259	mg/L	0.0010		0	0				
Selenium		0.0102	mg/L	0.0010	102	70	130				
Silver		0.0205	mg/L	0.0010	103	70	130				
Lab ID: CCV	7	Continuing Calibration Verification Standard							02/06/24 14:01		
Arsenic		0.0501	mg/L	0.0010	100	90	110				
Barium		0.0488	mg/L	0.0010	98	90	110				
Cadmium		0.0494	mg/L	0.0010	99	90	110				
Chromium		0.0504	mg/L	0.0010	101	90	110				
Lead		0.0487	mg/L	0.0010	97	90	110				
Selenium		0.0504	mg/L	0.0010	101	90	110				
Silver		0.0201	mg/L	0.0010	100	90	110				
Lab ID: CCV	7	Continuing Calibration Verification Standard							02/06/24 14:50		
Arsenic		0.0506	mg/L	0.0010	101	90	110				
Barium		0.0539	mg/L	0.0010	108	90	110				
Cadmium		0.0524	mg/L	0.0010	105	90	110				
Chromium		0.0512	mg/L	0.0010	102	90	110				
Lead		0.0485	mg/L	0.0010	97	90	110				
Selenium		0.0526	mg/L	0.0010	105	90	110				
Silver		0.0216	mg/L	0.0010	108	90	110				

Method: SW6020

Batch: 70200

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										
Batch: 70200										
Lab ID: MB-70200	7	Method Blank								
Run: ICPMS206-H_240206A 02/06/24 14:23										
Arsenic		0.2	mg/kg	0.2						
Barium		ND	mg/kg	0.09						
Cadmium		ND	mg/kg	0.007						
Chromium		ND	mg/kg	0.2						
Lead		ND	mg/kg	0.1						
Selenium		ND	mg/kg	0.07						
Silver		ND	mg/kg	0.006						
Lab ID: H24010643-001ADIL	7	Serial Dilution								
Run: ICPMS206-H_240206A 02/06/24 14:30										
Arsenic		8.22	mg/kg-dry	2.3		0	0		10	N
Barium		274	mg/kg-dry	1.3		0	0	7.9	10	
Cadmium		0.323	mg/kg-dry	1.0		0	0		10	N
Chromium		54.7	mg/kg-dry	2.3		0	0	6.8	10	
Lead		16.2	mg/kg-dry	1.5		0	0	1.1	10	
Selenium		ND	mg/kg-dry	1.1		0	0		10	
Silver		0.155	mg/kg-dry	1.0		0	0		10	N
Lab ID: LCS-70200	7	Laboratory Control Sample								
Run: ICPMS206-H_240206A 02/06/24 14:34										
Arsenic		156	mg/kg	1.0	80	66.4	104			
Barium		186	mg/kg	1.0	101	71.8	124			
Cadmium		92.6	mg/kg	1.0	94	79.2	121			
Chromium		105	mg/kg	1.0	91	72.5	115			
Lead		96.7	mg/kg	1.0	93	71.6	128			
Selenium		188	mg/kg	1.0	93	72.3	111			
Silver		43.9	mg/kg	1.0	105	70.8	133			
Lab ID: LFB-70200	7	Laboratory Fortified Blank								
Run: ICPMS206-H_240206A 02/06/24 14:37										
Arsenic		46.1	mg/kg	1.0	91	80	120			
Barium		48.6	mg/kg	1.0	96	80	120			
Cadmium		24.4	mg/kg	1.0	96	80	120			
Chromium		46.5	mg/kg	1.0	92	80	120			
Lead		47.2	mg/kg	1.0	93	80	120			
Selenium		46.5	mg/kg	1.0	92	80	120			
Silver		24.7	mg/kg	1.0	98	80	120			
Lab ID: H24010643-001APDS1	7	Post Digestion/Distillation Spike								
Run: ICPMS206-H_240206A 02/06/24 14:40										
Arsenic		21.0	mg/kg-dry	1.0	92	75	125			
Barium		304	mg/kg-dry	1.0		75	125			A
Cadmium		15.8	mg/kg-dry	1.0	102	75	125			
Chromium		63.9	mg/kg-dry	1.0	84	75	125			
Lead		30.9	mg/kg-dry	1.0	96	75	125			
Selenium		15.1	mg/kg-dry	1.0	99	75	125			
Silver		6.58	mg/kg-dry	1.0	106	75	125			
Lab ID: H24010643-001AMS	7	Sample Matrix Spike								
Run: ICPMS206-H_240206A 02/06/24 14:44										
Arsenic		63.5	mg/kg-dry	1.0	93	75	125			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated
N - Analyte concentration was not sufficiently high to calculate a Relative Percent Difference (RPD) for the serial dilution test



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: SW6020

Batch: 70200

Lab ID: H24010643-001AMS 7 Sample Matrix Spike Run: ICPMS206-H_240206A 02/06/24 14:44

Barium		367	mg/kg-dry	1.0		75	125			A
Cadmium		30.9	mg/kg-dry	1.0	101	75	125			
Chromium		120	mg/kg-dry	1.0	114	75	125			
Lead		77.8	mg/kg-dry	1.0	101	75	125			
Selenium		59.7	mg/kg-dry	1.0	98	75	125			
Silver		30.9	mg/kg-dry	1.0	101	75	125			

Lab ID: H24010643-001AMSD 7 Sample Matrix Spike Duplicate Run: ICPMS206-H_240206A 02/06/24 14:47

Arsenic		63.1	mg/kg-dry	1.0	93	75	125	0.7	20	
Barium		360	mg/kg-dry	1.0		75	125	1.9	20	A
Cadmium		30.7	mg/kg-dry	1.0	101	75	125	0.7	20	
Chromium		119	mg/kg-dry	1.0	113	75	125	1.1	20	
Lead		76.2	mg/kg-dry	1.0	100	75	125	2.1	20	
Selenium		58.8	mg/kg-dry	1.0	98	75	125	1.5	20	
Silver		30.9	mg/kg-dry	1.0	102	75	125	0.1	20	

Qualifiers:

RL - Analyte Reporting Limit

A - Analyte level was greater than four times the spike level - in accordance with the method, percent recovery is not calculated

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW7471B										Batch: 70204
Lab ID: H24010643-001AMS		Sample Matrix Spike								Run: HGCV203-H_240207A 02/07/24 13:18
Mercury		0.26	mg/kg-dry	0.50	98	80	120			
Lab ID: H24010643-001AMSD		Sample Matrix Spike Duplicate								Run: HGCV203-H_240207A 02/07/24 13:20
Mercury		0.25	mg/kg-dry	0.050	98	80	120	1.3	20	
Method: SW7471B										Analytical Run: HGCV205-H_240130A
Lab ID: ICV		Initial Calibration Verification Standard								01/30/24 15:30
Mercury		0.00098	mg/kg	0.50	98	90	110			
Lab ID: CCV		Continuing Calibration Verification Standard								01/30/24 15:32
Mercury		0.0025	mg/kg	0.50	100	90	110			
Method: SW7471B										Batch: 70204
Lab ID: MB-70204		Method Blank								Run: HGCV205-H_240130A 01/30/24 15:38
Mercury		ND	mg/kg	0.007						
Lab ID: LCS-70204		Laboratory Control Sample								Run: HGCV205-H_240130A 01/30/24 15:40
Mercury		5.3	mg/kg	0.50	106	71	126.4			
Lab ID: LFB-70204		Laboratory Fortified Blank								Run: HGCV205-H_240130A 01/30/24 15:42
Mercury		0.21	mg/kg	0.50	105	80	120			
Lab ID: H24010643-001AMS		Sample Matrix Spike								Run: HGCV205-H_240130A 01/30/24 15:47
Mercury		0.26	mg/kg-dry	0.50	100	80	120			
Lab ID: H24010643-001AMSD		Sample Matrix Spike Duplicate								Run: HGCV205-H_240130A 01/30/24 15:49
Mercury		0.26	mg/kg-dry	0.050	101	80	120	1.0	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8015M Batch: 70171										
Lab ID: MB-70171	2	Method Blank								
										Run: HP3_240125A 01/25/24 21:16
Total Extractable Hydrocarbons		ND	mg/kg	20						
Surr: o-Terphenyl				0.17	75	40	140			
Lab ID: LCS-70171	2	Laboratory Control Sample								
										Run: HP3_240125A 01/25/24 22:00
Total Extractable Hydrocarbons		199.5	mg/kg	20	94	60	140			
Surr: o-Terphenyl				0.17	84	40	140			
Lab ID: LCSD-70171	2	Laboratory Control Sample Duplicate								
										Run: HP3_240125A 01/25/24 22:43
Total Extractable Hydrocarbons		221.0	mg/kg	20	104	60	140	10	20	
Surr: o-Terphenyl				0.17	93	40	140			
Lab ID: H24010570-001AMS	2	Sample Matrix Spike								
										Run: HP3_240129A 01/30/24 00:57
Total Extractable Hydrocarbons		655.8	mg/kg-dry	33	57	60	140			S
Surr: o-Terphenyl				0.55	63	40	140			
Lab ID: H24010570-001AMSD	2	Sample Matrix Spike Duplicate								
										Run: HP3_240129A 01/30/24 01:41
Total Extractable Hydrocarbons		588.7	mg/kg-dry	33	38	60	140	11	20	S
Surr: o-Terphenyl				0.54	61	40	140			

Method: SW8015M Analytical Run: R192137										
Lab ID: CCV_0201HP3B04r-S	15	Continuing Calibration Verification Standard								
										02/01/24 12:57
n-Nonane		6.307	mg/kg		95	75	125			
n-Decane		6.439	mg/kg		97	75	125			
n-Dodecane		6.546	mg/kg		98	75	125			
n-Tetradecane		6.456	mg/kg		97	75	125			
n-Hexadecane		6.381	mg/kg		96	75	125			
n-Octadecane		6.368	mg/kg		96	75	125			
n-Nonadecane		6.469	mg/kg		97	75	125			
n-Eicosane		6.405	mg/kg		96	75	125			
n-Docosane		6.426	mg/kg		96	75	125			
n-Tetracosane		6.439	mg/kg		97	75	125			
n-Hexacosane		6.472	mg/kg		97	75	125			
n-Octacosane		6.411	mg/kg		96	75	125			
n-Triacontane		6.242	mg/kg		94	75	125			
n-Hexatriacontane		6.518	mg/kg		98	75	125			
Surr: o-Terphenyl				0.17	87	75	125			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW8260B											
Batch: 70142											
Lab ID: H24010510-005AMS	52 Sample Matrix Spike				Run: 5973MSD_240124A			01/24/24 18:04			
Benzene		1.09	mg/kg-dry	0.20	98	77	128				
Bromobenzene		0.998	mg/kg-dry	0.20	90	81	131				
Bromochloromethane		1.09	mg/kg-dry	0.20	99	71	135				
Bromodichloromethane		1.01	mg/kg-dry	0.20	91	62	141				
Bromoform		1.05	mg/kg-dry	0.20	95	75	117				
Bromomethane		1.09	mg/kg-dry	0.20	99	40	121				
Carbon tetrachloride		1.07	mg/kg-dry	0.20	97	71	142				
Chlorobenzene		1.02	mg/kg-dry	0.20	92	82	130				
Chlorodibromomethane		1.04	mg/kg-dry	0.20	94	66	123				
Chloroethane		0.877	mg/kg-dry	0.20	79	53	140				
Chloroform		1.10	mg/kg-dry	0.20	100	69	134				
Chloromethane		1.16	mg/kg-dry	0.20	105	78	131				
2-Chlorotoluene		1.03	mg/kg-dry	0.20	93	84	131				
4-Chlorotoluene		1.03	mg/kg-dry	0.20	94	82	133				
1,2-Dibromoethane		1.04	mg/kg-dry	0.20	94	63	121				
Dibromomethane		1.02	mg/kg-dry	0.20	93	53	149				
1,2-Dichlorobenzene		1.04	mg/kg-dry	0.20	94	84	121				
1,3-Dichlorobenzene		0.985	mg/kg-dry	0.20	89	82	125				
1,4-Dichlorobenzene		1.01	mg/kg-dry	0.20	91	83	128				
Dichlorodifluoromethane		0.816	mg/kg-dry	0.20	74	38	132				
1,1-Dichloroethane		1.04	mg/kg-dry	0.20	94	66	124				
1,2-Dichloroethane		1.10	mg/kg-dry	0.20	99	65	131				
1,1-Dichloroethene		1.03	mg/kg-dry	0.20	94	82	136				
cis-1,2-Dichloroethene		1.03	mg/kg-dry	0.20	94	82	126				
trans-1,2-Dichloroethene		1.02	mg/kg-dry	0.20	92	80	130				
1,2-Dichloropropane		1.04	mg/kg-dry	0.20	94	70	148				
1,3-Dichloropropane		1.08	mg/kg-dry	0.20	98	73	125				
2,2-Dichloropropane		1.09	mg/kg-dry	0.20	99	74	138				
1,1-Dichloropropene		1.06	mg/kg-dry	0.20	96	63	154				
cis-1,3-Dichloropropene		1.05	mg/kg-dry	0.20	95	66	152				
trans-1,3-Dichloropropene		0.976	mg/kg-dry	0.20	88	64	133				
Ethylbenzene		1.08	mg/kg-dry	0.20	98	79	134				
Methyl tert-butyl ether (MTBE)		1.14	mg/kg-dry	0.20	103	60	126				
Methyl ethyl ketone		12.0	mg/kg-dry	4.0	108	50	150				
Methylene chloride		1.11	mg/kg-dry	0.20	100	80	127				
Styrene		1.11	mg/kg-dry	0.20	100	82	127				
1,1,1,2-Tetrachloroethane		1.05	mg/kg-dry	0.20	95	75	128				
1,1,2,2-Tetrachloroethane		1.08	mg/kg-dry	0.20	98	74	120				
Tetrachloroethene		1.00	mg/kg-dry	0.20	91	72	144				
Toluene		1.07	mg/kg-dry	0.20	97	70	146				
1,1,1-Trichloroethane		1.10	mg/kg-dry	0.20	99	75	145				
1,1,2-Trichloroethane		1.08	mg/kg-dry	0.20	98	67	125				
Trichloroethene		0.994	mg/kg-dry	0.20	90	70	144				
Trichlorofluoromethane		1.24	mg/kg-dry	0.20	112	79	140				
1,2,3-Trichloropropane		1.08	mg/kg-dry	0.20	98	76	117				

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Batch: 70142										
Lab ID: H24010510-005AMS	52	Sample Matrix Spike					Run: 5973MSD_240124A		01/24/24 18:04	
Vinyl chloride		1.15	mg/kg-dry	0.20	104	81	139			
m+p-Xylenes		2.21	mg/kg-dry	0.20	100	79	133			
o-Xylene		1.09	mg/kg-dry	0.20	99	84	132			
Surr: 1,2-Dichloroethane-d4				0.20	89	65	147			
Surr: Dibromofluoromethane				0.20	90	71	135			
Surr: p-Bromofluorobenzene				0.20	82	60	143			
Surr: Toluene-d8				0.20	85	76	133			
Lab ID: H24010510-005AMSD	52	Sample Matrix Spike Duplicate					Run: 5973MSD_240124A		01/24/24 19:06	
Benzene		1.07	mg/kg-dry	0.20	97	77	128	1.5	20	
Bromobenzene		1.04	mg/kg-dry	0.20	94	81	131	3.7	20	
Bromochloromethane		1.07	mg/kg-dry	0.20	97	71	135	1.6	20	
Bromodichloromethane		1.00	mg/kg-dry	0.20	91	62	141	0.4	20	
Bromoform		1.08	mg/kg-dry	0.20	98	75	117	2.7	20	
Bromomethane		1.07	mg/kg-dry	0.20	97	40	121	2.1	20	
Carbon tetrachloride		1.06	mg/kg-dry	0.20	96	71	142	1.4	20	
Chlorobenzene		1.01	mg/kg-dry	0.20	92	82	130	0.4	20	
Chlorodibromomethane		1.03	mg/kg-dry	0.20	94	66	123	0.3	20	
Chloroethane		0.825	mg/kg-dry	0.20	75	53	140	6.1	20	
Chloroform		1.08	mg/kg-dry	0.20	97	69	134	2.4	20	
Chloromethane		1.10	mg/kg-dry	0.20	100	78	131	5.5	20	
2-Chlorotoluene		1.06	mg/kg-dry	0.20	96	84	131	3.0	20	
4-Chlorotoluene		1.04	mg/kg-dry	0.20	95	82	133	0.8	20	
1,2-Dibromoethane		1.03	mg/kg-dry	0.20	94	63	121	0.2	20	
Dibromomethane		1.00	mg/kg-dry	0.20	91	53	149	1.8	20	
1,2-Dichlorobenzene		1.07	mg/kg-dry	0.20	97	84	121	3.2	20	
1,3-Dichlorobenzene		1.02	mg/kg-dry	0.20	93	82	125	3.8	20	
1,4-Dichlorobenzene		1.05	mg/kg-dry	0.20	95	83	128	3.7	20	
Dichlorodifluoromethane		0.757	mg/kg-dry	0.20	69	38	132	7.5	20	
1,1-Dichloroethane		1.02	mg/kg-dry	0.20	93	66	124	1.8	20	
1,2-Dichloroethane		1.07	mg/kg-dry	0.20	97	65	131	2.4	20	
1,1-Dichloroethene		1.01	mg/kg-dry	0.20	91	82	136	2.6	20	
cis-1,2-Dichloroethene		1.02	mg/kg-dry	0.20	93	82	126	1.1	20	
trans-1,2-Dichloroethene		1.01	mg/kg-dry	0.20	91	80	130	1.3	20	
1,2-Dichloropropane		1.02	mg/kg-dry	0.20	92	70	148	2.2	20	
1,3-Dichloropropane		1.08	mg/kg-dry	0.20	98	73	125	0.3	20	
2,2-Dichloropropane		1.06	mg/kg-dry	0.20	96	74	138	3.0	20	
1,1-Dichloropropene		1.04	mg/kg-dry	0.20	94	63	154	2.3	20	
cis-1,3-Dichloropropene		1.02	mg/kg-dry	0.20	93	66	152	2.6	20	
trans-1,3-Dichloropropene		0.986	mg/kg-dry	0.20	89	64	133	1.1	20	
Ethylbenzene		1.06	mg/kg-dry	0.20	96	79	134	2.2	20	
Methyl tert-butyl ether (MTBE)		1.13	mg/kg-dry	0.20	103	60	126	0.3	20	
Methyl ethyl ketone		11.8	mg/kg-dry	4.0	107	50	150	1.0	20	
Methylene chloride		1.07	mg/kg-dry	0.20	97	80	127	3.4	20	
Styrene		1.10	mg/kg-dry	0.20	100	82	127	0.9	20	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Batch: 70142										
Lab ID: H24010510-005AMSD	52	Sample Matrix Spike Duplicate								
										Run: 5973MSD_240124A
										01/24/24 19:06
1,1,1,2-Tetrachloroethane		1.05	mg/kg-dry	0.20	95	75	128	0.7	20	
1,1,2,2-Tetrachloroethane		1.11	mg/kg-dry	0.20	101	74	120	2.3	20	
Tetrachloroethene		0.970	mg/kg-dry	0.20	88	72	144	3.4	20	
Toluene		1.05	mg/kg-dry	0.20	95	70	146	2.4	20	
1,1,1-Trichloroethane		1.07	mg/kg-dry	0.20	97	75	145	2.5	20	
1,1,2-Trichloroethane		1.06	mg/kg-dry	0.20	96	67	125	1.9	20	
Trichloroethene		0.984	mg/kg-dry	0.20	89	70	144	1.0	20	
Trichlorofluoromethane		1.16	mg/kg-dry	0.20	105	79	140	7.0	20	
1,2,3-Trichloropropane		1.12	mg/kg-dry	0.20	101	76	117	3.0	20	
Vinyl chloride		1.06	mg/kg-dry	0.20	96	81	139	8.0	20	
m+p-Xylenes		2.16	mg/kg-dry	0.20	98	79	133	2.2	20	
o-Xylene		1.09	mg/kg-dry	0.20	99	84	132	0.6	20	
Surr: 1,2-Dichloroethane-d4				0.20	99	65	147			
Surr: Dibromofluoromethane				0.20	98	71	135			
Surr: p-Bromofluorobenzene				0.20	94	60	143			
Surr: Toluene-d8				0.20	93	76	133			
Lab ID: H24010510-005AMS		Sample Matrix Spike								
										Run: 5973MSD_240124B
										01/24/24 18:04
2-Chloroethyl vinyl ether		2.14	mg/kg-dry	0.20	194	39	155			S
Lab ID: H24010510-005AMSD		Sample Matrix Spike Duplicate								
										Run: 5973MSD_240124B
										01/24/24 19:06
2-Chloroethyl vinyl ether		1.95	mg/kg-dry	0.20	177	39	155	9.2	20	S
Lab ID: LCS-70142	53	Laboratory Control Sample								
										Run: 5973MSD2_240124A
										01/24/24 12:54
Benzene		1.13	mg/kg	0.20	113	77	128			
Bromobenzene		1.19	mg/kg	0.20	119	81	131			
Bromochloromethane		1.03	mg/kg	0.20	103	71	135			
Bromodichloromethane		1.17	mg/kg	0.20	117	62	141			
Bromoform		1.22	mg/kg	0.20	122	75	117			S
Bromomethane		2.21	mg/kg	0.20	221	40	121			S
Carbon tetrachloride		1.19	mg/kg	0.20	119	71	142			
Chlorobenzene		1.18	mg/kg	0.20	118	82	130			
Chlorodibromomethane		1.19	mg/kg	0.20	119	66	123			
Chloroethane		1.41	mg/kg	0.20	141	53	140			S
2-Chloroethyl vinyl ether		1.11	mg/kg	0.20	111	39	155			
Chloroform		1.05	mg/kg	0.20	105	69	134			
Chloromethane		1.14	mg/kg	0.20	114	78	131			
2-Chlorotoluene		1.22	mg/kg	0.20	122	84	131			
4-Chlorotoluene		1.19	mg/kg	0.20	119	82	133			
1,2-Dibromoethane		1.13	mg/kg	0.20	113	63	121			
Dibromomethane		1.17	mg/kg	0.20	117	53	149			
1,2-Dichlorobenzene		1.14	mg/kg	0.20	114	84	121			
1,3-Dichlorobenzene		1.23	mg/kg	0.20	123	82	125			
1,4-Dichlorobenzene		1.20	mg/kg	0.20	120	83	128			
Dichlorodifluoromethane		0.937	mg/kg	0.20	94	38	132			
1,1-Dichloroethane		1.03	mg/kg	0.20	103	66	124			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: SW8260B

Batch: 70142

Lab ID: LCS-70142

53 Laboratory Control Sample

Run: 5973MSD2_240124A

01/24/24 12:54

1,2-Dichloroethane		1.09	mg/kg	0.20	109	65	131			
1,1-Dichloroethene		1.09	mg/kg	0.20	109	82	136			
cis-1,2-Dichloroethene		1.05	mg/kg	0.20	105	82	126			
trans-1,2-Dichloroethene		1.09	mg/kg	0.20	109	80	130			
1,2-Dichloropropane		1.19	mg/kg	0.20	119	70	148			
1,3-Dichloropropane		1.18	mg/kg	0.20	118	73	125			
2,2-Dichloropropane		1.14	mg/kg	0.20	114	74	138			
1,1-Dichloropropene		1.13	mg/kg	0.20	113	63	154			
cis-1,3-Dichloropropene		1.16	mg/kg	0.20	116	66	152			
trans-1,3-Dichloropropene		1.06	mg/kg	0.20	106	64	133			
Ethylbenzene		1.19	mg/kg	0.20	119	79	134			
Methyl tert-butyl ether (MTBE)		0.984	mg/kg	0.20	98	60	126			
Methyl ethyl ketone		9.01	mg/kg	4.0	90	50	150			
Methylene chloride		0.993	mg/kg	0.20	99	80	127			
Styrene		1.32	mg/kg	0.20	132	82	127			S
1,1,1,2-Tetrachloroethane		1.20	mg/kg	0.20	120	75	128			
1,1,1,2,2-Tetrachloroethane		1.18	mg/kg	0.20	118	74	120			
Tetrachloroethene		1.23	mg/kg	0.20	123	72	144			
Toluene		1.19	mg/kg	0.20	119	70	146			
1,1,1-Trichloroethane		1.10	mg/kg	0.20	110	75	145			
1,1,2-Trichloroethane		1.18	mg/kg	0.20	118	67	125			
Trichloroethene		1.20	mg/kg	0.20	120	70	144			
Trichlorofluoromethane		1.30	mg/kg	0.20	130	79	140			
1,2,3-Trichloropropane		1.14	mg/kg	0.20	114	76	117			
Vinyl chloride		1.09	mg/kg	0.20	109	81	139			
m+p-Xylenes		2.25	mg/kg	0.20	112	79	133			
o-Xylene		1.07	mg/kg	0.20	107	84	132			
Surr: 1,2-Dichloroethane-d4				0.20	112	65	147			
Surr: Dibromofluoromethane				0.20	105	71	135			
Surr: p-Bromofluorobenzene				0.20	110	60	143			
Surr: Toluene-d8				0.20	119	76	133			

Lab ID: MB-70142

53 Method Blank

Run: 5973MSD2_240124A

01/24/24 15:12

Benzene		ND	mg/kg	0.20						
Bromobenzene		ND	mg/kg	0.20						
Bromochloromethane		ND	mg/kg	0.20						
Bromodichloromethane		ND	mg/kg	0.20						
Bromoform		ND	mg/kg	0.20						
Bromomethane		ND	mg/kg	0.20						
Carbon tetrachloride		ND	mg/kg	0.20						
Chlorobenzene		ND	mg/kg	0.20						
Chlorodibromomethane		ND	mg/kg	0.20						
Chloroethane		ND	mg/kg	0.20						
2-Chloroethyl vinyl ether		ND	mg/kg	0.20						
Chloroform		ND	mg/kg	0.20						

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: SW8260B

Batch: 70142

Lab ID: MB-70142

53 Method Blank

Run: 5973MSD2_240124A

01/24/24 15:12

Chloromethane		ND	mg/kg	0.20						
2-Chlorotoluene		ND	mg/kg	0.20						
4-Chlorotoluene		ND	mg/kg	0.20						
1,2-Dibromoethane		ND	mg/kg	0.20						
Dibromomethane		ND	mg/kg	0.20						
1,2-Dichlorobenzene		ND	mg/kg	0.20						
1,3-Dichlorobenzene		ND	mg/kg	0.20						
1,4-Dichlorobenzene		ND	mg/kg	0.20						
Dichlorodifluoromethane		ND	mg/kg	0.20						
1,1-Dichloroethane		ND	mg/kg	0.20						
1,2-Dichloroethane		ND	mg/kg	0.20						
1,1-Dichloroethene		ND	mg/kg	0.20						
cis-1,2-Dichloroethene		ND	mg/kg	0.20						
trans-1,2-Dichloroethene		ND	mg/kg	0.20						
1,2-Dichloropropane		ND	mg/kg	0.20						
1,3-Dichloropropane		ND	mg/kg	0.20						
2,2-Dichloropropane		ND	mg/kg	0.20						
1,1-Dichloropropene		ND	mg/kg	0.20						
cis-1,3-Dichloropropene		ND	mg/kg	0.20						
trans-1,3-Dichloropropene		ND	mg/kg	0.20						
Ethylbenzene		ND	mg/kg	0.20						
Methyl tert-butyl ether (MTBE)		ND	mg/kg	0.20						
Methyl ethyl ketone		ND	mg/kg	4.0						
Methylene chloride		ND	mg/kg	0.20						
Styrene		ND	mg/kg	0.20						
1,1,1,2-Tetrachloroethane		ND	mg/kg	0.20						
1,1,1,2,2-Tetrachloroethane		ND	mg/kg	0.20						
Tetrachloroethene		ND	mg/kg	0.20						
Toluene		ND	mg/kg	0.20						
1,1,1-Trichloroethane		ND	mg/kg	0.20						
1,1,2-Trichloroethane		ND	mg/kg	0.20						
Trichloroethene		ND	mg/kg	0.20						
Trichlorofluoromethane		ND	mg/kg	0.20						
1,2,3-Trichloropropane		ND	mg/kg	0.20						
Vinyl chloride		ND	mg/kg	0.20						
m+p-Xylenes		ND	mg/kg	0.20						
o-Xylene		ND	mg/kg	0.20						
Surr: 1,2-Dichloroethane-d4				0.20	111	65	147			
Surr: Dibromofluoromethane				0.20	106	71	135			
Surr: p-Bromofluorobenzene				0.20	115	60	143			
Surr: Toluene-d8				0.20	118	76	133			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Analytical Run: R192076										
Lab ID: 30-Jan-24_CCV_2	53 Continuing Calibration Verification Standard									01/30/24 10:12
Benzene		5.53	ug/L	0.50	111	70	130			
Bromobenzene		5.65	ug/L	0.50	113	70	130			
Bromochloromethane		5.19	ug/L	0.50	104	70	130			
Bromodichloromethane		5.52	ug/L	0.50	110	70	130			
Bromoform		5.12	ug/L	0.50	102	70	130			
Bromomethane		4.85	ug/L	0.50	97	70	130			
Carbon tetrachloride		5.55	ug/L	0.50	111	70	130			
Chlorobenzene		5.69	ug/L	0.50	114	70	130			
Chlorodibromomethane		5.47	ug/L	0.50	109	70	130			
Chloroethane		4.45	ug/L	0.50	89	70	130			
Chloroform		5.41	ug/L	0.50	108	80	120			
Chloromethane		4.56	ug/L	0.50	91	70	130			
2-Chlorotoluene		5.92	ug/L	0.50	118	70	130			
4-Chlorotoluene		5.89	ug/L	0.50	118	70	130			
1,2-Dibromoethane		5.44	ug/L	0.30	109	70	130			
Dibromomethane		5.37	ug/L	0.50	107	70	130			
1,2-Dichlorobenzene		5.38	ug/L	0.50	108	70	130			
1,3-Dichlorobenzene		5.63	ug/L	0.50	113	70	130			
1,4-Dichlorobenzene		5.57	ug/L	0.50	111	70	130			
Dichlorodifluoromethane		4.52	ug/L	0.50	90	70	130			
1,1-Dichloroethane		5.47	ug/L	0.50	109	70	130			
1,2-Dichloroethane		5.09	ug/L	0.50	102	70	130			
1,1-Dichloroethene		5.38	ug/L	0.50	108	80	120			
cis-1,2-Dichloroethene		5.35	ug/L	0.50	107	70	130			
trans-1,2-Dichloroethene		5.55	ug/L	0.50	111	70	130			
1,2-Dichloropropane		5.62	ug/L	0.50	112	80	120			
1,3-Dichloropropane		5.37	ug/L	0.50	107	70	130			
2,2-Dichloropropane		5.68	ug/L	0.50	114	70	130			
1,1-Dichloropropene		5.51	ug/L	0.50	110	70	130			
cis-1,3-Dichloropropene		5.35	ug/L	0.30	107	70	130			
trans-1,3-Dichloropropene		5.52	ug/L	0.30	110	70	130			
Ethylbenzene		6.00	ug/L	0.50	120	80	120			
Methyl tert-butyl ether (MTBE)		4.66	ug/L	0.50	93	70	130			
Methyl ethyl ketone		41.2	ug/L	10	82	70	130			
Methylene chloride		5.18	ug/L	0.50	104	70	130			
Styrene		6.03	ug/L	0.50	121	70	130			
1,1,1,2-Tetrachloroethane		5.65	ug/L	0.50	113	70	130			
1,1,2,2-Tetrachloroethane		4.94	ug/L	0.50	99	70	130			
Tetrachloroethene		5.91	ug/L	0.50	118	70	130			
Toluene		5.86	ug/L	0.50	117	80	120			
1,1,1-Trichloroethane		5.50	ug/L	0.50	110	70	130			
1,1,2-Trichloroethane		5.38	ug/L	0.50	108	70	130			
Trichloroethene		5.81	ug/L	0.50	116	70	130			
Trichlorofluoromethane		4.49	ug/L	0.50	90	70	130			
1,2,3-Trichloropropane		5.18	ug/L	0.50	104	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Analytical Run: R192076										
Lab ID: 30-Jan-24_CCV_2	53 Continuing Calibration Verification Standard									01/30/24 10:12
Vinyl chloride		4.47	ug/L	0.40	89	80	120			
m+p-Xylenes		12.3	ug/L	0.50	123	70	130			
o-Xylene		6.04	ug/L	0.50	121	70	130			
Xylenes, Total		18.4	ug/L	0.50	123	70	130			
Surr: 1,2-Dichloroethane-d4				1.0	89	69	131			
Surr: Dibromofluoromethane				1.0	93	70	125			
Surr: p-Bromofluorobenzene				1.0	101	76	123			
Surr: Toluene-d8				1.0	107	80	119			
Lab ID: 30-Jan-24_CCV_2	52 Continuing Calibration Verification Standard									01/30/24 10:12
Benzene		1.11	mg/kg	0.20	111	70	130			
Bromobenzene		1.13	mg/kg	0.20	113	70	130			
Bromochloromethane		1.04	mg/kg	0.20	104	70	130			
Bromodichloromethane		1.10	mg/kg	0.20	110	70	130			
Bromoform		1.02	mg/kg	0.20	102	70	130			
Bromomethane		0.970	mg/kg	0.20	97	70	130			
Carbon tetrachloride		1.11	mg/kg	0.20	111	70	130			
Chlorobenzene		1.14	mg/kg	0.20	114	70	130			
Chlorodibromomethane		1.09	mg/kg	0.20	109	70	130			
Chloroethane		0.890	mg/kg	0.20	89	70	130			
Chloroform		1.08	mg/kg	0.20	108	80	120			
Chloromethane		0.911	mg/kg	0.20	91	70	130			
2-Chlorotoluene		1.18	mg/kg	0.20	118	70	130			
4-Chlorotoluene		1.18	mg/kg	0.20	118	70	130			
1,2-Dibromoethane		1.09	mg/kg	0.20	109	70	130			
Dibromomethane		1.07	mg/kg	0.20	107	70	130			
1,2-Dichlorobenzene		1.08	mg/kg	0.20	108	70	130			
1,3-Dichlorobenzene		1.13	mg/kg	0.20	113	70	130			
1,4-Dichlorobenzene		1.11	mg/kg	0.20	111	70	130			
Dichlorodifluoromethane		0.905	mg/kg	0.20	90	70	130			
1,1-Dichloroethane		1.09	mg/kg	0.20	109	70	130			
1,2-Dichloroethane		1.02	mg/kg	0.20	102	70	130			
1,1-Dichloroethene		1.08	mg/kg	0.20	108	80	120			
cis-1,2-Dichloroethene		1.07	mg/kg	0.20	107	70	130			
trans-1,2-Dichloroethene		1.11	mg/kg	0.20	111	70	130			
1,2-Dichloropropane		1.12	mg/kg	0.20	112	80	120			
1,3-Dichloropropane		1.07	mg/kg	0.20	107	70	130			
2,2-Dichloropropane		1.14	mg/kg	0.20	114	70	130			
1,1-Dichloropropene		1.10	mg/kg	0.20	110	70	130			
cis-1,3-Dichloropropene		1.07	mg/kg	0.20	107	70	130			
trans-1,3-Dichloropropene		1.10	mg/kg	0.20	110	70	130			
Ethylbenzene		1.20	mg/kg	0.20	120	80	120			
Methyl tert-butyl ether (MTBE)		0.933	mg/kg	0.20	93	70	130			
Methyl ethyl ketone		8.23	mg/kg	4.0	82	70	130			
Methylene chloride		1.04	mg/kg	0.20	104	70	130			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Analytical Run: R192076										
Lab ID: 30-Jan-24_CCV_2	52 Continuing Calibration Verification Standard									01/30/24 10:12
Styrene		1.21	mg/kg	0.20	121	70	130			
1,1,1,2-Tetrachloroethane		1.13	mg/kg	0.20	113	70	130			
1,1,2,2-Tetrachloroethane		0.989	mg/kg	0.20	99	70	130			
Tetrachloroethene		1.18	mg/kg	0.20	118	70	130			
Toluene		1.17	mg/kg	0.20	117	80	120			
1,1,1-Trichloroethane		1.10	mg/kg	0.20	110	70	130			
1,1,2-Trichloroethane		1.08	mg/kg	0.20	108	70	130			
Trichloroethene		1.16	mg/kg	0.20	116	70	130			
Trichlorofluoromethane		0.898	mg/kg	0.20	90	70	130			
1,2,3-Trichloropropane		1.04	mg/kg	0.20	104	70	130			
Vinyl chloride		0.894	mg/kg	0.20	89	80	120			
m+p-Xylenes		2.47	mg/kg	0.20	123	70	130			
o-Xylene		1.21	mg/kg	0.20	121	70	130			
Surr: 1,2-Dichloroethane-d4				0.20	89	70	130			
Surr: Dibromofluoromethane				0.20	93	70	130			
Surr: p-Bromofluorobenzene				0.20	101	70	130			
Surr: Toluene-d8				0.20	107	70	130			

Lab ID: 30-Jan-24_CCV_4	Continuing Calibration Verification Standard									01/30/24 12:19
2-Chloroethyl vinyl ether		0.773	mg/kg	0.20	77	70	130			

Method: SW8260B										
Batch: R192076										
Lab ID: 30-Jan-24_LCS_3	53 Laboratory Control Sample									01/30/24 11:19
Run: 5973MSD_240130A										
Benzene		4.84	ug/L	0.50	97	75	120			
Bromobenzene		5.04	ug/L	0.50	101	80	125			
Bromochloromethane		4.52	ug/L	0.50	90	65	130			
Bromodichloromethane		4.74	ug/L	0.50	95	79	118			
Bromoform		4.63	ug/L	0.50	93	67	128			
Bromomethane		6.54	ug/L	0.50	131	51	136			
Carbon tetrachloride		4.73	ug/L	0.50	95	75	129			
Chlorobenzene		4.97	ug/L	0.50	99	77	127			
Chlorodibromomethane		4.61	ug/L	0.50	92	70	126			
Chloroethane		5.77	ug/L	0.50	115	70	139			
Chloroform		4.70	ug/L	0.50	94	74	125			
Chloromethane		5.79	ug/L	0.50	116	64	152			
2-Chlorotoluene		5.38	ug/L	0.50	108	78	130			
4-Chlorotoluene		5.27	ug/L	0.50	105	82	129			
1,2-Dibromoethane		4.63	ug/L	0.30	93	72	122			
Dibromomethane		4.58	ug/L	0.50	92	75	120			
1,2-Dichlorobenzene		4.86	ug/L	0.50	97	74	122			
1,3-Dichlorobenzene		5.01	ug/L	0.50	100	78	120			
1,4-Dichlorobenzene		4.96	ug/L	0.50	99	70	121			
Dichlorodifluoromethane		4.53	ug/L	0.50	91	48	152			
1,1-Dichloroethane		4.64	ug/L	0.50	93	77	123			
1,2-Dichloroethane		4.39	ug/L	0.50	88	64	127			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: SW8260B

Batch: R192076

Lab ID: 30-Jan-24_LCS_3

53 Laboratory Control Sample

Run: 5973MSD_240130A

01/30/24 11:19

1,1-Dichloroethene	4.79	ug/L	0.50	96	76	130
cis-1,2-Dichloroethene	4.58	ug/L	0.50	92	74	124
trans-1,2-Dichloroethene	4.96	ug/L	0.50	99	79	124
1,2-Dichloropropane	4.94	ug/L	0.50	99	81	121
1,3-Dichloropropane	4.78	ug/L	0.50	96	72	122
2,2-Dichloropropane	5.02	ug/L	0.50	100	75	139
1,1-Dichloropropene	4.86	ug/L	0.50	97	73	130
cis-1,3-Dichloropropene	4.58	ug/L	0.30	92	74	128
trans-1,3-Dichloropropene	4.35	ug/L	0.30	87	69	122
Ethylbenzene	5.24	ug/L	0.50	105	74	125
Methyl tert-butyl ether (MTBE)	4.08	ug/L	0.50	82	66	129
Methyl ethyl ketone	46.3	ug/L	10	93	63	136
Methylene chloride	4.50	ug/L	0.50	90	69	128
Styrene	5.21	ug/L	0.50	104	75	123
1,1,1,2-Tetrachloroethane	4.86	ug/L	0.50	97	76	124
1,1,1,2,2-Tetrachloroethane	4.40	ug/L	0.50	88	67	124
Tetrachloroethene	5.24	ug/L	0.50	105	77	136
Toluene	5.44	ug/L	0.50	109	82	125
1,1,1-Trichloroethane	4.82	ug/L	0.50	96	73	134
1,1,2-Trichloroethane	4.64	ug/L	0.50	93	72	119
Trichloroethene	5.20	ug/L	0.50	104	72	132
Trichlorofluoromethane	6.07	ug/L	0.50	121	73	137
1,2,3-Trichloropropane	4.72	ug/L	0.50	94	71	126
Vinyl chloride	5.70	ug/L	0.40	114	68	140
m+p-Xylenes	10.8	ug/L	0.50	108	84	128
o-Xylene	5.21	ug/L	0.50	104	79	126
Xylenes, Total	16.0	ug/L	0.50	107	81	127
Surr: 1,2-Dichloroethane-d4			1.0	89	69	131
Surr: Dibromofluoromethane			1.0	92	70	125
Surr: p-Bromofluorobenzene			1.0	102	76	123
Surr: Toluene-d8			1.0	106	80	119

Lab ID: 30-Jan-24_MBLK_5

53 Method Blank

Run: 5973MSD_240130A

01/30/24 12:50

Benzene	ND	ug/L	0.50
Bromobenzene	ND	ug/L	0.50
Bromochloromethane	ND	ug/L	0.50
Bromodichloromethane	ND	ug/L	0.50
Bromoform	ND	ug/L	0.50
Bromomethane	ND	ug/L	0.50
Carbon tetrachloride	ND	ug/L	0.50
Chlorobenzene	ND	ug/L	0.50
Chlorodibromomethane	ND	ug/L	0.50
Chloroethane	ND	ug/L	0.50
Chloroform	ND	ug/L	0.50
Chloromethane	ND	ug/L	0.50

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Batch: R192076										
Lab ID: 30-Jan-24_MBLK_5	53	Method Blank								
						Run: 5973MSD_240130A				01/30/24 12:50
2-Chlorotoluene		ND	ug/L	0.50						
4-Chlorotoluene		ND	ug/L	0.50						
1,2-Dibromoethane		ND	ug/L	0.30						
Dibromomethane		ND	ug/L	0.50						
1,2-Dichlorobenzene		ND	ug/L	0.50						
1,3-Dichlorobenzene		ND	ug/L	0.50						
1,4-Dichlorobenzene		ND	ug/L	0.50						
Dichlorodifluoromethane		ND	ug/L	0.50						
1,1-Dichloroethane		ND	ug/L	0.50						
1,2-Dichloroethane		ND	ug/L	0.50						
1,1-Dichloroethene		ND	ug/L	0.50						
cis-1,2-Dichloroethene		ND	ug/L	0.50						
trans-1,2-Dichloroethene		ND	ug/L	0.50						
1,2-Dichloropropane		ND	ug/L	0.50						
1,3-Dichloropropane		ND	ug/L	0.50						
2,2-Dichloropropane		ND	ug/L	0.50						
1,1-Dichloropropene		ND	ug/L	0.50						
cis-1,3-Dichloropropene		ND	ug/L	0.30						
trans-1,3-Dichloropropene		ND	ug/L	0.30						
Ethylbenzene		ND	ug/L	0.50						
Methyl tert-butyl ether (MTBE)		ND	ug/L	0.50						
Methyl ethyl ketone		ND	ug/L	10						
Methylene chloride		ND	ug/L	0.50						
Styrene		ND	ug/L	0.50						
1,1,1,2-Tetrachloroethane		ND	ug/L	0.50						
1,1,1,2,2-Tetrachloroethane		ND	ug/L	0.50						
Tetrachloroethene		ND	ug/L	0.50						
Toluene		ND	ug/L	0.50						
1,1,1-Trichloroethane		ND	ug/L	0.50						
1,1,2-Trichloroethane		ND	ug/L	0.50						
Trichloroethene		ND	ug/L	0.50						
Trichlorofluoromethane		ND	ug/L	0.50						
1,2,3-Trichloropropane		ND	ug/L	0.50						
Vinyl chloride		ND	ug/L	0.40						
m+p-Xylenes		ND	ug/L	0.50						
o-Xylene		ND	ug/L	0.50						
Xylenes, Total		ND	ug/L	0.50						
Surr: 1,2-Dichloroethane-d4				1.0	95	69	131			
Surr: Dibromofluoromethane				1.0	97	70	125			
Surr: p-Bromofluorobenzene				1.0	103	76	123			
Surr: Toluene-d8				1.0	100	80	119			
Lab ID: H24010640-001AMS	53	Sample Matrix Spike								
						Run: 5973MSD_240130A				01/30/24 15:38
Benzene		50.1	ug/L	2.5	100	75	120			
Bromobenzene		47.8	ug/L	2.5	96	80	125			

Qualifiers:

RL - Analyte Reporting Limit

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QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Batch: R192076										
Lab ID: H24010640-001AMS	53 Sample Matrix Spike					Run: 5973MSD_240130A		01/30/24 15:38		
Bromochloromethane		47.2	ug/L	2.5	94	65	130			
Bromodichloromethane		47.9	ug/L	2.5	96	79	118			
Bromoform		49.1	ug/L	2.5	98	67	128			
Bromomethane		54.8	ug/L	2.5	105	51	136			
Carbon tetrachloride		47.2	ug/L	2.5	94	75	129			
Chlorobenzene		48.1	ug/L	2.5	96	77	127			
Chlorodibromomethane		50.1	ug/L	2.5	100	70	126			
Chloroethane		49.5	ug/L	2.5	99	70	139			
Chloroform		47.2	ug/L	2.5	94	74	125			
Chloromethane		49.8	ug/L	2.5	100	64	152			
2-Chlorotoluene		47.5	ug/L	5.0	95	78	130			
4-Chlorotoluene		47.4	ug/L	5.0	95	82	129			
1,2-Dibromoethane		51.9	ug/L	2.5	104	72	122			
Dibromomethane		49.5	ug/L	2.5	99	75	120			
1,2-Dichlorobenzene		48.0	ug/L	2.5	96	74	122			
1,3-Dichlorobenzene		46.9	ug/L	2.5	94	78	120			
1,4-Dichlorobenzene		46.6	ug/L	2.5	93	70	121			
Dichlorodifluoromethane		40.1	ug/L	2.5	80	48	152			
1,1-Dichloroethane		46.3	ug/L	2.5	93	77	123			
1,2-Dichloroethane		48.6	ug/L	2.5	97	64	127			
1,1-Dichloroethene		46.4	ug/L	2.5	93	76	130			
cis-1,2-Dichloroethene		45.6	ug/L	2.5	91	74	124			
trans-1,2-Dichloroethene		47.6	ug/L	2.5	95	79	124			
1,2-Dichloropropane		49.3	ug/L	2.5	99	81	121			
1,3-Dichloropropane		52.0	ug/L	2.5	104	72	122			
2,2-Dichloropropane		48.2	ug/L	5.0	96	75	139			
1,1-Dichloropropene		47.8	ug/L	2.5	96	73	130			
cis-1,3-Dichloropropene		48.4	ug/L	2.5	97	74	128			
trans-1,3-Dichloropropene		46.6	ug/L	2.5	93	69	122			
Ethylbenzene		49.8	ug/L	2.5	100	74	125			
Methyl tert-butyl ether (MTBE)		50.2	ug/L	2.5	100	66	129			
Methyl ethyl ketone		550	ug/L	100	110	63	136			
Methylene chloride		45.6	ug/L	5.0	91	69	128			
Styrene		39.4	ug/L	2.5	79	75	123			
1,1,1,2-Tetrachloroethane		48.9	ug/L	2.5	98	76	124			
1,1,1,2,2-Tetrachloroethane		50.1	ug/L	2.5	100	67	124			
Tetrachloroethene		48.8	ug/L	2.5	98	77	136			
Toluene		53.4	ug/L	2.5	101	82	125			
1,1,1-Trichloroethane		47.7	ug/L	2.5	95	73	134			
1,1,2-Trichloroethane		51.9	ug/L	2.5	104	72	119			
Trichloroethene		47.8	ug/L	2.5	96	72	132			
Trichlorofluoromethane		53.1	ug/L	2.5	106	73	137			
1,2,3-Trichloropropane		53.3	ug/L	2.5	107	71	126			
Vinyl chloride		48.6	ug/L	2.5	97	68	140			
m+p-Xylenes		103	ug/L	5.0	103	84	128			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Batch: R192076										
Lab ID: H24010640-001AMS	53	Sample Matrix Spike				Run: 5973MSD_240130A		01/30/24 15:38		
o-Xylene		51.4	ug/L	2.5	103	79	126			
Xylenes, Total		155	ug/L	2.5	103	81	127			
Surr: 1,2-Dichloroethane-d4				10	97	69	131			
Surr: Dibromofluoromethane				10	94	70	125			
Surr: p-Bromofluorobenzene				10	100	76	123			
Surr: Toluene-d8				10	101	80	119			
Lab ID: H24010640-001AMSD										
Batch: R192076										
53		Sample Matrix Spike Duplicate				Run: 5973MSD_240130A		01/30/24 16:08		
Benzene		50.8	ug/L	2.5	102	75	120	1.4	20	
Bromobenzene		49.1	ug/L	2.5	98	80	125	2.6	20	
Bromochloromethane		47.6	ug/L	2.5	95	65	130	0.8	20	
Bromodichloromethane		48.7	ug/L	2.5	97	79	118	1.7	20	
Bromoform		49.4	ug/L	2.5	99	67	128	0.6	20	
Bromomethane		59.1	ug/L	2.5	114	51	136	7.7	20	
Carbon tetrachloride		48.4	ug/L	2.5	97	75	129	2.5	20	
Chlorobenzene		48.9	ug/L	2.5	98	77	127	1.6	20	
Chlorodibromomethane		50.3	ug/L	2.5	101	70	126	0.4	20	
Chloroethane		49.1	ug/L	2.5	98	70	139	0.8	20	
Chloroform		48.5	ug/L	2.5	97	74	125	2.7	20	
Chloromethane		49.1	ug/L	2.5	98	64	152	1.5	20	
2-Chlorotoluene		47.5	ug/L	5.0	95	78	130	0	20	
4-Chlorotoluene		46.6	ug/L	5.0	93	82	129	1.7	20	
1,2-Dibromoethane		52.3	ug/L	2.5	105	72	122	0.8	20	
Dibromomethane		50.1	ug/L	2.5	100	75	120	1.2	20	
1,2-Dichlorobenzene		48.2	ug/L	2.5	96	74	122	0.4	20	
1,3-Dichlorobenzene		46.4	ug/L	2.5	93	78	120	1.0	20	
1,4-Dichlorobenzene		46.7	ug/L	2.5	93	70	121	0.1	20	
Dichlorodifluoromethane		39.2	ug/L	2.5	78	48	152	2.4	20	
1,1-Dichloroethane		46.6	ug/L	2.5	93	77	123	0.8	20	
1,2-Dichloroethane		49.2	ug/L	2.5	98	64	127	1.2	20	
1,1-Dichloroethene		47.3	ug/L	2.5	95	76	130	2.0	20	
cis-1,2-Dichloroethene		46.6	ug/L	2.5	93	74	124	2.2	20	
trans-1,2-Dichloroethene		48.7	ug/L	2.5	97	79	124	2.2	20	
1,2-Dichloropropane		49.4	ug/L	2.5	99	81	121	0.1	20	
1,3-Dichloropropane		53.7	ug/L	2.5	107	72	122	3.3	20	
2,2-Dichloropropane		48.3	ug/L	5.0	97	75	139	0.3	20	
1,1-Dichloropropene		49.6	ug/L	2.5	99	73	130	3.6	20	
cis-1,3-Dichloropropene		49.9	ug/L	2.5	100	74	128	3.1	20	
trans-1,3-Dichloropropene		47.3	ug/L	2.5	95	69	122	1.5	20	
Ethylbenzene		50.7	ug/L	2.5	101	74	125	1.8	20	
Methyl tert-butyl ether (MTBE)		51.6	ug/L	2.5	103	66	129	2.9	20	
Methyl ethyl ketone		527	ug/L	100	105	63	136	4.2	20	
Methylene chloride		46.9	ug/L	5.0	94	69	128	2.9	20	
Styrene		31.7	ug/L	2.5	63	75	123	22	20	SR
1,1,1,2-Tetrachloroethane		49.8	ug/L	2.5	100	76	124	1.9	20	

Qualifiers:

RL - Analyte Reporting Limit

R - Relative Percent Difference (RPD) exceeds advisory limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8260B										
Batch: R192076										
Lab ID: H24010640-001AMSD	53	Sample Matrix Spike Duplicate				Run: 5973MSD_240130A			01/30/24 16:08	
1,1,2,2-Tetrachloroethane		51.6	ug/L	2.5	103	67	124	2.8	20	
Tetrachloroethene		49.6	ug/L	2.5	99	77	136	1.6	20	
Toluene		53.9	ug/L	2.5	102	82	125	1.0	20	
1,1,1-Trichloroethane		48.5	ug/L	2.5	97	73	134	1.7	20	
1,1,2-Trichloroethane		53.2	ug/L	2.5	106	72	119	2.4	20	
Trichloroethene		49.1	ug/L	2.5	98	72	132	2.6	20	
Trichlorofluoromethane		52.6	ug/L	2.5	105	73	137	0.9	20	
1,2,3-Trichloropropane		54.7	ug/L	2.5	109	71	126	2.5	20	
Vinyl chloride		48.9	ug/L	2.5	98	68	140	0.6	20	
m+p-Xylenes		105	ug/L	5.0	105	84	128	1.1	20	
o-Xylene		51.5	ug/L	2.5	103	79	126	0.2	20	
Xylenes, Total		156	ug/L	2.5	104	81	127	0.8	20	
Surr: 1,2-Dichloroethane-d4				10	97	69	131			
Surr: Dibromofluoromethane				10	94	70	125			
Surr: p-Bromofluorobenzene				10	98	76	123			
Surr: Toluene-d8				10	101	80	119			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270E										
Batch: B_186693										
Lab ID: MB-186693	18	Method Blank								
										Run: SUB-B416165
										02/02/24 23:33
1-Methylnaphthalene		ND	mg/kg	0.0033						
2-Methylnaphthalene		ND	mg/kg	0.0033						
Acenaphthene		ND	mg/kg	0.0033						
Acenaphthylene		ND	mg/kg	0.0033						
Anthracene		ND	mg/kg	0.0033						
Benzo(a)anthracene		ND	mg/kg	0.0033						
Benzo(a)pyrene		ND	mg/kg	0.0033						
Benzo(b)fluoranthene		ND	mg/kg	0.0033						
Benzo(g,h,i)perylene		ND	mg/kg	0.0033						
Benzo(k)fluoranthene		ND	mg/kg	0.0033						
Chrysene		ND	mg/kg	0.0033						
Dibenzo(a,h)anthracene		ND	mg/kg	0.0033						
Fluoranthene		ND	mg/kg	0.0033						
Fluorene		ND	mg/kg	0.0033						
Indeno(1,2,3-cd)pyrene		ND	mg/kg	0.0033						
Naphthalene		ND	mg/kg	0.0033						
Phenanthrene		ND	mg/kg	0.0033						
Pyrene		ND	mg/kg	0.0033						
Lab ID: LLCS-186693	21	Laboratory Control Sample								
										Run: SUB-B416165
										02/03/24 00:34
1-Methylnaphthalene		0.111	mg/kg	0.0033	66	54	126	0.0	40	
2-Methylnaphthalene		0.123	mg/kg	0.0033	74	54	113	0.0	40	
Acenaphthene		0.123	mg/kg	0.0033	74	54	111	0.0	40	
Acenaphthylene		0.113	mg/kg	0.0033	68	53	113	0.0	40	
Anthracene		0.133	mg/kg	0.0033	80	66	109	0.0	40	
Benzo(a)anthracene		0.145	mg/kg	0.0033	87	51	121	0.0	40	
Benzo(a)pyrene		0.143	mg/kg	0.0033	86	62	114	0.0	40	
Benzo(b)fluoranthene		0.145	mg/kg	0.0033	87	50	128	0.0	40	
Benzo(g,h,i)perylene		0.133	mg/kg	0.0033	80	62	116	0.0	40	
Benzo(k)fluoranthene		0.136	mg/kg	0.0033	81	47	127	0.0	40	
Chrysene		0.146	mg/kg	0.0033	87	56	119	0.0	40	
Dibenzo(a,h)anthracene		0.144	mg/kg	0.0033	86	63	113	0.0	40	
Fluoranthene		0.138	mg/kg	0.0033	83	70	115	0.0	40	
Fluorene		0.135	mg/kg	0.0033	81	53	118	0.0	40	
Indeno(1,2,3-cd)pyrene		0.140	mg/kg	0.0033	84	57	119	0.0	40	
Naphthalene		0.105	mg/kg	0.0033	63	50	109	0.0	40	
Phenanthrene		0.138	mg/kg	0.0033	83	63	116	0.0	40	
Pyrene		0.131	mg/kg	0.0033	78	62	113	0.0	40	
Surr: 2-Fluorobiphenyl				0.0033	74	47	110			
Surr: Nitrobenzene-d5				0.0033	71	43	105			
Surr: Terphenyl-d14				0.0033	93	51	117			
Lab ID: B24011341-018ALMS	21	Sample Matrix Spike								
										Run: SUB-B416165
										02/03/24 01:35
1-Methylnaphthalene		0.0908	mg/kg-dry	0.017	52	54	126			S
2-Methylnaphthalene		0.106	mg/kg-dry	0.017	61	54	113	0.0	40	

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270E										
Batch: B_186693										
Lab ID: B24011341-018ALMS	21	Sample Matrix Spike			Run: SUB-B416165				02/03/24 01:35	
Acenaphthene		0.116	mg/kg-dry	0.017	67	54	111	0.0	40	
Acenaphthylene		0.112	mg/kg-dry	0.017	64	53	113	0.0	40	
Anthracene		0.118	mg/kg-dry	0.017	68	66	109	0.0	40	
Benzo(a)anthracene		0.120	mg/kg-dry	0.017	69	51	121	0.0	40	
Benzo(a)pyrene		0.123	mg/kg-dry	0.017	71	62	114	0.0	40	
Benzo(b)fluoranthene		0.116	mg/kg-dry	0.017	67	50	128	0.0	40	
Benzo(g,h,i)perylene		0.104	mg/kg-dry	0.017	60	62	116	0.0	40	S
Benzo(k)fluoranthene		0.110	mg/kg-dry	0.017	63	47	127	0.0	40	
Chrysene		0.117	mg/kg-dry	0.017	67	56	119	0.0	40	
Dibenzo(a,h)anthracene		0.115	mg/kg-dry	0.017	66	63	113	0.0	40	
Fluoranthene		0.123	mg/kg-dry	0.017	71	70	115	0.0	40	
Fluorene		0.121	mg/kg-dry	0.017	70	53	118	0.0	40	
Indeno(1,2,3-cd)pyrene		0.112	mg/kg-dry	0.017	64	57	119	0.0	40	
Naphthalene		0.0974	mg/kg-dry	0.017	56	50	109	0.0	40	
Phenanthrene		0.123	mg/kg-dry	0.017	71	63	116	0.0	40	
Pyrene		0.107	mg/kg-dry	0.017	61	62	113	0.0	40	S
Surr: 2-Fluorobiphenyl				0.017	65	47	110			
Surr: Nitrobenzene-d5				0.017	63	43	105			
Surr: Terphenyl-d14				0.017	68	51	117			
Lab ID: B24011341-018ALMSD	21	Sample Matrix Spike Duplicate			Run: SUB-B416165				02/03/24 02:05	
1-Methylnaphthalene		0.0915	mg/kg-dry	0.017	53	54	126	0.8	40	S
2-Methylnaphthalene		0.102	mg/kg-dry	0.017	58	54	113	4.5	40	
Acenaphthene		0.109	mg/kg-dry	0.017	63	54	111	6.7	40	
Acenaphthylene		0.104	mg/kg-dry	0.017	60	53	113	7.1	40	
Anthracene		0.112	mg/kg-dry	0.017	65	66	109	4.6	40	S
Benzo(a)anthracene		0.106	mg/kg-dry	0.017	61	51	121	12	40	
Benzo(a)pyrene		0.123	mg/kg-dry	0.017	71	62	114	0.4	40	
Benzo(b)fluoranthene		0.118	mg/kg-dry	0.017	68	50	128	1.0	40	
Benzo(g,h,i)perylene		0.106	mg/kg-dry	0.017	61	62	116	1.7	40	S
Benzo(k)fluoranthene		0.100	mg/kg-dry	0.017	58	47	127	8.9	40	
Chrysene		0.108	mg/kg-dry	0.017	62	56	119	7.8	40	
Dibenzo(a,h)anthracene		0.115	mg/kg-dry	0.017	66	63	113	0.3	40	
Fluoranthene		0.119	mg/kg-dry	0.017	69	70	115	3.3	40	S
Fluorene		0.114	mg/kg-dry	0.017	66	53	118	6.0	40	
Indeno(1,2,3-cd)pyrene		0.113	mg/kg-dry	0.017	65	57	119	1.0	40	
Naphthalene		0.0896	mg/kg-dry	0.017	52	50	109	8.3	40	
Phenanthrene		0.113	mg/kg-dry	0.017	65	63	116	8.0	40	
Pyrene		0.105	mg/kg-dry	0.017	61	62	113	1.2	40	S
Surr: 2-Fluorobiphenyl				0.017	63	47	110			
Surr: Nitrobenzene-d5				0.017	70	43	105			
Surr: Terphenyl-d14				0.017	65	51	117			

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits

QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW8270E										
Batch: B_186749										
Lab ID: MB-186749	18	Method Blank								
						Run: SUB-B416165			02/03/24 06:37	
1-Methylnaphthalene		ND	mg/kg	0.0033						
2-Methylnaphthalene		ND	mg/kg	0.0033						
Acenaphthene		ND	mg/kg	0.0033						
Acenaphthylene		ND	mg/kg	0.0033						
Anthracene		ND	mg/kg	0.0033						
Benzo(a)anthracene		ND	mg/kg	0.0033						
Benzo(a)pyrene		ND	mg/kg	0.0033						
Benzo(b)fluoranthene		ND	mg/kg	0.0033						
Benzo(g,h,i)perylene		ND	mg/kg	0.0033						
Benzo(k)fluoranthene		ND	mg/kg	0.0033						
Chrysene		ND	mg/kg	0.0033						
Dibenzo(a,h)anthracene		ND	mg/kg	0.0033						
Fluoranthene		ND	mg/kg	0.0033						
Fluorene		ND	mg/kg	0.0033						
Indeno(1,2,3-cd)pyrene		ND	mg/kg	0.0033						
Naphthalene		ND	mg/kg	0.0033						
Phenanthrene		ND	mg/kg	0.0033						
Pyrene		ND	mg/kg	0.0033						
Lab ID: LLCS-186749	21	Laboratory Control Sample								
						Run: SUB-B416165			02/03/24 07:07	
1-Methylnaphthalene	0.0933	mg/kg	0.0033	56	54	126	0.0	40		
2-Methylnaphthalene	0.114	mg/kg	0.0033	68	54	113	0.0	40		
Acenaphthene	0.112	mg/kg	0.0033	67	54	111	0.0	40		
Acenaphthylene	0.104	mg/kg	0.0033	62	53	113	0.0	40		
Anthracene	0.129	mg/kg	0.0033	77	66	109	0.0	40		
Benzo(a)anthracene	0.130	mg/kg	0.0033	78	51	121	0.0	40		
Benzo(a)pyrene	0.130	mg/kg	0.0033	78	62	114	0.0	40		
Benzo(b)fluoranthene	0.131	mg/kg	0.0033	79	50	128	0.0	40		
Benzo(g,h,i)perylene	0.119	mg/kg	0.0033	72	62	116	0.0	40		
Benzo(k)fluoranthene	0.117	mg/kg	0.0033	70	47	127	0.0	40		
Chrysene	0.129	mg/kg	0.0033	77	56	119	0.0	40		
Dibenzo(a,h)anthracene	0.133	mg/kg	0.0033	80	63	113	0.0	40		
Fluoranthene	0.132	mg/kg	0.0033	79	70	115	0.0	40		
Fluorene	0.117	mg/kg	0.0033	70	53	118	0.0	40		
Indeno(1,2,3-cd)pyrene	0.131	mg/kg	0.0033	79	57	119	0.0	40		
Naphthalene	0.0998	mg/kg	0.0033	60	50	109	0.0	40		
Phenanthrene	0.129	mg/kg	0.0033	77	63	116	0.0	40		
Pyrene	0.123	mg/kg	0.0033	74	62	113	0.0	40		
Surr: 2-Fluorobiphenyl			0.0033	71	47	110				
Surr: Nitrobenzene-d5			0.0033	85	43	105				
Surr: Terphenyl-d14			0.0033	94	51	117				
Lab ID: B24011479-005ALMS	21	Sample Matrix Spike								
						Run: SUB-B416166			02/03/24 15:01	
1-Methylnaphthalene	0.133	mg/kg	0.0033	80	54	126				
2-Methylnaphthalene	0.148	mg/kg	0.0033	89	54	113	0.0	40		

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
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Method: SW8270E

Batch: B_186749

Lab ID: B24011479-005ALMS 21 Sample Matrix Spike Run: SUB-B416166 02/03/24 15:01

Acenaphthene	0.153	mg/kg	0.0033	92	54	111	0.0	40
Acenaphthylene	0.141	mg/kg	0.0033	85	53	113	0.0	40
Anthracene	0.157	mg/kg	0.0033	94	66	109	0.0	40
Benzo(a)anthracene	0.162	mg/kg	0.0033	97	51	121	0.0	40
Benzo(a)pyrene	0.164	mg/kg	0.0033	98	62	114	0.0	40
Benzo(b)fluoranthene	0.159	mg/kg	0.0033	96	50	128	0.0	40
Benzo(g,h,i)perylene	0.150	mg/kg	0.0033	90	62	116	0.0	40
Benzo(k)fluoranthene	0.153	mg/kg	0.0033	92	47	127	0.0	40
Chrysene	0.160	mg/kg	0.0033	96	56	119	0.0	40
Dibenzo(a,h)anthracene	0.165	mg/kg	0.0033	99	63	113	0.0	40
Fluoranthene	0.161	mg/kg	0.0033	97	70	115	0.0	40
Fluorene	0.164	mg/kg	0.0033	98	53	118	0.0	40
Indeno(1,2,3-cd)pyrene	0.161	mg/kg	0.0033	97	57	119	0.0	40
Naphthalene	0.124	mg/kg	0.0033	75	50	109	0.0	40
Phenanthrene	0.158	mg/kg	0.0033	95	63	116	0.0	40
Pyrene	0.142	mg/kg	0.0033	85	62	113	0.0	40
Surr: 2-Fluorobiphenyl			0.0033	97	47	110		
Surr: Nitrobenzene-d5			0.0033	96	43	105		
Surr: Terphenyl-d14			0.0033	112	51	117		

Lab ID: B24011479-005ALMSD 21 Sample Matrix Spike Duplicate Run: SUB-B416166 02/03/24 15:31

1-Methylnaphthalene	0.105	mg/kg	0.0033	63	54	126	24	40
2-Methylnaphthalene	0.135	mg/kg	0.0033	81	54	113	8.8	40
Acenaphthene	0.140	mg/kg	0.0033	84	54	111	8.7	40
Acenaphthylene	0.130	mg/kg	0.0033	78	53	113	8.0	40
Anthracene	0.147	mg/kg	0.0033	88	66	109	6.4	40
Benzo(a)anthracene	0.153	mg/kg	0.0033	92	51	121	5.5	40
Benzo(a)pyrene	0.155	mg/kg	0.0033	93	62	114	5.6	40
Benzo(b)fluoranthene	0.152	mg/kg	0.0033	91	50	128	4.9	40
Benzo(g,h,i)perylene	0.141	mg/kg	0.0033	84	62	116	5.9	40
Benzo(k)fluoranthene	0.146	mg/kg	0.0033	88	47	127	4.8	40
Chrysene	0.152	mg/kg	0.0033	91	56	119	5.0	40
Dibenzo(a,h)anthracene	0.156	mg/kg	0.0033	93	63	113	5.9	40
Fluoranthene	0.158	mg/kg	0.0033	94	70	115	2.5	40
Fluorene	0.145	mg/kg	0.0033	87	53	118	12	40
Indeno(1,2,3-cd)pyrene	0.154	mg/kg	0.0033	92	57	119	4.6	40
Naphthalene	0.117	mg/kg	0.0033	70	50	109	6.0	40
Phenanthrene	0.149	mg/kg	0.0033	89	63	116	6.2	40
Pyrene	0.139	mg/kg	0.0033	83	62	113	2.6	40
Surr: 2-Fluorobiphenyl			0.0033	86	47	110		
Surr: Nitrobenzene-d5			0.0033	107	43	105		S
Surr: Terphenyl-d14			0.0033	106	51	117		

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

S - Spike recovery outside of advisory limits



QA/QC Summary Report

Prepared by Helena, MT Branch

Client: Water and Environmental Technologies

Work Order: H24010643

Report Date: 02/14/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW8270E								Analytical Run: B_R416165			
Lab ID: 02-Feb-24_CCV_21	21 Continuing Calibration Verification Standard								02/02/24 22:02		
1-Methylnaphthalene		0.0685	mg/kg	0.0033	103	80	120				
2-Methylnaphthalene		0.0685	mg/kg	0.0033	103	80	120				
Acenaphthene		0.0722	mg/kg	0.0033	108	80	120				
Acenaphthylene		0.0665	mg/kg	0.0033	100	80	120				
Anthracene		0.0709	mg/kg	0.0033	106	80	120				
Benzo(a)anthracene		0.0680	mg/kg	0.0033	102	80	120				
Benzo(a)pyrene		0.0665	mg/kg	0.0033	100	80	120				
Benzo(b)fluoranthene		0.0695	mg/kg	0.0033	104	80	120				
Benzo(g,h,i)perylene		0.0677	mg/kg	0.0033	102	80	120				
Benzo(k)fluoranthene		0.0673	mg/kg	0.0033	101	80	120				
Chrysene		0.0682	mg/kg	0.0033	102	80	120				
Dibenzo(a,h)anthracene		0.0659	mg/kg	0.0033	99	80	120				
Fluoranthene		0.0712	mg/kg	0.0033	107	80	120				
Fluorene		0.0703	mg/kg	0.0033	105	80	120				
Indeno(1,2,3-cd)pyrene		0.0671	mg/kg	0.0033	101	80	120				
Naphthalene		0.0656	mg/kg	0.0033	98	80	120				
Phenanthrene		0.0707	mg/kg	0.0033	106	80	120				
Pyrene		0.0632	mg/kg	0.0033	95	80	120				
Surr: 2-Fluorobiphenyl				0.0033	109	80	120				
Surr: Nitrobenzene-d5				0.0033	131	80	120			S	
Surr: Terphenyl-d14				0.0033	103	80	120				

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

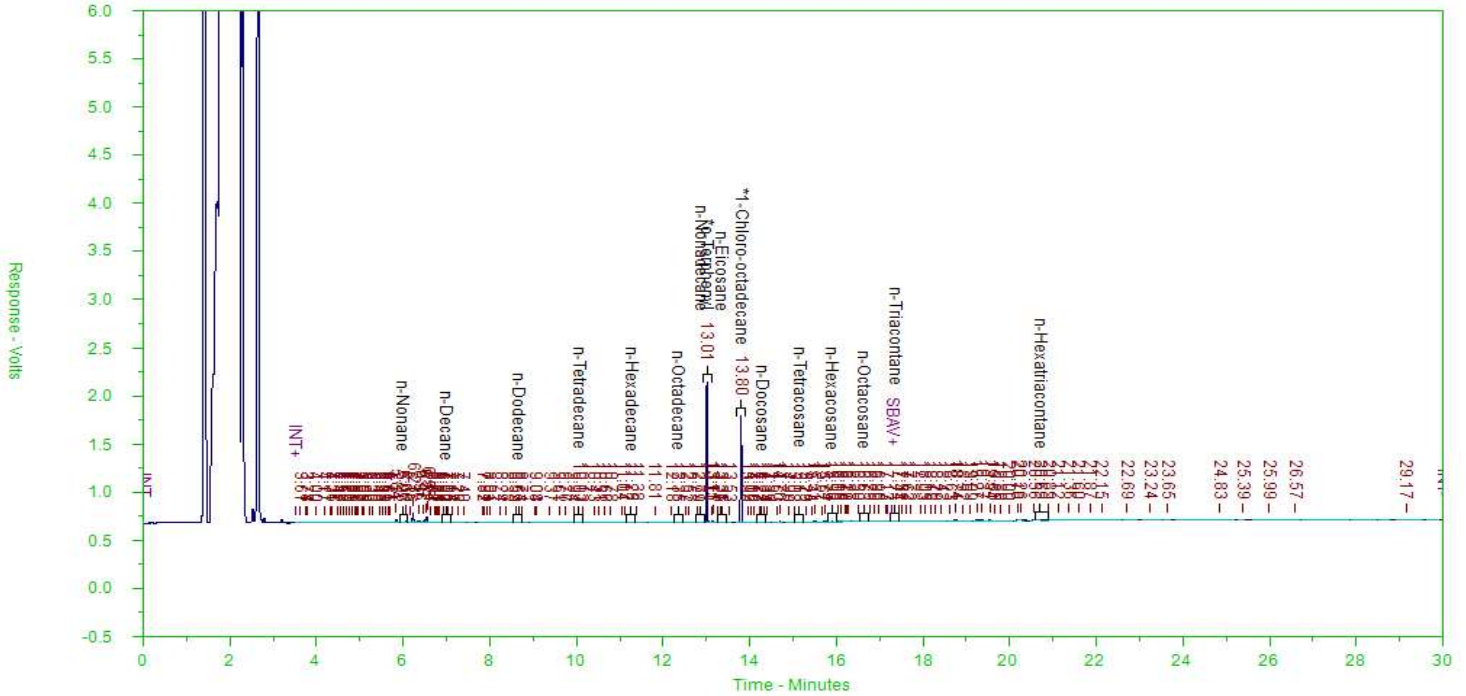
S - Spike recovery outside of advisory limits

H24010643 - H24010643-001A

Batch ID: 70171

G:\Org\HP3B\DAT\HP3B020124_B\0201HP3B.0006.RAW

H24010643-001A;0201HP3B, \$HC-EPH-SCRN-S,



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: H24010643-001A ;0201HP3B , \$HC-EPH-SCRN-S,
Raw File: \\HEFLE\PROGRAMS\ORG\HP3B\DAT\HP3B020124_B\0201HP3B.0006.RAW
Date & Time Acquired: 2/1/2024 4:01:14 PM
Method File: \\HEFLE\PROGRAMS\ORG\HP3B\METHODS\SRB051723S.MET
Calibration File: \\HEFLE\PROGRAMS\ORG\HP3B\CALS\SRB051723S.CAL
Sample Weight: 30.58 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 hydrocarbons: 25094.0800
Mean RF for C19 to C36 Hydrocarbons: 26346.6000
Mean RF for Total Extractable Hydrocarbons: 25720.3400
Rt range for Diesel Range Organics: 6.91 to 17.43
Rt range for C9 to C18 Hydrocarbons: 5.91 to 12.91
Rt range for C19 to C36 Hydrocarbons: 12.96 to 20.88

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	13.008	2335218	6.540	4.897	74.87	-
*1-Chloro-octadecane	13.797	1867362	6.540	4.791	73.26	-

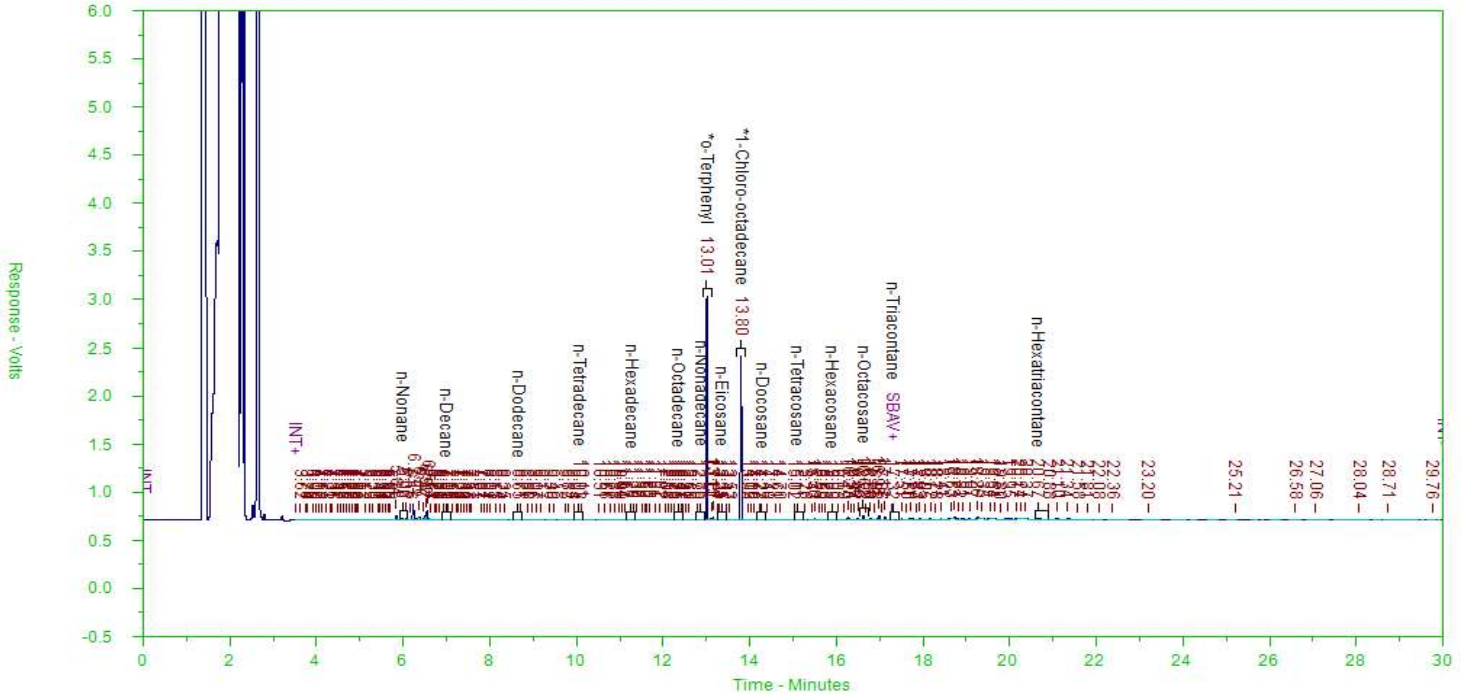
DRO Area: 374118.25 DRO Amount: 0.95131576
TEH Area: 1363658.8 TEH Amount: 3.4675403
C9-C18 Area: 681653.06 C9-C18 Amount: 1.7765791
C19-C36 Area: 434249.25 C19-C36 Amount: 1.0779709

H24010643 - H24010643-002A

Batch ID: 70171

G:\Org\HP3B\DAT\HP3B020124_B\0201HP3B.0007.RAW

H24010643-002A ;0201HP3B, \$HC-EPH-SCRN-S,



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: H24010643-002A ;0201HP3B , \$HC-EPH-SCRN-S,
Raw File: \\HEFLE\PROGRAMS\ORG\HP3B\DAT\HP3B020124_B\0201HP3B.0007.RAW
Date & Time Acquired: 2/1/2024 4:45:42 PM
Method File: \\HEFLE\PROGRAMS\ORG\HP3B\METHODS\SRB051723S.MET
Calibration File: \\HEFLE\PROGRAMS\ORG\HP3B\CALS\SRB051723S.CAL
Sample Weight: 30.1 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 hydrocarbons: 25094.0800
Mean RF for C19 to C36 Hydrocarbons: 26346.6000
Mean RF for Total Extractable Hydrocarbons: 25720.3400
Rt range for Diesel Range Organics: 6.91 to 17.43
Rt range for C9 to C18 Hydrocarbons: 5.91 to 12.91
Rt range for C19 to C36 Hydrocarbons: 12.96 to 20.88

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	13.007	3710902	6.645	7.905	118.97	-
*1-Chloro-octadecane	13.795	2933204	6.645	7.646	115.07	-

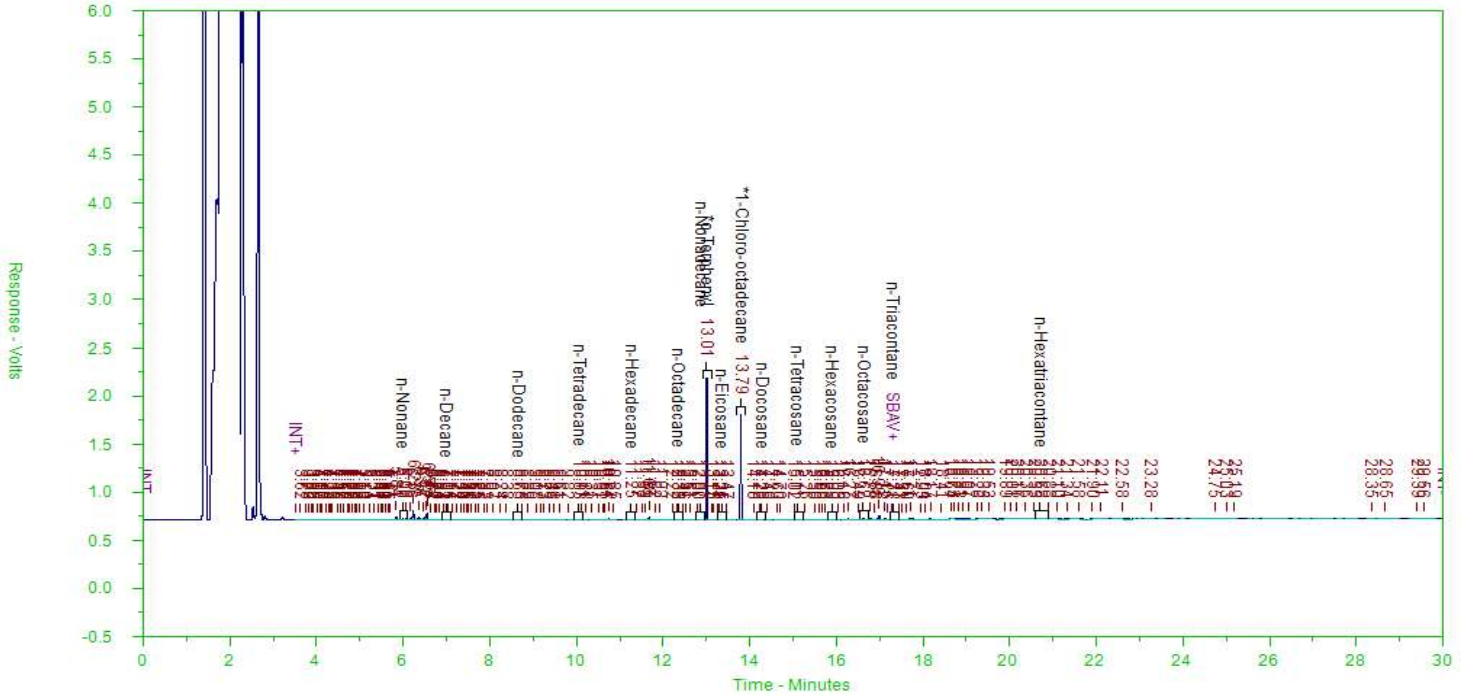
DRO Area: 807877 DRO Amount: 2.0870461
TEH Area: 2643446.8 TEH Amount: 6.829004
C9-C18 Area: 1097639.1 C9-C18 Amount: 2.9063754
C19-C36 Area: 1012333 C19-C36 Amount: 2.5530677

H24010643 - H24010643-003A

Batch ID: 70171

G:\Org\HP3B\DAT\HP3B020124_B\0201HP3B.0008.RAW

H24010643-003A ;0201HP3B, \$HC-EPH-SCRN-S,



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: H24010643-003A ;0201HP3B , \$HC-EPH-SCRN-S,
Raw File: \\HEFLE\PROGRAMS\ORG\HP3B\DAT\HP3B020124_B\0201HP3B.0008.RAW
Date & Time Acquired: 2/1/2024 5:30:26 PM
Method File: \\HEFLE\PROGRAMS\ORG\HP3B\METHODS\SRB051723S.MET
Calibration File: \\HEFLE\PROGRAMS\ORG\HP3B\CALS\SRB051723S.CAL
Sample Weight: 30.54 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 hydrocarbons: 25094.0800
Mean RF for C19 to C36 Hydrocarbons: 26346.6000
Mean RF for Total Extractable Hydrocarbons: 25720.3400
Rt range for Diesel Range Organics: 6.91 to 17.43
Rt range for C9 to C18 Hydrocarbons: 5.91 to 12.91
Rt range for C19 to C36 Hydrocarbons: 12.96 to 20.88

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	13.005	2372376	6.549	4.981	76.06	-
*1-Chloro-octadecane	13.794	1879873	6.549	4.830	73.75	-

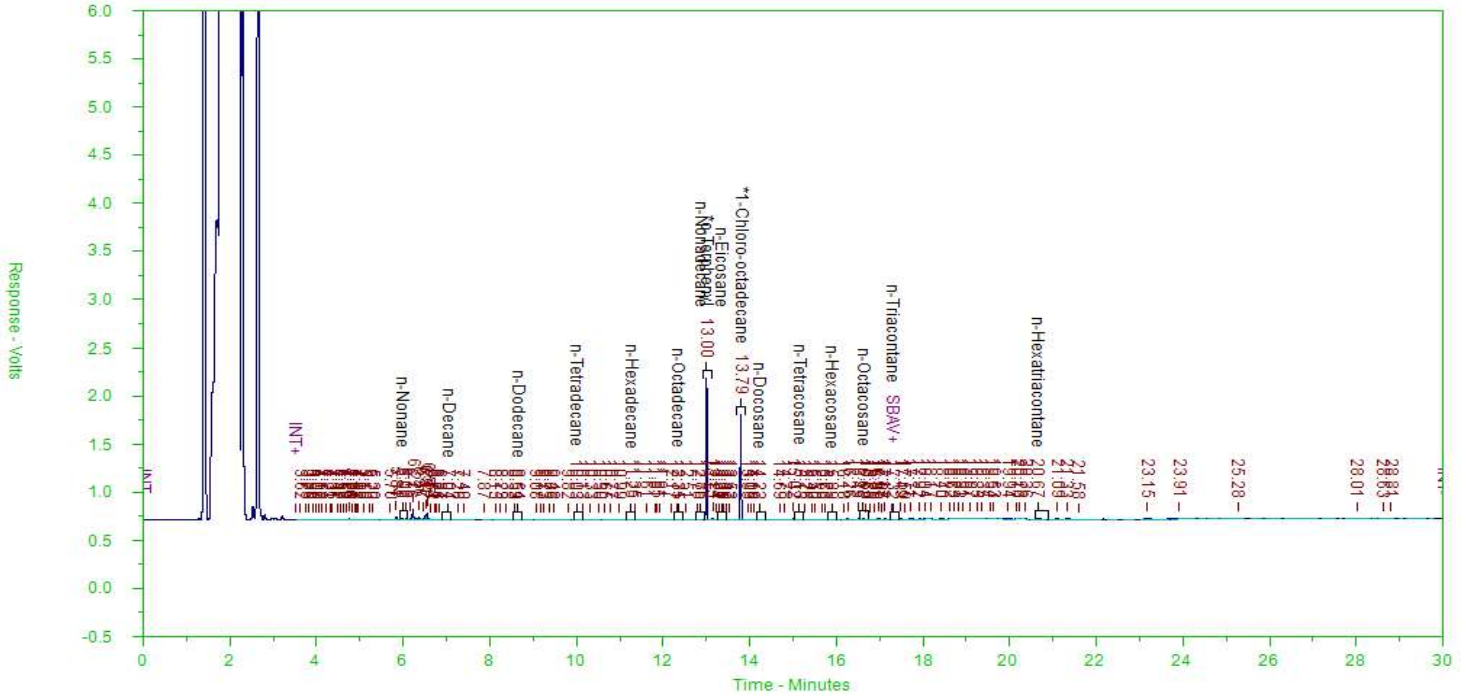
DRO Area: 530171.75 DRO Amount: 1.3498976
TEH Area: 1741484.8 TEH Amount: 4.434084
C9-C18 Area: 821148.6 C9-C18 Amount: 2.1429467
C19-C36 Area: 520726.75 C19-C36 Amount: 1.2943337

H24010643 - H24010643-004A

Batch ID: 70171

G:\Org\HP3B\DAT\HP3B020124_B\0201HP3B.0009.RAW

H24010643-004A ;0201HP3B, \$HC-EPH-SCRN-S,



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: H24010643-004A ;0201HP3B , \$HC-EPH-SCRN-S,
Raw File: \\HEFLE\PROGRAMS\ORG\HP3B\DAT\HP3B020124_B\0201HP3B.0009.RAW
Date & Time Acquired: 2/1/2024 6:14:43 PM
Method File: \\HEFLE\PROGRAMS\ORG\HP3B\METHODS\SRB051723S.MET
Calibration File: \\HEFLE\PROGRAMS\ORG\HP3B\CALS\SRB051723S.CAL
Sample Weight: 30.66 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 hydrocarbons: 25094.0800
Mean RF for C19 to C36 Hydrocarbons: 26346.6000
Mean RF for Total Extractable Hydrocarbons: 25720.3400
Rt range for Diesel Range Organics: 6.91 to 17.43
Rt range for C9 to C18 Hydrocarbons: 5.91 to 12.91
Rt range for C19 to C36 Hydrocarbons: 12.96 to 20.88

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	13.001	2321127	6.523	4.854	74.42	-
*1-Chloro-octadecane	13.790	1862032	6.523	4.765	73.05	-

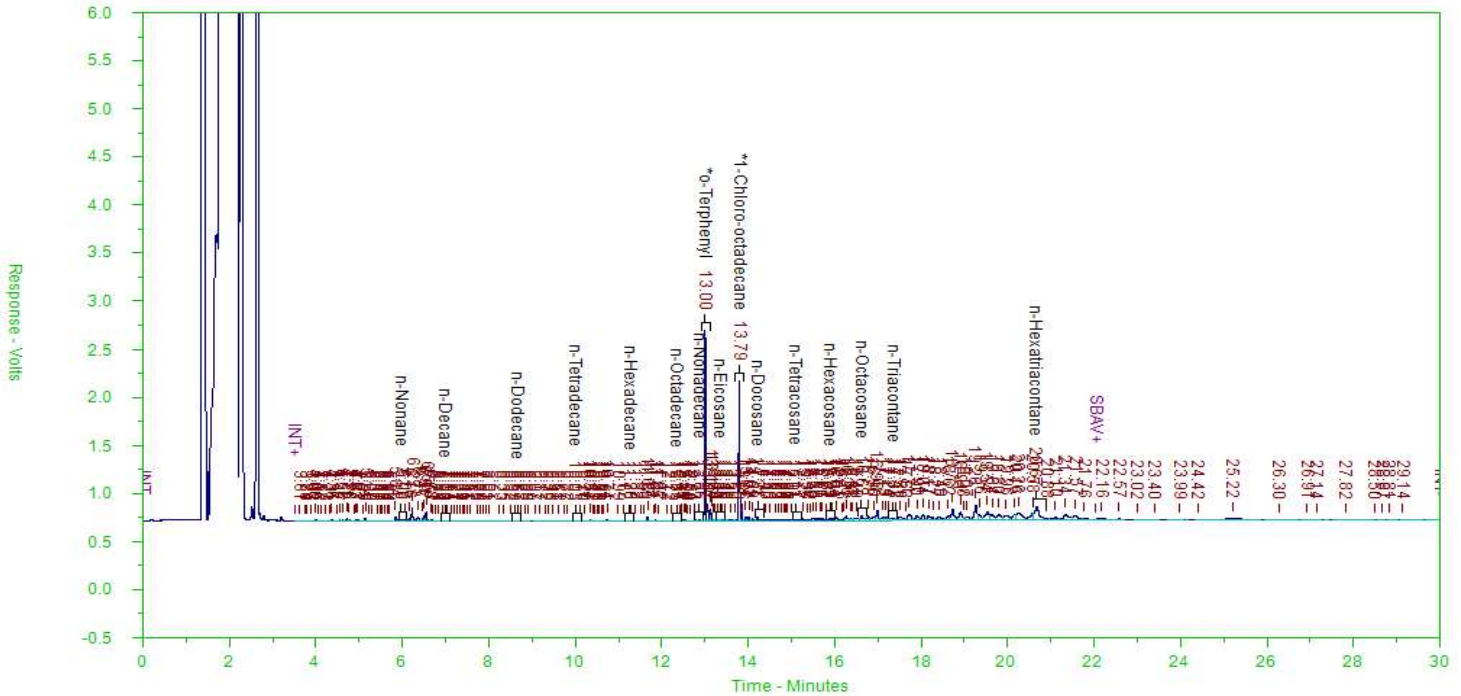
DRO Area: 344053.5 DRO Amount: 0.87258375
TEH Area: 1262467.5 TEH Amount: 3.2018526
C9-C18 Area: 630052.06 C9-C18 Amount: 1.6378078
C19-C36 Area: 382293 C19-C36 Amount: 0.9465197

H24010643 - H24010643-005A

Batch ID: 70171

G:\Org\HP3B\DAT\HP3B020124_B\0201HP3B.0010.RAW

H24010643-005A ;0201HP3B , \$HC-EPH-SCRN-S,



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: H24010643-005A ;0201HP3B , \$HC-EPH-SCRN-S,
Raw File: \\HEFLE\PROGRAMS\ORG\HP3B\DAT\HP3B020124_B\0201HP3B.0010.RAW
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Method File: \\HEFLE\PROGRAMS\ORG\HP3B\METHODS\020124_10.MET
Calibration File: \\HEFLE\PROGRAMS\ORG\HP3B\CALS\SRB051723S.CAL
Sample Weight: 30.08 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 hydrocarbons: 25094.0800
Mean RF for C19 to C36 Hydrocarbons: 26346.6000
Mean RF for Total Extractable Hydrocarbons: 25720.3400
Rt range for Diesel Range Organics: 6.91 to 17.43
Rt range for C9 to C18 Hydrocarbons: 5.91 to 12.91
Rt range for C19 to C36 Hydrocarbons: 12.96 to 20.88

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	13.003	3152412	6.649	6.720	101.07	-
*1-Chloro-octadecane	13.790	2501116	6.649	6.524	98.12	-

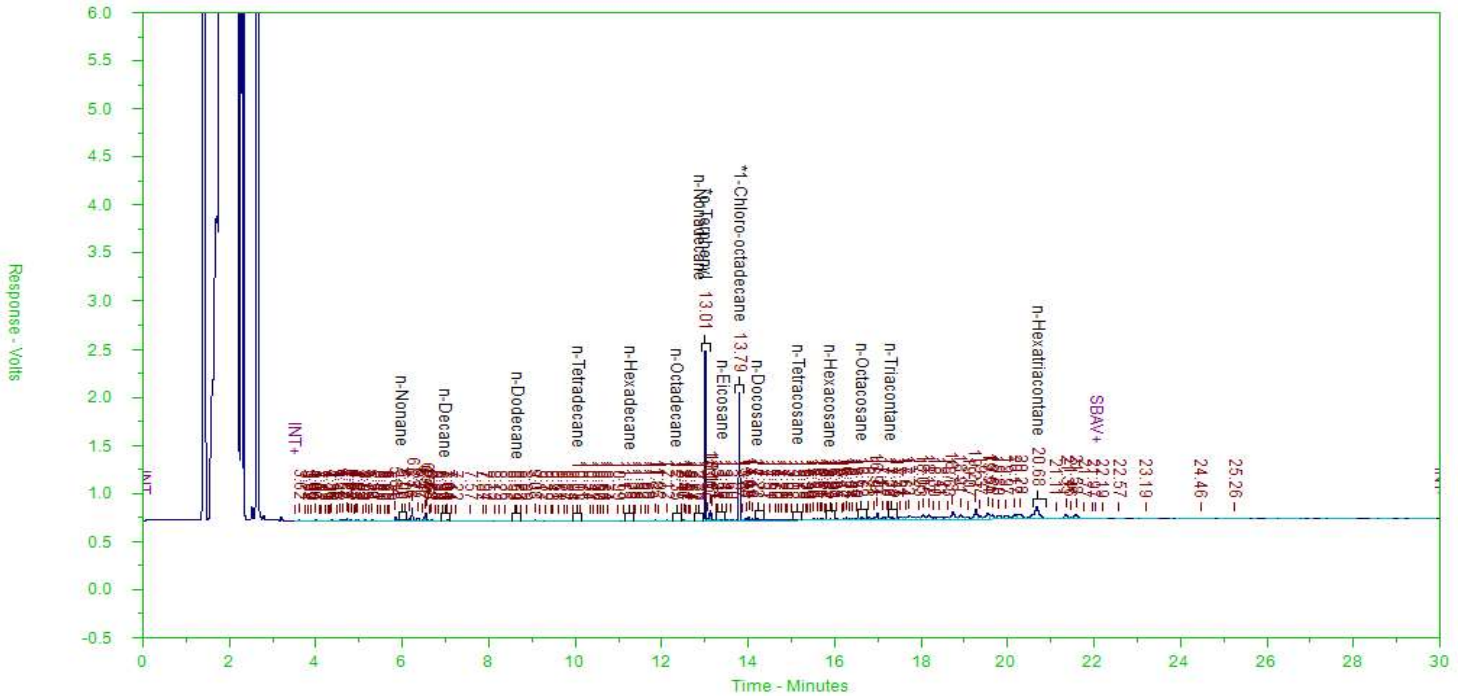
DRO Area: 3629295.8 DRO Amount: 9.382052
TEH Area: 13135826 TEH Amount: 33.957275
C9-C18 Area: 1193053.6 C9-C18 Amount: 3.1611187
C19-C36 Area: 10494585 C19-C36 Amount: 26.484566

H24010643 - H24010643-007A

Batch ID: 70171

G:\Org\HP3B\DAT\HP3B020124_B\0201HP3B.0012.RAW

H24010643-007A ;0201HP3B , \$HC-EPH-SCRN-S,



EXTRACTABLE PETROLEUM HYDROCARBONS (EPH) SCREENING ANALYSIS CHROMATOGRAM

Sample Name: H24010643-007A ;0201HP3B , \$HC-EPH-SCRN-S,
Raw File: \\HEFLE\PROGRAMS\ORG\HP3B\DAT\HP3B020124_B\0201HP3B.0012.RAW
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Method File: \\HEFLE\PROGRAMS\ORG\HP3B\METHODS\020124_10.MET
Calibration File: \\HEFLE\PROGRAMS\ORG\HP3B\CALS\SRB051723S.CAL
Sample Weight: 30.26 Dilution: 2 S.A.: 1

Mean RF for C9 to C18 hydrocarbons: 25094.0800
Mean RF for C19 to C36 Hydrocarbons: 26346.6000
Mean RF for Total Extractable Hydrocarbons: 25720.3400
Rt range for Diesel Range Organics: 6.91 to 17.43
Rt range for C9 to C18 Hydrocarbons: 5.91 to 12.91
Rt range for C19 to C36 Hydrocarbons: 12.96 to 20.88

SURROGATE COMPOUND	RT	AREA	ACTUAL	MEASURED	%REC	
*o-Terphenyl	13.006	2838226	6.609	6.014	91.00	-
*1-Chloro-octadecane	13.794	2271814	6.609	5.890	89.12	-

DRO Area: 2565347.5 DRO Amount: 6.5922027
TEH Area: 10474122 TEH Amount: 26.91547
C9-C18 Area: 881587.25 C9-C18 Amount: 2.3219616
C19-C36 Area: 8437290 C19-C36 Amount: 21.166035



Work Order Receipt Checklist

Water and Environmental Technologies

H24010643

Login completed by: Rebecca A. Tooke

Date Received: 1/26/2024

Reviewed by: tjones

Received by: RAT

Reviewed Date: 1/29/2024

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	0.1°C On Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Contact and Corrective Action Comments:

None



Trust our People. Trust our Data.

Chain of Custody & Analytical Request Record

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Page 1 of 1

Account Information (Billing information)

Company/Name: WET
 Contact: Accounting
 Phone: (406) 782-5220
 Mailing Address: 480 E Park St
 City, State, Zip: Butte, MT 59701
 Email: Accounting@waterenvtech.com
 Receive Invoice: Hard Copy Email
 Purchase Order: Hard Copy Email
 Quote: Bottle Order

Report Information (if different than Account information)

Company/Name: WET
 Contact: RAYE SURRETT
 Phone: (406) 431-2447
 Mailing Address: 480 EAST PARK ST.
 City, State, Zip: BUTTE, MT 59701
 Email: RSURRETT@WATERENVTECH.COM
 Receive Report: Hard Copy Email
 Special Report/Forms: LEVEL IV INELAC EDD/EDT (contact laboratory) Other

Comments

JESSICA OWLES
 (509) 860-6017
 JOWLES@WATERENVTECH.COM
 * IF EPH SCREEN RESULTS ARE ABOVE THE TRIGGER VALUE (200 mg/kg), ANALYZE FOR EPH FRACTIONS WITHOUT PAHS.

Project Information

Project Name, PWSID, Permit, etc.: HRANGESMO1 / 2024.2021
 Sampler Name: JESSICA OWLES
 Sampler Phone: (509) 860-6017
 Sample Origin State: MT
 EPA/State Compliance: Yes No
 URANIUM MINING CLIENTS MUST indicate sample type
 Unprocessed Ore
 Processed Ore (Ground or Refined) **CALL BEFORE SENDING
 11(e) Byproduct Material (Can ONLY be Submitted to ELI Casper Location)

Matrix Codes

- A - Air
- W - Water
- S - Soils/Solids
- V - Vegetation
- B - Bios assay
- O - Oil
- DW - Drinking Water

Analysis Requested

- EPH SCREEN
- MONITORING
- WITH SELECTED EPA METHOD B270
- PAHS (GSM)
- EPA METHOD B260
- KGS
- CPH SCREEN
- MODIFIED METHOD
- RESORCINOL
- RECOVERED PART (RPA) METALS

All turnaround times are standard unless marked as RUSH.
 Energy Laboratories MUST be contacted prior to RUSH sample submittal for charges and scheduling - See Instructions Page

Sample ID	Date	Time	Collection	Matrix (See Codes Above)	Number of Containers	Analysis Requested										RUSH TAT	ELI LAB ID (Laboratory Use Only)	
						EPH SCREEN	MONITORING	WITH SELECTED EPA METHOD B270	PAHS (GSM)	EPA METHOD B260	KGS	CPH SCREEN	MODIFIED METHOD	RESORCINOL	RECOVERED PART (RPA) METALS			
1 TP-1-1-2	1-25-24	920		S	3	X	X	X	X	X	X	X	X	X	X	X		
2 TP-2-1-2	1-26-24	940		S	3	X	X	X	X	X	X	X	X	X	X	X		
3 TP-3-1-2	1-25-24	1010		S	3	X	X	X	X	X	X	X	X	X	X	X		
4 FD1-TP-24-01-25	1-25-24	921		S	3	X	X	X	X	X	X	X	X	X	X	X		
5 C-1	1-25-24	1100		S	3	X	X	X	X	X	X	X	X	X	X	X		
6 C-2	1-25-24	1110		S	3	X	X	X	X	X	X	X	X	X	X	X		
7 FD2-C-24-01-25	1-25-24	1111		S	3	X	X	X	X	X	X	X	X	X	X	X		
8 TBI-24-01-25																		
9																		

ELI is REQUIRED to provide preservative traceability. If the preservatives supplied with the bottle order were NOT used, please attach your preservative information with this COC.

Custody Record MUST be signed: JESSICA OWLES
 Date/Time: 1-25-24 1500
 Signature: [Signature]
 Received by Laboratory (print): [Signature]
 Date/Time: 1-26-24 0830
 Signature: [Signature]

Shipped By: [Signature]
 Cooler ID(s): Y N C B
 Custody Seals: Y N C B
 Receipt Temp: 0.1 °C
 In fact: Y N
 Temp Blank: Y N
 On Ice: Y N
 Payment Type: Cash Check
 Amount: \$
 Receipt Number (cash/check only):

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All subcontracted data will be clearly notated on your analytical report.

Appendix F

Soil Laboratory Analytical Report Data Validation



Data Verification/Validation Checklist and Summary Report

PROJECT AND LABORATORY INFORMATION	
Project/Task/Sub-Task #:	2024.2021/005: 4 Ranges - Livingston Wellness Center
Site & Location:	Katie Bonnel Park – Livingston, MT
Sample Collection Date(s):	January 25, 2024
Laboratory & Location:	Energy Laboratories – Helena, MT
Sample Delivery Group (SDG):	Test Pit Investigation
Work Order (WO):	H24010643
Extraction/Prep Date(s):	NA
Analysis Date(s):	January 26 – February 6, 2024
Laboratory Report Date(s):	February 14, 2024
Data Validator:	Laurel Bitterman
Data Validation Date(s):	February 15, 2024
Data Validation Reviewer:	Janelle Garza
Data Validation Review Date(s):	February 16, 2024

SDG/WO					
Sample ID	Lab ID	Sample Date	Sample Time	Matrix	Notes
TP-1:1-2	H24010643-001	January 25, 2024	9:20	Soil	
TP-2:1-2	H24010643-002	January 25, 2024	9:40	Soil	
TP-3:1-2	H24010643-003	January 25, 2024	10:10	Soil	
FD1-TP-24-01-25	H24010643-004	January 25, 2024	9:21	Soil	TP-1:1-2 duplicate
C-1	H24010643-005	January 25, 2024	11:00	Soil	
C-2	H24010643-006	January 25, 2024	11:10	Soil	
FD2-C-24-01-25	H24010643-007	January 25, 2024	11:11	Soil	C-2 duplicate
TB1-24-01-25	H24010643-008	January 25, 2024	9:20	Deionized (DI) water	Trip blank

METHOD(S)/ANALYSES	
D2974	Moisture
SW6020: Total Metals	Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver
SW7471B	Total Mercury
SW8015M: Extractable Petroleum Hydrocarbons (EPH) Screen	Total Extractable Hydrocarbons (TEH)
SW8260B: Volatile Organic Compounds (VOCs)	Short List
SW8270E: Semi-Volatile Organic Compounds (SVOCs)	Low Level by Selected Ion Monitoring (SIM)

QUALIFIER DEFINITIONS	
U	The analyte was analyzed for but was not detected above the level of the adjusted detection limit or quantitation limit, as appropriate.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J-	The result is an estimated quantity, but the result may be biased low.
J+	The result is an estimated quantity, but the result may be biased high.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

GUIDANCE DOCUMENTS	
List any/all Environmental Protection Agency (EPA) or state Department of Environmental Quality (DEQ) guidance documents referenced/resourced.	N/A X

List any/all project quality assurance plan (QAP), sampling and analysis plan (SAP), or work plan (WP) referenced/resourced.	N/A		
4 Ranges Foundation Environmental Investigation Work Plan			
List any/all data validation (DV) standard operating guideline (SOG) or procedure (SOP) referenced/resourced.	N/A		
Water & Environmental Technologies (WET) Data Verification & Validation (DVV): Standard Operating Guidelines (SOG) Inorganic, Organic, High Resolution, & Radioanalytical (January 18, 2024)			
Select the applicable United States Environmental Protection Agency (USEPA) National Functional Guidelines (NFGs) Superfund Methods Data Review (SMDR) referenced/resourced:	Inorganic	Organic	N/A
	X	X	
Select the applicable USEPA Guideline for Data Review referenced/resourced:	High Resolution	Asbestos	N/A
			X
Was the Idaho National Engineering and Environmental Laboratory (INEEL) Radioanalytical DV Guide referenced/resourced? If no, enter any/all radioanalytical DV SOG/SOP referenced/resourced:	Yes	No	N/A
			X

CHECKLIST

A. Field QA/QC

A1. Was field documentation provided and complete?	Yes	No	N/A
	X		
A2. Were calibration checks within project stabilization criteria (or other applicable range)?	Yes	No	N/A
	X		
A3. Was chain-of-custody (COC) and container label documentation accurate and complete?	Yes	No	N/A
	X		
A4. Were all planned samples able to be collected?	Yes	No	N/A
	X		
A5. Were samples submitted received by the laboratory in good condition?	Yes	No	N/A
	X		
A6. Other issues? If yes, detail below.	Yes	No	N/A
		X	
Field Preservation			
A7. Were samples submitted within a reasonable time frame to meet extraction/prep and/or analytical hold times (HT)? If no, detail below.	Yes	No	N/A
	X		
A8. Were samples submitted properly filtered and/or preserved?	Yes	No	N/A
			X
A9. Were samples received by the laboratory within temperature and/or pH requirements? If no, detail below.	Yes	No	N/A
			X
A10. Were volatile samples collected with zero headspace, or was enough volume available for analysis without using any containers with bubbles? If no, detail below.	Yes	No	N/A
			X
Field Precision			
A11. Were field duplicate (FD) samples required?	Yes	No	N/A
	X		
	Yes	No	N/A

A12. Were FD samples collected at the correct frequency? If no, all field data points are qualified as estimated (J/UJ) due to lack of field precision QA/QC (FDX).	X		
A13. Were FD relative percent difference (RPD) results at or below control limits (CLs)? If no, detail below.	Yes	No	N/A
C-2 (original) & FD2-C-24-01-25 (duplicate): representing samples: C-1, C-2, and FD2-24-01-25 ❖ Benzo(k)fluoranthene (SW8270E) RPD was 42.4%, >35% CL. The original and duplicate sample results were <5xRL. The absolute difference between the original and duplicate sample results was ≤2xRL. ➤ No qualification required.		X	
Field Blanks			
A14. Was field decontamination of sampling equipment required?	Yes	No	N/A
		X	
A15. Were equipment rinse blank (ERB) samples required?	Yes	No	N/A
			X
A16. Were ERB samples collected at the correct frequency? If no, all field data points are qualified (J/UJ) as estimated due to lack of field QA/QC (ERBX).	Yes	No	N/A
			X
A17. Were all ERB results non-detect (ND)? If no, detail below.	Yes	No	N/A
			X
A18. Were field blank (FB) samples required?	Yes	No	N/A
		X	
A19. Were FB samples collected at the correct frequency? If no, all data is qualified as estimated due to lack of field QA/QC (FBX).	Yes	No	N/A
			X
A20. Were all FB results ND? If no, detail below.	Yes	No	N/A
			X
A21. Were trip blank (TB) samples required (volatiles analyses)?	Yes	No	N/A
	X		
A22. Were TB samples submitted as required (one per shipping container)? If no, all data is qualified as estimated due to lack of TB (TBX).	Yes	No	N/A
	X		
Field QA/QC Summary			
Out of 655 total data points, all 655 data points (100%) remain unqualified.			
B. Laboratory QA/QC			
B1. Did the laboratory use appropriate methods to extract/prep and analyze all samples within HT?	Yes	No	N/A
	X		
B2. Were there any results reported below the RL (J) or in exceedance of (E) or over (O) instrument calibration? If yes, detail below.	Yes	No	N/A
TEH in TP-2:1-2 was qualified as estimated (J) due to a detection <RL.	X		
B3. Were there any laboratory qualifiers that will not affect the data quality? If so, please list below.	Yes	No	N/A
96 data points were assigned a D qualifier, meaning the RL was increased due to the sample matrix.	X		
B4. Other issues? If yes, detail below.	Yes	No	N/A
			X
Laboratory Blanks			
B5. Were TB results ND? If no, detail below.	Yes	No	N/A
	X		
B6. Were method blank (MB) samples analyzed at a frequency of one per 20 samples or one per batch?	Yes	No	N/A
		X	
B7. Were MB results ND? If no, detail below.	Yes	No	N/A
		X	
❖ Method SW6020			

<ul style="list-style-type: none"> ➤ Batch 70200 <ul style="list-style-type: none"> ▪ Arsenic was detected at 0.2 mg/kg, <RL of 1 mg/kg. <ul style="list-style-type: none"> • No qualification was required for any samples due to all results $\geq 10 \times \text{MB}$. 			
Laboratory Accuracy			
B8. Were initial/continuing calibration verification (ICV/CCV) analyses performed at the appropriate frequency?	Yes	No	N/A
	X		
B9. Were ICV/CCV percent recoveries within CLs? If no, detail below.	Yes	No	N/A
		X	
<ul style="list-style-type: none"> ❖ Method SW8270E <ul style="list-style-type: none"> ➤ Batch B_186749: Lab IDs 005-007 <ul style="list-style-type: none"> ▪ Surr: Nitrobenzene-d5 was recovered at 131%, >120% upper CL. <ul style="list-style-type: none"> • All associated recovery results were qualified as estimated (J). 			
B10. Were laboratory control samples (LCS) / fortified blanks (LFB) analyzed at a frequency of one per 20 samples or one per batch?	Yes	No	N/A
	X		
B11. Were LFB/LCS percent recoveries within CLs? If no, detail below.	Yes	No	N/A
		X	
<ul style="list-style-type: none"> ❖ Method SW8260B <ul style="list-style-type: none"> ➤ Batch 70142: Lab IDs 001-007 <ul style="list-style-type: none"> ▪ Bromoform was recovered at 122%, >117% upper CL. <ul style="list-style-type: none"> • No qualification was required for any samples due to all ND results. ▪ Bromomethane was recovered at 221%, >121% upper CL. <ul style="list-style-type: none"> • No qualification was required for any samples due to all ND results. ▪ Chloroethane was recovered at 141%, >140% upper CL. <ul style="list-style-type: none"> • No qualification was required for any samples due to all ND results. ▪ Styrene was recovered at 132%, >127% upper CL. <ul style="list-style-type: none"> • No qualification was required for any samples due to all ND results. 			
B12. Were matrix spike (MS) samples analyzed at a frequency of one per 20 samples or one per batch?	Yes	No	N/A
	X		
B13. Were there any MS or MSDs where the result was >4x the spike amount and were therefore not calculated by the laboratory or are exempt from qualification?	Yes	No	N/A
	X		
<ul style="list-style-type: none"> ❖ Method SW6020 <ul style="list-style-type: none"> ➤ Batch 70200 <ul style="list-style-type: none"> ▪ H24010643-001AMS: TP-1:1-2 <ul style="list-style-type: none"> • Barium (MS/MSD) 			
B14. Were MS percent recoveries within CLs? If no, detail below.	Yes	No	N/A
		X	
<ul style="list-style-type: none"> ❖ Method SW8015M <ul style="list-style-type: none"> ➤ Batch 70171: Lab IDs 001-007 <ul style="list-style-type: none"> ▪ H24010570-001AMS/D: unassociated work order sample <ul style="list-style-type: none"> • TEH was recovered at 57% (MS) & 38% (MSD), <60% lower CL. <ul style="list-style-type: none"> ◆ Samples TP-2:1-2, C-1, C-2, and FD2-C-24-01-25 were qualified as estimated low (J-) due to detected results. ◆ Samples TP-1:1-2, TP-3:1-2, and FD1-TP-24-01-25 were qualified as estimated (UJ) due to ND results. ❖ Method SW8260B <ul style="list-style-type: none"> ➤ Batch 70142: Lab IDs 001-007 <ul style="list-style-type: none"> ▪ H24010510-005AMS/D: unassociated work order sample <ul style="list-style-type: none"> • 2-Chloroethyl vinyl ether was recovered at 194% (MS) & 177% (MSD), >155% upper CL. <ul style="list-style-type: none"> ◆ No qualification was required for any samples due to all ND results. ➤ Batch R192076: Lab ID 008 <ul style="list-style-type: none"> ▪ H24010640-001AMSD: unassociated work order sample <ul style="list-style-type: none"> • Styrene was recovered at 63% (MSD), <75% lower CL. <ul style="list-style-type: none"> ◆ Samples TB1-24-01-25 was qualified as estimated (UJ) due to a ND result. ❖ Method SW8270E <ul style="list-style-type: none"> ➤ Batch B_186693: Lab IDs 001-004 <ul style="list-style-type: none"> ▪ B24011341-018ALMS/D: unassociated work order sample <ul style="list-style-type: none"> • 1-Methylnaphthalene was recovered at 52% (MS) & 53% (MSD), <54% lower CL. <ul style="list-style-type: none"> ◆ No qualification was required for any samples due to all ND results. • Benzo(g,h,i)perylene was recovered at 60% (MS) & 61% (MSD) <62% lower CL. 			

- ◆ No qualification was required for any samples due to all ND results.
- Pyrene was recovered at 61% (MS & MSD), <62% lower CL.
- ◆ No qualification was required for any samples due to all ND results.
- Anthracene was recovered at 65% (MSD), <66% lower CL.
- ◆ No qualification was required for any samples due to all ND results.
- Fluoranthene was recovered at 69% (MSD), <70% lower CL.
- ◆ No qualification was required for any samples due to all ND results.
- Surr: Nitrobenzene-d5 was recovered at 107% (MSD), >106% upper CL.
- ◆ All associated recovery results were qualified as estimated J.

B15. Were surrogate recoveries within CLs (organics only)? If no, detail below.	Yes	No	N/A
		X	

- ❖ Sample TP-1:1-2
 - Method SW8270E
 - Surr: Nitrobenzene-d5 was recovered at 38.0%, between the expanded lower CL of 10% and the lower CL of 43%.
 - All SVOA compounds were qualified as estimated (UJ) due to ND results.
- ❖ Sample TP-2:1-2
 - Method SW8270E
 - Surr: Nitrobenzene-d5 was recovered at 39.0%, between the expanded lower CL of 10% and the lower CL of 43%.
 - All SVOA compounds were qualified as estimated (UJ) due to ND results.
- ❖ Sample TP-3:1-2
 - Method SW8270E
 - Surr: Nitrobenzene-d5 was recovered at 36.0%, between the expanded lower CL of 10% and the lower CL of 43%.
 - All SVOA compounds were qualified as estimated (UJ) due to ND results.
- ❖ Sample FD1-TP-24-01-25
 - Method SW8270E
 - Surr: Nitrobenzene-d5 was recovered at 40.0%, between the expanded lower CL of 10% and the lower CL of 43%.
 - All SVOA compounds were qualified as estimated (UJ) due to ND results.

Laboratory Precision

B16. Were laboratory duplicates analyzed at a frequency of one per 20 samples or one per batch, either through laboratory sample duplicates (LSD), LCS duplicates (LCSD), or MS duplicates (MSD)?	Yes	No	N/A
	X		

B17. Were laboratory duplicate RPD results at or below CLs? If no, detail below.	Yes	No	N/A
	X		

- ❖ Method SW8260B
 - Batch R192076: Lab ID 008
 - H24010640-001AMSD: unassociated work order sample
 - Styrene RPD was 22%, >20% CL.
 - ◆ No qualification required due to a ND result.

B16. Were serial dilution (SD) samples analyzed at a frequency of one per 20 samples or one per batch (metals only)?	Yes	No	N/A
	X		

B17. Were SD RPD results at or below CLs? If no, detail below.	Yes	No	N/A
	X		

Laboratory QA/QC Summary

- Out of 655 total data points:
- 568 data points (86.7%) remain unqualified.
 - Out of 87 data points (13.3%) qualified as estimated:
 - 1 data point (5.7% of qualified, 0.2% of total) were due to detections <RL.
 - No data points were due to laboratory blank contamination.
 - All 87 data points were due to poor accuracy (high CCV and LCS recoveries, MS/MSD failures, and low SRs).
 - No data points were due to poor precision.
 - No data points were rejected.

OVERALL SUMMARY
Data Quality

- Out of 655 total data points:
- 568 data points (86.7%) remain unqualified and are considered quantitative.

- Out of 87 data points (13.3%) qualified as estimated and assigned as qualitative:
 - No data points were due to field QA/QC.
 - All 87 data points were due to laboratory QA/QC.
- No data points were rejected.

Completeness

Out of 7 samples planned, 7 samples were completed. This sample delivery group is 100% complete.

Out of 43 analyses planned, 43 analyses were completed. This work order is 100% complete.

Out of 655 data points produced, 655 data points were useable. This data package is 100% complete.