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FINAL

SUMMARY REPORT

Buffalo Center Service

2022 Environmental Services - DEC

File Number 120.26.001

DELTA JUNCTION, ALASKA

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Submitted To: Madhouse Enterprises, LLC  
PO Box 327  
Delta Junction, Alaska 99737  
Attn: Charlie Herman

Subject: FINAL SUMMARY REPORT, BUFFALO CENTER SERVICE  
2022 ENVIRONMENTAL SERVICES - DEC FILE NUMBER 120.26.001,  
DELTA JUNCTION, ALASKA

Shannon & Wilson prepared this report as specified in our September 2, 2022 *Buffalo Center Service Work Plan Implementation Proposal*. Our services were completed in accordance with our August 2022 *Buffalo Center Service - DEC File Number 120.26.001 Final 2022 Environmental Services Work Plan (Work Plan)* approved by the Alaska Department of Environmental Conservation (DEC) on September 1, 2022.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

Sheila Hinckley  
Senior Environmental Scientist  
*Role: Project Manager*

Christopher Darrah, LG, CPG, CPESC  
Vice President  
*Role: Principle in Charge*

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Important Information

## ACRONYMS

°C	degree centigrade
AAC	Alaska Administrative Code
BCS	Buffalo Center Service
COC	chain of custody
COPC	contaminant of potential concern
CUL	cleanup level
DEC	Alaska Department of Environmental Conservation
DL	detection limit
DQO	data quality objective
DRO	diesel range organics
EPA	United States Environmental Protection Agency
GRO	gasoline range organics
IDW	investigation derived waste
LCS/LCSD	laboratory control sample/laboratory control sample duplicate
LDRC	laboratory data review checklist
LOD	limit of detection
LOQ	limit of quantitation
MB	method blank
mg/kg	milligram per kilogram
MS/MSD	matrix spike/matrix spike duplicate
PAH	polynuclear aromatic hydrocarbon
PID	photoionization detector
ppm	parts per million
QA	quality assurance
QC	quality control
RPD	relative percent difference
SGS	SGS North America, Inc.
SVE	soil vapor extraction
TB	trip blank
VOC	volatile organic compound
Work Plan	<i>Buffalo Center Service - DEC File Number 120.26.001 Final 2022 Environmental Services Work Plan (August 2022)</i>

## 1 INTRODUCTION

We have prepared this report summarizing the characterization of soils directly underlying the footprint of the shop building at the Buffalo Center Service (BCS) site located at 1600 Richardson Highway in Delta Junction, Alaska (Figure 1). The Alaska Department of Environmental Conservation (DEC) file number for the site is 120.26.001 and the Underground Storage Tank Facility ID number is 0125.

The BCS, located on the Richardson Highway in Delta Junction, Alaska, is listed on the DEC Contaminated Site Database for a petroleum release incident in 1989 and subsequent underground storage tank removals. A cleanup complete determination, with institutional controls for this site was issued by the DEC in a letter dated October 30, 2020.

Our services described in this report were performed in accordance with our August 2022 *Buffalo Center Service - DEC File Number 120.26.001 Final 2022 Environmental Services Work Plan* (Work Plan) which was approved by DEC on September 1, 2022.

## 2 BACKGROUND

The BCS shop building roof collapsed in early 2022 due to excessive snow load, which caused the septic system beneath the shop building to freeze. You notified the DEC of the scheduled shop-building and septic-system repairs, and DEC requested soil characterization below the footprint of the shop building, as the repairs include tasks that conflict with the current institutional controls. You retained Shannon & Wilson to prepare a Work Plan to support soil-screening and sampling during the planned building repair activities.

We performed a site visit on September 20, 2022 during which we met with you and your contractor J&J Specialties. We assessed exposed soils for potential volatile contaminants during the site visit using a photoionization detector (PID) after removal of the concrete slab. PID readings were collected from beneath the former slab as well as from excavated soils and excavation limits associated with the septic line excavation in accordance with the DEC-approved Work Plan.

### 3 FIELD ACTIVITIES SUMMARY

Shannon & Wilson personnel, Mr. Michael Jaramillo (DEC qualified environmental professional), mobilized to the project site on September 20, 2022 to complete the field activities. Mr. Jaramillo collected field screening samples from exposed soils beneath the removed slab footprint as well as the excavated soils and excavation limits from the septic line repair. Field screening was conducted using a hand-held MiniRae® 3000 PID with an 11.7 electron volt lamp, in accordance with the Work Plan. A photographic log and copies of our field forms are provided in Appendix A and B, respectively.

#### 3.1 Exposed Soils from Concrete Slab Removal

Mr. Jaramillo established a grid of the exposed soil from the removed slab footprint (approximately 40 feet long by 63 feet wide; Appendix B). A total of 40 grid subunits (approximately 8 feet by 8 feet) were field screened with the PID to assess potential volatile contamination. Heated headspace field screening samples were collected from each grid subunit. In areas that exhibited staining or fuel/chemical odor, headspace field screening samples were collected from an area expected to be most contaminated. Field screening results from the grid were less than 10 parts per million (ppm) and did not exhibit signs of contamination, with the following two exceptions:

- Grids E-4 and E-5 had PID readings of 224.5 ppm and 21.5 ppm, respectively. These grids exhibited staining and volatile odors that we identified to the operators. The staining at E-4 was removed during excavation of the septic line and soils from E-5 were hand dug and placed in the contaminated soils stockpile.

After removal of the stained soils described above, the field screening results were less than 20 ppm and analytical soil samples were not collected.

#### 3.2 Excavated Soils from Septic Line Repair

The contractor side-cast excavated soils along the south side of the excavation. Based on the dimensions of the excavation (approximately 50 feet long, 4.5 feet wide, and 5 feet deep) an estimated 42 cubic yards of soils were excavated to repair the septic line. Mr. Jaramillo collected twenty heated headspace field screening samples from the excavated soils. The majority of headspace samples exhibited PID readings less than 20 ppm and were considered clean, as defined in the Work Plan; those soils were considered usable for backfill. However, the soils excavated within roughly 18 linear feet of the septic exhibited PID readings greater than 20 ppm. Based on the dimensions of the excavated soils, approximately 11 cubic yards of material exhibited elevated PID readings and are considered potentially contaminated soils.

The potentially contaminated soils were placed in a lined stockpile and covered pending analytical results and a decision on their final disposition. We collected three analytical samples (two primary and one field-duplicate) from the stockpiled soil in areas exhibiting the highest PID readings. Analytical samples were submitted for the analysis of gasoline range organics (GRO), diesel range organics (DRO), volatile organic compounds (VOCs), and polynuclear aromatic hydrocarbons (PAHs), in accordance with the Work Plan.

### 3.3 Limits of Excavation

Upon completion of the excavation, Mr. Jaramillo collected heated headspace field screening samples from the excavation sidewalls and base. A dark band of soil along the excavation sidewalls that exhibited a fuel odor. The depth of this band ranged between 1.0 to 1.5 feet in depth, approximately 20 feet in length, and roughly 0.3 feet in thickness. Field screening samples were collected along the entire length of the excavation and various depths, with a focus in areas with potential contamination.

In general, PID results were less than 20 ppm with a few exceptions where the dark band of soil was encountered. In addition, PID results greater than 20 ppm were observed at the excavation base closer to the septic tank. In accordance with the Work Plan, a total of five sidewall samples (one primary sample per sidewall, plus one field duplicate) and two base samples were collected from the limits of excavation. Analytical samples were submitted for the analysis GRO, DRO, VOCs, and PAHs.

## 4 ANALYTICAL SAMPLE SUMMARY

Analytical samples collected from the excavation limits and soil stockpile were submitted for the following analyses:

- GRO by Alaska Method AK101;
- DRO by Alaska Method AK102;
- VOCs by the Environmental Protection Agency (EPA) Method SW8260D; and
- PAHs by the EPA Method SW8270D-SIM.

The samples were hand delivered to SGS North America, Inc. (SGS) receiving office in Fairbanks, Alaska and transported via ground transport to the SGS laboratory in Anchorage, Alaska. The Anchorage SGS laboratory is an DEC-certified laboratory for the requested analyses. Exhibit 1 provides a summary of sample names and descriptions submitted for this project.



**Exhibit 4-1: Analytical Soil Sampling Summary**

Sample ID	Sample Area	Sample Location	Sample Depth (feet)
22BCS-SW-01		Southern Excavation Sidewall	1.1
22BCS-SW-101		Duplicate of Sample 22BCS-SW-01	1.1
22BCS-SW-02	Excavation Sidewall	Northern Excavation Sidewall	1.4
22BCS-SW-03		Western Excavation Sidewall	1.4
22BCS-SW-04		Eastern Excavation Sidewall	3.2
22BCS-Base-01		Excavation Base	Excavation Base
22BCS-Base-02	Excavation Base		4.5
22BCS-POL-01		Stockpile	Not applicable
22BCS-POL-101	Soil Stockpile	Duplicate of Sample 22BCS-POL-01	Not applicable
22BCS-POL-02		Stockpile	Not applicable

## 5 INVESTIGATION DERIVED WASTE

Upon completion of sampling and excavation activities, soils with field screening results less than 20 ppm were returned to their originating area. Soils with evidence of contamination and elevated PID readings were stockpiled in accordance with the Work Plan. Refer to the discussion section for disposal recommendations for the contaminated soils stockpile.

Additional investigation derived waste primarily consisted of disposable sampling equipment (nitrile gloves, paper towels, sorbent pads, plastic bags, etc.). We collected the disposable sampling equipment in a trash bag during the site assessment and dispose of these materials at the Fairbanks North Star Borough Landfill.

## 6 ANALYTICAL RESULTS

We submitted soil samples to SGS laboratory in Anchorage, Alaska for the analysis of GRO, DRO, VOC, and PAH. To evaluate analytical data, we compared soil-sample analytical results to the DEC migration-to-groundwater soil cleanup levels (CULs) for the "Under 40 Inch Zone" listed in Title 18, Chapter 75 of the Alaska Administrative Code (18 AAC 75.341[c] and [d]). Analytical results are presented in the SGS laboratory report 1225761 (Appendix C). A summary of the analytical soil sample results is presented in Table 1 and results exceeding DEC CULs are pictured in Figure 2. Results exceeding DEC CULs are discussed in the subsequent sections.

## 6.1 Excavation Limits

Detected results from the excavation limits were less than DEC CULs with the following exceptions:

- DRO was detected in the excavation base sample *22BCS-BASE-01* at a concentration of 1,170 milligrams per kilogram (mg/kg).
- DRO was detected in the sidewall samples *22BCS-SW-01*, field duplicate *22BCS-SW-101*, and *22BCS-SW-02*, at concentrations of 7,220 mg/kg, 6,330 mg/kg, and 9,050 mg/kg, respectively.
- Tetrachloroethene was detected in the sidewall samples *22BCS-SW-01*, field duplicate *22BCS-SW-101*, and *22BCS-SW-02*, at concentrations of 0.333 mg/kg, 0.271 mg/kg, and 0.565 mg/kg, respectively.

Although not part of the comparison evaluation presented in the Work Plan, we note the greatest DRO concentration observed (sample *22BCS-SW-02* at 9,050 mg/kg) is less than the Maximum Allowable Concentration of 12,500 mg/kg presented in Table B2 – Method Two – Petroleum Hydrocarbon Soil CULs.

## 6.2 Soil Stockpile

Detected results from the potentially contaminated soils stockpile were less than the DEC soil CULs with the following exceptions:

- DRO was detected in the stockpile samples *22BCS-POL-01*, field duplicate *22BCS-POL-101*, and *22BCS-POL-02*, at concentrations of 1,370 mg/kg, 1,310 mg/kg, and 2,010 mg/kg, respectively.

Although not part of the comparison evaluation presented in the Work Plan, we note the greatest DRO concentration observed (sample *22BCS-POL-02* at 2,010 mg/kg) is less than the Maximum Allowable Concentration of 12,500 mg/kg presented in Table B2 – Method Two – Petroleum Hydrocarbon Soil CULs.

## 7 QUALITY ASSURANCE / QUALITY CONTROL

The SGS laboratory report 1225761 and the DEC Laboratory Data Review Checklist (LDRC) are presented in Appendix C. Shannon & Wilson staff performed a quality control (QC) quality assurance (QA) assessment of our sampling procedures and the laboratory reports which is presented in Appendix D. By completing our field activities in accordance with our standard QC/QA procedures and the Work Plan; we consider the samples we collected representative of site conditions at the locations and times they were obtained. Based on the

QA review, analytical data are considered useable with applied qualifiers. The QA assessment in Appendix C identifies analytical results that were qualified due to QC failures reported by the laboratory and Shannon & Wilson. In our opinion, the data produced by SGS Anchorage for this project are suitable for characterizing soil quality at the locations sampled, with qualifications applied by Shannon & Wilson due to data affected by QC failures. The overall completeness goal of obtaining 90% useable data was met.

## 8 DISCUSSION

The goal of this project was to provide DEC with the requested sub-slab soil information during the 2022 repairs, and to inform decision making concerning site management. The results of this investigation will be used to determine the steps, if any, necessary to maintain the site's cleanup complete status.

DRO and tetrachloroethene were detected at concentrations greater than the migration to groundwater DEC soil CUL in limits of excavation samples. However, chasing the contamination left in place was not part of the project scope. In addition, you indicated that the following preventative measures were instituted in order to minimize the potential for vapor intrusion issues resulting from contamination remaining in place. The contractor, J&J Specialties installed the following:

- 2 horizontal, 4-inch diameter, perforated PVC piping along the length of the new shop concrete slab as a passive soil vapor extraction (SVE) measure.
- a vapor barrier liner over the passive SVE measure to further minimize potential vapor intrusion potential.
- a six-inch concrete slab over the passive SVE and vapor barrier.

With these mitigation measures in place, we recommend no change in designation of "Cleanup Complete with Institutional Controls" for this contaminated site.

Based on the analytical results for the contaminated soils stockpile exceeding DEC CULs for DRO, the collected soils will require onsite aeration to facilitate natural attenuation, as described in the Work Plan. The owner will be responsible for managing the petroleum contaminated soils stockpile.

## 9 CLOSURE

This report was prepared for the exclusive use of Madhouse Enterprises LLC and their representatives, in accordance with our scope of services. Third parties may not rely upon

our report. The contents of this report should not be considered a warranty of site-wide environmental conditions. We conducted our services in a manner consistent with the level of care and skill ordinarily exercised by members of the environmental profession currently practicing in Alaska and under similar conditions as this project.

Shannon & Wilson's scope of services did not include evaluating the presence of contaminants or naturally occurring materials other than those for which laboratory analyses were performed. If a service is not specifically indicated in this report, do not assume that it was performed.

This report should not be used without our approval if any of the following occurs:

- Conditions change due to natural forces or human activity at or adjacent to the site.
- Assumptions stated in this report have changed.
- New information, changes in project details, regulations, or laws becomes available that may affect our analyses, recommendations, or conclusions.

If any of these occur, we should be retained to review the applicability of our analyses, recommendations, or conclusions.

No amount of sampling can precisely predict the characteristics, quality, or distribution of subsurface and site conditions. Potential sources of data variation include, but are not limited to:

- The conditions between or at different depths than our samples may be different.
- The passage of time or intervening causes (natural or manmade) may result in changes to site and subsurface conditions.
- Groundwater levels and flow may fluctuate due to seasonal and recharge variations.
- Groundwater flow between different aquifers can occur; no soil layer should be assumed to be water-tight.
- The concentrations of contaminants may change at any sampled or unsampled location in response to natural conditions, chemical reactions, and/or other events.

State and/or federal agencies may require reporting of the information included in this report. Shannon & Wilson does not assume the responsibility for reporting these findings and therefore has not, and will not, disclose the results of this report unless specifically requested and authorized by Madhouse Enterprises LLC, or as required by law. We do not guarantee that regulatory agencies will reach the same conclusions as Shannon & Wilson. We have prepared the attachment *Important Information about Your Environmental Report* to assist you and others in understanding the uses and limitations of our reports.

Table 1 — 2022 Analytical Soil Sample Results

Analytical Method	Analyte	CAS#	Sample Area		Excavation Base		Excavation Sidewalls				Soil Stockpile			
			DEC	Units	22BCS-BASE-01	22BCS-BASE-02	22BCS-SW-01 / 22BCS-SW-101		22BCS-SW-02	22BCS-SW-03	22BCS-SW-04	22BCS-POL-01 / 22BCS-POL-101		22BCS-POL-02
			CULs		9/20/22	9/20/22	9/20/22	DUP	9/20/22	9/20/22	9/20/22	9/20/22	DUP	9/20/22
SM21 2540G	Total Solids	PCT Solids	n/a	%	93.6	91.3	92.8	93.2	92.0	93.7	88.8	93.1	92.8	91.6
AK101	Gasoline Range Organics	GRO	300	mg/kg	<5.22 B*	<5.54 B*	<6.72 B*	<5.35 B*	21.0 JH*	<4.63 B*	<6.80 B*	<7.31 B*	<5.41 B*	<5.81 B*
AK102	Diesel Range Organics	DRO	250	mg/kg	<b>1,170</b>	<b>58.3</b>	<b>7,220</b>	<b>6,330</b>	<b>9,050</b>	14.7 J	26.2	<b>1,370</b>	<b>1,310</b>	<b>2,010</b>
SW8260D (VOC)	1,1,1,2-Tetrachloroethane	630-20-6	0.022	mg/kg	<0.0209	<0.0222	<0.0268	<0.0214	<0.0231	<0.0185	<0.0272	<0.0293	<0.0216	<0.0232
	1,1,1-Trichloroethane	71-55-6	32	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,1,1,2,2-Tetrachloroethane	79-34-5	0.003	mg/kg	<0.00209	<0.00222	<0.00268	<0.00214	<0.00231	<0.00185	<0.00272	<0.00293	<0.00216	<0.00232
	1,1,2-Trichloroethane	79-00-5	0.0014	mg/kg	<0.00104	<0.00111	<0.00135	<0.00107	<0.00116	<0.000925	<0.00136	<0.00146	<0.00109	<0.00116
	1,1-Dichloroethane	75-34-3	0.092	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,1-Dichloroethene	75-35-4	1.2	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,1-Dichloropropene	563-58-6	n/a	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,2,3-Trichlorobenzene	87-61-6	0.15	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	1,2,3-Trichloropropane	96-18-4	0.000031	mg/kg	<0.00209	<0.00222	<0.00268	<0.00214	<0.00231	<0.00185	<0.00272	<0.00293	<0.00216	<0.00232
	1,2,4-Trichlorobenzene	120-82-1	0.082	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,2,4-Trimethylbenzene	95-63-6	0.61	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	1,2-Dibromo-3-chloropropane	96-12-8	n/a	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	1,2-Dibromoethane	106-93-4	0.00024	mg/kg	<0.00157	<0.00167	<0.00201	<0.00161	<0.00173	<0.00139	<0.00204	<0.00219	<0.00162	<0.00174
	1,2-Dichlorobenzene	95-50-1	2.4	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,2-Dichloroethane	107-06-2	0.0055	mg/kg	<0.00209	<0.00222	<0.00268	<0.00214	<0.00231	<0.00185	<0.00272	<0.00293	<0.00216	<0.00232
	1,2-Dichloropropane	78-87-5	0.03	mg/kg	<0.0104	<0.0111	<0.0135	<0.0107	<0.0116	<0.00925	<0.0136	<0.0147	<0.0109	<0.0116
	1,3,5-Trimethylbenzene	108-67-8	0.66	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,3-Dichlorobenzene	541-73-1	2.3	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	1,3-Dichloropropane	142-28-9	n/a	mg/kg	<0.0104	<0.0111	<0.0135	<0.0107	<0.0116	<0.00925	<0.0136	<0.0147	<0.0109	<0.0116
	1,4-Dichlorobenzene	106-46-7	0.037	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	2,2-Dichloropropane	594-20-7	n/a	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	2-Butanone (MEK)	78-93-3	15	mg/kg	0.207 J	0.471 J	0.704 J*	0.223 J*	0.285 J	<0.232	0.446 J	<0.365	<0.271	<0.290
	2-Chlorotoluene	95-49-8	n/a	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	2-Hexanone	591-78-6	0.11	mg/kg	<0.125	<0.133	<0.161	<0.129	<0.139	<0.111	<0.163	<0.175	<0.130	<0.140
	4-Chlorotoluene	106-43-4	n/a	mg/kg	<0.0209	<0.0222	<0.0268	<0.0214	<0.0231	<0.0185	<0.0272	<0.0293	<0.0216	<0.0232
	Acetone	67-64-1	38	mg/kg	<0.261	<0.277	<0.336	<0.268	<0.288	<0.232	<0.340	<0.365	<0.271	<0.290
Benzene	71-43-2	0.022	mg/kg	<0.0131	<0.0138	<0.0168	<0.0134	<0.0144	<0.0116	<0.0170	<0.0183	<0.0136	<0.0145	
Bromobenzene	108-86-1	0.36	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290	
Bromochloromethane	74-97-5	n/a	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290	
Bromodichloromethane	75-27-4	0.0043	mg/kg	<0.00209	<0.00222	<0.00268	<0.00214	<0.00231	<0.00185	<0.00272	<0.00293	<0.00216	<0.00232	

Table 1 — 2022 Analytical Soil Sample Results

Analytical Method	Analyte	CAS#	Sample Area		Excavation Base		Excavation Sidewalls			Soil Stockpile				
			DEC CULs	Sample ID	22BCS-BASE-01	22BCS-BASE-02	22BCS-SW-01 / 22BCS-SW-101		22BCS-SW-02	22BCS-SW-03	22BCS-SW-04	22BCS-POL-01 / 22BCS-POL-101		22BCS-POL-02
				Units	9/20/22	9/20/22	9/20/22	DUP	9/20/22	9/20/22	9/20/22	9/20/22	DUP	9/20/22
	Bromoform	75-25-2	0.1	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Bromomethane	74-83-9	0.024	mg/kg	<0.0209	<0.0222	<0.0268	<0.0214	<0.0231	<0.0185	<0.0272	<0.0293	<0.0216	<0.0232
	Carbon disulfide	75-15-0	2.9	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	Carbon tetrachloride	56-23-5	0.021	mg/kg	<0.0131	<0.0138	<0.0168	<0.0134	<0.0144	<0.0116	<0.0170	<0.0183	<0.0136	<0.0145
	Chlorobenzene	108-90-7	0.46	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Chloroethane	75-00-3	72	mg/kg	<0.208	<0.222	<0.269	<0.214	<0.231	<0.185	<0.272	<0.292	<0.217	<0.232
	Chloroform	67-66-3	0.0071	mg/kg	<0.00625	<0.00665	<0.00805	<0.00640	<0.00695	<0.00555	<0.00815	<0.00880	<0.00650	<0.00695
	Chloromethane	74-87-3	0.61	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	cis-1,2-Dichloroethene	156-59-2	0.12	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	cis-1,3-Dichloropropene	10061-01-5	0.018	mg/kg	<0.0131	<0.0138	<0.0168	<0.0134	<0.0144	<0.0116	<0.0170	<0.0183	<0.0136	<0.0145
	Dibromochloromethane	124-48-1	0.0027	mg/kg	<0.00520	<0.00555	<0.00670	<0.00535	<0.00575	<0.00463	<0.00680	<0.00730	<0.00540	<0.00580
	Dibromomethane	74-95-3	0.025	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Dichlorodifluoromethane	75-71-8	3.9	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	Ethylbenzene	100-41-4	0.13	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Hexachlorobutadiene	87-68-3	0.02	mg/kg	<0.0209	<0.0222	<0.0268	<0.0214	<0.0231	<0.0185	<0.0272	<0.0293	<0.0216	<0.0232
	Isopropylbenzene	98-82-8	5.6	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
SW8260D (VOC) continued	m,p-xylenes	P & M -Xylene	1.5	mg/kg	<0.0520	<0.0555	<0.0670	<0.0535	<0.0575	<0.0463	<0.0680	<0.0730	<0.0540	<0.0580
	Methyl isobutyl ketone	108-10-1	18	mg/kg	<0.261	<0.277	<0.336	<0.268	<0.288	<0.232	<0.340	<0.365	<0.271	<0.290
	Methylene chloride	75-09-2	0.33	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	Methyl-t-butyl ether (MTBE)	1634-04-4	0.4	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116
	Naphthalene	91-20-3	0.038	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	n-Butylbenzene	104-51-8	23	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	n-Propylbenzene	103-65-1	9.1	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	o-Xylene	95-47-6	1.5	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	p-Isopropyltoluene	99-87-6	n/a	mg/kg	<0.0835	<0.0885	<0.108	<0.0855	<0.0925	<0.0740	<0.109	<0.117	<0.0865	<0.0930
	sec-Butylbenzene	135-98-8	42	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Styrene	100-42-5	10	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	tert-Butylbenzene	98-06-6	11	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Tetrachloroethene	127-18-4	0.19	mg/kg	0.0201 J	<0.0138	0.333	0.271	0.565	<0.0116	<0.0170	<0.0183	0.0140 J	0.0295
	Toluene	108-88-3	6.7	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	Total Xylenes	1330-20-7	1.5	mg/kg	<0.0780	<0.0830	<0.101	<0.0805	<0.0865	<0.0695	<0.102	<0.110	<0.0810	<0.0870
	trans-1,2-Dichloroethene	156-60-5	1.3	mg/kg	<0.0261	<0.0277	<0.0336	<0.0267	<0.0289	<0.0232	<0.0340	<0.0365	<0.0271	<0.0290
	trans-1,3-Dichloropropene	10061-02-6	0.018	mg/kg	<0.0131	<0.0138	<0.0168	<0.0134	<0.0144	<0.0116	<0.0170	<0.0183	<0.0136	<0.0145

Table 1 — 2022 Analytical Soil Sample Results

Analytical Method	Analyte	CAS#	Sample Area		Excavation Base		Excavation Sidewalls				Soil Stockpile				
			Sample ID	DEC CULs	Units	22BCS-BASE-01	22BCS-BASE-02	22BCS-SW-01 / 22BCS-SW-101		22BCS-SW-02	22BCS-SW-03	22BCS-SW-04	22BCS-POL-01 / 22BCS-POL-101		22BCS-POL-02
						9/20/22	9/20/22	9/20/22	DUP	9/20/22	9/20/22	9/20/22	9/20/22	DUP	9/20/22
SW8260D (VOC) continued	Trichloroethene	79-01-6	0.011	mg/kg	<0.0104	<0.0111	<0.0135	<0.0107	<0.0116	<0.00925	<0.0136	<0.0147	<0.0109	<0.0116	
	Trichlorofluoromethane	75-69-4	41	mg/kg	<0.0520	<0.0555	<0.0670	<0.0535	<0.0575	0.0769 J	<0.0680	<0.0730	<0.0540	<0.0580	
	Trichlorotrifluoroethane	76-13-1	310	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116	
	Vinyl acetate	108-05-4	1.1	mg/kg	<0.105	<0.111	<0.135	<0.107	<0.116	<0.0925	<0.136	<0.146	<0.109	<0.116	
	Vinyl chloride	75-01-4	0.0008	mg/kg	<0.000835	<0.000885	<0.00108	<0.000855	<0.000925	<0.000740	<0.00109	<0.00117	<0.000865	<0.000930	
SW8270D SIM (PAH)	1-Methylnaphthalene	90-12-0	0.41	mg/kg	0.0196 J	<0.0135	<0.0670	<0.0670	0.191 JH*	<0.0133	<0.0140	0.0122 JL*	0.0361 J*	0.0412	
	2-Methylnaphthalene	91-57-6	1.3	mg/kg	0.00889 J	<0.0135	<0.0670	<0.0670	0.0876 JH*	<0.0133	<0.0140	<0.0132 J*	0.0170 J	0.0141 J	
	Acenaphthene	83-32-9	37	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Acenaphthylene	208-96-8	18	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Anthracene	120-12-7	390	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	0.0589	
	Benzo(a)anthracene	56-55-3	0.7	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Benzo(a)pyrene	50-32-8	1.9	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Benzo(b)fluoranthene	205-99-2	20	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Benzo(g,h,i)perylene	191-24-2	15,000	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	0.0106 J	<0.0134	
	Benzo(k)fluoranthene	207-08-9	190	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Chrysene	218-01-9	600	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	0.00745 J	0.00927 J	
	Dibenzo(a,h)anthracene	53-70-3	6.3	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Fluoranthene	206-44-0	590	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Fluorene	86-73-7	36	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Indeno(1,2,3-cd)pyrene	193-39-5	65	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Naphthalene	91-20-3	0.038	mg/kg	<0.0107	<0.0108	<0.0535	<0.0535	<0.107	<0.0107	<0.0112	<0.0106 J*	<0.0107	<0.0107	
	Phenanthrene	85-01-8	39	mg/kg	<0.0133	<0.0135	<0.0670	<0.0670	<0.134	<0.0133	<0.0140	<0.0132 J*	<0.0133	<0.0134	
	Pyrene	129-00-0	87	mg/kg	0.0162 J	<0.0135	0.112 J	0.0781 J	0.102 J	<0.0133	<0.0140	<0.0132 J*	0.0229 J	0.0258 J	

- Notes: Results reported from SGS work order 1225761.  
 DEC cleanup levels (CULs) obtained from 18 AAC 75.341[c] and [d] Table B1 Method Two – Migration to Groundwater Soil CULs in the “Under 40-inch Zone”.  
 < Analyte not detected; listed as less than the limit of detection (LOD) unless otherwise flagged due to quality-control failures.  
 <Bold The laboratory’s reporting limit (LOD) exceeds the regulatory limit.  
 Bold The detected concentration exceeds the regulatory limit for the associated analyte.  
 J Estimated concentration, detected greater than the detection limit (DL) and less than the reporting limit (LOQ). Flag applied by the laboratory.  
 B\* Result is included in the same preparatory batch as a blank detection for the associated analyte. Flag applied by Shannon & Wilson, Inc. (\*)  
 J\* Estimated concentration due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 JH\* Estimated concentration, biased high due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)  
 JL\* Estimated concentration, biased low due to quality control failures. Flag applied by Shannon & Wilson, Inc. (\*)

CAS = chemical abstract service; CUL = Cleanup Level; DEC = Alaska Department of Environmental Conservation; DUP = field duplicate sample; mg/kg = milligram per kilogram; n/a = no applicable regulatory limit exists for the associated analyte; PAH = polynuclear aromatic hydrocarbons; VOC = volatile organic compound



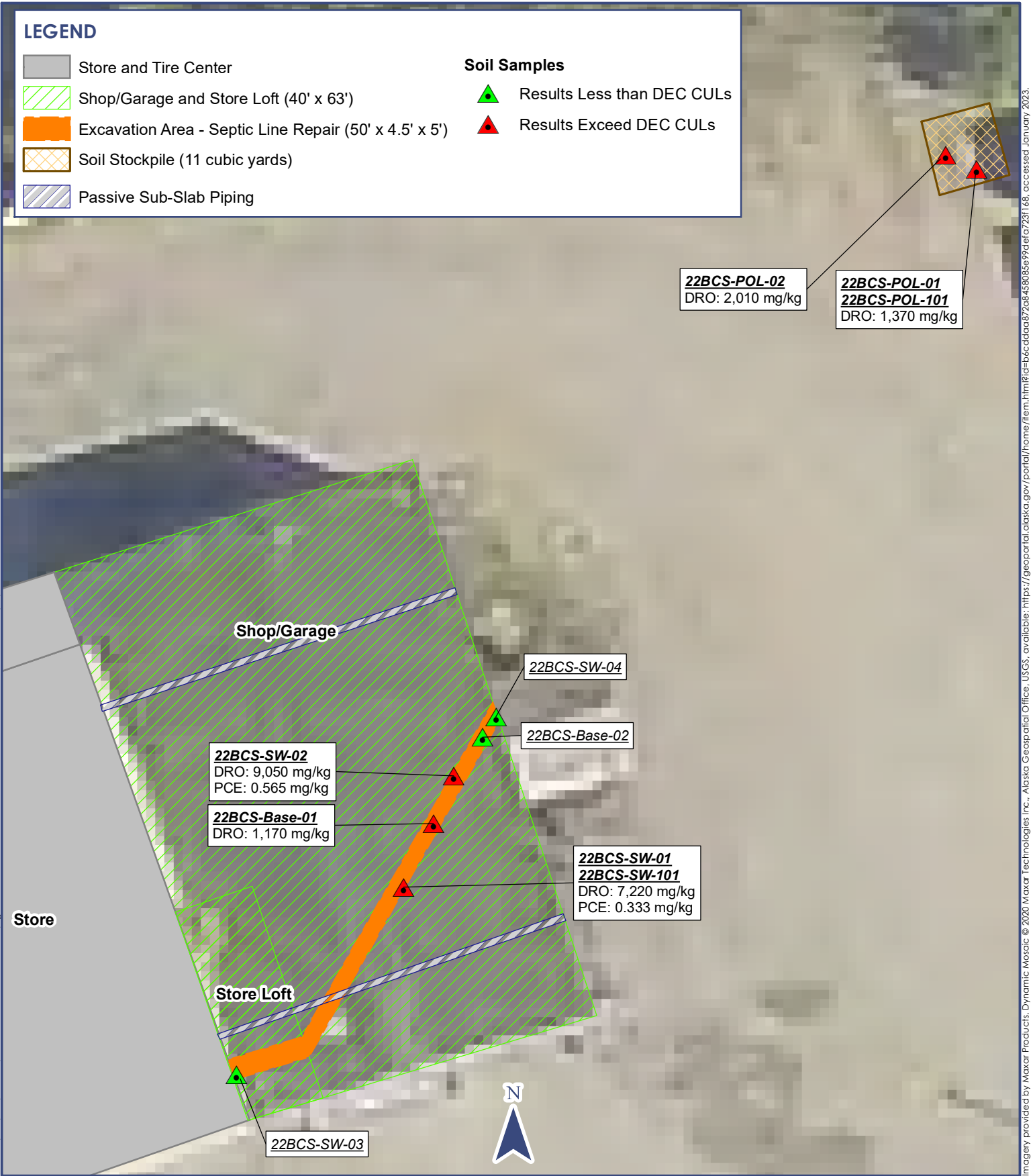
Path: P:\GIS\FBX\109000s\109735 Buffalo Center Service\Figure 1 Vicinity Map 2023.mxd Author: User: DHF Date: 1/17/2023

Imagery provided by Maxar Products, Dynamic, Mosel © 2020 Maxar Technologies Inc., Alaska Geospatial Office, USGS, available: <https://geospatial.alaska.gov/portal/home/item.html?ID=66cdd0a9726458085e9d4e7a7231168>, accessed January 2023.



May 2023  
**VICINITY MAP**  
Figure 1





Path: P:\GIS\FBX\109735\Buffalo Center Service\Figure 2 - BCS Soil Exceedances 2023.mxd Author: BRL User: SMH Date: 2/14/2023

Imagery provided by Maxar Products. Dynamic Mosaic © 2020 Maxar Technologies Inc., Alaska Geospatial Office. USGS, available: https://geoportal.alaska.gov/portal/home/item.html?id=b6cddaa872a458085e99defa7231168, accessed January 2023.

Notes: All locations are approximate.  
1. Greatest result for each field-duplicate pair is reported.  
2. Only results exceeding DEC CULs are reported.  
mg/kg = milligrams per kilogram; CULs = Cleanup Levels;  
DEC = Alaska Department of Environmental Conservation;  
DRO = diesel range organics; PCE = tetrachloroethane  
See Table 1 for complete results.

**SHOP/GARAGE AND SEPTIC LINE REPAIRS -  
2022 SOIL SAMPLE ANALYTICAL EXCEEDANCES**  
Figure 2

Appendix A

# Photographic Log

APPENDIX A: PHOTOGRAPHIC LOG



Photo 1: Contractor clearing remaining slab rubble.



Photo 2: Exposed conduit beneath slab.



Photo 3: Measuring distance from septic to building.



Photo 4: Excavation from building to septic with side-cast soils.



Photo 5: Excavation sidewall near septic.

## Appendix B

# Field Forms

### CONTENTS

- Field Activities Daily Log
- Grid of Exposed Soils from Former Concrete Slab
- Excavation Diagram
- Sample Location Diagram
- Field Screening Log
- Chain of Custody Record

**FIELD ACTIVITIES DAILY LOG**

Date 09/20/2022

Sheet 1 of 1

Project No. 109735-00

Project Name: Buffalo Center Services - Environmental Services

Field activity subject: Field Screening

Description of daily activities and events:

0700 Leave office

0832 Arrive onsite and discuss plans with operator. Text Charlie Herman to inform him MXT was onsite.

0840 Calibrates PID, tried exposed area and begins field screening.

1035 Begin excavation. Continue field screening grid

1115 Collect field screening samples from stockpiled soils from excavation

1202 ~~can~~ Contamination from grid E-4 was excavated. Hand dig contamination in E-5 and place in stockpile area reading high (>20 ppm). Resample E-5. Sample less than 20 ppm.

1230 Collect field screening samples from excavation limits.

\* dark material observed on North and South side wall approximately 20-35' along excavation length at depth at ~1.0-1.5' bgs.

Collect analytical samples from excavation limits and stockpile soils.

1535 Leave site.

Visitors on site: Charlie Herman

Changes from plans/specifications and other special orders and important decisions:

None

Weather conditions: Mostly cloudy in morning. Light rain in afternoon

40°F - 50°F

Important telephone calls: Charlie Herman (907) 750-2482

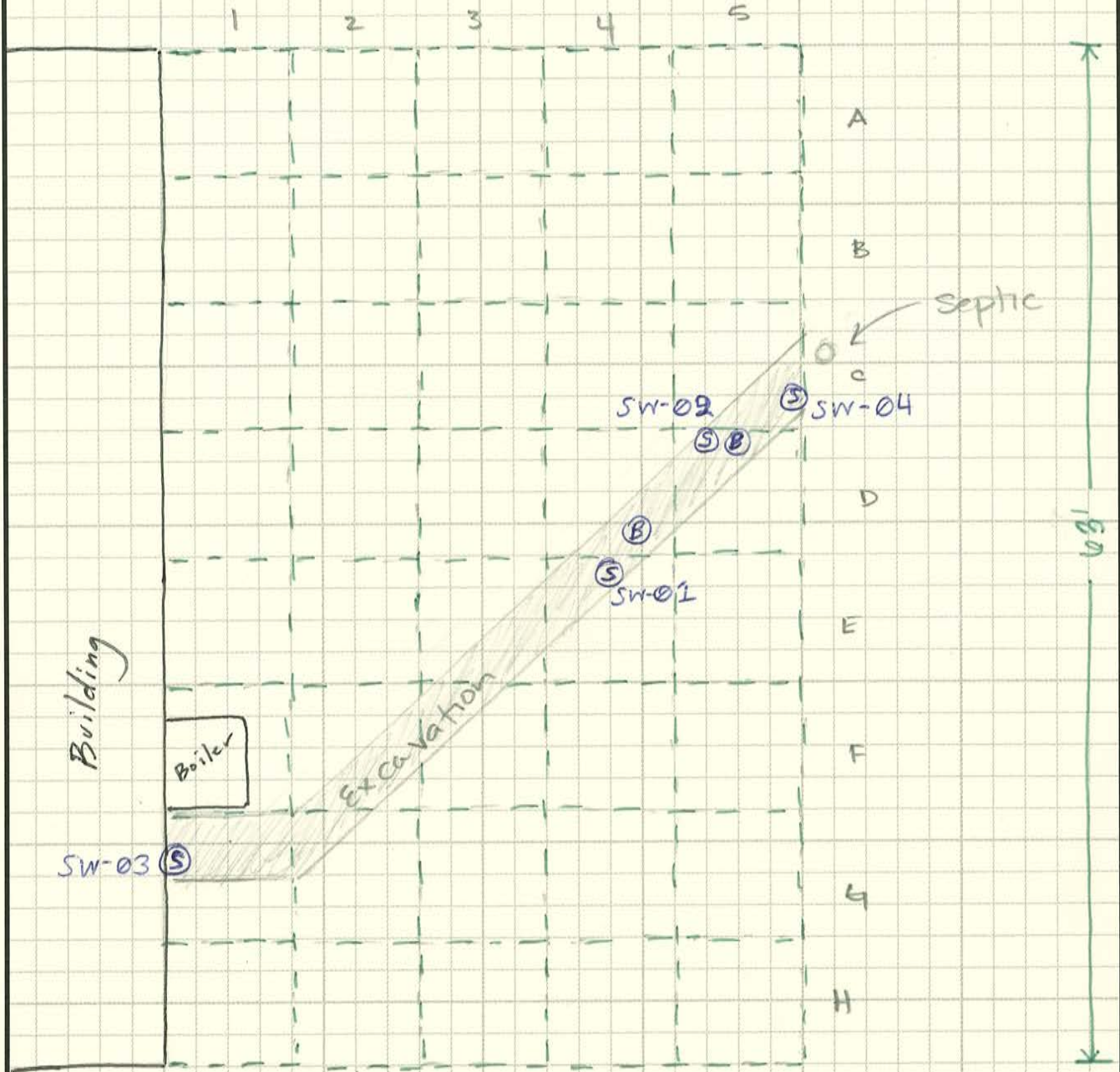
Sheila Hukley (907) 458-3157

Personnel on site: Michael Jaramillo (MXT)

Signature:  Date: 9/20/2022



Grid of exposed soils beneath the former slab

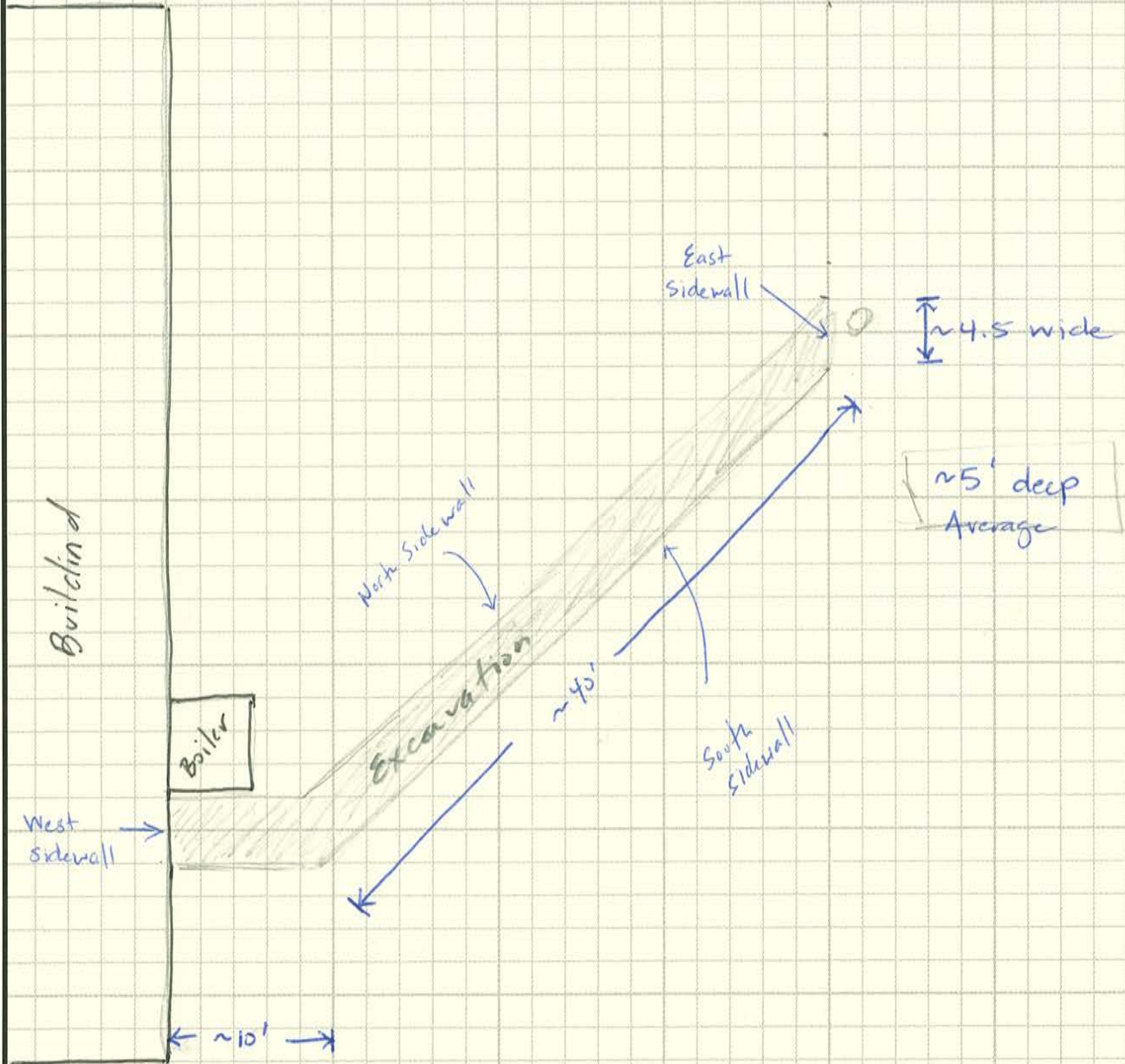


- NOTES:
- (B) = excavation base sample
  - (S) = sidewall sample
  - At least one field-screening sample was collected from each subunit.
  - Grid subunits ~8' x 8'
  - \*Not drawn to scale





# Excavation Diagram



Excavated soil -  $50' \times 4.5' \times 5' = 1,125 \text{ cu. ft.} \approx 42 \text{ cu. yds.}$

Northern Sidewall }  $50' \times 5' = 250 \text{ sq. ft.}$   
 Southern Sidewall }

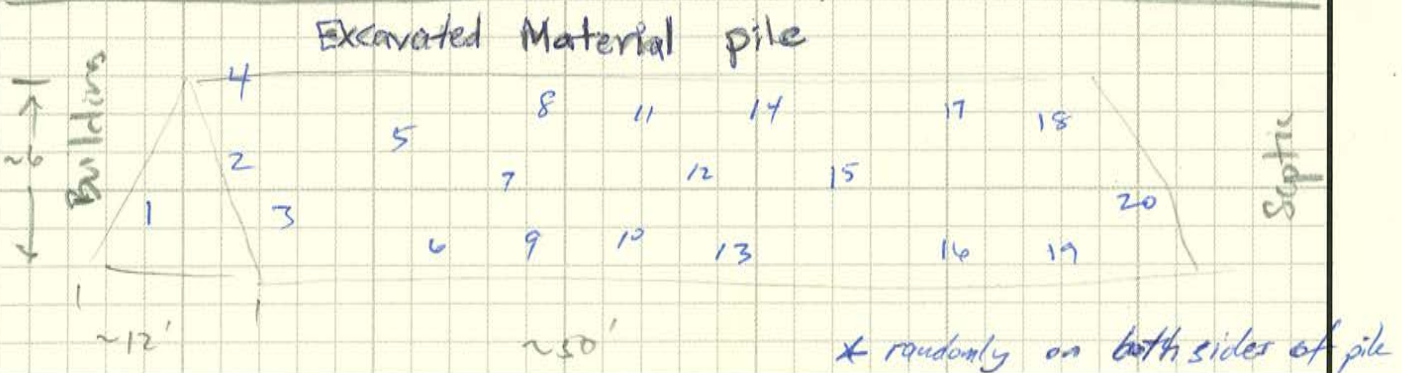
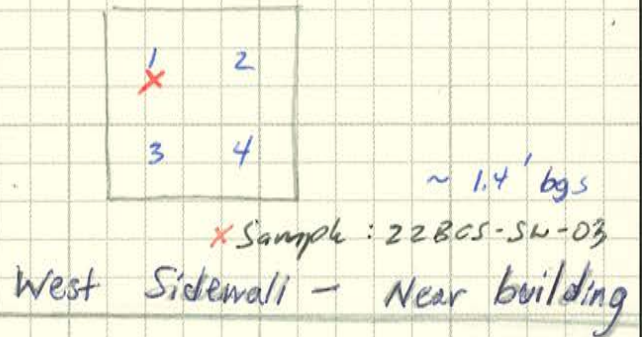
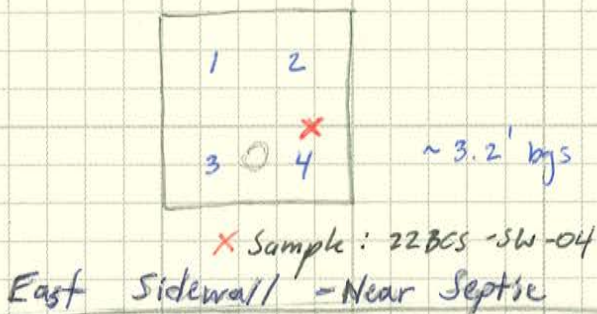
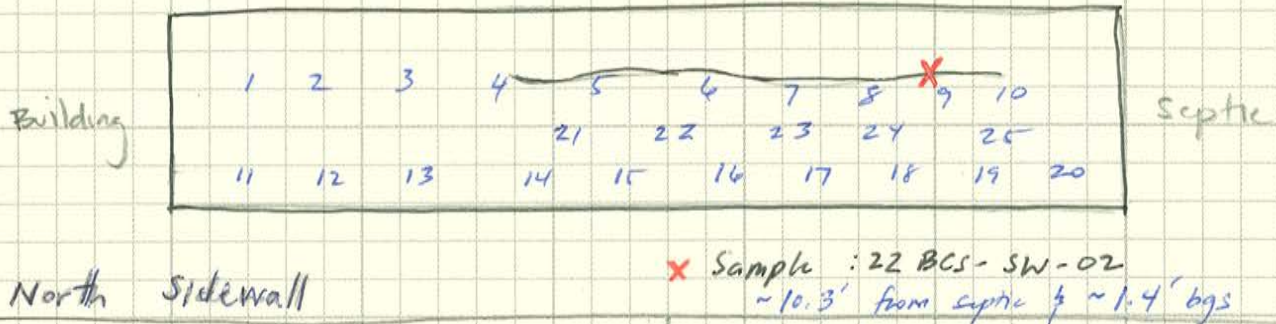
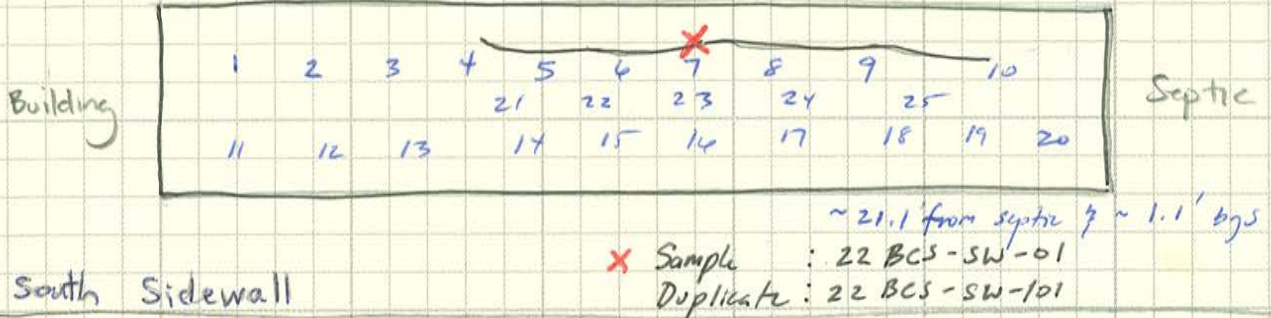
East Sidewall }  $\sim 4.5' \times 5' = 22.5 \text{ sq. ft.}$   
 West Sidewall }

Base -  $50' \times 4.5' = 225 \text{ sq. ft.}$





## Sample location diagrams

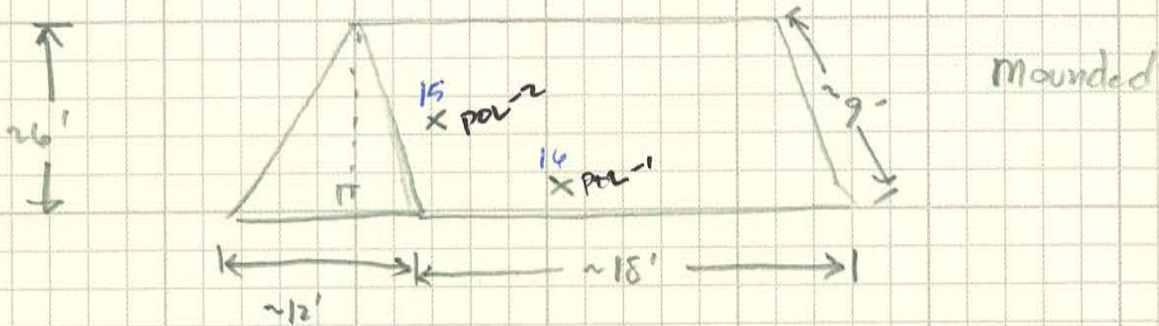






Sample location diagrams continued.

Contaminated Stockpile



estimated volume  $\approx 290$  cu. ft.  $\approx 11$  cu. yds.  
(area of a triangular prism)

Sample: 22BCS-POL-01  $\left\{ \begin{array}{l} \text{fs sample 16} \\ \text{22BCS-POL-101} \end{array} \right.$   
22SCS-POL-02 - fs sample 15

**FIELD SCREENING LOG (soil samples)**

Project Number: 109735 Project Name: Buffalo Center Services - Environmental Services Page: 1 of 4  
 Date: 9/20/2022  
 Sampler: MXT Calibration time, result: 0840 0.0 ppm / 99.8 ppm PID number: SN 2376

FS Sample Number	Sample Time	PID Reading	Depth (ft)	Fresh cal gas		Soil Description/Notes	
				FS Sample Location			
A1	904	0.2	0.5	↓	↓	brown fines w/ gravel & sand	
A2	905	0.2				Exposed soil beneath shop slab	grey sand w/ gravel & sand
A3	906	0.4				See site sketch for approx. locations	↓ ↓ ↓
A4	907	0.5					
A5	908	0.8					
B1	909	0.3					brown fines w/ gravel & sand
B2	911	0.3					" " " " "
B3	912	0.4					grey sand w/ gravel
B4	913	0.5					↓ ↓ ↓
B5	914	0.2					
C1	1037	0.3					brown fines w/ gravel & sand
C2	1038	0.1					grey sand w/ gravel
C3	1039	0.4					↓ ↓ ↓
C4	948	2.2					
C5	946	1.7					
D1	1041	0.2			grey sand		
D2	1042	0.4			grey sand w/ gravel		
D3	951	2.0			↓ ↓ ↓ ↓		
D4	949	3.8					
D5	948	3.2					
E1	1043	0.9			Brown fines w/ gravel sand & organics		
E2	953	0.9			grey sand w/ gravel		
E3	952	1.8			↓ ↓ ↓		
E4	950	224.5					
E5	1049	21.5					
F1	957	0.4			brown fines w/ gravel & sand - moist		
F2	954	1.2			grey w/ sand and gravel		
F3	1053	2.2			↓ ↓ ↓		
F4	1052	7.7					
F5	1051	2.0					
G1	958	0.3			brown fines w/ gravel & sand		
G2	956	0.6			grey w/ sand and gravel		
G3	1056	1.1			↓ ↓ ↓		
G4	1055	2.1					

**FIELD SCREENING LOG (soil samples)**

Project Number: 109735      Project Name: Buffalo Center Services - Environmental Services  
 Date: 9/20/2022      Calibration time, result: 0840 0.0 ppm / 99.8 ppm      PID number: SN 2376      Page 2 of 4  
 Sampler: Mx5

FS Sample Number	Sample Time	PID Reading	Depth (ft)	FS Sample Location		Soil Description/Notes
				fresh	cal gas	
G5	1054	0.8	~0.5	Exposed soil beneath shop slab		grey sand w/ gravel
H1	1416	1.5	}	See site sketch for approx. locations	↓	
H2	1417	1.3				
H3	1419	0.7				
H4	1420	0.7				
H5	1421	0.9				
X 1	1115	0.2	EX	brown fines w/ sand and gravel		brown fines w/ sand and gravel
X 2	1116	0.4	}	excavation material	↓	
X 3	1117	0.8				
X 4	1118	0.7				
X 5	1120	0.6				
X 6	1121	0.5				
X 7	1127	1.3				
X 8	1128	0.8				
X 9	1129	6.2				
X 10	1131	3.5				
X 11	1132	7.3				
X 12	1133	10.2				
X 13	1148	12.5				
X 14	1149	8.8				
X 15	1156	42.7				
X 16	1157	48.7				
X 17	1153	25.7				
X 18	1154	19.5				
X 19	1155	33.4				
X 20	1157	20.8				
E5-Redo	1202	2.5				

**FIELD SCREENING LOG (soil samples)**

Project Number: 109735 Project Name: Buffalo Center Services Page 3 of 4  
 Date: 9/20/2012  
 Sampler: MKT Calibration time, result: 0840 0.0 ppm / 99.8 ppm PID number: SN 2376

FS Sample Number	Sample Time	PID Reading	Depth (ft)	fresh air cal gas		Soil Description/Notes
				FS Sample Location		
SW-S1	1235	<del>1.5</del>	~1.5	Excavation sidewall - South wall		Brown fines w/ sand & gravel
SW-S2	1236	0.8	↓			↓
SW-S3	1234	1.7	↓			↓
SW-S4	1237	3.4	↓			↓
SW-S5	1238	12.4	~1.0			Grey sand and gravel
SW-S6	1238	14.7	↓			↓
SW-S7	1239	71.5	↓			↓
SW-S8	1239	28.3	↓			↓
SW-S9	1240	18.4	↓			↓
SW-S10	1241	3.1	±			↓
SW-S11	1241	<del>2.4</del>	~4.0			Brown fines w/ sand and gravel
SW-S12	1242	1.2	↓			↓
SW-S13	1243	1.4	↓			↓
SW-S14	1243	1.8	↓			↓
SW-S15	1244	3.2	↓			↓
SW-S16	1244	1.4	↓			↓
SW-S17	1245	5.4	↓			↓
SW-S18	1246	4.9	↓			↓
SW-S19	1247	1.1	↓			↓
SW-S20	1247	2.2	↓			↓
SW-S21	1248	6.1	~2.5			↓
SW-S22	1248	2.2	↓			↓
SW-S23	1249	4.4	↓			↓
SW-S24	1249	7.2	↓			↓
SW-S25	1250	2.1	±			↓
SW-E1	1250	1.3	~1.5	Excavation sidewall - East sidewall		↓
SW-E2	1251	0.2	~1.5			↓
SW-E3	1251	0.4	~4.0			↓
SW-E4	1252	2.2	~4.0			↓
SW-N1	1253	1.8	~1.5	Excavation sidewall - North sidewall		↓
SW-N2	1253	1.3	↓			↓
SW-N3	1254	2.4	↓			↓
SW-N4	1255	4.7	↓			↓
SW-N5	1255	6.0	↓			Grey sands and gravel

FIELD SCREENING LOG (soil samples)

Project Number: 109735      Project Name: B-Halo Center Services - Environmental Services      Page 4 of 4  
 Date: 9/20/2022  
 Sampler: MXT      Calibration time, result: 0840 0.0 ppm      PID number: g/n 2376

FS Sample Number	Sample Time	PID Reading	Depth (ft)	FS Sample Location	Soil Description/Notes	
SW-N6	1256	10.1	~1.5'	Excavation sidewall - North sidewall	grey sand w/ gravel	
SW-N7	1257	18.2	↓			
SW-N8	1257	31.1	↓			
SW-N9	1258	63.7	↓			
SW-N10	1259	3.7	↓			
SW-N11	1300	0.4	~4.0'		Brown fines w/ sand & gravel	
SW-N12	1301	0.7	↓			
SW-N13	1301	1.4	↓			
SW-N14	1302	1.6	↓			
SW-N15	1302	2.5	↓			
SW-N16	1303	2.4	↓			
SW-N17	1303	1.3	↓			
SW-N18	1304	1.3	↓			
SW-N19	1305	1.7	↓			
SW-N20	1305	1.9	↓			
SW-N21	1306	9.8	~2.5'			
SW-N22	1307	7.6	↓			
SW-N23	1307	6.4	↓			
SW-N24	1308	11.4	↓			
SW-N25	1308	15.8	↓			
SW-N1	1309	1.7	~1.5'		Excavation Sidewall - West sidewall	
SW-N2	1310	1.1	~1.5'		↓	
SW-N3	1310	0.5	~3.5'		↓	
SW-N4	1311	0.4	~3.5'		↓	
Base-1	1312	4.3	~5'		Excavation Base	
Base-2	1312	7.4	↓	↓		
Base-3	1314	3.3	↓	↓		
Base-4	1314	51.6	↓	↓		
Base-5	1315	27.3	↓	↓		

# CHAIN-OF-CUSTODY RECORD

Analytical Methods (include preservative if used)

**Turn Around Time:**

Normal  Rush

Please Specify

Quote No: Open

MSA Number:

J-Flags:  Yes  No

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods (include preservative if used)						Total Number of Containers	Remarks/Matrix Composition/Grab Sample Containers
22 BCS-SW-01		9/20/22	1342	X	X					2	S-113
22 BCS-SW-101			1343	X	X					2	
22 BCS-SW-02			1347	X	X					2	
22 BCS-SW-03			1521	X	X					2	
22 BCS-SW-04			1524	X	X					2	
22 BCS-Base-01			1350	X	X					2	
22 BCS-Base-02			1356	X	X					2	
22 BCS-POL-01			1445	X	X					2	
22 BCS-POL-101			1446	X	X					2	
22 BCS-POL-02			1450	X	X					2	

**Project Information**

Number: 109735

Name: Buffalo Center

Contact: GMH

Ongoing Project? Yes  No

Sampler: MXF

**Sample Receipt**

Total No. of Containers: 20

COC Seals/Intact? Y/N/NA Y

Received Good Cond./Cold Y

Temp: 59°C

Delivery Method: Hand

**Relinquished By: 1.**

Signature: [Signature] Time: 9:13

Printed Name: Michael Tomillo Date: 9/20/22

Company: Shannon & Wilson

**Relinquished By: 2.**

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

**Relinquished By: 3.**

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

**Notes:**

Please include TB for PFOO/VOC analysis

TB kept with samples at all times

**Received By: 1.**

Signature: [Signature] Time: 9:15

Printed Name: Alexandra Munster-Lewis Date: \_\_\_\_\_

Company: SGL

**Received By: 2.**

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

**Received By: 3.**

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
 Yellow - w/shipment - for consignee files  
 Pink - Shannon & Wilson - job file

Appendix C

# Analytical Laboratory Report and Corresponding LDRC

## CONTENTS

- SGS Work Order 1225761
- DEC Laboratory Data Review Checklist



## Laboratory Report of Analysis

To: Shannon & Wilson-Fairbanks  
2355 Hill Rd  
Fairbanks, AK 99707

Report Number: **1225761**

Client Project: **109735 Buffalo Center**

Dear Sheila Hinckley,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Jennifer at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America Inc.

---

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date



### Case Narrative

SGS Client: **Shannon & Wilson-Fairbanks**

SGS Project: **1225761**

Project Name/Site: **109735 Buffalo Center**

Project Contact: **Sheila Hinckley**

Refer to sample receipt form for information on sample condition.

**22BCS-SW-01 (1225761001) PS**

8270D SIM - PAH Surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria due to matrix interference.  
8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to the dark color of the extract.

**22BCS-SW-101 (1225761002) PS**

8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to the dark color of the extract.

**22BCS-SW-02 (1225761003) PS**

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.  
8270D SIM - PAH Surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 do not meet QC criteria due to matrix interference.  
8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to matrix interference with the internal standard.

**22BCS-POL-01 (1225761008) PS**

8270D SIM - PAH Surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 do not meet QC criteria. The sample was re-extracted outside of hold time and results confirm. The in-hold-data is reported.

**1225761001(1688350MS) (1688351) MS**

8260D - MS recoveries for several analytes do not meet QC criteria. See LCS for accuracy requirements.

**1225761001(1688350MSD) (1688352) MSD**

8260D - MSD recoveries for several analytes do not meet QC criteria. See LCS for accuracy requirements.

\*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 11/01/2022 8:22:38AM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>8270D SIM (PAH)</b>				
1225761003	22BCS-SW-02	XMS13395	1-Methylnaphthalene	BLC

#### Manual Integration Reason Code Descriptions

Code	Description
O	Original Chromatogram
M	Modified Chromatogram
SS	Skimmed surrogate
BLG	Closed baseline gap
RP	Reassign peak name
PIR	Pattern integration required
IT	Included tail
SP	Split peak
RSP	Removed split peak
FPS	Forced peak start/stop
BLC	Baseline correction
PNF	Peak not found by software

All DRO/RRO analysis are integrated per SOP.

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. The results apply to the samples as received. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCCV/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
DF	Analytical Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LLQC/LLIQC	Low Level Quantitation Check
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
RPD	Relative Percent Difference
TNTC	Too Numerous To Count
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
22BCS-SW-01	1225761001	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-SW-101	1225761002	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-SW-02	1225761003	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-SW-03	1225761004	09/20/2022	09/21/2022	Soil/Solid (dry weight)
22BCS-SW-04	1225761005	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-BASE-01	1225761006	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-BASE-02	1225761007	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-POL-01	1225761008	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-POL-101	1225761009	09/20/2022	09/22/2022	Soil/Solid (dry weight)
22BCS-POL-02	1225761010	09/20/2022	09/22/2022	Soil/Solid (dry weight)
Trip Blank	1225761011	09/20/2022	09/22/2022	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
SW8260D	VOC 8260 (S) Field Extracted
AK102	Diesel Range Organics (S)
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
SM21 2540G	Percent Solids SM2540G
AK101	Gasoline Range Organics (S)

Print Date: 11/01/2022 8:22:43AM

### Detectable Results Summary

Client Sample ID: **22BCS-SW-01**

Lab Sample ID: 1225761001

**Polynuclear Aromatics GC/MS**  
**Semivolatile Organic Fuels**  
**Volatile Fuels**  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Pyrene	0.112J	mg/kg
Diesel Range Organics	7220	mg/kg
Gasoline Range Organics	2.74J	mg/kg
2-Butanone (MEK)	0.704	mg/kg
Tetrachloroethene	0.333	mg/kg

Client Sample ID: **22BCS-SW-101**

Lab Sample ID: 1225761002

**Polynuclear Aromatics GC/MS**  
**Semivolatile Organic Fuels**  
**Volatile Fuels**  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Pyrene	0.0781J	mg/kg
Diesel Range Organics	6330	mg/kg
Gasoline Range Organics	2.31J	mg/kg
2-Butanone (MEK)	0.223J	mg/kg
Tetrachloroethene	0.271	mg/kg

Client Sample ID: **22BCS-SW-02**

Lab Sample ID: 1225761003

**Polynuclear Aromatics GC/MS**  
  
**Semivolatile Organic Fuels**  
**Volatile Fuels**  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.191J	mg/kg
2-Methylnaphthalene	0.0876J	mg/kg
Pyrene	0.102J	mg/kg
Diesel Range Organics	9050	mg/kg
Gasoline Range Organics	21.0	mg/kg
2-Butanone (MEK)	0.285J	mg/kg
Tetrachloroethene	0.565	mg/kg

Client Sample ID: **22BCS-SW-03**

Lab Sample ID: 1225761004

**Semivolatile Organic Fuels**  
**Volatile Fuels**  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	14.7J	mg/kg
Gasoline Range Organics	1.72J	mg/kg
Trichlorofluoromethane	0.0769J	mg/kg

Client Sample ID: **22BCS-SW-04**

Lab Sample ID: 1225761005

**Semivolatile Organic Fuels**  
**Volatile Fuels**  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	26.2	mg/kg
Gasoline Range Organics	2.53J	mg/kg
2-Butanone (MEK)	0.446J	mg/kg

Client Sample ID: **22BCS-BASE-01**

Lab Sample ID: 1225761006

**Polynuclear Aromatics GC/MS**  
  
**Semivolatile Organic Fuels**  
**Volatile Fuels**  
**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.0196J	mg/kg
2-Methylnaphthalene	0.00889J	mg/kg
Pyrene	0.0162J	mg/kg
Diesel Range Organics	1170	mg/kg
Gasoline Range Organics	2.36J	mg/kg
2-Butanone (MEK)	0.207J	mg/kg
Tetrachloroethene	0.0201J	mg/kg

### Detectable Results Summary

Client Sample ID: **22BCS-BASE-02**

Lab Sample ID: 1225761007

**Semivolatile Organic Fuels**

**Volatile Fuels**

**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	58.3	mg/kg
Gasoline Range Organics	1.97J	mg/kg
2-Butanone (MEK)	0.471J	mg/kg

Client Sample ID: **22BCS-POL-01**

Lab Sample ID: 1225761008

**Polynuclear Aromatics GC/MS**

**Semivolatile Organic Fuels**

**Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.0122J	mg/kg
Diesel Range Organics	1370	mg/kg
Gasoline Range Organics	2.53J	mg/kg

Client Sample ID: **22BCS-POL-101**

Lab Sample ID: 1225761009

**Polynuclear Aromatics GC/MS**

**Semivolatile Organic Fuels**

**Volatile Fuels**

**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.0361	mg/kg
2-Methylnaphthalene	0.0170J	mg/kg
Benzo[g,h,i]perylene	0.0106J	mg/kg
Chrysene	0.00745J	mg/kg
Pyrene	0.0229J	mg/kg
Diesel Range Organics	1310	mg/kg
Gasoline Range Organics	2.60J	mg/kg
Tetrachloroethene	0.0140J	mg/kg

Client Sample ID: **22BCS-POL-02**

Lab Sample ID: 1225761010

**Polynuclear Aromatics GC/MS**

**Semivolatile Organic Fuels**

**Volatile Fuels**

**Volatile GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.0412	mg/kg
2-Methylnaphthalene	0.0141J	mg/kg
Anthracene	0.0589	mg/kg
Chrysene	0.00927J	mg/kg
Pyrene	0.0258J	mg/kg
Diesel Range Organics	2010	mg/kg
Gasoline Range Organics	3.93J	mg/kg
Tetrachloroethene	0.0295	mg/kg

Client Sample ID: **Trip Blank**

Lab Sample ID: 1225761011

**Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	0.823J	mg/kg

## Results of 22BCS-SW-01

Client Sample ID: **22BCS-SW-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761001  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.8  
 Location:

## Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
2-Methylnaphthalene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Acenaphthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Acenaphthylene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Anthracene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Benzo(a)Anthracene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Benzo[a]pyrene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Benzo[b]Fluoranthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Benzo[g,h,i]perylene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Benzo[k]fluoranthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Chrysene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Dibenzo[a,h]anthracene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Fluoranthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Fluorene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Indeno[1,2,3-c,d] pyrene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Naphthalene	0.0535 U	0.107	0.0268	mg/kg	5		10/05/22 18:22
Phenanthrene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:22
Pyrene	0.112 J	0.134	0.0335	mg/kg	5		10/05/22 18:22
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	105	*	58-103	%	5		10/05/22 18:22
Fluoranthene-d10 (surr)	85.7		54-113	%	5		10/05/22 18:22

## Batch Information

Analytical Batch: XMS13391  
 Analytical Method: 8270D SIM (PAH)  
 Analyst: NGG  
 Analytical Date/Time: 10/05/22 18:22  
 Container ID: 1225761001-A

Prep Batch: XXX47086  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 08:49  
 Prep Initial Wt./Vol.: 22.652 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-SW-01

Client Sample ID: **22BCS-SW-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761001  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.8  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	7220		85.8	38.6	mg/kg	4		10/06/22 05:57
<b>Surrogates</b>								
5a Androstane (surr)	102		50-150		%	4		10/06/22 05:57

## Batch Information

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Analyst: MAP  
 Analytical Date/Time: 10/06/22 05:57  
 Container ID: 1225761001-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.167 g  
 Prep Extract Vol: 5 mL





Results of **22BCS-SW-01**

Client Sample ID: **22BCS-SW-01**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761001  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):92.8  
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.74 J	6.72	2.02	mg/kg	1		09/29/22 18:38
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	104	50-150		%	1		09/29/22 18:38

**Batch Information**

Analytical Batch: VFC16276  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 09/29/22 18:38  
Container ID: 1225761001-B

Prep Batch: VXX39260  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:42  
Prep Initial Wt./Vol.: 21.301 g  
Prep Extract Vol: 26.5429 mL



Results of 22BCS-SW-01

Client Sample ID: 22BCS-SW-01
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761001
Lab Project ID: 1225761

Collection Date: 09/20/22 13:42
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):92.8
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 22BCS-SW-01

Client Sample ID: 22BCS-SW-01
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761001
Lab Project ID: 1225761

Collection Date: 09/20/22 13:42
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):92.8
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-SW-01

Client Sample ID: **22BCS-SW-01**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761001  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):92.8  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 16:02  
Container ID: 1225761001-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:42  
Prep Initial Wt./Vol.: 21.301 g  
Prep Extract Vol: 26.5429 mL

## Results of 22BCS-SW-101

Client Sample ID: **22BCS-SW-101**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761002  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:43  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.2  
 Location:

## Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
2-Methylnaphthalene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Acenaphthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Acenaphthylene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Anthracene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Benzo(a)Anthracene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Benzo[a]pyrene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Benzo[b]Fluoranthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Benzo[g,h,i]perylene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Benzo[k]fluoranthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Chrysene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Dibenzo[a,h]anthracene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Fluoranthene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Fluorene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Indeno[1,2,3-c,d] pyrene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Naphthalene	0.0535 U	0.107	0.0268	mg/kg	5		10/05/22 18:39
Phenanthrene	0.0670 U	0.134	0.0335	mg/kg	5		10/05/22 18:39
Pyrene	0.0781 J	0.134	0.0335	mg/kg	5		10/05/22 18:39
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	103	58-103		%	5		10/05/22 18:39
Fluoranthene-d10 (surr)	90.4	54-113		%	5		10/05/22 18:39

## Batch Information

Analytical Batch: XMS13391  
 Analytical Method: 8270D SIM (PAH)  
 Analyst: NGG  
 Analytical Date/Time: 10/05/22 18:39  
 Container ID: 1225761002-A

Prep Batch: XXX47086  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 08:49  
 Prep Initial Wt./Vol.: 22.533 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-SW-101

Client Sample ID: **22BCS-SW-101**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761002  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:43  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.2  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	6330	106	47.6	mg/kg	5		10/07/22 09:18
<b>Surrogates</b>							
5a Androstane (surr)	91.7	50-150		%	5		10/07/22 09:18

## Batch Information

Analytical Batch: XFC16362  
 Analytical Method: AK102  
 Analyst: HMW  
 Analytical Date/Time: 10/07/22 09:18  
 Container ID: 1225761002-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.415 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-SW-101

Client Sample ID: **22BCS-SW-101**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761002  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:43  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.2  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.31 J	5.35	1.61	mg/kg	1		09/29/22 18:56
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	106	50-150		%	1		09/29/22 18:56

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 18:56  
 Container ID: 1225761002-B

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 13:43  
 Prep Initial Wt./Vol.: 26.876 g  
 Prep Extract Vol: 26.8173 mL



**Results of 22BCS-SW-101**

Client Sample ID: **22BCS-SW-101**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761002  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:43  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.2  
 Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.0214 U	0.0428	0.0133	mg/kg	1		09/27/22 18:19
1,1,1-Trichloroethane	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,1,2,2-Tetrachloroethane	0.00214 U	0.00428	0.00133	mg/kg	1		09/27/22 18:19
1,1,2-Trichloroethane	0.00107 U	0.00214	0.00107	mg/kg	1		09/27/22 18:19
1,1-Dichloroethane	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,1-Dichloroethene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,1-Dichloropropene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,2,3-Trichlorobenzene	0.107 U	0.214	0.0642	mg/kg	1		09/27/22 18:19
1,2,3-Trichloropropane	0.00214 U	0.00428	0.00133	mg/kg	1		09/27/22 18:19
1,2,4-Trichlorobenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,2,4-Trimethylbenzene	0.107 U	0.214	0.0642	mg/kg	1		09/27/22 18:19
1,2-Dibromo-3-chloropropane	0.107 U	0.214	0.0664	mg/kg	1		09/27/22 18:19
1,2-Dibromoethane	0.00161 U	0.00321	0.00161	mg/kg	1		09/27/22 18:19
1,2-Dichlorobenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,2-Dichloroethane	0.00214 U	0.00428	0.00150	mg/kg	1		09/27/22 18:19
1,2-Dichloropropane	0.0107 U	0.0214	0.0107	mg/kg	1		09/27/22 18:19
1,3,5-Trimethylbenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,3-Dichlorobenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
1,3-Dichloropropane	0.0107 U	0.0214	0.00664	mg/kg	1		09/27/22 18:19
1,4-Dichlorobenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
2,2-Dichloropropane	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
2-Butanone (MEK)	0.223 J	0.535	0.167	mg/kg	1		09/27/22 18:19
2-Chlorotoluene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
2-Hexanone	0.129 U	0.257	0.128	mg/kg	1		09/27/22 18:19
4-Chlorotoluene	0.0214 U	0.0428	0.0214	mg/kg	1		09/27/22 18:19
4-Isopropyltoluene	0.0855 U	0.171	0.0856	mg/kg	1		09/27/22 18:19
4-Methyl-2-pentanone (MIBK)	0.268 U	0.535	0.167	mg/kg	1		09/27/22 18:19
Acetone	0.268 U	0.535	0.235	mg/kg	1		09/27/22 18:19
Benzene	0.0134 U	0.0268	0.00835	mg/kg	1		09/27/22 18:19
Bromobenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
Bromochloromethane	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
Bromodichloromethane	0.00214 U	0.00428	0.00133	mg/kg	1		09/27/22 18:19
Bromoform	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19
Bromomethane	0.0214 U	0.0428	0.0171	mg/kg	1		09/27/22 18:19
Carbon disulfide	0.107 U	0.214	0.0664	mg/kg	1		09/27/22 18:19
Carbon tetrachloride	0.0134 U	0.0268	0.00835	mg/kg	1		09/27/22 18:19
Chlorobenzene	0.0267 U	0.0535	0.0167	mg/kg	1		09/27/22 18:19

Print Date: 11/01/2022 8:22:46AM

J flagging is activated





Results of 22BCS-SW-101

Client Sample ID: 22BCS-SW-101
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761002
Lab Project ID: 1225761

Collection Date: 09/20/22 13:43
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.2
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-SW-101

Client Sample ID: **22BCS-SW-101**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761002  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:43  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):93.2  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 18:19  
Container ID: 1225761002-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:43  
Prep Initial Wt./Vol.: 26.876 g  
Prep Extract Vol: 26.8173 mL



Results of 22BCS-SW-02

Client Sample ID: 22BCS-SW-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761003
Lab Project ID: 1225761

Collection Date: 09/20/22 13:47
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):92.0
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS13395
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 10/06/22 23:52
Container ID: 1225761003-A

Prep Batch: XXX47086
Prep Method: SW3550C
Prep Date/Time: 10/03/22 08:49
Prep Initial Wt./Vol.: 22.876 g
Prep Extract Vol: 5 mL

## Results of 22BCS-SW-02

Client Sample ID: **22BCS-SW-02**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761003  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:47  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.0  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	9050	108	48.5	mg/kg	5		10/07/22 09:28
<b>Surrogates</b>							
5a Androstane (surr)	77.6	50-150		%	5		10/07/22 09:28

## Batch Information

Analytical Batch: XFC16362  
 Analytical Method: AK102  
 Analyst: HMW  
 Analytical Date/Time: 10/07/22 09:28  
 Container ID: 1225761003-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.27 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-SW-02

Client Sample ID: **22BCS-SW-02**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761003  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:47  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.0  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	21.0		5.77	1.73	mg/kg	1		09/29/22 19:14
<b>Surrogates</b>								
4-Bromofluorobenzene (surr)	172	*	50-150		%	1		09/29/22 19:14

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 19:14  
 Container ID: 1225761003-B

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 13:47  
 Prep Initial Wt./Vol.: 25.44 g  
 Prep Extract Vol: 27.0257 mL



Results of 22BCS-SW-02

Client Sample ID: 22BCS-SW-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761003
Lab Project ID: 1225761

Collection Date: 09/20/22 13:47
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):92.0
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



**Results of 22BCS-SW-02**

Client Sample ID: **22BCS-SW-02**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761003  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:47  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.0  
 Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.231 U	0.462	0.143	mg/kg	1		09/27/22 18:37
Chloroform	0.00695 U	0.0139	0.00693	mg/kg	1		09/27/22 18:37
Chloromethane	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
cis-1,2-Dichloroethene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
cis-1,3-Dichloropropene	0.0144 U	0.0289	0.00900	mg/kg	1		09/27/22 18:37
Dibromochloromethane	0.00575 U	0.0115	0.00346	mg/kg	1		09/27/22 18:37
Dibromomethane	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
Dichlorodifluoromethane	0.116 U	0.231	0.0693	mg/kg	1		09/27/22 18:37
Ethylbenzene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
Freon-113	0.116 U	0.231	0.0716	mg/kg	1		09/27/22 18:37
Hexachlorobutadiene	0.0231 U	0.0462	0.0143	mg/kg	1		09/27/22 18:37
Isopropylbenzene (Cumene)	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
Methylene chloride	0.116 U	0.231	0.0716	mg/kg	1		09/27/22 18:37
Methyl-t-butyl ether	0.116 U	0.231	0.0716	mg/kg	1		09/27/22 18:37
Naphthalene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
n-Butylbenzene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
n-Propylbenzene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
o-Xylene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
P & M -Xylene	0.0575 U	0.115	0.0346	mg/kg	1		09/27/22 18:37
sec-Butylbenzene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
Styrene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
tert-Butylbenzene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
Tetrachloroethene	0.565	0.0289	0.00900	mg/kg	1		09/27/22 18:37
Toluene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
trans-1,2-Dichloroethene	0.0289 U	0.0577	0.0180	mg/kg	1		09/27/22 18:37
trans-1,3-Dichloropropene	0.0144 U	0.0289	0.00900	mg/kg	1		09/27/22 18:37
Trichloroethene	0.0116 U	0.0231	0.00739	mg/kg	1		09/27/22 18:37
Trichlorofluoromethane	0.0575 U	0.115	0.0346	mg/kg	1		09/27/22 18:37
Vinyl acetate	0.116 U	0.231	0.0716	mg/kg	1		09/27/22 18:37
Vinyl chloride	0.000925 U	0.00185	0.000577	mg/kg	1		09/27/22 18:37
Xylenes (total)	0.0865 U	0.173	0.0526	mg/kg	1		09/27/22 18:37
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	118	71-136		%	1		09/27/22 18:37
4-Bromofluorobenzene (surr)	91.5	55-151		%	1		09/27/22 18:37
Toluene-d8 (surr)	102	85-116		%	1		09/27/22 18:37

## Results of 22BCS-SW-02

Client Sample ID: **22BCS-SW-02**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761003  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:47  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):92.0  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 18:37  
Container ID: 1225761003-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:47  
Prep Initial Wt./Vol.: 25.44 g  
Prep Extract Vol: 27.0257 mL





Results of 22BCS-SW-03

Client Sample ID: 22BCS-SW-03
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761004
Lab Project ID: 1225761

Collection Date: 09/20/22 15:21
Received Date: 09/21/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.7
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS13391
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 10/05/22 19:11
Container ID: 1225761004-A

Prep Batch: XXX47086
Prep Method: SW3550C
Prep Date/Time: 10/03/22 08:49
Prep Initial Wt./Vol.: 22.583 g
Prep Extract Vol: 5 mL

**Results of 22BCS-SW-03**

Client Sample ID: **22BCS-SW-03**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761004  
 Lab Project ID: 1225761

Collection Date: 09/20/22 15:21  
 Received Date: 09/21/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.7  
 Location:

**Results by Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	14.7 J	21.1	9.51	mg/kg	1		10/05/22 14:50
<b>Surrogates</b>							
5a Androstane (surr)	79.3	50-150		%	1		10/05/22 14:50

**Batch Information**

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Analyst: MAP  
 Analytical Date/Time: 10/05/22 14:50  
 Container ID: 1225761004-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.316 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-SW-03

Client Sample ID: **22BCS-SW-03**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761004  
 Lab Project ID: 1225761

Collection Date: 09/20/22 15:21  
 Received Date: 09/21/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.7  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.72 J	4.63	1.39	mg/kg	1		09/29/22 19:33
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	125	50-150		%	1		09/29/22 19:33

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 19:33  
 Container ID: 1225761004-B

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 15:21  
 Prep Initial Wt./Vol.: 31.12 g  
 Prep Extract Vol: 26.9747 mL



Results of 22BCS-SW-03

Client Sample ID: 22BCS-SW-03  
Client Project ID: 109735 Buffalo Center  
Lab Sample ID: 1225761004  
Lab Project ID: 1225761

Collection Date: 09/20/22 15:21  
Received Date: 09/21/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):93.7  
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	0.0185 U	0.0370	0.0115	mg/kg	1		09/27/22 18:54
1,1,1-Trichloroethane	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,1,2,2-Tetrachloroethane	0.00185 U	0.00370	0.00115	mg/kg	1		09/27/22 18:54
1,1,2-Trichloroethane	0.000925 U	0.00185	0.000926	mg/kg	1		09/27/22 18:54
1,1-Dichloroethane	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,1-Dichloroethene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,1-Dichloropropene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,2,3-Trichlorobenzene	0.0925 U	0.185	0.0555	mg/kg	1		09/27/22 18:54
1,2,3-Trichloropropane	0.00185 U	0.00370	0.00115	mg/kg	1		09/27/22 18:54
1,2,4-Trichlorobenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,2,4-Trimethylbenzene	0.0925 U	0.185	0.0555	mg/kg	1		09/27/22 18:54
1,2-Dibromo-3-chloropropane	0.0925 U	0.185	0.0574	mg/kg	1		09/27/22 18:54
1,2-Dibromoethane	0.00139 U	0.00278	0.00139	mg/kg	1		09/27/22 18:54
1,2-Dichlorobenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,2-Dichloroethane	0.00185 U	0.00370	0.00130	mg/kg	1		09/27/22 18:54
1,2-Dichloropropane	0.00925 U	0.0185	0.00926	mg/kg	1		09/27/22 18:54
1,3,5-Trimethylbenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,3-Dichlorobenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
1,3-Dichloropropane	0.00925 U	0.0185	0.00574	mg/kg	1		09/27/22 18:54
1,4-Dichlorobenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
2,2-Dichloropropane	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
2-Butanone (MEK)	0.232 U	0.463	0.144	mg/kg	1		09/27/22 18:54
2-Chlorotoluene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
2-Hexanone	0.111 U	0.222	0.111	mg/kg	1		09/27/22 18:54
4-Chlorotoluene	0.0185 U	0.0370	0.0185	mg/kg	1		09/27/22 18:54
4-Isopropyltoluene	0.0740 U	0.148	0.0740	mg/kg	1		09/27/22 18:54
4-Methyl-2-pentanone (MIBK)	0.232 U	0.463	0.144	mg/kg	1		09/27/22 18:54
Acetone	0.232 U	0.463	0.204	mg/kg	1		09/27/22 18:54
Benzene	0.0116 U	0.0231	0.00722	mg/kg	1		09/27/22 18:54
Bromobenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
Bromochloromethane	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
Bromodichloromethane	0.00185 U	0.00370	0.00115	mg/kg	1		09/27/22 18:54
Bromoform	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54
Bromomethane	0.0185 U	0.0370	0.0148	mg/kg	1		09/27/22 18:54
Carbon disulfide	0.0925 U	0.185	0.0574	mg/kg	1		09/27/22 18:54
Carbon tetrachloride	0.0116 U	0.0231	0.00722	mg/kg	1		09/27/22 18:54
Chlorobenzene	0.0232 U	0.0463	0.0144	mg/kg	1		09/27/22 18:54

Print Date: 11/01/2022 8:22:46AM

J flagging is activated



Results of 22BCS-SW-03

Client Sample ID: 22BCS-SW-03
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761004
Lab Project ID: 1225761

Collection Date: 09/20/22 15:21
Received Date: 09/21/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.7
Location:

Results by Volatile GC/MS

Table with columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-SW-03

Client Sample ID: **22BCS-SW-03**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761004  
Lab Project ID: 1225761

Collection Date: 09/20/22 15:21  
Received Date: 09/21/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):93.7  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 18:54  
Container ID: 1225761004-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 15:21  
Prep Initial Wt./Vol.: 31.12 g  
Prep Extract Vol: 26.9747 mL



Results of 22BCS-SW-04

Client Sample ID: 22BCS-SW-04
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761005
Lab Project ID: 1225761

Collection Date: 09/20/22 15:24
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):88.8
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS13391
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 10/05/22 20:00
Container ID: 1225761005-A

Prep Batch: XXX47086
Prep Method: SW3550C
Prep Date/Time: 10/03/22 08:49
Prep Initial Wt./Vol.: 22.71 g
Prep Extract Vol: 5 mL

## Results of 22BCS-SW-04

Client Sample ID: **22BCS-SW-04**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761005  
 Lab Project ID: 1225761

Collection Date: 09/20/22 15:24  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):88.8  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	26.2		22.5	10.1	mg/kg	1		10/05/22 15:00
<b>Surrogates</b>								
5a Androstane (surr)	79		50-150		%	1		10/05/22 15:00

## Batch Information

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Analyst: MAP  
 Analytical Date/Time: 10/05/22 15:00  
 Container ID: 1225761005-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.059 g  
 Prep Extract Vol: 5 mL





Results of **22BCS-SW-04**

Client Sample ID: **22BCS-SW-04**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761005  
Lab Project ID: 1225761

Collection Date: 09/20/22 15:24  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):88.8  
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.53 J	6.80	2.04	mg/kg	1		09/29/22 19:51
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	129	50-150		%	1		09/29/22 19:51

**Batch Information**

Analytical Batch: VFC16276  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 09/29/22 19:51  
Container ID: 1225761005-B

Prep Batch: VXX39260  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 15:24  
Prep Initial Wt./Vol.: 22.816 g  
Prep Extract Vol: 27.5494 mL



Results of 22BCS-SW-04

Client Sample ID: 22BCS-SW-04
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761005
Lab Project ID: 1225761

Collection Date: 09/20/22 15:24
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):88.8
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



**Results of 22BCS-SW-04**

Client Sample ID: **22BCS-SW-04**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761005  
 Lab Project ID: 1225761

Collection Date: 09/20/22 15:24  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):88.8  
 Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.272 U	0.544	0.169	mg/kg	1		09/27/22 19:11
Chloroform	0.00815 U	0.0163	0.00816	mg/kg	1		09/27/22 19:11
Chloromethane	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
cis-1,2-Dichloroethene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
cis-1,3-Dichloropropene	0.0170 U	0.0340	0.0106	mg/kg	1		09/27/22 19:11
Dibromochloromethane	0.00680 U	0.0136	0.00408	mg/kg	1		09/27/22 19:11
Dibromomethane	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
Dichlorodifluoromethane	0.136 U	0.272	0.0816	mg/kg	1		09/27/22 19:11
Ethylbenzene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
Freon-113	0.136 U	0.272	0.0843	mg/kg	1		09/27/22 19:11
Hexachlorobutadiene	0.0272 U	0.0544	0.0169	mg/kg	1		09/27/22 19:11
Isopropylbenzene (Cumene)	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
Methylene chloride	0.136 U	0.272	0.0843	mg/kg	1		09/27/22 19:11
Methyl-t-butyl ether	0.136 U	0.272	0.0843	mg/kg	1		09/27/22 19:11
Naphthalene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
n-Butylbenzene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
n-Propylbenzene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
o-Xylene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
P & M -Xylene	0.0680 U	0.136	0.0408	mg/kg	1		09/27/22 19:11
sec-Butylbenzene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
Styrene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
tert-Butylbenzene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
Tetrachloroethene	0.0170 U	0.0340	0.0106	mg/kg	1		09/27/22 19:11
Toluene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
trans-1,2-Dichloroethene	0.0340 U	0.0680	0.0212	mg/kg	1		09/27/22 19:11
trans-1,3-Dichloropropene	0.0170 U	0.0340	0.0106	mg/kg	1		09/27/22 19:11
Trichloroethene	0.0136 U	0.0272	0.00870	mg/kg	1		09/27/22 19:11
Trichlorofluoromethane	0.0680 U	0.136	0.0408	mg/kg	1		09/27/22 19:11
Vinyl acetate	0.136 U	0.272	0.0843	mg/kg	1		09/27/22 19:11
Vinyl chloride	0.00109 U	0.00217	0.000680	mg/kg	1		09/27/22 19:11
Xylenes (total)	0.102 U	0.204	0.0620	mg/kg	1		09/27/22 19:11
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	107	71-136		%	1		09/27/22 19:11
4-Bromofluorobenzene (surr)	108	55-151		%	1		09/27/22 19:11
Toluene-d8 (surr)	96.2	85-116		%	1		09/27/22 19:11

## Results of 22BCS-SW-04

Client Sample ID: **22BCS-SW-04**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761005  
Lab Project ID: 1225761

Collection Date: 09/20/22 15:24  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):88.8  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 19:11  
Container ID: 1225761005-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 15:24  
Prep Initial Wt./Vol.: 22.816 g  
Prep Extract Vol: 27.5494 mL

## Results of 22BCS-BASE-01

Client Sample ID: **22BCS-BASE-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761006  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:50  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.6  
 Location:

## Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0196 J	0.0266	0.00664	mg/kg	1		10/05/22 20:16
2-Methylnaphthalene	0.00889 J	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Acenaphthene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Acenaphthylene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Anthracene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Benzo(a)Anthracene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Benzo[a]pyrene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Benzo[b]Fluoranthene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Benzo[g,h,i]perylene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Benzo[k]fluoranthene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Chrysene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Dibenzo[a,h]anthracene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Fluoranthene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Fluorene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Indeno[1,2,3-c,d] pyrene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Naphthalene	0.0107 U	0.0213	0.00531	mg/kg	1		10/05/22 20:16
Phenanthrene	0.0133 U	0.0266	0.00664	mg/kg	1		10/05/22 20:16
Pyrene	0.0162 J	0.0266	0.00664	mg/kg	1		10/05/22 20:16
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	95.7	58-103		%	1		10/05/22 20:16
Fluoranthene-d10 (surr)	86.6	54-113		%	1		10/05/22 20:16

## Batch Information

Analytical Batch: XMS13391  
 Analytical Method: 8270D SIM (PAH)  
 Analyst: NGG  
 Analytical Date/Time: 10/05/22 20:16  
 Container ID: 1225761006-A

Prep Batch: XXX47086  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 08:49  
 Prep Initial Wt./Vol.: 22.617 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-BASE-01

Client Sample ID: **22BCS-BASE-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761006  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:50  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.6  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1170	21.2	9.54	mg/kg	1		10/07/22 11:27
<b>Surrogates</b>							
5a Androstane (surr)	95.6	50-150		%	1		10/07/22 11:27

## Batch Information

Analytical Batch: XFC16362  
 Analytical Method: AK102  
 Analyst: HMW  
 Analytical Date/Time: 10/07/22 11:27  
 Container ID: 1225761006-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.23 g  
 Prep Extract Vol: 5 mL



Results of **22BCS-BASE-01**

Client Sample ID: **22BCS-BASE-01**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761006  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:50  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):93.6  
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.36 J	5.22	1.56	mg/kg	1		09/29/22 20:10
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	116	50-150		%	1		09/29/22 20:10

**Batch Information**

Analytical Batch: VFC16276  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 09/29/22 20:10  
Container ID: 1225761006-B

Prep Batch: VXX39260  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:50  
Prep Initial Wt./Vol.: 27.406 g  
Prep Extract Vol: 26.757 mL



Results of 22BCS-BASE-01

Client Sample ID: 22BCS-BASE-01
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761006
Lab Project ID: 1225761

Collection Date: 09/20/22 13:50
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.





Results of 22BCS-BASE-01

Client Sample ID: 22BCS-BASE-01
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761006
Lab Project ID: 1225761

Collection Date: 09/20/22 13:50
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-BASE-01

Client Sample ID: **22BCS-BASE-01**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761006  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:50  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):93.6  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 19:28  
Container ID: 1225761006-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:50  
Prep Initial Wt./Vol.: 27.406 g  
Prep Extract Vol: 26.757 mL



Results of 22BCS-BASE-02

Client Sample ID: 22BCS-BASE-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761007
Lab Project ID: 1225761

Collection Date: 09/20/22 13:56
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):91.3
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS13391
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 10/05/22 20:32
Container ID: 1225761007-A

Prep Batch: XXX47086
Prep Method: SW3550C
Prep Date/Time: 10/03/22 08:49
Prep Initial Wt./Vol.: 22.842 g
Prep Extract Vol: 5 mL

**Results of 22BCS-BASE-02**

Client Sample ID: **22BCS-BASE-02**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761007  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:56  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):91.3  
 Location:

**Results by Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	58.3	21.8	9.83	mg/kg	1		10/05/22 15:20
<b>Surrogates</b>							
5a Androstane (surr)	80.9	50-150		%	1		10/05/22 15:20

**Batch Information**

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Analyst: MAP  
 Analytical Date/Time: 10/05/22 15:20  
 Container ID: 1225761007-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.106 g  
 Prep Extract Vol: 5 mL



Results of **22BCS-BASE-02**

Client Sample ID: **22BCS-BASE-02**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761007  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:56  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):91.3  
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.97 J	5.54	1.66	mg/kg	1		09/29/22 20:46
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	116	50-150		%	1		09/29/22 20:46

**Batch Information**

Analytical Batch: VFC16276  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 09/29/22 20:46  
Container ID: 1225761007-B

Prep Batch: VXX39260  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:56  
Prep Initial Wt./Vol.: 27.038 g  
Prep Extract Vol: 27.3578 mL



Results of 22BCS-BASE-02

Client Sample ID: 22BCS-BASE-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761007
Lab Project ID: 1225761

Collection Date: 09/20/22 13:56
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):91.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 22BCS-BASE-02

Client Sample ID: 22BCS-BASE-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761007
Lab Project ID: 1225761

Collection Date: 09/20/22 13:56
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):91.3
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-BASE-02

Client Sample ID: **22BCS-BASE-02**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761007  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:56  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):91.3  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 19:45  
Container ID: 1225761007-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:56  
Prep Initial Wt./Vol.: 27.038 g  
Prep Extract Vol: 27.3578 mL





Results of 22BCS-POL-01

Client Sample ID: 22BCS-POL-01
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761008
Lab Project ID: 1225761

Collection Date: 09/20/22 14:45
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.1
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS13391
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 10/05/22 20:48
Container ID: 1225761008-A

Prep Batch: XXX47086
Prep Method: SW3550C
Prep Date/Time: 10/03/22 08:49
Prep Initial Wt./Vol.: 22.949 g
Prep Extract Vol: 5 mL

**Results of 22BCS-POL-01**

Client Sample ID: **22BCS-POL-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761008  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:45  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.1  
 Location:

**Results by Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1370	21.4	9.62	mg/kg	1		10/05/22 15:29
<b>Surrogates</b>							
5a Androstane (surr)	91.3	50-150		%	1		10/05/22 15:29

**Batch Information**

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Analyst: MAP  
 Analytical Date/Time: 10/05/22 15:29  
 Container ID: 1225761008-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.166 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-POL-01

Client Sample ID: **22BCS-POL-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761008  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:45  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.1  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.53 J	7.31	2.19	mg/kg	1		09/29/22 21:05
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	115	50-150		%	1		09/29/22 21:05

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 21:05  
 Container ID: 1225761008-B

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 14:45  
 Prep Initial Wt./Vol.: 19.354 g  
 Prep Extract Vol: 26.344 mL



Results of 22BCS-POL-01

Client Sample ID: 22BCS-POL-01
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761008
Lab Project ID: 1225761

Collection Date: 09/20/22 14:45
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):93.1
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



**Results of 22BCS-POL-01**

Client Sample ID: **22BCS-POL-01**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761008  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:45  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):93.1  
 Location:

**Results by Volatile GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.292 U	0.585	0.181	mg/kg	1		09/27/22 20:02
Chloroform	0.00880 U	0.0176	0.00878	mg/kg	1		09/27/22 20:02
Chloromethane	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
cis-1,2-Dichloroethene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
cis-1,3-Dichloropropene	0.0183 U	0.0366	0.0114	mg/kg	1		09/27/22 20:02
Dibromochloromethane	0.00730 U	0.0146	0.00439	mg/kg	1		09/27/22 20:02
Dibromomethane	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
Dichlorodifluoromethane	0.146 U	0.293	0.0878	mg/kg	1		09/27/22 20:02
Ethylbenzene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
Freon-113	0.146 U	0.293	0.0907	mg/kg	1		09/27/22 20:02
Hexachlorobutadiene	0.0293 U	0.0585	0.0181	mg/kg	1		09/27/22 20:02
Isopropylbenzene (Cumene)	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
Methylene chloride	0.146 U	0.293	0.0907	mg/kg	1		09/27/22 20:02
Methyl-t-butyl ether	0.146 U	0.293	0.0907	mg/kg	1		09/27/22 20:02
Naphthalene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
n-Butylbenzene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
n-Propylbenzene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
o-Xylene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
P & M -Xylene	0.0730 U	0.146	0.0439	mg/kg	1		09/27/22 20:02
sec-Butylbenzene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
Styrene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
tert-Butylbenzene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
Tetrachloroethene	0.0183 U	0.0366	0.0114	mg/kg	1		09/27/22 20:02
Toluene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
trans-1,2-Dichloroethene	0.0365 U	0.0731	0.0228	mg/kg	1		09/27/22 20:02
trans-1,3-Dichloropropene	0.0183 U	0.0366	0.0114	mg/kg	1		09/27/22 20:02
Trichloroethene	0.0147 U	0.0293	0.00936	mg/kg	1		09/27/22 20:02
Trichlorofluoromethane	0.0730 U	0.146	0.0439	mg/kg	1		09/27/22 20:02
Vinyl acetate	0.146 U	0.293	0.0907	mg/kg	1		09/27/22 20:02
Vinyl chloride	0.00117 U	0.00234	0.000731	mg/kg	1		09/27/22 20:02
Xylenes (total)	0.110 U	0.219	0.0667	mg/kg	1		09/27/22 20:02
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	107	71-136		%	1		09/27/22 20:02
4-Bromofluorobenzene (surr)	101	55-151		%	1		09/27/22 20:02
Toluene-d8 (surr)	100	85-116		%	1		09/27/22 20:02

## Results of 22BCS-POL-01

Client Sample ID: **22BCS-POL-01**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761008  
Lab Project ID: 1225761

Collection Date: 09/20/22 14:45  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):93.1  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 20:02  
Container ID: 1225761008-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 14:45  
Prep Initial Wt./Vol.: 19.354 g  
Prep Extract Vol: 26.344 mL



**Results of 22BCS-POL-101**

Client Sample ID: **22BCS-POL-101**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761009  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:46  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.8  
 Location:

**Results by Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0361	0.0266	0.00665	mg/kg	1		10/05/22 21:04
2-Methylnaphthalene	0.0170 J	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Acenaphthene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Acenaphthylene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Anthracene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Benzo(a)Anthracene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Benzo[a]pyrene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Benzo[b]Fluoranthene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Benzo[g,h,i]perylene	0.0106 J	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Benzo[k]fluoranthene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Chrysene	0.00745 J	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Dibenzo[a,h]anthracene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Fluoranthene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Fluorene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Indeno[1,2,3-c,d] pyrene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Naphthalene	0.0107 U	0.0213	0.00532	mg/kg	1		10/05/22 21:04
Phenanthrene	0.0133 U	0.0266	0.00665	mg/kg	1		10/05/22 21:04
Pyrene	0.0229 J	0.0266	0.00665	mg/kg	1		10/05/22 21:04
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	100	58-103		%	1		10/05/22 21:04
Fluoranthene-d10 (surr)	81.3	54-113		%	1		10/05/22 21:04

**Batch Information**

Analytical Batch: XMS13391  
 Analytical Method: 8270D SIM (PAH)  
 Analyst: NGG  
 Analytical Date/Time: 10/05/22 21:04  
 Container ID: 1225761009-A

Prep Batch: XXX47086  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 08:49  
 Prep Initial Wt./Vol.: 22.778 g  
 Prep Extract Vol: 5 mL



Results of **22BCS-POL-101**

Client Sample ID: **22BCS-POL-101**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761009  
Lab Project ID: 1225761

Collection Date: 09/20/22 14:46  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):92.8  
Location:

Results by **Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1310	21.2	9.55	mg/kg	1		10/05/22 15:39
<b>Surrogates</b>							
5a Androstane (surr)	87.5	50-150		%	1		10/05/22 15:39

**Batch Information**

Analytical Batch: XFC16360  
Analytical Method: AK102  
Analyst: MAP  
Analytical Date/Time: 10/05/22 15:39  
Container ID: 1225761009-A

Prep Batch: XXX47089  
Prep Method: SW3550C  
Prep Date/Time: 10/03/22 09:58  
Prep Initial Wt./Vol.: 30.482 g  
Prep Extract Vol: 5 mL



## Results of 22BCS-POL-101

Client Sample ID: **22BCS-POL-101**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761009  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:46  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):92.8  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.60 J	5.41	1.62	mg/kg	1		09/29/22 21:23
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	119	50-150		%	1		09/29/22 21:23

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 21:23  
 Container ID: 1225761009-B

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 14:46  
 Prep Initial Wt./Vol.: 26.807 g  
 Prep Extract Vol: 26.9314 mL



Results of 22BCS-POL-101

Client Sample ID: 22BCS-POL-101
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761009
Lab Project ID: 1225761

Collection Date: 09/20/22 14:46
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):92.8
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



Results of 22BCS-POL-101

Client Sample ID: 22BCS-POL-101
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761009
Lab Project ID: 1225761

Collection Date: 09/20/22 14:46
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):92.8
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-POL-101

Client Sample ID: **22BCS-POL-101**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761009  
Lab Project ID: 1225761

Collection Date: 09/20/22 14:46  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):92.8  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 20:19  
Container ID: 1225761009-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 14:46  
Prep Initial Wt./Vol.: 26.807 g  
Prep Extract Vol: 26.9314 mL



Results of 22BCS-POL-02

Client Sample ID: 22BCS-POL-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761010
Lab Project ID: 1225761

Collection Date: 09/20/22 14:50
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):91.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS13391
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 10/05/22 21:21
Container ID: 1225761010-A

Prep Batch: XXX47086
Prep Method: SW3550C
Prep Date/Time: 10/03/22 08:49
Prep Initial Wt./Vol.: 22.928 g
Prep Extract Vol: 5 mL

## Results of 22BCS-POL-02

Client Sample ID: **22BCS-POL-02**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761010  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:50  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):91.6  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	2010	21.8	9.82	mg/kg	1		10/05/22 15:49
<b>Surrogates</b>							
5a Androstane (surr)	85.9	50-150		%	1		10/05/22 15:49

## Batch Information

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Analyst: MAP  
 Analytical Date/Time: 10/05/22 15:49  
 Container ID: 1225761010-A

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/03/22 09:58  
 Prep Initial Wt./Vol.: 30.017 g  
 Prep Extract Vol: 5 mL

## Results of 22BCS-POL-02

Client Sample ID: **22BCS-POL-02**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761010  
 Lab Project ID: 1225761

Collection Date: 09/20/22 14:50  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):91.6  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	3.93 J	5.81	1.74	mg/kg	1		09/29/22 21:41
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	127	50-150		%	1		09/29/22 21:41

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 21:41  
 Container ID: 1225761010-B

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 14:50  
 Prep Initial Wt./Vol.: 25.534 g  
 Prep Extract Vol: 27.1508 mL



Results of 22BCS-POL-02

Client Sample ID: 22BCS-POL-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761010
Lab Project ID: 1225761

Collection Date: 09/20/22 14:50
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):91.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.





Results of 22BCS-POL-02

Client Sample ID: 22BCS-POL-02
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761010
Lab Project ID: 1225761

Collection Date: 09/20/22 14:50
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):91.6
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.

## Results of 22BCS-POL-02

Client Sample ID: **22BCS-POL-02**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761010  
Lab Project ID: 1225761

Collection Date: 09/20/22 14:50  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):91.6  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 20:37  
Container ID: 1225761010-B

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 14:50  
Prep Initial Wt./Vol.: 25.534 g  
Prep Extract Vol: 27.1508 mL

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761011  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):  
 Location:

## Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.823 J	2.52	0.755	mg/kg	1		09/29/22 15:52
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	123	50-150		%	1		09/29/22 15:52

## Batch Information

Analytical Batch: VFC16276  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 09/29/22 15:52  
 Container ID: 1225761011-A

Prep Batch: VXX39260  
 Prep Method: SW5035A  
 Prep Date/Time: 09/20/22 13:42  
 Prep Initial Wt./Vol.: 49.663 g  
 Prep Extract Vol: 25 mL



Results of Trip Blank

Client Sample ID: Trip Blank
Client Project ID: 109735 Buffalo Center
Lab Sample ID: 1225761011
Lab Project ID: 1225761

Collection Date: 09/20/22 13:42
Received Date: 09/22/22 09:15
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various chemical compounds and their detection results.



### Results of Trip Blank

Client Sample ID: **Trip Blank**  
 Client Project ID: **109735 Buffalo Center**  
 Lab Sample ID: 1225761011  
 Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
 Received Date: 09/22/22 09:15  
 Matrix: Soil/Solid (dry weight)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroethane	0.101 U	0.201	0.0624	mg/kg	1		09/27/22 15:44
Chloroform	0.00302 U	0.00604	0.00302	mg/kg	1		09/27/22 15:44
Chloromethane	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
cis-1,2-Dichloroethene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
cis-1,3-Dichloropropene	0.00630 U	0.0126	0.00393	mg/kg	1		09/27/22 15:44
Dibromochloromethane	0.00252 U	0.00503	0.00151	mg/kg	1		09/27/22 15:44
Dibromomethane	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
Dichlorodifluoromethane	0.0505 U	0.101	0.0302	mg/kg	1		09/27/22 15:44
Ethylbenzene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
Freon-113	0.0505 U	0.101	0.0312	mg/kg	1		09/27/22 15:44
Hexachlorobutadiene	0.0101 U	0.0201	0.00624	mg/kg	1		09/27/22 15:44
Isopropylbenzene (Cumene)	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
Methylene chloride	0.0505 U	0.101	0.0312	mg/kg	1		09/27/22 15:44
Methyl-t-butyl ether	0.0505 U	0.101	0.0312	mg/kg	1		09/27/22 15:44
Naphthalene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
n-Butylbenzene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
n-Propylbenzene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
o-Xylene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
P & M -Xylene	0.0251 U	0.0503	0.0151	mg/kg	1		09/27/22 15:44
sec-Butylbenzene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
Styrene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
tert-Butylbenzene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
Tetrachloroethene	0.00630 U	0.0126	0.00393	mg/kg	1		09/27/22 15:44
Toluene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
trans-1,2-Dichloroethene	0.0126 U	0.0252	0.00785	mg/kg	1		09/27/22 15:44
trans-1,3-Dichloropropene	0.00630 U	0.0126	0.00393	mg/kg	1		09/27/22 15:44
Trichloroethene	0.00505 U	0.0101	0.00322	mg/kg	1		09/27/22 15:44
Trichlorofluoromethane	0.0251 U	0.0503	0.0151	mg/kg	1		09/27/22 15:44
Vinyl acetate	0.0505 U	0.101	0.0312	mg/kg	1		09/27/22 15:44
Vinyl chloride	0.000403 U	0.000805	0.000252	mg/kg	1		09/27/22 15:44
Xylenes (total)	0.0377 U	0.0755	0.0230	mg/kg	1		09/27/22 15:44
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	102	71-136		%	1		09/27/22 15:44
4-Bromofluorobenzene (surr)	110	55-151		%	1		09/27/22 15:44
Toluene-d8 (surr)	96.1	85-116		%	1		09/27/22 15:44

Print Date: 11/01/2022 8:22:46AM

J flagging is activated

## Results of Trip Blank

Client Sample ID: **Trip Blank**  
Client Project ID: **109735 Buffalo Center**  
Lab Sample ID: 1225761011  
Lab Project ID: 1225761

Collection Date: 09/20/22 13:42  
Received Date: 09/22/22 09:15  
Matrix: Soil/Solid (dry weight)  
Solids (%):  
Location:

## Results by Volatile GC/MS

### Batch Information

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Analyst: S.S  
Analytical Date/Time: 09/27/22 15:44  
Container ID: 1225761011-A

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 09/20/22 13:42  
Prep Initial Wt./Vol.: 49.663 g  
Prep Extract Vol: 25 mL



### Method Blank

Blank ID: MB for HBN 1844841 [SPT/11646]  
Blank Lab ID: 1689186

Matrix: Soil/Solid (dry weight)

#### QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010

### Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

### Batch Information

Analytical Batch: SPT11646  
Analytical Method: SM21 2540G  
Instrument:  
Analyst: APS  
Analytical Date/Time: 10/2/2022 5:38:00PM

Print Date: 11/01/2022 8:22:50AM

## Duplicate Sample Summary

Original Sample ID: 1225789006  
 Duplicate Sample ID: 1689187

Analysis Date: 10/02/2022 17:38  
 Matrix: Soil/Solid (dry weight)

QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008,  
 1225761009, 1225761010

## Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	70.5	73.2	%	3.80	(< 15 )

## Batch Information

Analytical Batch: SPT11646  
 Analytical Method: SM21 2540G  
 Instrument:  
 Analyst: APS

Print Date: 11/01/2022 8:22:51AM



## Duplicate Sample Summary

Original Sample ID: 1225795001

Duplicate Sample ID: 1689188

QC for Samples:

Analysis Date: 10/02/2022 17:38

Matrix: Soil/Solid (dry weight)

## Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	95.5	95.5	%	0.06	(< 15 )

## Batch Information

Analytical Batch: SPT11646

Analytical Method: SM21 2540G

Instrument:

Analyst: APS

Print Date: 11/01/2022 8:22:51AM



### Method Blank

Blank ID: MB for HBN 1844344 [VXX/39245]  
Blank Lab ID: 1688311

Matrix: Soil/Solid (dry weight)

QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

### Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,1,1,2-Tetrachloroethane	0.0100U	0.0200	0.00620	mg/kg
1,1,1-Trichloroethane	0.0125U	0.0250	0.00780	mg/kg
1,1,2,2-Tetrachloroethane	0.00100U	0.00200	0.000620	mg/kg
1,1,2-Trichloroethane	0.000500U	0.00100	0.000500	mg/kg
1,1-Dichloroethane	0.0125U	0.0250	0.00780	mg/kg
1,1-Dichloroethene	0.0125U	0.0250	0.00780	mg/kg
1,1-Dichloropropene	0.0125U	0.0250	0.00780	mg/kg
1,2,3-Trichlorobenzene	0.0500U	0.100	0.0300	mg/kg
1,2,3-Trichloropropane	0.00100U	0.00200	0.000620	mg/kg
1,2,4-Trichlorobenzene	0.0125U	0.0250	0.00780	mg/kg
1,2,4-Trimethylbenzene	0.0500U	0.100	0.0300	mg/kg
1,2-Dibromo-3-chloropropane	0.0500U	0.100	0.0310	mg/kg
1,2-Dibromoethane	0.000750U	0.00150	0.000750	mg/kg
1,2-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/kg
1,2-Dichloroethane	0.00100U	0.00200	0.000700	mg/kg
1,2-Dichloropropane	0.00500U	0.0100	0.00500	mg/kg
1,3,5-Trimethylbenzene	0.0125U	0.0250	0.00780	mg/kg
1,3-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/kg
1,3-Dichloropropane	0.00500U	0.0100	0.00310	mg/kg
1,4-Dichlorobenzene	0.0125U	0.0250	0.00780	mg/kg
2,2-Dichloropropane	0.0125U	0.0250	0.00780	mg/kg
2-Butanone (MEK)	0.125U	0.250	0.0780	mg/kg
2-Chlorotoluene	0.0125U	0.0250	0.00780	mg/kg
2-Hexanone	0.0600U	0.120	0.0600	mg/kg
4-Chlorotoluene	0.0100U	0.0200	0.0100	mg/kg
4-Isopropyltoluene	0.0400U	0.0800	0.0400	mg/kg
4-Methyl-2-pentanone (MIBK)	0.125U	0.250	0.0780	mg/kg
Acetone	0.125U	0.250	0.110	mg/kg
Benzene	0.00625U	0.0125	0.00390	mg/kg
Bromobenzene	0.0125U	0.0250	0.00780	mg/kg
Bromochloromethane	0.0125U	0.0250	0.00780	mg/kg
Bromodichloromethane	0.00100U	0.00200	0.000620	mg/kg
Bromoform	0.0125U	0.0250	0.00780	mg/kg
Bromomethane	0.0100U	0.0200	0.00800	mg/kg
Carbon disulfide	0.0500U	0.100	0.0310	mg/kg
Carbon tetrachloride	0.00625U	0.0125	0.00390	mg/kg
Chlorobenzene	0.0125U	0.0250	0.00780	mg/kg
Chloroethane	0.100U	0.200	0.0620	mg/kg

Print Date: 11/01/2022 8:22:55AM

## Method Blank

Blank ID: MB for HBN 1844344 [VXX/39245]  
 Blank Lab ID: 1688311

Matrix: Soil/Solid (dry weight)

### QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Chloroform	0.00300U	0.00600	0.00300	mg/kg
Chloromethane	0.0125U	0.0250	0.00780	mg/kg
cis-1,2-Dichloroethene	0.0125U	0.0250	0.00780	mg/kg
cis-1,3-Dichloropropene	0.00625U	0.0125	0.00390	mg/kg
Dibromochloromethane	0.00250U	0.00500	0.00150	mg/kg
Dibromomethane	0.0125U	0.0250	0.00780	mg/kg
Dichlorodifluoromethane	0.0500U	0.100	0.0300	mg/kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/kg
Freon-113	0.0500U	0.100	0.0310	mg/kg
Hexachlorobutadiene	0.0100U	0.0200	0.00620	mg/kg
Isopropylbenzene (Cumene)	0.0125U	0.0250	0.00780	mg/kg
Methylene chloride	0.0500U	0.100	0.0310	mg/kg
Methyl-t-butyl ether	0.0500U	0.100	0.0310	mg/kg
Naphthalene	0.0125U	0.0250	0.00780	mg/kg
n-Butylbenzene	0.0125U	0.0250	0.00780	mg/kg
n-Propylbenzene	0.0125U	0.0250	0.00780	mg/kg
o-Xylene	0.0125U	0.0250	0.00780	mg/kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/kg
sec-Butylbenzene	0.0125U	0.0250	0.00780	mg/kg
Styrene	0.0125U	0.0250	0.00780	mg/kg
tert-Butylbenzene	0.0125U	0.0250	0.00780	mg/kg
Tetrachloroethene	0.00625U	0.0125	0.00390	mg/kg
Toluene	0.0125U	0.0250	0.00780	mg/kg
trans-1,2-Dichloroethene	0.0125U	0.0250	0.00780	mg/kg
trans-1,3-Dichloropropene	0.00625U	0.0125	0.00390	mg/kg
Trichloroethene	0.00500U	0.0100	0.00320	mg/kg
Trichlorofluoromethane	0.0250U	0.0500	0.0150	mg/kg
Vinyl acetate	0.0500U	0.100	0.0310	mg/kg
Vinyl chloride	0.000400U	0.000800	0.000250	mg/kg
Xylenes (total)	0.0375U	0.0750	0.0228	mg/kg
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	106	71-136		%
4-Bromofluorobenzene (surr)	114	55-151		%
Toluene-d8 (surr)	94.8	85-116		%



**Method Blank**

Blank ID: MB for HBN 1844344 [VXX/39245]  
Blank Lab ID: 1688311

Matrix: Soil/Solid (dry weight)

QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

**Results by SW8260D**

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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**Batch Information**

Analytical Batch: VMS22012  
Analytical Method: SW8260D  
Instrument: VQA 7890/5975 GC/MS  
Analyst: S.S  
Analytical Date/Time: 9/27/2022 11:32:00AM

Prep Batch: VXX39245  
Prep Method: SW5035A  
Prep Date/Time: 9/27/2022 6:00:00AM  
Prep Initial Wt./Vol.: 50 g  
Prep Extract Vol: 25 mL

Print Date: 11/01/2022 8:22:55AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1225761 [VXX39245]

Blank Spike Lab ID: 1688312

Date Analyzed: 09/27/2022 11:49

Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	0.750	0.852	114	( 78-125 )
1,1,1-Trichloroethane	0.750	0.815	109	( 73-130 )
1,1,2,2-Tetrachloroethane	0.750	0.783	104	( 70-124 )
1,1,2-Trichloroethane	0.750	0.815	109	( 78-121 )
1,1-Dichloroethane	0.750	0.796	106	( 76-125 )
1,1-Dichloroethene	0.750	0.776	104	( 70-131 )
1,1-Dichloropropene	0.750	0.794	106	( 76-125 )
1,2,3-Trichlorobenzene	0.750	0.769	103	( 66-130 )
1,2,3-Trichloropropane	0.750	0.717	96	( 73-125 )
1,2,4-Trichlorobenzene	0.750	0.791	105	( 67-129 )
1,2,4-Trimethylbenzene	0.750	0.804	107	( 75-123 )
1,2-Dibromo-3-chloropropane	0.750	0.767	102	( 61-132 )
1,2-Dibromoethane	0.750	0.838	112	( 78-122 )
1,2-Dichlorobenzene	0.750	0.779	104	( 78-121 )
1,2-Dichloroethane	0.750	0.776	104	( 73-128 )
1,2-Dichloropropane	0.750	0.820	109	( 76-123 )
1,3,5-Trimethylbenzene	0.750	0.793	106	( 73-124 )
1,3-Dichlorobenzene	0.750	0.781	104	( 77-121 )
1,3-Dichloropropane	0.750	0.804	107	( 77-121 )
1,4-Dichlorobenzene	0.750	0.773	103	( 75-120 )
2,2-Dichloropropane	0.750	0.823	110	( 67-133 )
2-Butanone (MEK)	2.25	2.46	110	( 51-148 )
2-Chlorotoluene	0.750	0.789	105	( 75-122 )
2-Hexanone	2.25	2.54	113	( 53-145 )
4-Chlorotoluene	0.750	0.785	105	( 72-124 )
4-Isopropyltoluene	0.750	0.796	106	( 73-127 )
4-Methyl-2-pentanone (MIBK)	2.25	2.53	112	( 65-135 )
Acetone	2.25	2.40	107	( 36-164 )
Benzene	0.750	0.805	107	( 77-121 )
Bromobenzene	0.750	0.764	102	( 78-121 )
Bromochloromethane	0.750	0.802	107	( 78-125 )
Bromodichloromethane	0.750	0.872	116	( 75-127 )
Bromoform	0.750	0.799	107	( 67-132 )
Bromomethane	0.750	0.781	104	( 53-143 )

Print Date: 11/01/2022 8:22:57AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1225761 [VXX39245]

Blank Spike Lab ID: 1688312

Date Analyzed: 09/27/2022 11:49

Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
Carbon disulfide	1.13	1.29	114	(63-132)
Carbon tetrachloride	0.750	0.856	114	(70-135)
Chlorobenzene	0.750	0.781	104	(79-120)
Chloroethane	0.750	0.792	106	(59-139)
Chloroform	0.750	0.794	106	(78-123)
Chloromethane	0.750	0.739	99	(50-136)
cis-1,2-Dichloroethene	0.750	0.788	105	(77-123)
cis-1,3-Dichloropropene	0.750	0.893	119	(74-126)
Dibromochloromethane	0.750	0.805	107	(74-126)
Dibromomethane	0.750	0.820	109	(78-125)
Dichlorodifluoromethane	0.750	0.754	101	(29-149)
Ethylbenzene	0.750	0.796	106	(76-122)
Freon-113	1.13	1.17	104	(66-136)
Hexachlorobutadiene	0.750	0.762	102	(61-135)
Isopropylbenzene (Cumene)	0.750	0.816	109	(68-134)
Methylene chloride	0.750	0.791	105	(70-128)
Methyl-t-butyl ether	1.13	1.18	105	(73-125)
Naphthalene	0.750	0.777	104	(62-129)
n-Butylbenzene	0.750	0.843	112	(70-128)
n-Propylbenzene	0.750	0.805	107	(73-125)
o-Xylene	0.750	0.806	108	(77-123)
P & M -Xylene	1.50	1.61	107	(77-124)
sec-Butylbenzene	0.750	0.813	108	(73-126)
Styrene	0.750	0.812	108	(76-124)
tert-Butylbenzene	0.750	0.798	106	(73-125)
Tetrachloroethene	0.750	0.793	106	(73-128)
Toluene	0.750	0.765	102	(77-121)
trans-1,2-Dichloroethene	0.750	0.808	108	(74-125)
trans-1,3-Dichloropropene	0.750	0.787	105	(71-130)
Trichloroethene	0.750	0.801	107	(77-123)
Trichlorofluoromethane	0.750	0.877	117	(62-140)
Vinyl acetate	0.750	0.870	116	(50-151)
Vinyl chloride	0.750	0.810	108	(56-135)
Xylenes (total)	2.25	2.42	107	(78-124)

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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1225761 [VXX39245]

Blank Spike Lab ID: 1688312

Date Analyzed: 09/27/2022 11:49

Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	0.750		96	( 71-136 )
4-Bromofluorobenzene (surr)	0.750		111	( 55-151 )
Toluene-d8 (surr)	0.750		99	( 85-116 )

## Batch Information

Analytical Batch: VMS22012

Analytical Method: SW8260D

Instrument: VQA 7890/5975 GC/MS

Analyst: S.S

Prep Batch: VXX39245

Prep Method: SW5035A

Prep Date/Time: 09/27/2022 06:00

Spike Init Wt./Vol.: 0.750 mg/kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1688350  
 MS Sample ID: 1688351 MS  
 MSD Sample ID: 1688352 MSD

Analysis Date: 09/27/2022 16:02  
 Analysis Date: 09/27/2022 13:10  
 Analysis Date: 09/27/2022 13:27  
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	0.0249U	1.88	2.11	112	1.88	2.08	111	78-125	1.50	(< 20)
1,1,1-Trichloroethane	0.0312U	1.88	2.13	113	1.88	2.10	112	73-130	1.30	(< 20)
1,1,2,2-Tetrachloroethane	0.00249U	1.88	2.04	108	1.88	2.09	111	70-124	2.40	(< 20)
1,1,2-Trichloroethane	0.00125U	1.88	2.06	110	1.88	2.07	110	78-121	0.65	(< 20)
1,1-Dichloroethane	0.0312U	1.88	2.03	108	1.88	2.00	107	76-125	1.30	(< 20)
1,1-Dichloroethene	0.0312U	1.88	2.13	113	1.88	2.08	111	70-131	2.40	(< 20)
1,1-Dichloropropene	0.0312U	1.88	2.10	112	1.88	2.07	110	76-125	1.40	(< 20)
1,2,3-Trichlorobenzene	0.125U	1.88	2.19	117	1.88	2.13	114	66-130	2.60	(< 20)
1,2,3-Trichloropropane	0.00249U	1.88	1.84	98	1.88	1.90	101	73-125	3.30	(< 20)
1,2,4-Trichlorobenzene	0.0312U	1.88	2.37	126	1.88	2.28	122	67-129	3.70	(< 20)
1,2,4-Trimethylbenzene	0.125U	1.88	2.12	113	1.88	2.00	106	75-123	5.80	(< 20)
1,2-Dibromo-3-chloropropane	0.125U	1.88	1.97	105	1.88	2.00	107	61-132	1.30	(< 20)
1,2-Dibromoethane	0.00187U	1.88	2.12	113	1.88	2.16	115	78-122	1.70	(< 20)
1,2-Dichlorobenzene	0.0312U	1.88	1.94	103	1.88	1.89	100	78-121	2.90	(< 20)
1,2-Dichloroethane	0.00249U	1.88	1.95	104	1.88	1.97	105	73-128	0.86	(< 20)
1,2-Dichloropropane	0.0124U	1.88	2.06	109	1.88	2.06	109	76-123	0.04	(< 20)
1,3,5-Trimethylbenzene	0.0312U	1.88	2.10	112	1.88	2.00	106	73-124	5.10	(< 20)
1,3-Dichlorobenzene	0.0312U	1.88	2.02	108	1.88	1.92	102	77-121	5.00	(< 20)
1,3-Dichloropropane	0.0124U	1.88	2.02	107	1.88	2.04	108	77-121	0.94	(< 20)
1,4-Dichlorobenzene	0.0312U	1.88	2.00	107	1.88	1.91	102	75-120	4.50	(< 20)
2,2-Dichloropropane	0.0312U	1.88	2.26	120	1.88	2.22	118	67-133	1.50	(< 20)
2-Butanone (MEK)	0.653	5.63	6.68	107	5.63	7.08	114	51-148	5.80	(< 20)
2-Chlorotoluene	0.0312U	1.88	2.04	109	1.88	1.93	103	75-122	5.60	(< 20)
2-Hexanone	0.149U	5.63	6.53	116	5.63	6.69	119	53-145	2.50	(< 20)
4-Chlorotoluene	0.0249U	1.88	2.04	109	1.88	1.93	103	72-124	5.50	(< 20)
4-Isopropyltoluene	0.0995U	1.88	2.60	138 *	1.88	2.43	129 *	73-127	6.80	(< 20)
4-Methyl-2-pentanone (MIBK)	0.312U	5.63	6.44	114	5.63	6.66	118	65-135	3.30	(< 20)
Acetone	0.312U	5.63	6.11	109	5.63	6.67	118	36-164	8.70	(< 20)
Benzene	0.0156U	1.88	2.05	109	1.88	2.03	108	77-121	1.10	(< 20)
Bromobenzene	0.0312U	1.88	1.92	102	1.88	1.90	101	78-121	1.40	(< 20)
Bromochloromethane	0.0312U	1.88	2.02	107	1.88	2.02	108	78-125	0.25	(< 20)
Bromodichloromethane	0.00249U	1.88	2.18	116	1.88	2.17	116	75-127	0.39	(< 20)
Bromoform	0.0312U	1.88	2.02	108	1.88	2.05	109	67-132	1.50	(< 20)
Bromomethane	0.0249U	1.88	2.10	112	1.88	2.09	112	53-143	0.27	(< 20)
Carbon disulfide	0.125U	2.82	3.55	126	2.82	3.44	122	63-132	3.20	(< 20)
Carbon tetrachloride	0.0156U	1.88	2.26	120	1.88	2.21	118	70-135	1.90	(< 20)
Chlorobenzene	0.0312U	1.88	1.96	104	1.88	1.93	103	79-120	1.70	(< 20)

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## Matrix Spike Summary

Original Sample ID: 1688350  
 MS Sample ID: 1688351 MS  
 MSD Sample ID: 1688352 MSD

Analysis Date: 09/27/2022 16:02  
 Analysis Date: 09/27/2022 13:10  
 Analysis Date: 09/27/2022 13:27  
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroethane	0.249U	1.88	2.12	113	1.88	2.02	108	59-139	4.60	(< 20)
Chloroform	0.00750U	1.88	2.01	107	1.88	1.99	106	78-123	0.81	(< 20)
Chloromethane	0.0312U	1.88	1.95	104	1.88	1.94	103	50-136	0.48	(< 20)
cis-1,2-Dichloroethene	0.0312U	1.88	1.99	106	1.88	1.96	104	77-123	1.70	(< 20)
cis-1,3-Dichloropropene	0.0156U	1.88	2.27	121	1.88	2.28	121	74-126	0.53	(< 20)
Dibromochloromethane	0.00625U	1.88	2.02	108	1.88	2.02	107	74-126	0.29	(< 20)
Dibromomethane	0.0312U	1.88	2.05	109	1.88	2.08	111	78-125	1.10	(< 20)
Dichlorodifluoromethane	0.125U	1.88	2.13	113	1.88	2.07	110	29-149	2.80	(< 20)
Ethylbenzene	0.0312U	1.88	1.99	106	1.88	1.93	103	76-122	3.50	(< 20)
Freon-113	0.125U	2.82	3.24	115	2.82	3.17	112	66-136	2.30	(< 20)
Hexachlorobutadiene	0.0249U	1.88	4.30	229 *	1.88	4.24	226 *	61-135	1.30	(< 20)
Isopropylbenzene (Cumene)	0.0312U	1.88	2.08	111	1.88	1.94	103	68-134	7.20	(< 20)
Methylene chloride	0.125U	1.88	2.04	109	1.88	2.06	110	70-128	1.10	(< 20)
Methyl-t-butyl ether	0.125U	2.82	2.95	105	2.82	3.01	107	73-125	1.90	(< 20)
Naphthalene	0.0312U	1.88	1.96	104	1.88	1.98	106	62-129	1.00	(< 20)
n-Butylbenzene	0.0312U	1.88	3.31	177 *	1.88	3.08	164 *	70-128	7.30	(< 20)
n-Propylbenzene	0.0312U	1.88	2.22	118	1.88	2.05	109	73-125	8.20	(< 20)
o-Xylene	0.0312U	1.88	1.97	105	1.88	1.91	102	77-123	2.90	(< 20)
P & M -Xylene	0.0625U	3.76	4.00	107	3.76	3.85	102	77-124	4.00	(< 20)
sec-Butylbenzene	0.0312U	1.88	2.68	143 *	1.88	2.46	131 *	73-126	8.60	(< 20)
Styrene	0.0312U	1.88	2.01	107	1.88	1.97	105	76-124	2.30	(< 20)
tert-Butylbenzene	0.0312U	1.88	2.32	123	1.88	2.12	113	73-125	8.70	(< 20)
Tetrachloroethene	0.309	1.88	2.38	110	1.88	2.30	106	73-128	3.50	(< 20)
Toluene	0.0312U	1.88	1.95	104	1.88	1.91	102	77-121	1.80	(< 20)
trans-1,2-Dichloroethene	0.0312U	1.88	2.11	113	1.88	2.11	112	74-125	0.05	(< 20)
trans-1,3-Dichloropropene	0.0156U	1.88	2.01	107	1.88	2.01	107	71-130	0.14	(< 20)
Trichloroethene	0.0124U	1.88	2.07	110	1.88	2.04	108	77-123	1.50	(< 20)
Trichlorofluoromethane	0.0625U	1.88	2.47	132	1.88	2.11	112	62-140	15.80	(< 20)
Vinyl acetate	0.125U	1.88	2.24	119	1.88	2.30	122	50-151	2.60	(< 20)
Vinyl chloride	0.000995U	1.88	2.22	118	1.88	2.16	115	56-135	2.50	(< 20)
Xylenes (total)	0.0935U	5.63	5.97	106	5.63	5.76	102	78-124	3.60	(< 20)
<b>Surrogates</b>										
1,2-Dichloroethane-D4 (surr)		1.88	1.83	97	1.88	1.89	101	71-136	3.50	
4-Bromofluorobenzene (surr)		2.93	2.79	95	2.93	2.71	93	55-151	2.70	
Toluene-d8 (surr)		1.88	1.85	98	1.88	1.84	98	85-116	0.11	

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## Matrix Spike Summary

Original Sample ID: 1688350  
 MS Sample ID: 1688351 MS  
 MSD Sample ID: 1688352 MSD

Analysis Date:  
 Analysis Date: 09/27/2022 13:10  
 Analysis Date: 09/27/2022 13:27  
 Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by SW8260D

Parameter	Sample	Matrix Spike (%)			Spike Duplicate (%)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			

## Batch Information

Analytical Batch: VMS22012  
 Analytical Method: SW8260D  
 Instrument: VQA 7890/5975 GC/MS  
 Analyst: S.S  
 Analytical Date/Time: 9/27/2022 1:10:00PM

Prep Batch: VXX39245  
 Prep Method: Vol. Extraction SW8260 Field Extracted L  
 Prep Date/Time: 9/27/2022 6:00:00AM  
 Prep Initial Wt./Vol.: 21.30g  
 Prep Extract Vol: 26.54mL

## Method Blank

Blank ID: MB for HBN 1844541 [VXX/39260]

Matrix: Soil/Solid (dry weight)

Blank Lab ID: 1688970

QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	1.25U	2.50	0.750	mg/kg
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	99.5	50-150		%

## Batch Information

Analytical Batch: VFC16276

Analytical Method: AK101

Instrument: Agilent 7890A PID/FID

Analyst: PHK

Analytical Date/Time: 9/29/2022 2:52:00PM

Prep Batch: VXX39260

Prep Method: SW5035A

Prep Date/Time: 9/29/2022 6:00:00AM

Prep Initial Wt./Vol.: 50 g

Prep Extract Vol: 25 mL

Print Date: 11/01/2022 8:23:00AM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1225761 [VXX39260]  
 Blank Spike Lab ID: 1688971  
 Date Analyzed: 09/29/2022 14:16

Spike Duplicate ID: LCSD for HBN 1225761 [VXX39260]  
 Spike Duplicate Lab ID: 1688972  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010, 1225761011

## Results by AK101

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	13.5	108	12.5	13.6	108	( 60-120 )	0.14	(< 20 )

### Surrogates

4-Bromofluorobenzene (surr)	1.25		104	1.25		104	( 50-150 )	0.02	
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## Batch Information

Analytical Batch: **VFC16276**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890A PID/FID**  
 Analyst: **PHK**

Prep Batch: **VXX39260**  
 Prep Method: **SW5035A**  
 Prep Date/Time: **09/29/2022 06:00**  
 Spike Init Wt./Vol.: 1.25 mg/kg Extract Vol: 25 mL  
 Dupe Init Wt./Vol.: 1.25 mg/kg Extract Vol: 25 mL

## Method Blank

Blank ID: MB for HBN 1844831 [XXX/47086]  
 Blank Lab ID: 1689155

Matrix: Soil/Solid (dry weight)

### QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010

## Results by 8270D SIM (PAH)

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
2-Methylnaphthalene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthene	0.0125U	0.0250	0.00625	mg/kg
Acenaphthylene	0.0125U	0.0250	0.00625	mg/kg
Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo(a)Anthracene	0.0125U	0.0250	0.00625	mg/kg
Benzo[a]pyrene	0.0125U	0.0250	0.00625	mg/kg
Benzo[b]Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Benzo[g,h,i]perylene	0.0125U	0.0250	0.00625	mg/kg
Benzo[k]fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Chrysene	0.0125U	0.0250	0.00625	mg/kg
Dibenzo[a,h]anthracene	0.0125U	0.0250	0.00625	mg/kg
Fluoranthene	0.0125U	0.0250	0.00625	mg/kg
Fluorene	0.0125U	0.0250	0.00625	mg/kg
Indeno[1,2,3-c,d] pyrene	0.0125U	0.0250	0.00625	mg/kg
Naphthalene	0.0100U	0.0200	0.00500	mg/kg
Phenanthrene	0.0125U	0.0250	0.00625	mg/kg
Pyrene	0.0125U	0.0250	0.00625	mg/kg
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	95.4	58-103		%
Fluoranthene-d10 (surr)	94.9	54-113		%

## Batch Information

Analytical Batch: XMS13391  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: Agilent 8890 GC/MS US2210A024  
 Analyst: NGG  
 Analytical Date/Time: 10/5/2022 5:01:00PM

Prep Batch: XXX47086  
 Prep Method: SW3550C  
 Prep Date/Time: 10/3/2022 8:49:54AM  
 Prep Initial Wt./Vol.: 22.5 g  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1225761 [XXX47086]

Blank Spike Lab ID: 1689156

Date Analyzed: 10/05/2022 17:17

Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010

## Results by 8270D SIM (PAH)

Parameter	Blank Spike (mg/kg)			CL
	Spike	Result	Rec (%)	
1-Methylnaphthalene	0.111	0.107	96	( 43-111 )
2-Methylnaphthalene	0.111	0.107	97	( 39-114 )
Acenaphthene	0.111	0.110	99	( 44-111 )
Acenaphthylene	0.111	0.104	94	( 39-116 )
Anthracene	0.111	0.109	98	( 50-114 )
Benzo(a)Anthracene	0.111	0.103	93	( 54-122 )
Benzo[a]pyrene	0.111	0.102	92	( 50-125 )
Benzo[b]Fluoranthene	0.111	0.112	100	( 53-128 )
Benzo[g,h,i]perylene	0.111	0.0996	90	( 49-127 )
Benzo[k]fluoranthene	0.111	0.108	97	( 56-123 )
Chrysene	0.111	0.109	98	( 57-118 )
Dibenzo[a,h]anthracene	0.111	0.106	96	( 50-129 )
Fluoranthene	0.111	0.104	93	( 55-119 )
Fluorene	0.111	0.109	98	( 47-114 )
Indeno[1,2,3-c,d] pyrene	0.111	0.106	95	( 49-130 )
Naphthalene	0.111	0.109	98	( 38-111 )
Phenanthrene	0.111	0.107	96	( 49-113 )
Pyrene	0.111	0.105	94	( 55-117 )
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	0.111		97	( 58-103 )
Fluoranthene-d10 (surr)	0.111		94	( 54-113 )

## Batch Information

Analytical Batch: XMS13391

Analytical Method: 8270D SIM (PAH)

Instrument: Agilent 8890 GC/MS US2210A024

Analyst: NGG

Prep Batch: XXX47086

Prep Method: SW3550C

Prep Date/Time: 10/03/2022 08:49

Spike Init Wt./Vol.: 0.111 mg/kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:

## Matrix Spike Summary

Original Sample ID: 1225761004  
 MS Sample ID: 1689157 MS  
 MSD Sample ID: 1689158 MSD

Analysis Date: 10/05/2022 19:11  
 Analysis Date: 10/05/2022 19:27  
 Analysis Date: 10/05/2022 19:43  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010

## Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0133U	0.118	0.110	93	0.117	0.109	92	43-111	1.10	(< 20)
2-Methylnaphthalene	0.0133U	0.118	0.110	92	0.117	0.109	93	39-114	0.50	(< 20)
Acenaphthene	0.0133U	0.118	0.114	97	0.117	0.111	95	44-111	2.80	(< 20)
Acenaphthylene	0.0133U	0.118	0.110	92	0.117	0.110	93	39-116	0.23	(< 20)
Anthracene	0.0133U	0.118	0.117	99	0.117	0.117	100	50-114	0.44	(< 20)
Benzo(a)Anthracene	0.0133U	0.118	0.109	92	0.117	0.107	91	54-122	1.30	(< 20)
Benzo[a]pyrene	0.0133U	0.118	0.108	91	0.117	0.107	91	50-125	1.20	(< 20)
Benzo[b]Fluoranthene	0.0133U	0.118	0.115	97	0.117	0.115	98	53-128	0.56	(< 20)
Benzo[g,h,i]perylene	0.0133U	0.118	0.0883	75	0.117	0.101	86	49-127	13.90	(< 20)
Benzo[k]fluoranthene	0.0133U	0.118	0.113	96	0.117	0.109	92	56-123	4.30	(< 20)
Chrysene	0.0133U	0.118	0.112	94	0.117	0.110	94	57-118	1.70	(< 20)
Dibenzo[a,h]anthracene	0.0133U	0.118	0.0942	80	0.117	0.108	91	50-129	13.20	(< 20)
Fluoranthene	0.0133U	0.118	0.108	91	0.117	0.107	91	55-119	0.92	(< 20)
Fluorene	0.0133U	0.118	0.115	97	0.117	0.111	94	47-114	3.20	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0133U	0.118	0.0927	78	0.117	0.107	91	49-130	14.00	(< 20)
Naphthalene	0.0107U	0.118	0.108	91	0.117	0.108	91	38-111	0.63	(< 20)
Phenanthrene	0.0133U	0.118	0.111	93	0.117	0.111	94	49-113	0.48	(< 20)
Pyrene	0.0133U	0.118	0.110	93	0.117	0.109	92	55-117	1.10	(< 20)
<b>Surrogates</b>										
2-Methylnaphthalene-d10 (surr)		0.118	0.111	94	0.117	0.108	91	58-103	3.20	
Fluoranthene-d10 (surr)		0.118	0.108	91	0.117	0.107	91	54-113	0.85	

## Batch Information

Analytical Batch: XMS13391  
 Analytical Method: 8270D SIM (PAH)  
 Instrument: Agilent 8890 GC/MS US2210A024  
 Analyst: NGG  
 Analytical Date/Time: 10/5/2022 7:27:00PM

Prep Batch: XXX47086  
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml  
 Prep Date/Time: 10/3/2022 8:49:54AM  
 Prep Initial Wt./Vol.: 22.51g  
 Prep Extract Vol: 5.00mL

## Method Blank

Blank ID: MB for HBN 1844834 [XXX/47089]  
 Blank Lab ID: 1689164

Matrix: Soil/Solid (dry weight)

QC for Samples:

1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010

## Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	9.00	mg/kg
<b>Surrogates</b>				
5a Androstane (surr)	78.8	60-120		%

## Batch Information

Analytical Batch: XFC16360  
 Analytical Method: AK102  
 Instrument: Agilent 7890B R  
 Analyst: MAP  
 Analytical Date/Time: 10/5/2022 12:53:00PM

Prep Batch: XXX47089  
 Prep Method: SW3550C  
 Prep Date/Time: 10/3/2022 9:58:50AM  
 Prep Initial Wt./Vol.: 30 g  
 Prep Extract Vol: 5 mL



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1225761 [XXX47089]  
 Blank Spike Lab ID: 1689165  
 Date Analyzed: 10/05/2022 13:02

Spike Duplicate ID: LCSD for HBN 1225761 [XXX47089]  
 Spike Duplicate Lab ID: 1689166  
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1225761001, 1225761002, 1225761003, 1225761004, 1225761005, 1225761006, 1225761007, 1225761008, 1225761009, 1225761010

## Results by AK102

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	667	752	113	667	695	104	( 75-125 )	7.80	(< 20 )
<b>Surrogates</b>									
5a Androstane (surr)	16.7		93	16.7		87	( 60-120 )	6.10	

## Batch Information

Analytical Batch: **XFC16360**  
 Analytical Method: **AK102**  
 Instrument: **Agilent 7890B R**  
 Analyst: **MAP**

Prep Batch: **XXX47089**  
 Prep Method: **SW3550C**  
 Prep Date/Time: **10/03/2022 09:58**  
 Spike Init Wt./Vol.: 16.7 mg/kg Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 16.7 mg/kg Extract Vol: 5 mL



2355 Hill Road  
Fairbanks, AK 99709  
(907) 479-0600  
www.shannonwilson.com

# CHAIN-OF-CUSTODY RECORD

Laborat  
Attn: \_\_\_\_\_



Analytical Methods (include preservative ii

**Turn Around Time:**

Normal  Rush

Please Specify

Quote No: Open

MSA Number:

J-Flags:  Yes  No

EPA / VOC (Meth)  
 AK101 / SW-260  
 DRW / PPH  
 AK102 / SW-270 - SIM

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods		Total Number of Containers	Remarks/Matrix Composition/Grab Sample Containers
22BCS-SW-01	1AB	9/20/22	1342	X	X	2	Soils
22BCS-SW-101	2AB		1343	X	X	2	
22BCS-SW-02	3AB		1347	X	X	2	
22BCS-SW-03	4AB		1521	X	X	2	
22BCS-SW-04	5AB		1524	X	X	2	
22BCS-Base-01	6AB		1350	X	X	2	
22BCS-Base-02	7AB		1354	X	X	2	
22BCS-POL-01	8AB		1445	X	X	2	
22BCS-POL-101	9AB		1446	X	X	2	
22BCS-POL-02	10AB		1450	X	X	2	

**Project Information**

Number: 109735

Name: Buffalo Water

Contact: SMH

Ongoing Project? Yes  No

Sampler: MXF

**Sample Receipt**

Total No. of Containers: 20

COC Seals/Intact? Y/N/NA Y/N/A

Received Good Cond./Cold Y

Temp: 5.9°C

Delivery Method: Hand

**Relinquished By: 1.**

Signature: [Signature] Time: 9:13

Printed Name: Michael Jaramillo Date: 9/21/22

Company: Shannon & Wilson

**Relinquished By: 2.**

Signature: [Signature] Time: 15:30

Printed Name: Alexandra Johnston-Carnes Date: 9/21/22

Company: SGS

**Relinquished By: 3.**

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

**Notes:**

Please include TB for EPA/VOC analysis  
TB kept with samples at all times

**Received By: 1.**

Signature: [Signature] Time: 9:13

Printed Name: Alexandra Johnston-Carnes Date: 9/21/22

Company: SGS

**Received By: 2.**

Signature: \_\_\_\_\_ Time: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Date: \_\_\_\_\_

Company: \_\_\_\_\_

**Received By: 3.**

Signature: [Signature] Time: 04:15

Printed Name: Daniel Fennessy Date: 9/22/22

Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report  
Yellow - w/shipment - for consignee files  
Pink - Shannon & Wilson - job file

3.1  
DSS



SGS Workorder #:

S&W



Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
<b>Chain of Custody / Temperature Requirements</b>			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A			
COC accompanied samples?	Yes			
DOD: Were samples received in COC corresponding coolers?	N/A			
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required				
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1	@	5.9 °C Therm. ID: D52
		Cooler ID:	@	°C Therm. ID:
		Cooler ID:	@	°C Therm. ID:
		Cooler ID:	@	°C Therm. ID:
<p>If samples received without a temperature blank, the "cooler temperature" will be documented instead &amp; "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.</p>				
*If >6°C, were samples collected <8 hours ago?				
If <0°C, were sample containers ice free?				
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.				
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.		
Do samples match COC** (i.e., sample IDs, dates/times collected)?	N/C			
**Note: If times differ <1hr, record details & login per COC.				
***Note: If sample information on containers differs from COC, SGS will default to COC information				
Were samples in good condition (no leaks/cracks/breakage)?	Yes			
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals))	Yes			
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes			
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A			
Were all soil VOAs field extracted with MeOH+BFB?	N/C			
For Rush/Short Hold Time, was RUSH/Short HT email sent?				
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.				
Additional notes (if applicable):				
<b>SGS Profile #</b>	<b>362915</b>	362915		



SGS Workorder #:

1225761

1225761

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
-----------------	--------------------------	------------------------

<b>Chain of Custody / Temperature Requirements</b>	Note: Temperature and COC seal information is found on the chain of custody form	
--	--	--

DOD only: Did all sample coolers have a corresponding COC?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note containers received with ice:		
Identify any containers received at non-compliant temperature:  (Use form FS-0029 if more space is needed)		

<b>Holding Time / Documentation / Sample Condition Requirement</b>	Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.	
--	--	--

Were samples received within analytical holding time?	Yes	
Do sample labels match COC? Record discrepancies.	Yes	
<b>Note:</b> If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.		
Were analytical requests clear? <i>(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)</i>	Yes	
Were proper containers (type/mass/volume/preservative)used? Note: Exemption for metals analysis by 200.8/6020 in water.	Yes	

<b>Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)</b>		
---	--	--

Were all soil VOAs received with a corresponding % solids container?	Yes	
Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with Methanol+BFB?	Yes	

**Note to Client:** Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.

<b>Additional notes (if applicable):</b>
--



## Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1225761001-A	No Preservative Required	OK			
1225761001-B	Methanol field pres. 4 C	OK			
1225761002-A	No Preservative Required	OK			
1225761002-B	Methanol field pres. 4 C	OK			
1225761003-A	No Preservative Required	OK			
1225761003-B	Methanol field pres. 4 C	OK			
1225761004-A	No Preservative Required	OK			
1225761004-B	Methanol field pres. 4 C	OK			
1225761005-A	No Preservative Required	OK			
1225761005-B	Methanol field pres. 4 C	OK			
1225761006-A	No Preservative Required	OK			
1225761006-B	Methanol field pres. 4 C	OK			
1225761007-A	No Preservative Required	OK			
1225761007-B	Methanol field pres. 4 C	OK			
1225761008-A	No Preservative Required	OK			
1225761008-B	Methanol field pres. 4 C	OK			
1225761009-A	No Preservative Required	OK			
1225761009-B	Methanol field pres. 4 C	OK			
1225761010-A	No Preservative Required	OK			
1225761010-B	Methanol field pres. 4 C	OK			
1225761011-A	Methanol field pres. 4 C	OK			

### Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM - The container was received damaged.

FR - The container was received frozen and not usable for Bacteria or BOD analyses.

IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.

NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

QN - Insufficient sample quantity provided.

# ADEC Contaminated Sites Program Laboratory Data Review Checklist

<b>Completed By:</b>	Kailyn Davis	<b>CS Site Name:</b>	Buffalo Service Station	<b>Lab Name:</b>	SGS
<b>Title:</b>	2022 Buffalo Center Service	<b>ADEC File No.:</b>	120.26.010	<b>Lab Report No.:</b>	1225761
<b>Consulting Firm:</b>	Shannon & Wilson, Inc.	<b>Hazard ID No.:</b>	24579	<b>Lab Report Date:</b>	11/01/2022

**Note:** Any N/A or No box checked must have an explanation in the comments box.

## 1. Laboratory

- a. Did an ADEC Contaminated Sites Laboratory Approval Program (CS-LAP) approved laboratory receive and perform all of the submitted sample analyses?

Yes  No  N/A

Comments: Samples were submitted to SGS in Anchorage, Alaska.

- b. If the samples were transferred to another “network” laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses CS-LAP approved?

Yes  No  N/A

Comments:

## 2. Chain of Custody (CoC)

- a. Is the CoC information completed, signed, and dated (including released/received by)?

Yes  No  N/A

Comments:

- b. Were the correct analyses requested?

Yes  No  N/A

Analyses requested: Click or tap here to enter text.

Comments:

## 3. Laboratory Sample Receipt Documentation

- a. Is the sample/cooler temperature documented and within range at receipt (0° to 6° C)?

Yes  No  N/A

**CS Site Name:** Buffalo Service Station

**Lab Report No.:** 1225761

Cooler temperature(s): The sample cooler was measured at 3.1 °C upon receipt at the Fairbanks receiving office, and 5.9 °C upon receipt at the Anchorage laboratory.

Sample temperature(s):

Comments: Sample receipt form notes the project samples were received in good condition.

- b. Is the sample preservation acceptable – acidified waters, methanol preserved soil (GRO, BTEX, VOCs, etc.)?

Yes  No  N/A

Comments:

- c. Is the sample condition documented – broken, leaking, zero headspace (VOA vials); canister vacuum/pressure checked and no open valves, etc.?

Yes  No  N/A

Comments: Sample receipt form notes the project samples were received in good condition.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, canister not holding a vacuum, etc.?

Yes  No  N/A

Comments: Sample receipt form notes the project samples were received in good condition.

- e. Is the data quality or usability affected?

Yes  No  N/A

Comments: Sample receipt form notes the project samples were received in good condition. The data quality and usability are not affected.

#### 4. Case Narrative

- a. Is the case narrative present and understandable?

Yes  No  N/A

Comments:

- b. Are there discrepancies, errors, or QC failures identified by the lab?

Yes  No  N/A

Comments:

The laboratory case narrative documents the following:

22BCS-SW-01 (1225761001) PS

8270D SIM - PAH Surrogate recovery for 2-methylnaphthalene-d10 does not meet QC criteria due to matrix interference.

8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to the dark color of the extract.

**CS Site Name:** Buffalo Service Station

**Lab Report No.:** 1225761

22BCS-SW-101 (1225761002) PS

8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to the dark color of the extract.

22BCS-SW-02 (1225761003) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

8270D SIM - PAH Surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 do not meet QC criteria due to matrix interference.

8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to matrix interference with the internal standard.

22BCS-POL-01 (1225761008) PS

8270D SIM - PAH Surrogate recoveries for 2-methylnaphthalene-d10 and fluoranthene-d10 do not meet QC criteria. The sample was re-extracted outside of hold time and results confirm. The in-hold-data is reported.

1225761001(1688350MS) (1688351) MS

8260D - MS recoveries for several analytes do not meet QC criteria. See LCS for accuracy requirements.

1225761001(1688350MSD) (1688352) MSD

8260D - MSD recoveries for several analytes do not meet QC criteria. See LCS for accuracy requirements.

c. Were all the corrective actions documented?

Yes  No  N/A

Comments: No corrective actions were necessary.

d. What is the effect on data quality/usability according to the case narrative?

Comments: The case narrative does not note an effect on the data quality and usability. Please see the following sections for our assessment.

## 5. Sample Results

a. Are the correct analyses performed/reported as requested on CoC?

Yes  No  N/A

Comments:

b. Are all applicable holding times met?

Yes  No  N/A

Comments:

c. Are all soils reported on a dry weight basis?

Yes  No  N/A

Comments:



**CS Site Name:** Buffalo Service Station

**Lab Report No.:** 1225761

- d. Are the reported limits of quantitation (LoQ) or limits of detections (LOD), or reporting limits (RL) less than the Cleanup Level or the action level for the project?

Yes  No  N/A

Comments: The limits of detection (LODs) are reported above the associated regulatory limit for the following analytes:

- naphthalene (8270) for samples 22BCS-SW-01, 22BCS-SW-101, and 22BCS-SW-02 due to matrix interference;

- 1,1,1,2-tetrachloroethane, 2-hexanone, bromomethane, chloroform, dibromochloromethane, dibromomethane, hexachlorobutadiene, trichloroethene, and vinyl chloride in several project samples; and

- 1,2,3-trichloropropane and 1,2-dibromoethane in each project sample.

- di. Is the data quality or usability affected?

Yes  No  N/A

Comments: We cannot determine if the analytes with elevated LODs are present above the associated regulatory levels. These analytes are bolded on the associated data table.

## 6. QC Samples

- a. Method Blank

- i. Was one method blank reported per matrix, analysis, and 20 samples?

Yes  No  N/A

Comments:

- ii. Are all method blank results less than LOQ (or RL)?

Yes  No

Comments:

- iii. If above LoQ or RL, what samples are affected?

Comments: None of the project samples were detected in the method blank samples.

- iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: Method blank results were less than the LOQ.

- v. Data quality or usability affected?

Yes  No  N/A

Comments: Data quality and usability were not affected.

CS Site Name: Buffalo Service Station

Lab Report No.: 1225761

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

- i. Organics – Are one LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes  No  N/A

Comments: LCS samples were reported for VOC (8260) and PAH (8270-SIM) analysis. MS/MSD samples were used to assess precision for these analytes.

LCS/LCSD samples were reported for GRO (AK101) and DRO (AK102) analysis.

- ii. Metals/Inorganics – Are one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analysis was not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? Was the RPD reported from LCS/LCSD, and or sample/sample duplicate? (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; the LCS recoveries and RPDs were within laboratory limits.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: See above.

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability are not affected.

CS Site Name: Buffalo Service Station

Lab Report No.: 1225761

c. Matrix Spike/Matrix Spike Duplicate (MS/MSD)

- i. Organics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: MS/MSD samples were reported for VOC (8260) and SVOC (8270) analysis.

- ii. Metals/Inorganics – Are one MS/MSD reported per matrix, analysis and 20 samples?

Yes  No  N/A

Comments: Metal analysis was not requested for this work order.

- iii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable?

Yes  No  N/A

Comments: Several recovery failures present for QC sample 1688350; however, this sample is not a project sample, so doesn't affect project results.

- iv. Precision – Are all relative percent differences (RPD) reported and less than method or laboratory limits and project specified objectives, if applicable? RPD reported from MS/MSD, and or sample/sample duplicate.

Yes  No  N/A

Comments:

- v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments: N/A; see above.

- vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: N/A; see above

- vii. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality and usability are not affected.

d. Surrogates – Organics Only or Isotope Dilution Analytes (IDA) – Isotope Dilution Methods Only

- i. Are surrogate/IDA recoveries reported for organic analyses – field, QC, and laboratory samples?

Yes  No  N/A

Comments:

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- ii. Accuracy – Are all percent recoveries (%R) reported and within method or laboratory limits and project specified objectives, if applicable? (AK Petroleum methods 50-150 %R for field samples and 60-120 %R for QC samples; all other analyses see the laboratory report pages)

Yes  No  N/A

Comments: 2-Methylnaphthalene-d10 was recovered above laboratory limits in samples 22BCS-SW-01 and 22BCS-SW-02. The associated analytes are non-detects for sample 22BCS-SW-01 so the quality of the data is not affected. Analytes 1-methylnaphthalene and 2-methylnaphthalene were detected in sample 22BCS-SW-02 and are considered biased high, flagged with a “JH” on the associated table.

2-Methylnaphthalene-d10 and fluoranthene-d10 were recovered below laboratory limits in 22BCS-POL-01. Each PAH analyte for this sample is considered biased low, which is notated with a “JL” flag for detections and “UJ” for non-detects.

4-Bromofluorobenzene was recovered above laboratory limits in sample 22BCS-SW-02 and the associated GRO result is considered biased high, which is notated with a “JH” flag in the associated table.

- iii. Do the sample results with failed surrogate/IDA recoveries have data flags? If so, are the data flags clearly defined?

Yes  No  N/A

Comments: See above.

- iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: Data quality is affected; see above. The data are considered usable with the applied qualifiers.

e. Trip Blanks

- i. Is one trip blank reported per matrix, analysis, and for each cooler containing volatile samples? Yes  No  N/A

Comments:

- ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments: GRO were detected in the trip blank at an estimated concentration below the LOQ at 0.823 J mg/kg.

- iii. If above LoQ or RL, what samples are affected?

Comments: *The following samples had concentrations similar to the trip blank concentration (within 5X the MB concentration). These samples are considered not detected and reported at the LOQ (UB at LOQ)*

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- 22BCS-SW-01
- 22BCS-SW-101
- 22BCS-SW-03
- 22BCS-SW-04
- 22BCS-Base-01
- 22BCS-Base-02
- 22BCS-POL-01
- 22BCS-POL-101
- 22BCS-POL-02

iv. Is the data quality or usability affected?

Yes  No  N/A

Comments: The data quality is affected; see above. The data are considered useable with the applied qualifiers.

f. Field Duplicate

i. Are one field duplicate submitted per matrix, analysis, and 10 project samples?

Yes  No  N/A

Comments: The field duplicate pairs 22BCS-SW-01/22BCS-SW-101 and 22BCS-POL-01/22BCS-POL-101 were submitted with this work order.

ii. Was the duplicate submitted blind to lab?

Yes  No  N/A

Comments:

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% water or air, 50% soil)

$$RPD (\%) = \left| \frac{R_1 - R_2}{\left(\frac{R_1 + R_2}{2}\right)} \right| \times 100$$

Where  $R_1$  = Sample Concentration

$R_2$  = Field Duplicate Concentration

Yes  No  N/A

iv. Is the data quality or usability affected? (Explain)

Yes  No  N/A

Comments: The following analytes are considered estimated due to RPD failures above 50%: 2-butanone for SW-01/SW-101 and 1-methylnaphthalene for POL-01/POL-101. These analytes are considered estimated for the duplicate pair, denoted with a “J” in the analytical table. The data are considered usable with the applied qualifier. We noted that 1-methylnaphthalene for sample POL-01 is already flagged due to surrogate recovery failure. No further flag was applied for the RPD failure.

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g. Decontamination or Equipment Blanks

i. Were decontamination or equipment blanks collected?

Yes  No  N/A

Comments: An equipment blank was not necessary with the work order.  
Clean, non-reusable materials were used for sampling.

ii. Are all results less than LoQ or RL?

Yes  No  N/A

Comments:

iii. If above LoQ or RL, specify what samples are affected.

Comments: An equipment blank was not submitted with the work order.

iv. Are data quality or usability affected?

Yes  No  N/A

Comments: See above.

**7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)**

a. Are they defined and appropriate?

Yes  No  N/A

Comments:

Appendix D

# Quality Control and Quality Assurance Summary

Subtitle if Applicable

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## D.1 OVERVIEW

QC/QA procedures assist in producing data of acceptable quality and reliability. We reviewed the analytical results for laboratory QC samples and conducted our own QA assessment for this project. We reviewed the chain of custody (COC) records and laboratory receipt forms to check that custody was not breached, sample-holding times were met, and the samples were kept chilled (between 0 degrees Celsius [°C] and 6 °C) during shipping. Our QA-review procedures allowed us to document the accuracy and precision of the analytical data, as well as check that the analyses were sufficiently sensitive to meet project-specific data quality objectives (DQOs).

Laboratory QC procedures included evaluating surrogate recovery, performing continuing calibration checks, and analyzing method blanks (MBs), laboratory control samples (LCS), and matrix spikes (MS) to assess accuracy and precision. LCS, LCS duplicate (LCSD), MS, MS duplicate (MSD), and surrogate recovery analyses were performed to evaluate the accuracy of the analytical process. Analytical precision was assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and duplicate-sample pairs.

QC procedures in the field included using single-use equipment to reduce the potential for sample cross-contamination. We used a new, clean pair of nitrile gloves when sampling at each monitoring well. The laboratory report contains a case narrative and forms documenting sample-receipt conditions.

Details regarding the results of our QA review are presented below. Refer to the SGS laboratory report 1225761 and corresponding DEC LDRC for additional information.

## D.2 SAMPLE HANDLING

The samples were hand-delivered to the SGS in Fairbanks, Alaska. We completed COC forms, which were signed upon delivery to the SGS Fairbanks office. The samples were then repackaged by SGS and shipped to the SGS laboratory in Anchorage, Alaska. There were no sample handling discrepancies noted by the laboratory. Data quality and usability were not affected.

## D.3 ANALYTICAL SENSITIVITY

The laboratory's detection limit (DL) is the lowest analyte concentration that can be measured. The laboratory's limit of quantitation (LOQ) is the lowest analyte concentration that can be routinely measured in the sampled matrix with confidence, the point at which a



concentration is considered quantitative. Sample matrix, instrument performance, sample dilutions, and other factors may affect the DL and LOQ. Analytes may be present in samples at concentrations below the DL. In cases where analytes were not detected at concentrations above their DL, the analytical results are presented in our data-summary table with reference to their limit of detection (LOD). If the analyte is detected between the DL and the LOQ, its concentration is considered an estimate; in our tables, this value is flagged with a 'J'. The flag is applied by the laboratory.

The laboratory LODs were compared to the DEC CULs to assess if the laboratory method was sufficiently sensitive for reporting purposes. There were several VOC analytes and naphthalene by PAH analyses that did not have LODs below the DEC CULs. Analytes that are non-detect with LODs exceeding the DQO are identified in "<bold" in the results tables. Refer to the corresponding LDRCs for details.

To evaluate the potential for cross-contamination between samples or introduction of contamination from an outside source, laboratory-supplied trip blanks (TBs) were carried with the samples in their cooler during sampling and shipping. A TB was analyzed as part of this sampling event for VOCs. Project analytes were not detected in the TB samples with the exception of GRO.

- GRO was detected in project samples *22BCS-SW-01, 22BCS-SW-101, 22BCS-SW-03, 22BCS-SW-04, 22BCS-BASE-01, 22BCS-BASE-02, 22BCS-POL-01, 22BCS-POL-101, and 22BCS-POL-02* at concentrations within five times the detected concentration observed in the TB. The GRO results are considered non-detect and flagged 'B\*' in the analytical summary tables to identify the potential laboratory cross contamination. The high biased results are less than the DEC CUL for GRO, therefore the data are considered usable for reporting purposes.

Laboratory MBs were also analyzed in association with samples collected for this project to check for contributions to the analytical results possibly attributable to laboratory-based contamination. Target analytes were not detected in the MB samples associated with this work order.

#### D.4 ACCURACY

Accuracy refers to determining the correct analyte concentration and is a comparison between the measured value and a known or expected value. Laboratory analytical accuracy may be assessed through the analyte recoveries from LCS/LCSD analyses and MS/MSD analyses, and the recovery of analyte surrogates (for organic analytes) added to project samples. The LCS/LCSDs are spikes of known analyte concentrations added to a clean

matrix; the MS/MSDs are spikes of known analyte concentrations in a matrix similar to field samples.

The laboratories' LCS, LCSD, MS, MSD, and surrogate recoveries were within laboratory acceptance criteria, with the following exceptions:

- The PAH surrogate 2-methylnaphthalene-d10 had a high recovery failure in samples 22BCS-SW-01 and 22BCS-SW-02. The associated analytes were not detected in the project samples and are not considered affected, with the following exceptions. The associated analytes 1-methylnaphthalene and 2-methylnaphthalene were detected in sample 22BCS-SW-02. The detected results are considered estimated, biased high, and are flagged 'JH\*' in the associated summary table to identify the potential high bias. However, the detected results are below the DEC CULs and the high biased results are considered usable for reporting purposes.
- The PAH surrogates 2-methylnaphthalene-d10 and fluoranthene-d10 had low recoveries in sample 22BCS-POL-01. The detected results are considered estimated, biased low, and are flagged 'JL\*' in the associated summary table. In addition, non-detect results are flagged 'J\*' to identify the QC failure. While these low bias results were less than the associated DEC CULs in this sample, the DRO results exceeded the DEC CULs and further disposal recommendations will be addressed for these soils.
- The GRO surrogate 4-bromofluorobenzene had a high recovery failure in sample 22BCS-SW-02. The detected results are considered estimated, biased high, and are flagged 'JH\*' in the associated summary table to identify the potential high bias. However, the detected results are below the DEC CULs and the high biased results are considered usable for reporting purposes.

Additional recovery failures were reported by the laboratory but did not affect the data quality. Refer to the LDRCs for details.

## D.5 PRECISION

We collected field-duplicate samples at a frequency of ten percent of the total number of samples to evaluate the precision of analytical measurements and reproducibility of our sampling technique. Sample 22BCS-SW-101 is a field duplicate of the excavation sidewall sample 22BCS-SW-01. Sample 22BCS-POL-101 is a field duplicate of the contaminated soils stockpile sample 22BCS-POL-01.

The field-duplicate samples were submitted "blind" (i.e., the laboratory could not identify it as a duplicate). The duplicate was analyzed by the same test methods as the original sample. To evaluate the precision of the data, we calculated the relative percent difference (RPD; difference between the sample and its duplicate divided by the mean of the two). RPDs can

be evaluated only if the results of the analyses for both the sample and its duplicate are reported above the DL. The data quality objective for water samples' RPD is 50 percent for soil samples. Where concentrations were reported in both samples, we calculated the RPDs. The field duplicate RPDs were within acceptance criteria, with the following exceptions.

- *22BCS-SW-01/22BCS-SW-101*: The VOC analyte 2-butanone had a field-duplicate RPD failure.
- *22BCS-POL-01/22BCS-POL-101*: The PAH analyte 1-methylnaphthalene had a field-duplicate RPD failure.

The sample results with field duplicate RPD failures are considered estimated and are flagged 'J\*' in the analytical summary tables to identify the imprecision. However, the analytical results were below the DEC CULs for these sample results and the data are considered usable for reporting purposes.

Laboratory analytical precision can also be assessed by comparing the results of duplicate analyses performed on LCS/LCSD, MS/MSD, and laboratory-duplicate samples, and evaluating the associated RPDs. The data quality objective is 20 percent for the laboratory QC samples. The laboratory LCS/LCSD, MS/MSD, and laboratory-duplicate sample RPDs were within laboratory acceptance criteria with an exception that did not affect the data quality and usability. Refer to the LDRC for details.

## D.6 DATA QUALITY SUMMARY

By conducting our field activities in general accordance with our standard QC/QA procedures and the Work Plan, the samples we collected are considered representative of site conditions at the locations and times they were obtained. Based on our QA review, our completeness goal of obtaining 90% useable data was met. In our opinion, the data produced by the SGS Anchorage Alaska laboratory for this project are suitable for characterizing soil quality at the locations sampled.

# Important Information

About Your Environmental Report

IMPORTANT INFORMATION

## CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

## THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

## SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

## MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent

such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

#### A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

#### THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

#### BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

## READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

**The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland**