NORTECH

SUSTAINABLE ENVIRONMENT, ENERGY,
HEALTH & SAFETY PROFESSIONAL SERVICES

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December 9, 2022

Sent via email to:
statefarmfireclaims@statefarm.com

Casualty Claim Specialist
State Farm Insurance
P.O. Box 106169
Atlanta, Georgia, 30348

ATTN: Trevor Crum

RE: Groundwater Monitoring and Soil Assessment
4886 Drake Street, Fairbanks, Alaska – Claim Number: 02-G019-269

Trevor,

NORTECH has completed soil gas sampling, groundwater monitoring, and free product collection at 4886 Drake Street (The Site) in Fairbanks, Alaska. The following is a brief synopsis of the background, scope of work, methodology, field activities, and sampling results, with a discussion including conclusions and recommendations.

Background

In August 2002, the 1,000-gallon buried heating oil tank was filled with fuel oil, and within a few weeks, the tank was empty. During the inspection, the tank was removed and found to be rusted and corroded. A new 500-gallon above-ground storage tank (AST) was installed. Four test holes were excavated in October 2003: Test Hole #1, in the location of the former heating oil tank, was the only test hole where free product was present in the soil and groundwater. A monitoring well was installed at this location. On June 4, 2004, this monitoring well had 18" of free product floating on the water table.

On June 13, 2004, over 106 tons of contaminated soil was removed from the area of the former tank area and thermally remediated at Organic Incineration Technology, Inc. (OIT). A recovery well and passive vapor extraction system were installed.

Between September 2008 and December 2009, seven free product monitoring events and one groundwater sampling event were completed at the Site. Results presented in the August 6, 2010, Summary Report concluded that groundwater typically drops below the bottom of the groundwater monitoring wells and remains until spring melt and summer precipitation increases groundwater elevation to be observed in the monitoring wells. Groundwater contaminant concentrations have been below ADEC's pre-2016 cleanup levels in each of the perimeter monitoring wells since 2004.

The 2017 groundwater results showed Laboratory results show VOCs relating to a heating oil release, including BTEX compounds, were not detected at or above the laboratory detection limits. DRO contaminants were not detected at or above the laboratory detection limits in MW-3 and MW-4. DRO compounds were detected below the ADEC 2017 cleanup levels in MW-1 and MW-2.

Scope of Work and Objectives
Based on ADEC site visits and comments, ***NORTECH*** developed the March 2022 work plan, which outlined the following activities:

- Complete groundwater sampling of groundwater monitoring wells MW-1 and MW-2.
- Evaluate the soil conditions using a soil boring to identify subsurface soil contaminant concentrations between the former tank location and the house
- Decommission MW-3 and 4, the soil vent system, and the recovery well
- Create a report documenting and discussing fieldwork and laboratory analysis results.

Methodology
Field personnel completed groundwater sampling in accordance with the 2022 work plan, the ADEC Field Sampling Guidance, dated January 2022 (FSG), and ***NORTECH's*** Lab Sampling Plan v4.

Groundwater Sampling
Based on the known release, prior sampling results, and work plan, groundwater sampling was limited to MW-1 and MW-2 for Diesel Range Organics (DRO) analysis. SGS Environmental Services in Anchorage, Alaska, was the analytical laboratory for this project.

Depth to groundwater and total depth were measured in each well using an electronic oil/water interface level indicator probe. Water clarity was evaluated by visual observation before the water entered the flow-through cell. Water parameters were measured during purging using a calibrated YSI ProDSS water quality meter. Water quality parameters were considered stable when three successive readings, collected 3-5 minutes apart, were within five parameters of temperature, dissolved oxygen, conductivity, pH, and oxidation-reduction potential (ORP), or three to five well volumes had been removed from the well. The parameters and visual clarity were monitored and recorded.

MW-1 was sampled using a peristaltic pump and disposable tubing because the submersible pump does not fit in the bore of MW-1. To prevent VOC loss, the peristaltic pump was operated at the lowest practicable setting so that air bubbles were not entrained with the water during purging and sampling.

After purging, water samples were collected directly from the pump discharge tubing into laboratory-supplied sample bottles as outlined in the 2022 FSG. New disposable gloves were worn to collect samples, and gloves were changed between sample locations.

Soil Boring Sampling
One soil boring was advanced by the Drilling Company of North Pole, Alaska, using a truck-mounted drill rig capable of direct-push and hollow-stem auger drilling methods. Soil borings were advanced to 12.0 feet (ft) below ground surface (bgs).

Each soil core retrieved from the soil boring was opened and inspected for visual and olfactory indications of contamination. Soil recovery within the body was measured, and soil types were classified on a soil boring log form. Field screening was completed by ***NORTECH*** using a photoionization detector (PID) by headspace monitoring.

Following field screening, two soil samples were collected by ***NORTECH***; one was collected within the vadose and one in the smear zone based on elevated PID readings or locations with visual and olfactory indications of contamination.

PID Field Screening
A hand-held MiniRAE Air Monitor/Photoionization Detector was used to field screen the soils for total volatile organic compounds (tVOCs), including petroleum and solvent-related compounds. The PID field-screening instrument allows semi-quantitative real-time (<15 minutes) analysis. The PID yields semi-quantitative concentrations in parts per million (ppm) for tVOCs as referenced to a 100-ppm isobutylene gas standard.

PID field screening was completed using a 10.6 electron volt (eV) lamp. Headspace screening consisted of partially filling a clean re-sealable bag with freshly uncovered soil. The bag was closed, and headspace vapors were allowed to develop for 10 minutes. The bag was shaken at the beginning and end of the soil headspace development period for 15 seconds each.

The soil headspace was tested in a heated vehicle after the soil was warmed to a temperature of 40°F. The PID probe was inserted into the bag, and vapors were drawn from the bag above the soils and analyzed for tVOCs. The PID reading was then recorded in the field book.

Laboratory Sample Collection Procedures
Soil samples selected for laboratory analysis were collected into laboratory-supplied containers for submission to the laboratory. Disposable gloves were worn to collect samples, and gloves were changed between samples.

Soil samples for volatile analyses were collected by collecting 50 grams of soil placed in pre-labeled, pre-weighed jars and immediately immersed with a methanol preservative provided by the laboratory. DRO sample containers were filled with soil and were discretely identified using laboratory-supplied labels. All samples were placed in coolers, cooled to 4±2 °C, and delivered to SGS.

Laboratory Sample Analysis
The laboratory was SGS North America Inc. (SGS), an ADEC-approved laboratory in Anchorage, Alaska. Soil samples were submitted to SGS for analysis by the following methods:

- Diesel Range Organics (DRO) by Method AK102
- Volatile Organic Compounds (VOCs) by EPA Method 8260D
- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA Method 8270 SIMS

Groundwater samples were analyzed for DRO by Method AK 102.

Quality Assurance/Quality Control
Quality Assurance/Quality Control (QA/QC) objectives were followed as described in the ADEC 2022 FSG. Laboratory QA/QC procedures included analysis of method blanks, laboratory control spike samples (LCS) and LCS duplicates (LCSD), and matrix spike samples (MS) and MS duplicates (MSD).

Field Activities
Groundwater Sampling
On June 8, 2022, ***NORTECH*** personnel visited the site to monitor groundwater from the one-inch sand point advanced through the 4-inch ABS well bottom of MW-1. A submersible pump does not fit in the bore of MW-1; therefore, purging and sampling were completed using a peristaltic pump. Because of a mismatch in tubing sizes between the peristaltic pump and flow cell, water quality parameters were not collected. The well was purged of over three well

volumes (1.25 gallons). After purging, a DRO primary (MW-1) and duplicate (MW11) sample were collected.

MW-2 was sampled using a submersible pump set to the lowest possible flow rate. Initially, groundwater parameters were collected but not completed because the well was purged dry due to the well's low recharge rate. After allowing the well to recharge for fifteen minutes, samples were collected for DRO analysis. All samples were delivered to SGS for analysis. Laboratory results are summarized in Table 1 and discussed below.

Soil Assessment

The Drilling Company of North Pole, Alaska, advanced soil boring, using a truck-mounted drill rig implementing direct-push and hollow-stem auger drilling methods. A QEP oversaw drilling activities and performed soil logging on the continuous core produced using the Macro-Core system. The QEP visually inspected, classified, and logged the soil following the ADEC FSG. A MiniRAE 3000 Handheld Air Monitor PID was used to field screen soils for volatile organic compound contamination at two-foot intervals.

Two analytical samples were collected from the soil with the highest reading in the vadose and the smear zone. The soil boring was documented on a drilling log form. One duplicate sample was collected from the smear zone and submitted blind to the laboratory in the same manner as the other samples for analysis. The results of the field duplicate sample were compared to the corresponding primary sample.

Well Decommissioning

The Drilling Company personnel arrived on site at 0800 on September 21, 2022. ***NORTECH*** personnel met with Rod Drumhiller of the Drilling Company to decommission MW-3, and MW-4, the soil vents, and the recovery well.

Two 4" ABS vertical pipes from the soil vent system were pulled intact from the borehole and filled with native soil and gravel. Bentonite was not used because the vents are above the static groundwater level.

Initially, the Drilling Company removed the galvanized 1-inch well point and pipe from MW-3. A chain was attached to the hydraulic ram on the drill rig and the top of the 4-inch ABS pipe to pull the ABS pipe out of the ground. The well broke at the ground surface, so an inside well cutter was used to cut the well 16 inches below grade. Because of the cold weather, we did not mix up a bentonite slurry and pump it down the well using a tremie pipe. Bentonite chips were poured into the well to five feet below grade and hydrated. Sand was added to 6 inches below grade, and native soil was used to fill the top six inches of the borehole to match the existing grade.

MW-4 was decommissioned by pulling the galvanized 1-inch well point from the ABS pipe. A chain was attached to the hydraulic ram on the drill rig and the top of the 4-inch ABS pipe to pull the ABS pipe out of the ground. The well was removed intact, and the bore remained open to the bottom. Bentonite chips were poured into the well five feet below grade and hydrated. Sand was added to 6 inches below grade, and native soil was used to fill the top six inches of the borehole to match the existing grade.

The 12-inch corrugated steel recovery well could not be pulled, so the top two feet of the well were removed using a cutting torch. Two feet of bentonite grout was placed in the well, hydrated, and then sand was added to 6 inches below grade. Native soil was used to fill the top six inches of the borehole to match the existing grade.

Results with Discussion

Groundwater Results

The 2022 analytical results are summarized in Table 1, along with the field duplicate quality control summary. A summary of the historical results for each well is presented in Table 3. The well locations are shown in Figure 3. Copies of the laboratory analytical report and the ADEC Laboratory Data Review Checklist (LDRC) are attached to this report.

The primary contaminant of concern at this site is DRO. A total of three groundwater samples (including one field duplicate) were collected from the MW-1 and MW-2, the site's perimeter monitoring wells.

DRO contaminants were not detected at or above the laboratory detection limits in the MW-1 primary sample and MW-2. DRO compounds were detected at the limit of quantification in the duplicate sample from MW-1. Laboratory detection limits were below the ADEC cleanup levels.

Eight groundwater monitoring events have been conducted over 18 years since DRO was identified in 2005 at MW-4, just above the cleanup level. Based on each monitoring well (MW-1 through MW-4) consistently meeting cleanup levels since 2005, analysis of groundwater is no longer necessary at this site. MW-1 and MW-2 should be decommissioned along with the other non-essential onsite hardware.

QA/QC Results and Discussion, Groundwater

A field duplicate sample was collected and submitted blind to the laboratory. The primary and duplicate sample pair results were used to calculate the relevant percent difference (RPD). The RPD results for each duplicate pair are shown at the bottom of the respective summary in Table 1 (groundwater). ADEC considers an acceptable RPD in a groundwater duplicate pair at 30% or less. The RPD is not calculated if a compound was not detected in either sample. The DRO results were not calculable because the primary sample was below the limit of quantification, while the duplicate detected DRO at the limit of quantification. ***NORTECH*** also reviewed the laboratory reports for other quality control issues using the ADEC Laboratory Data Review Checklist. A review of the reports did not identify any concerns that affect data usability for closure as described in this report. The checklist is included as an attachment to the laboratory report.

Soil Boring Assessment

A summary showing detected compounds and other compounds of specific potential concern is included in Table 3 (vadose zone and smear zone). Laboratory results were compared to ADEC Soil Cleanup Levels listed in 18 Alaska Administrative Code (AAC) 75.341 Table B2 Migration to Groundwater (most stringent) as amended through November 7, 2020.

The vadose zone sample (V1) was collected five feet below the ground surface (bgs). There were no odors, petroleum staining, or other indicators of petroleum contamination. The soil was ungraded sandy gravel with cobbles to two inches. Headspace samples were collected at two feet and five feet below the ground, and the results were 0.02 parts per million (ppm) for both samples. The results indicate typical background conditions. No DRO or VOC compounds were detected at or above the limit of quantitation (LOQ) in the vadose zone sample. The LOQ for 1,2,3-Trichloropropane, 1,2-Dibromoethane (EDB), and Dibromochloromethane exceed their respective ADEC cleanup levels; however, these compounds are not associated with heating oil. The elevated LOQs for these chemicals are not a concern. PAH testing was not conducted in the vadose zone sample.

The smear zone samples (V2 and duplicate V22) were collected from seven to nine feet bgs. There was a strong petroleum odor and petroleum sheen, and the PID results were elevated. DRO compounds were detected at 29,600 and 21,600 in the primary and duplicate samples, respectively. VOC results indicated 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, naphthalene, and total xylenes significantly exceed cleanup levels. An additional five compounds were detected below cleanup levels.

The LOQ for twenty-eight VOC compounds exceeded cleanup levels. A discussion with the laboratory indicated that they had to dilute the samples because of the gross contamination in the smear zone sample to avoid instrument damage. The elevated LOQs do not change the conclusion that the chemicals of concern for heating oil are significantly above the cleanup levels and that heating oil grossly impacts the smear zone soil at this location.

PAH compounds, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene were detected significantly above the cleanup level in the smear zone sample. An additional four PAH compounds were detected below cleanup levels.

QA/QC results and discussion
An LDRC was completed for each laboratory work order and is included following each laboratory report in Attachment 2. The SGS laboratory reports case narratives were reviewed against the ADEC LDRC for potential laboratory QC issues. Field duplicate pairs are a QC check on field sampling techniques and laboratory error. Precision, expressed as the relative percent difference (RPD) between field duplicate sample results, is an indication of consistency in sampling, sample handling, preservation, and laboratory analysis. The RPD was calculated as a percentage of the average of those results. Detected results from the samples with detected analytes were less than fifty percent (50%) and meet data quality objectives for soil. with no impact to usability. DRO and naphthalene in one sample pair and PFAS compounds in two sample pairs had RPDs greater than 50%. As discussed in the soil results, many analytes had elevated LOQs above ADEC cleanup standards. LOQ compounds. The elevated LOQs do not change the conclusion that the chemicals of concern for heating oil are significantly above the cleanup levels and that heating oil grossly impacts the smear zone soil at this location. The results are considered usable as discussed above.

Summary
Eight groundwater monitoring events have been conducted since DRO was identified just above the cleanup level in 2005 at MW-4. Since that time, no groundwater analyte has exceeded its cleanup level Based on the perimeter wells consistently meeting cleanup levels (18 years), analysis of groundwater was no longer considered necessary at MW-3 and MW-4 and have been decommissioned. These 2022 results confirm MW-1 and MW-2 also meet cleanup levels, and decommissioning these wells is recommended. These long-term conditions observed in the perimeter monitoring wells suggest that the gross contamination observed at the recovery well and the soil boring has not significantly migrated, confirming the plume is stable. Natural attenuation will slowly remediate the remaining smear zone soil contamination.

The soil boring shows that the gross contamination from the source area has migrated at least 10 feet to the south and has impacted smear zone soils within six feet of the house. Based on the non-detect vadose zone soil results and the non-detect 2017 soil gas results, the soils above the smear zone have not been impacted, and the inhalation of indoor air exposure pathway is incomplete. In addition, the inspection of the interior space indicates indoor air testing would be confounded by the solvents and petroleum stored in the attached garage and the mechanical work that the homeowner conducts in the garage. Based on these factors, further assessment of the potential vapor intrusion concern is not recommended.

Conclusions and Recommendations

NORTECH has completed the scope of work requested by ADEC to facilitate the evaluation of this Site for closure. Based on the review of this data and the historical information for the Site, ***NORTECH*** has developed the following Site conclusions and recommendations:

Groundwater Characterization

- Groundwater perimeter well data from 2005 through 2022 indicate contaminant concentrations were consistently below ADEC contaminant cleanup levels
    - Results indicated that the plume is stable
    - The groundwater data provide direct evidence that the site meets the cleanup objectives at the property boundaries
    - MW-3 and MW-4 were decommissioned in 2022
    - Groundwater monitoring of at MW-1 and MW-2 can be discontinued and the wells decommissioned

Soil Boring Results

- Smear zone contamination historically observed in the source area has migrated 6 feet north of the house
    - The remaining contamination observed in the smear zone has not impacted soil at the property boundaries
    - The vadose zone soils background PID results, no petroleum odors, or indicators, and non-detect results indicate the vadose zone has not been impacted
- The 2017 soil gas results, coupled with the vadose zone results, provide multiple lines of evidence that the soil gas pathway for inhalation of indoor air is incomplete

Project Management Recommendations

- Based on the observed site conditions, the Site may qualify for closure with institutional controls
- Develop a work plan and submit it to the ADEC for decommissioning MW-1 and MW-2

Please get in touch with either of the undersigned at your earliest convenience if you have any questions about the data presented in the report or the Site in general.

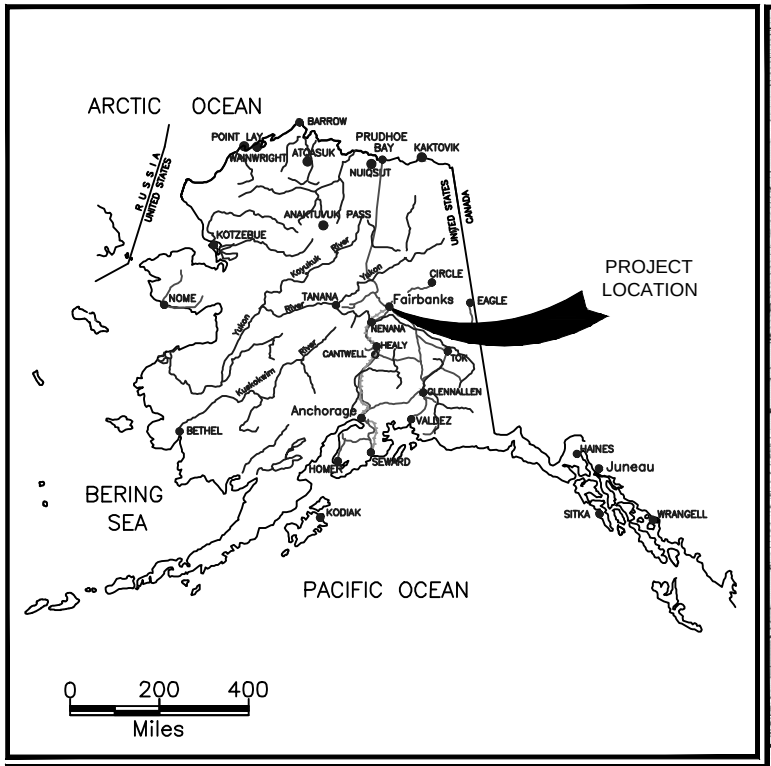
Sincerely,
NORTECH

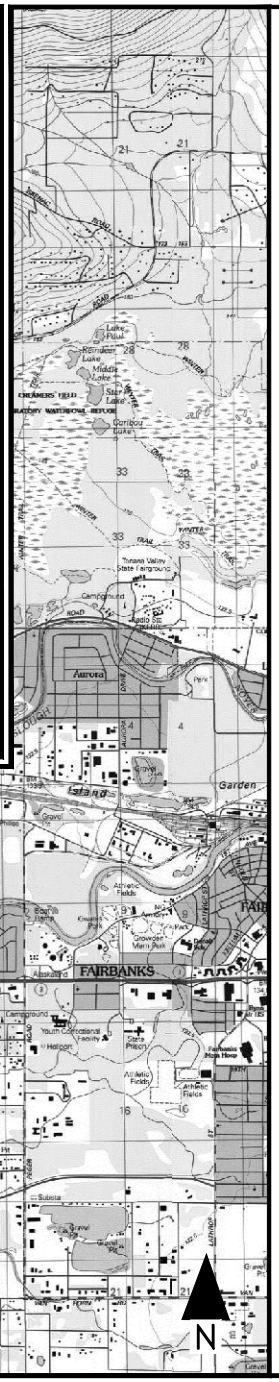
Doug Dusek,
Environmental Specialist

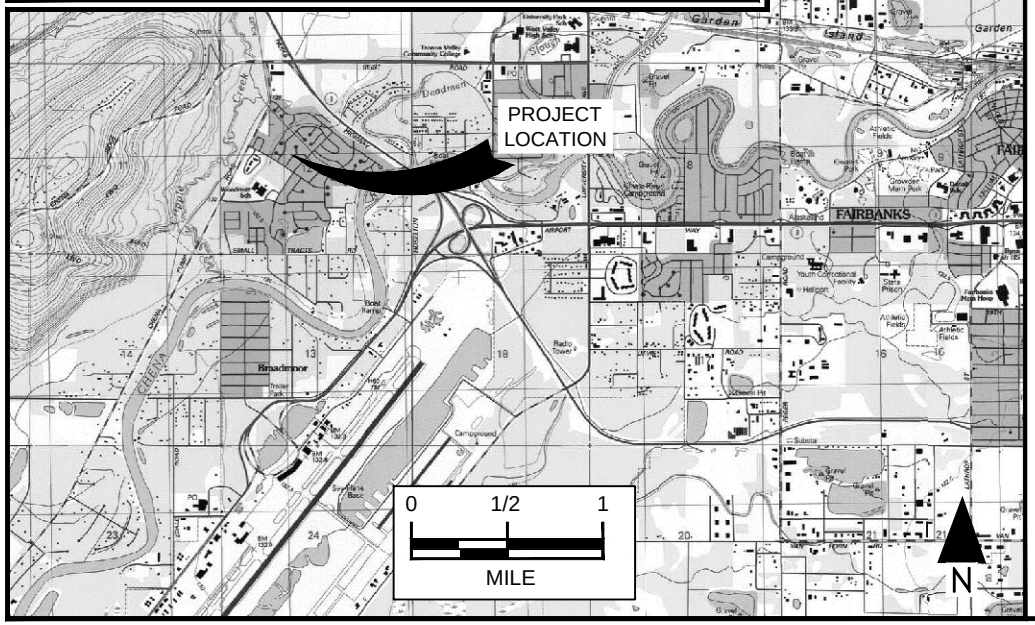
Peter Beardsley, PE
Principal, Environmental Engineer

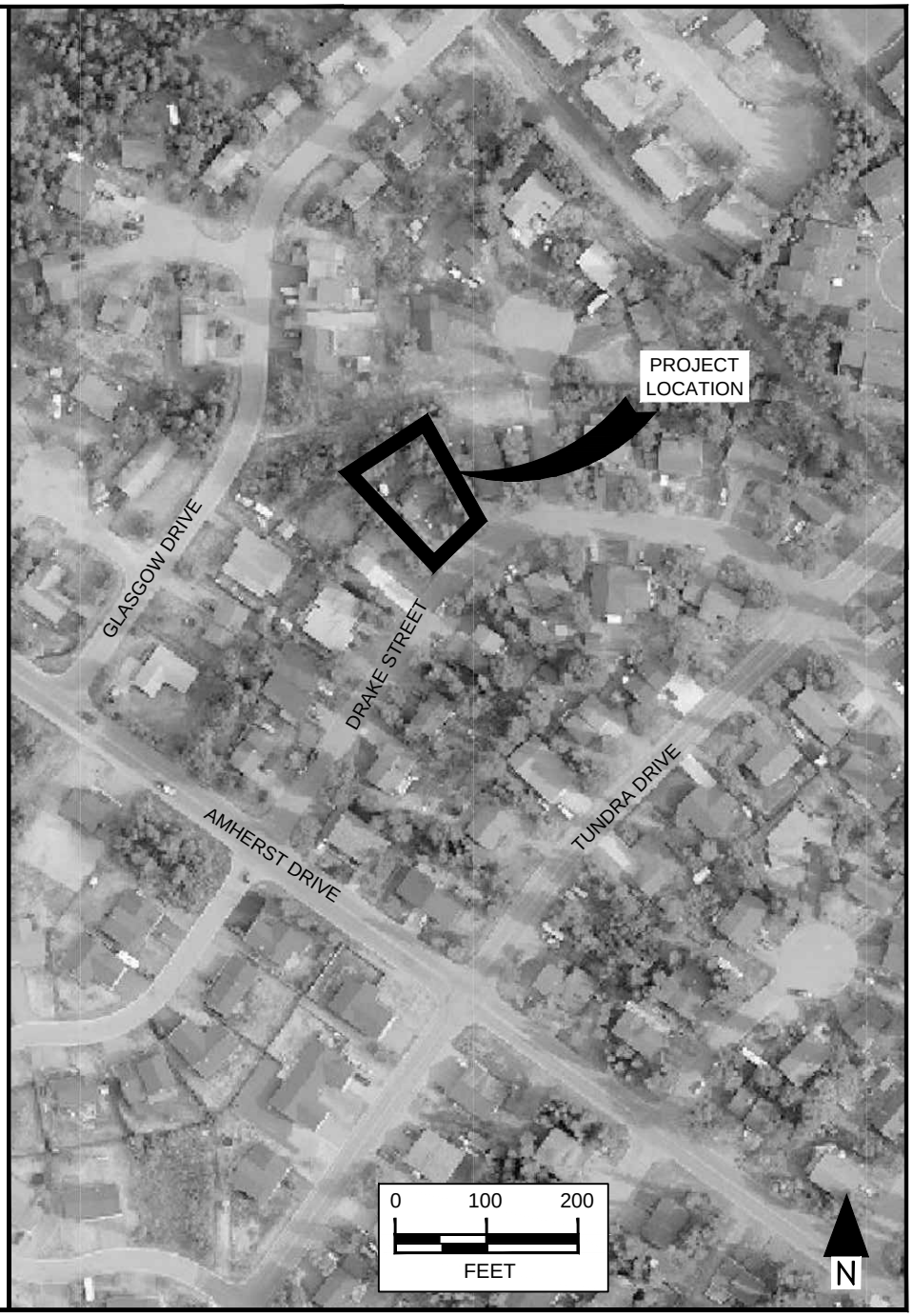
Attachments: Figures
Photos
Tables – Groundwater, Soil Results and, Groundwater Historical Summary
Laboratory Reports and Lab Quality Checklists

Attachment 1









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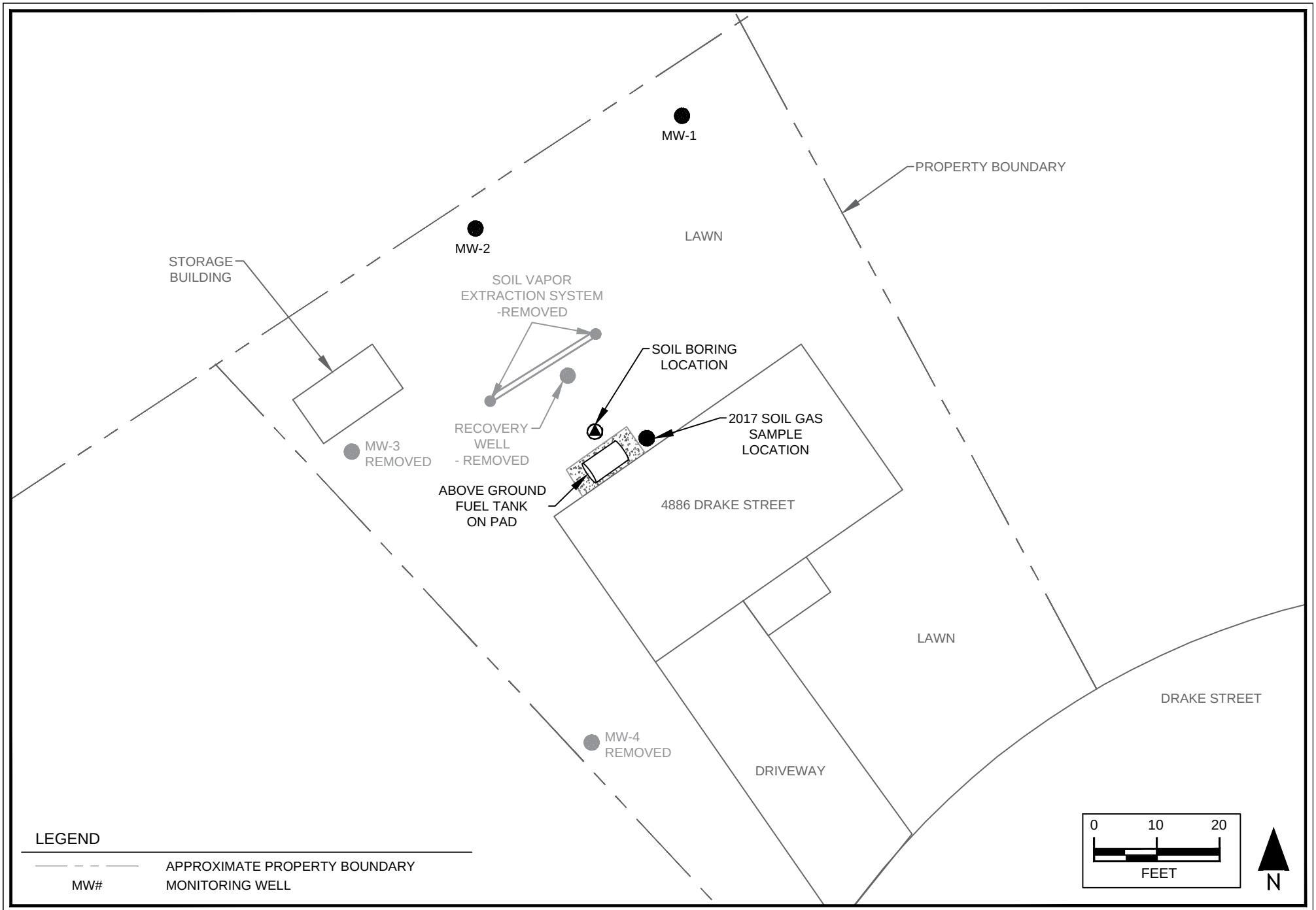
Location Maps
Drake Property Characterization
4886 Drake Street, Fairbanks, Alaska

DATE: 12/09/2022	SCALE: As Shown
DESIGN: DSD	PROJECT: 20-1400
DRAWN: SPH	DWG: 201400(d)

FIGURE 1



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Site Map
Drake Property Characterization
4886 Drake Street, Fairbanks, Alaska

DATE: 12/09/2022	SCALE: As Shown
DESIGN: DSD	PROJECT: 20-1400
DRAWN: SPH	DWG: 201400(d)

FIGURE 2

Attachment 2

Photo 1: *(MW3) pulling the galvanized well pipe out of existing ABS piping*

Photo 2: *Removing MW4 by pulling the galvanized pipe from the ABS well pipe first and then the ABS pipe. Bentonite was added from the well bottom to 5' bgs, sand to 6" bgs, and native fill to grade.*

Photo 3: *Advancing soil boring near the between the recovery well and the house.*

Photo 4: *Soil boring showing saturated, very fine sand with strong petroleum*

Photo 5: *Photo showing view of the culvert and above-ground tank*

Photo 6: *Cut the culvert recovery 2' below ground level with an acetylene torch*

Photo 7: *Pouring bentonite chips into the recovery well. After installing the chips, they were hydrated.*

Photo 8: *The culvert well was filled with 2' of bentonite, sand to 6" BGS, and native soil to grade.*

Attachment 3

Table 1
2022 Drake Groundwater Monitoring

Sample ID:	ADEC Cleanup Level	MW-1	MW-11 Dup of MW-1	MW-2
DRO mg/L				
DRO	1.5	0.600 U	0.006	0.577U

# U	Compound was not detected above the limit of quantitation
Shade	Compound was detected below the ADEC cleanup level
Bold	Compound was detected above the ADEC cleanup level

Table 2
Quality Control Summary Table

Sample ID	MW-4	MW-5	RPD
Analyte	**mg/kg**	**mg/kg**	**%**
DRO	NC	NC	NC

Note:

RPD	Relative Percent Difference
NC	Not calculable

Table 2

Detected 2022 Soil Boring Results

Analyte	ADEC Clean Up Levels	Sample ID			
		V1	V2	V22	Trip
Diesel Range Organics By AK 102 (mg/kg)					
Diesel Range Organics	250.00	20.6 U	**29600**	**21600**	NT
VOCs by SW 8260D (ug/kg)					
1,2,4-Trimethylbenzene	610	54.4 U	**14000**	**13900**	99.9 U
1,3,5-Trimethylbenzene	660	13.6 U	**5540**	**5450**	25.0 U
4-Isopropyltoluene		43.5 U	981 U	661	80.0 U
Ethylbenzene	130	13.6 U	**3040**	**2730**	25.0 U
Naphthalene	38.0	13.6 U	**9840**	**10000**	25.0 U
n-Propylbenzene	9100	13.6 U	2540	2410	25.0 U
o-Xylene		13.6 U	8640	8370	25.0 U
P & M -Xylene		27.2 U	13800	12400	50.0 U
sec-Butylbenzene	42000	13.6 U	888	850	25.0 U
Xylenes (total)	1500	40.8 U	**22400**	**20700**	75.0 U
PAHs by 8270D SIM (mg/kg)					
1-Methylnaphthalene	410	NT	**64700**	**50800**	NT
2-Methylnaphthalene	1300	NT	**86400**	**68500**	NT
Acenaphthene	37000	NT	1970	1440	NT
Fluoranthene	590000	NT	318	324 U	NT
Fluorene	36000	NT	9100	6750	NT
Naphthalene	38.0	NT	**39500**	**32100**	NT
Phenanthrene	39000	NT	18200	14200	NT

# U	Compound was not detected above the limit of quantitation
Shade	Compound was detected below the ADEC cleanup level
Bold	Compound was detected above the ADEC cleanup level
#### Light Shade	LOQ Above ADEC Clean Up Level

QA/QC Sample Results Summary

Sample ID	**V2**	**V22**	**RPD**
Analyte	mg/L	mg/L	%
Benzene	0.177	0.121	37.58%
1,2,4-Trimethylbenzene	14000	13900	0.72%
1,3,5-Trimethylbenzene	5540	5450	1.64%
Ethylbenzene	3040	2730	10.75%
Naphthalene	9840	10000	1.61%
1-Methylnaphthalene	64700	50800	24.07%
2-Methylnaphthalene	86400	68500	23.11%
DRO	29600	21600	31.25%
Xylenes (total)	22400	20700	7.89%

RPD Relative Percent Difference

Table 3
Historical Groundwater Results

Well ID	Date	DRO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Lab Comment
Units		**mg/L**	**mg/L**	**mg/L**	**mg/L**	**mg/L**	
ADEC Limits		1.5	0.005	1.0	0.7	10	
ADEC Limits 2017		1.5	0.0046	1.1	0.0	0.19	
MW-1	Fall 2004	1.19	0.00050U	0.00200U	0.00200U	0.00200U	
	Spring 2005	0.313U	0.00050U	0.00200U	0.00200U	0.00200U	
	S05 Dup	0.309U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2005	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Spring 2006	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2007	0.311U	0.000622	0.00200U	0.00250	0.00642	
	Fall 2008	0.41	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2017	0.954	0.0004U	0.0001U	0.0001U	0.003U	
	June 8, 2022	0.006	NT	NT	NT	NT	
MW-2	Fall 2004	0.911	0.00050U	0.00200U	0.00200U	0.00618	
	Spring 2005	0.306U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2005	0.300U	0.00050U	0.00200U	0.00200U	0.00461	
	Spring 2006	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2007	0.309U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2008	0.385U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2017	0.577U	0.0004U	0.0001U	0.0001U	0.003U	
	June 8, 2022	0.577U	NT	NT	NT	NT	
MW-3	Fall 2004	0.422	0.00050U	0.00200U	0.00200U	0.00200U	
	Spring 2005	0.323U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2005	0.300U	0.00050U	0.00200U	0.00200U	0.00317	
	Spring 2006	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	S06 Dup	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2007	0.314U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2008	0.357U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2017	0.766	0.0004U	0.0001U	0.0001U	0.003U	
MW-4	Fall 2004	**1.81**	0.00050U	0.00200U	0.00200U	0.00200U	
	Spring 2005	0.309U	0.00050U	0.0047	0.0043	0.0038	
	Fall 2005	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	F05 Dup	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Spring 2006	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2007	0.300U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2008	0.357U	0.00050U	0.00200U	0.00200U	0.00200U	
	Fall 2017	1.25	0.0004U	0.0001U	0.0001U	0.003U	

Notes:

U	Compound was not detected
NT	Not Taken
shade	Result is below ADEC regulatory limit, but above detection limit
bold	Result is above ADEC regulatory limit

Attachment 4

Laboratory Report of Analysis

To: Nortech
2400 College Road
Fairbanks, AK 99709

Report Number: **1222857**

Client Project: **20-1400 Drake**

Dear Doug Dusek,

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.

Stephen C. Ede
2022.06.21
11:32:17 -08'00'

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

SGS North America Inc. 200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Case Narrative

SGS Client: **Nortech**
SGS Project: **1222857**
Project Name/Site: **20-1400 Drake**
Project Contact: **Doug Dusek**

Refer to sample receipt form for information on sample condition.

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

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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, indenmification 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 (Provisionally Certified as of 05/31/2022 for Fluoride by EPA 300.0 and Nitrate as N by SM 4500NO3-F) & 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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
MW-1	1222857001	06/08/2022	06/08/2022	Water (Surface, Eff., Ground)
MW-2	1222857002	06/08/2022	06/08/2022	Water (Surface, Eff., Ground)
MW-11	1222857003	06/08/2022	06/08/2022	Water (Surface, Eff., Ground)

Method	Method Description
AK102	DRO Low Volume (W)

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Detectable Results Summary

Client Sample ID: **MW-11**
Lab Sample ID: 1222857003

Semivolatile Organic Fuels

Parameter	Result	Units
Diesel Range Organics	0.600	mg/L

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Results of **MW-1**

Client Sample ID: **MW-1**
Client Project ID: **20-1400 Drake**
Lab Sample ID: 1222857001
Lab Project ID: 1222857

Collection Date: 06/08/22 09:50
Received Date: 06/08/22 16:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600	U	0.600	0.200	mg/L	1		06/17/22 16:02
Surrogates								
5a Androstane (surr)	77.5		50-150		%	1		06/17/22 16:02

Batch Information

Analytical Batch: XFC16261
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 06/17/22 16:02
Container ID: 1222857001-A

Prep Batch: XXX46431
Prep Method: SW3520C
Prep Date/Time: 06/16/22 16:20
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 06/21/2022 10:31:14AM

Results of **MW-2**

Client Sample ID: **MW-2**
Client Project ID: **20-1400 Drake**
Lab Sample ID: 1222857002
Lab Project ID: 1222857

Collection Date: 06/08/22 10:45
Received Date: 06/08/22 16:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.577	U	0.577	0.192	mg/L	1		06/17/22 16:12
Surrogates								
5a Androstane (surr)	85		50-150		%	1		06/17/22 16:12

Batch Information

Analytical Batch: XFC16261
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 06/17/22 16:12
Container ID: 1222857002-A

Prep Batch: XXX46431
Prep Method: SW3520C
Prep Date/Time: 06/16/22 16:20
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

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Results of **MW-11**

Client Sample ID: **MW-11**
Client Project ID: **20-1400 Drake**
Lab Sample ID: 1222857003
Lab Project ID: 1222857

Collection Date: 06/08/22 09:30
Received Date: 06/08/22 16:48
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.600		0.600	0.200	mg/L	1		06/17/22 16:42
Surrogates								
5a Androstane (surr)	77.3		50-150		%	1		06/17/22 16:42

Batch Information

Analytical Batch: XFC16261
Analytical Method: AK102
Analyst: MDT
Analytical Date/Time: 06/17/22 16:42
Container ID: 1222857003-A

Prep Batch: XXX46431
Prep Method: SW3520C
Prep Date/Time: 06/16/22 16:20
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1837986 [XXX/46431]
Blank Lab ID: 1668360

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1222857001, 1222857002, 1222857003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.200	mg/L
Surrogates				
5a Androstane (surr)	86.7	60-120		%

Batch Information

Analytical Batch: XFC16261
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: MDT
Analytical Date/Time: 6/17/2022 1:09:00PM

Prep Batch: XXX46431
Prep Method: SW3520C
Prep Date/Time: 6/16/2022 4:20:10PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1222857 [XXX46431]
Blank Spike Lab ID: 1668361
Date Analyzed: 06/17/2022 13:19

Spike Duplicate ID: LCSD for HBN 1222857 [XXX46431]
Spike Duplicate Lab ID: 1668362
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1222857001, 1222857002, 1222857003

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	18.7	94	20	22.0	110	(75-125)	15.90	(< 20)
Surrogates									
5a Androstane (surr)	0.4		84	0.4		99	(60-120)	15.90	

Batch Information

Analytical Batch: **XFC16261**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **MDT**

Prep Batch: **XXX46431**
Prep Method: **SW3520C**
Prep Date/Time: **06/16/2022 16:20**
Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

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SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1222857

Profile #: Int.:

Page 1 of 1

Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: Wortech	
CONTACT: Doug Dosek	PHONE #: 907-452-5688
PROJECT NAME: Drake	Project/Permit Number: 20-1400 NPDL Number(DOD):
REPORTS TO: Doug Dosek	E-MAIL: doug.dosek@wortechmgt.com
INVOICE TO: "	QUOTE #: P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Sample Type: Comp / Grab / MI	Analysis*: DRO	REMARKS/LOC ID
1AB	MW-1	6/8/22	9:50	W			✓	
2AB	MW-3	↓	10:45	↓			✓	
3AB	MW-11	↓	9:30	↓			✓	

NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS

Section 3 — Preservative: cold

Comments:

Section 4

DOD Project? YES NO

Data Deliverables Requested: DataView, Level 4, SEDD, ERPIMS, EQUIS, Other:

Turnaround Time Requested: Standard, Rush

Requested Rush Report Date:

SGS Sample Receipt (Lab Use Only)

Delivery Method: Client Commercial

Did each cooler have a corresponding COC? Yes No

Chain of Custody Seal Condition: INTACT BROKEN ABSENT

COC Seal Location(s):

Section 5

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:	Cooler ID	Temperature (°C)	Therm. ID
	6/8/22	11:19		1	Same Day	
	6/8/22	1535		1	2.7°C	D62

If more than three coolers are received, or for documentation of non-compliant coolers, use form FS-0029.

DATE TIME RECEIVED BY — Laboratory Use Only

Note: If temp. is outside 0-6 °C and samples were not taken <8 hours ago OR are waste samples, Client or PM should initial here or attach an email change order to proceed with analysis. If ice is present, note on form F102B.

Intials:

e-Sample Receipt Form FBK

SGS Workorder #:	Nortech	Nortech

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		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	
Yes — **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)?		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	Yes	chilling not required
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.		
Holding Time / Documentation / Sample Condition Requirements		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?	N/A	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
For Rush/Short Hold Time, was RUSH/Short HT email sent?	N/A	

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

Additional notes (if applicable):

SGS Profile #	341954	341954

e-Sample Receipt Form

SGS Workorder #:	1222857	1222857

Review Criteria	Condition (Yes, No, N/A	Exceptions Noted below
Chain of Custody / Temperature Requirements	*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)*		
Holding Time / Documentation / Sample Condition Requirements	*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. ***Note:*** *If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.*	Yes	
Were analytical requests clear? *(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)*	Yes	
Were proper containers (type/mass/volume/preservative)used? Note: Exemption for metals analysis by 200.8/6020 in water.	Yes	
Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)		
Were all soil VOAs received with a corresponding % solids container?	N/A	
Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?	N/A	
Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?	N/A	
Were all soil VOAs field extracted with Methanol+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1222857001-A	HCL to pH < 2	OK			
1222857001-B	HCL to pH < 2	OK			
1222857002-A	HCL to pH < 2	OK			
1222857002-B	HCL to pH < 2	OK			
1222857003-A	HCL to pH < 2	OK			
1222857003-B	HCL to pH < 2	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.

Laboratory Data Review Checklist

Completed By:

Doug Dusek

Title:

Environmental Specialist

Date:

December 8, 2022

CS Report Name:

20-1400 Drake

Report Date:

6/21/2022

Consultant Firm:

NORTECH

Laboratory Name:

SGS

Laboratory Report Number:

1222857

ADEC File Number:

43316;14<4

Hazard Identification Number:

3956

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ◉ Yes ○ No Comments:

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

   ○ Yes ○ No Comments:

   na

2. Chain of Custody (CoC)

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

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ○ Yes ○ No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ○ Yes ○ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ○ Yes ○ No Comments:

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, etc.?

○ Yes ○ No Comments:

e. Data quality or usability affected?

Comments:

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

○ Yes ◉ No Comments:

c. Were all corrective actions documented?

○ Yes ○ No Comments:

na

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

Comments:

na

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

◉ Yes ○ No Comments:

b. All applicable holding times met?

◉ Yes ○ No Comments:

c. All soils reported on a dry weight basis?

○ Yes ○ No Comments:

na

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

◉ Yes ○ No Comments:

e. Data quality or usability affected?

○ Yes ◉ No Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

◉ Yes ○ No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

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

○ Yes ○ No Comments:

na

v. Data quality or usability affected?

Comments:

Not affected

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

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

☐ Yes ☐ No Comments:

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

☐ Yes ☐ No Comments:

na

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

☑ Yes ☐ No Comments:

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

☑ Yes ☐ No Comments:

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

Comments:

na

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

☐ Yes ☐ No Comments:

na

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Na

c. Surrogates – Organics Only

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

◉ Yes ○ No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

◉ Yes ○ No Comments:

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

○ Yes ○ No Comments:

na

iv. Data quality or usability affected?

Comments:

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

○ Yes ○ No Comments:

no vocs

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

○ Yes ○ No Comments:

iii. All results less than LOQ?

○ Yes ○ No Comments:

iv. If above LOQ, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

e. Field Duplicate

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

◉ Yes ○ No Comments:

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

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

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

○ Yes ○ No Comments:

Not calculable

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

○ Yes ○ No ◉ Not Applicable

i. All results less than LOQ?

☐ Yes ☐ No Comments:

ii. If above LOQ, what samples are affected?

Comments:

iii. Data quality or usability affected?

Comments:

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

a. Defined and appropriate?

☐ Yes ☉ No Comments:

Laboratory Report of Analysis

To: Nortech
2400 College Road
Fairbanks, AK 99709

Report Number: **1226505**

Client Project: **Drake**

Dear Doug Dusek,

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.

Stephen C. Ede 2022.11.16 08:10:24 -09'00'

Jennifer Dawkins Date
Project Manager
Jennifer.Dawkins@sgs.com

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Case Narrative

SGS Client: **Nortech**
SGS Project: **1226505**
Project Name/Site: **Drake**
Project Contact: **Doug Dusek**

Refer to sample receipt form for information on sample condition.

V2 (1226505002) PS

AK102 - Surrogate recovery for 5a-androstane 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 a high concentration of non-target compounds.

V22 (1226505003) PS

AK102 - Surrogate recovery for 5a-androstane 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 a high concentration of non-target compounds.

1226608007MS (1694871) MS

8270D SIM - PAH Surrogate recovery for 2-methylnapthhalene-d10 does not meet QC criteria due to matrix interference.
8270D SIM - PAH MS recoveries for acenaphthene and pyrene do not meet QC criteria. Refer to LCS for accuracy requirements.
8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to a high concentration of non-target compounds.

1226608007MSD (1694872) MSD

8270D SIM - PAH Surrogate recovery for 2-methylnapthhalene-d10 does not meet QC criteria due to matrix interference.
8270D SIM - PAH MSD recoveries for acenaphthene, fluorene, and pyrene do not meet QC criteria. Refer to LCS for accuracy requirements.
8270D SIM - PAH The LOQs are elevated due to sample dilution. The sample was diluted due to a high concentration of non-target compounds.

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

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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
8270D SIM (PAH)				
1694872	1226608007MSD	XMS13440	Benzo(a)Anthracene	RP
SW8260D				
1226505002	V2	VMS22102	4-Isopropyltoluene	SP
1226505003	V22	VMS22102	4-Isopropyltoluene	SP

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.

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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, indenmification 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.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
V1	1226505001	10/20/2022	10/25/2022	Soil/Solid (dry weight)
V2	1226505002	10/20/2022	10/25/2022	Soil/Solid (dry weight)
V22	1226505003	10/20/2022	10/25/2022	Soil/Solid (dry weight)
Trip	1226505004	10/20/2022	10/25/2022	Soil/Solid (dry weight)

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

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Detectable Results Summary

Client Sample ID: **V2**
Lab Sample ID: 1226505002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	64700	ug/kg
	2-Methylnaphthalene	86400	ug/kg
	Acenaphthene	1970	ug/kg
	Fluoranthene	318	ug/kg
	Fluorene	9100	ug/kg
	Naphthalene	39500	ug/kg
	Phenanthrene	18200	ug/kg
Semivolatile Organic Fuels	Diesel Range Organics	29600	mg/kg
Volatile GC/MS	1,2,4-Trimethylbenzene	14000	ug/kg
	1,3,5-Trimethylbenzene	5540	ug/kg
	Ethylbenzene	3040	ug/kg
	Isopropylbenzene (Cumene)	1370	ug/kg
	Naphthalene	9840	ug/kg
	n-Propylbenzene	2540	ug/kg
	o-Xylene	8640	ug/kg
	P & M -Xylene	13800	ug/kg
	sec-Butylbenzene	888	ug/kg
	Xylenes (total)	22400	ug/kg

Client Sample ID: **V22**
Lab Sample ID: 1226505003

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	50800	ug/kg
	2-Methylnaphthalene	68500	ug/kg
	Acenaphthene	1440	ug/kg
	Fluorene	6750	ug/kg
	Naphthalene	32100	ug/kg
	Phenanthrene	14200	ug/kg
Semivolatile Organic Fuels	Diesel Range Organics	21600	mg/kg
Volatile GC/MS	1,2,4-Trimethylbenzene	13900	ug/kg
	1,3,5-Trimethylbenzene	5450	ug/kg
	4-Isopropyltoluene	661	ug/kg
	Ethylbenzene	2730	ug/kg
	Isopropylbenzene (Cumene)	1250	ug/kg
	Naphthalene	10000	ug/kg
	n-Propylbenzene	2410	ug/kg
	o-Xylene	8370	ug/kg
	P & M -Xylene	12400	ug/kg
	sec-Butylbenzene	850	ug/kg
	Xylenes (total)	20700	ug/kg

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Results of **V1**

Client Sample ID: **V1**
Client Project ID: **Drake**
Lab Sample ID: 1226505001
Lab Project ID: 1226505

Collection Date: 10/20/22 10:20
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):95.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	20.6	U	20.6	9.28	mg/kg	1		10/31/22 17:57
Surrogates								
5a Androstane (surr)	85.7		50-150		%	1		10/31/22 17:57

Batch Information

Analytical Batch: XFC16392
Analytical Method: AK102
Analyst: HMW
Analytical Date/Time: 10/31/22 17:57
Container ID: 1226505001-A

Prep Batch: XXX47263
Prep Method: SW3550C
Prep Date/Time: 10/31/22 09:30
Prep Initial Wt./Vol.: 30.462 g
Prep Extract Vol: 5 mL

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Results of **V1**

Client Sample ID: **V1**
Client Project ID: **Drake**
Lab Sample ID: 1226505001
Lab Project ID: 1226505

Collection Date: 10/20/22 10:20
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):95.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	10.9	U	10.9	3.37	ug/kg	1		10/26/22 14:40
1,1,1-Trichloroethane	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,1,2,2-Tetrachloroethane	1.09	U	1.09	0.337	ug/kg	1		10/26/22 14:40
1,1,2-Trichloroethane	0.544	U	0.544	0.272	ug/kg	1		10/26/22 14:40
1,1-Dichloroethane	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,1-Dichloroethene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,1-Dichloropropene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,2,3-Trichlorobenzene	54.4	U	54.4	16.3	ug/kg	1		10/26/22 14:40
1,2,3-Trichloropropane	1.09	U	1.09	0.337	ug/kg	1		10/26/22 14:40
1,2,4-Trichlorobenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,2,4-Trimethylbenzene	54.4	U	54.4	16.3	ug/kg	1		10/26/22 14:40
1,2-Dibromo-3-chloropropane	54.4	U	54.4	16.9	ug/kg	1		10/26/22 14:40
1,2-Dibromoethane	0.816	U	0.816	0.408	ug/kg	1		10/26/22 14:40
1,2-Dichlorobenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,2-Dichloroethane	1.09	U	1.09	0.381	ug/kg	1		10/26/22 14:40
1,2-Dichloropropane	5.44	U	5.44	2.72	ug/kg	1		10/26/22 14:40
1,3,5-Trimethylbenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,3-Dichlorobenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
1,3-Dichloropropane	5.44	U	5.44	1.69	ug/kg	1		10/26/22 14:40
1,4-Dichlorobenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
2,2-Dichloropropane	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
2-Butanone (MEK)	136	U	136	42.4	ug/kg	1		10/26/22 14:40
2-Chlorotoluene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
2-Hexanone	65.2	U	65.2	32.6	ug/kg	1		10/26/22 14:40
4-Chlorotoluene	10.9	U	10.9	5.44	ug/kg	1		10/26/22 14:40
4-Isopropyltoluene	43.5	U	43.5	21.7	ug/kg	1		10/26/22 14:40
4-Methyl-2-pentanone (MIBK)	136	U	136	42.4	ug/kg	1		10/26/22 14:40
Acetone	136	U	136	59.8	ug/kg	1		10/26/22 14:40
Benzene	6.80	U	6.80	2.12	ug/kg	1		10/26/22 14:40
Bromobenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Bromochloromethane	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Bromodichloromethane	1.09	U	1.09	0.337	ug/kg	1		10/26/22 14:40
Bromoform	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Bromomethane	10.9	U	10.9	4.35	ug/kg	1		10/26/22 14:40
Carbon disulfide	54.4	U	54.4	16.9	ug/kg	1		10/26/22 14:40
Carbon tetrachloride	6.80	U	6.80	2.12	ug/kg	1		10/26/22 14:40
Chlorobenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40

Results of **V1**

Client Sample ID: **V1**
Client Project ID: **Drake**
Lab Sample ID: 1226505001
Lab Project ID: 1226505

Collection Date: 10/20/22 10:20
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):95.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	109	U	109	33.7	ug/kg	1		10/26/22 14:40
Chloroform	3.26	U	3.26	1.63	ug/kg	1		10/26/22 14:40
Chloromethane	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
cis-1,2-Dichloroethene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
cis-1,3-Dichloropropene	6.80	U	6.80	2.12	ug/kg	1		10/26/22 14:40
Dibromochloromethane	2.72	U	2.72	0.816	ug/kg	1		10/26/22 14:40
Dibromomethane	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Dichlorodifluoromethane	54.4	U	54.4	16.3	ug/kg	1		10/26/22 14:40
Ethylbenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Freon-113	54.4	U	54.4	16.9	ug/kg	1		10/26/22 14:40
Hexachlorobutadiene	10.9	U	10.9	3.37	ug/kg	1		10/26/22 14:40
Isopropylbenzene (Cumene)	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Methylene chloride	54.4	U	54.4	16.9	ug/kg	1		10/26/22 14:40
Methyl-t-butyl ether	54.4	U	54.4	16.9	ug/kg	1		10/26/22 14:40
Naphthalene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
n-Butylbenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
n-Propylbenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
o-Xylene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
P & M -Xylene	27.2	U	27.2	8.16	ug/kg	1		10/26/22 14:40
sec-Butylbenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Styrene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
tert-Butylbenzene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
Tetrachloroethene	6.80	U	6.80	2.12	ug/kg	1		10/26/22 14:40
Toluene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
trans-1,2-Dichloroethene	13.6	U	13.6	4.24	ug/kg	1		10/26/22 14:40
trans-1,3-Dichloropropene	6.80	U	6.80	2.12	ug/kg	1		10/26/22 14:40
Trichloroethene	5.44	U	5.44	1.74	ug/kg	1		10/26/22 14:40
Trichlorofluoromethane	27.2	U	27.2	8.16	ug/kg	1		10/26/22 14:40
Vinyl acetate	54.4	U	54.4	16.9	ug/kg	1		10/26/22 14:40
Vinyl chloride	0.435	U	0.435	0.136	ug/kg	1		10/26/22 14:40
Xylenes (total)	40.8	U	40.8	12.4	ug/kg	1		10/26/22 14:40
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		71-136		%	1		10/26/22 14:40
4-Bromofluorobenzene (surr)	113		55-151		%	1		10/26/22 14:40
Toluene-d8 (surr)	94.9		85-116		%	1		10/26/22 14:40

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Results of **V1**

Client Sample ID: **V1**
Client Project ID: **Drake**
Lab Sample ID: 1226505001
Lab Project ID: 1226505

Collection Date: 10/20/22 10:20
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):95.6
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS22102
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 10/26/22 14:40
Container ID: 1226505001-B

Prep Batch: VXX39396
Prep Method: SW5035A
Prep Date/Time: 10/20/22 10:20
Prep Initial Wt./Vol.: 116.123 g
Prep Extract Vol: 30.1648 mL

Results of **V2**

Client Sample ID: **V2**
Client Project ID: **Drake**
Lab Sample ID: 1226505002
Lab Project ID: 1226505

Collection Date: 10/20/22 10:35
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):78.6
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	64700		6250	1560	ug/kg	200		11/08/22 21:39
2-Methylnaphthalene	86400		6250	1560	ug/kg	200		11/08/22 21:39
Acenaphthene	1970		313	78.1	ug/kg	10		11/08/22 00:14
Acenaphthylene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Anthracene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Benzo(a)Anthracene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Benzo[a]pyrene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Benzo[b]Fluoranthene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Benzo[g,h,i]perylene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Benzo[k]fluoranthene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Chrysene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Dibenzo[a,h]anthracene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Fluoranthene	318		313	78.1	ug/kg	10		11/08/22 00:14
Fluorene	9100		6250	1560	ug/kg	200		11/08/22 21:39
Indeno[1,2,3-c,d] pyrene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Naphthalene	39500		5000	1250	ug/kg	200		11/08/22 21:39
Phenanthrene	18200		6250	1560	ug/kg	200		11/08/22 21:39
Pyrene	313	U	313	78.1	ug/kg	10		11/08/22 00:14
Surrogates								
2-Methylnaphthalene-d10 (surr)	638	*	58-103		%	10		11/08/22 00:14
Fluoranthene-d10 (surr)	287	*	54-113		%	10		11/08/22 00:14

Batch Information

Analytical Batch: XMS13441
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 11/08/22 00:14
Container ID: 1226505002-A

Prep Batch: XXX47282
Prep Method: SW3550C
Prep Date/Time: 11/02/22 13:30
Prep Initial Wt./Vol.: 22.902 g
Prep Extract Vol: 5 mL

Analytical Batch: XMS13443
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 11/08/22 21:39
Container ID: 1226505002-A

Prep Batch: XXX47282
Prep Method: SW3550C
Prep Date/Time: 11/02/22 13:30
Prep Initial Wt./Vol.: 22.902 g
Prep Extract Vol: 5 mL

Results of **V2**

Client Sample ID: **V2**
Client Project ID: **Drake**
Lab Sample ID: 1226505002
Lab Project ID: 1226505

Collection Date: 10/20/22 10:35
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):78.6
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	29600		253	114	mg/kg	10		11/01/22 14:39
Surrogates								
5a Androstane (surr)	240	*	50-150		%	10		11/01/22 14:39

Batch Information

Analytical Batch: XFC16393
Analytical Method: AK102
Analyst: MAP
Analytical Date/Time: 11/01/22 14:39
Container ID: 1226505002-A

Prep Batch: XXX47263
Prep Method: SW3550C
Prep Date/Time: 10/31/22 09:30
Prep Initial Wt./Vol.: 30.215 g
Prep Extract Vol: 5 mL

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Results of **V2**

Client Sample ID: **V2**
Client Project ID: **Drake**
Lab Sample ID: 1226505002
Lab Project ID: 1226505

Collection Date: 10/20/22 10:35
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):78.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	245	U	245	76.0	ug/kg	10		10/26/22 14:58
1,1,1-Trichloroethane	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,1,2,2-Tetrachloroethane	24.5	U	24.5	7.60	ug/kg	10		10/26/22 14:58
1,1,2-Trichloroethane	12.3	U	12.3	6.13	ug/kg	10		10/26/22 14:58
1,1-Dichloroethane	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,1-Dichloroethene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,1-Dichloropropene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,2,3-Trichlorobenzene	1230	U	1230	368	ug/kg	10		10/26/22 14:58
1,2,3-Trichloropropane	24.5	U	24.5	7.60	ug/kg	10		10/26/22 14:58
1,2,4-Trichlorobenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,2,4-Trimethylbenzene	14000		1230	368	ug/kg	10		10/26/22 14:58
1,2-Dibromo-3-chloropropane	1230	U	1230	380	ug/kg	10		10/26/22 14:58
1,2-Dibromoethane	18.4	U	18.4	9.20	ug/kg	10		10/26/22 14:58
1,2-Dichlorobenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,2-Dichloroethane	24.5	U	24.5	8.58	ug/kg	10		10/26/22 14:58
1,2-Dichloropropane	123	U	123	61.3	ug/kg	10		10/26/22 14:58
1,3,5-Trimethylbenzene	5540		307	95.6	ug/kg	10		10/26/22 14:58
1,3-Dichlorobenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
1,3-Dichloropropane	123	U	123	38.0	ug/kg	10		10/26/22 14:58
1,4-Dichlorobenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
2,2-Dichloropropane	307	U	307	95.6	ug/kg	10		10/26/22 14:58
2-Butanone (MEK)	3070	U	3070	956	ug/kg	10		10/26/22 14:58
2-Chlorotoluene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
2-Hexanone	1470	U	1470	736	ug/kg	10		10/26/22 14:58
4-Chlorotoluene	245	U	245	123	ug/kg	10		10/26/22 14:58
4-Isopropyltoluene	981	U	981	490	ug/kg	10		10/26/22 14:58
4-Methyl-2-pentanone (MIBK)	3070	U	3070	956	ug/kg	10		10/26/22 14:58
Acetone	3070	U	3070	1350	ug/kg	10		10/26/22 14:58
Benzene	153	U	153	47.8	ug/kg	10		10/26/22 14:58
Bromobenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
Bromochloromethane	307	U	307	95.6	ug/kg	10		10/26/22 14:58
Bromodichloromethane	24.5	U	24.5	7.60	ug/kg	10		10/26/22 14:58
Bromoform	307	U	307	95.6	ug/kg	10		10/26/22 14:58
Bromomethane	245	U	245	98.1	ug/kg	10		10/26/22 14:58
Carbon disulfide	1230	U	1230	380	ug/kg	10		10/26/22 14:58
Carbon tetrachloride	153	U	153	47.8	ug/kg	10		10/26/22 14:58
Chlorobenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58

Results of **V2**

Client Sample ID: **V2**
Client Project ID: **Drake**
Lab Sample ID: 1226505002
Lab Project ID: 1226505

Collection Date: 10/20/22 10:35
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):78.6
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	2450	U	2450	760	ug/kg	10		10/26/22 14:58
Chloroform	73.6	U	73.6	36.8	ug/kg	10		10/26/22 14:58
Chloromethane	307	U	307	95.6	ug/kg	10		10/26/22 14:58
cis-1,2-Dichloroethene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
cis-1,3-Dichloropropene	153	U	153	47.8	ug/kg	10		10/26/22 14:58
Dibromochloromethane	61.3	U	61.3	18.4	ug/kg	10		10/26/22 14:58
Dibromomethane	307	U	307	95.6	ug/kg	10		10/26/22 14:58
Dichlorodifluoromethane	1230	U	1230	368	ug/kg	10		10/26/22 14:58
Ethylbenzene	3040		307	95.6	ug/kg	10		10/26/22 14:58
Freon-113	1230	U	1230	380	ug/kg	10		10/26/22 14:58
Hexachlorobutadiene	245	U	245	76.0	ug/kg	10		10/26/22 14:58
Isopropylbenzene (Cumene)	1370		307	95.6	ug/kg	10		10/26/22 14:58
Methylene chloride	1230	U	1230	380	ug/kg	10		10/26/22 14:58
Methyl-t-butyl ether	1230	U	1230	380	ug/kg	10		10/26/22 14:58
Naphthalene	9840		307	95.6	ug/kg	10		10/26/22 14:58
n-Butylbenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
n-Propylbenzene	2540		307	95.6	ug/kg	10		10/26/22 14:58
o-Xylene	8640		307	95.6	ug/kg	10		10/26/22 14:58
P & M -Xylene	13800		613	184	ug/kg	10		10/26/22 14:58
sec-Butylbenzene	888		307	95.6	ug/kg	10		10/26/22 14:58
Styrene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
tert-Butylbenzene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
Tetrachloroethene	153	U	153	47.8	ug/kg	10		10/26/22 14:58
Toluene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
trans-1,2-Dichloroethene	307	U	307	95.6	ug/kg	10		10/26/22 14:58
trans-1,3-Dichloropropene	153	U	153	47.8	ug/kg	10		10/26/22 14:58
Trichloroethene	123	U	123	39.2	ug/kg	10		10/26/22 14:58
Trichlorofluoromethane	613	U	613	184	ug/kg	10		10/26/22 14:58
Vinyl acetate	1230	U	1230	380	ug/kg	10		10/26/22 14:58
Vinyl chloride	9.81	U	9.81	3.07	ug/kg	10		10/26/22 14:58
Xylenes (total)	22400		920	280	ug/kg	10		10/26/22 14:58
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		71-136		%	10		10/26/22 14:58
4-Bromofluorobenzene (surr)	64.6		55-151		%	10		10/26/22 14:58
Toluene-d8 (surr)	96.2		85-116		%	10		10/26/22 14:58

Results of **V2**

Client Sample ID: **V2**
Client Project ID: **Drake**
Lab Sample ID: 1226505002
Lab Project ID: 1226505

Collection Date: 10/20/22 10:35
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):78.6
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS22102
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 10/26/22 14:58
Container ID: 1226505002-B

Prep Batch: VXX39396
Prep Method: SW5035A
Prep Date/Time: 10/20/22 10:35
Prep Initial Wt./Vol.: 93.379 g
Prep Extract Vol: 44.9917 mL

Results of **V22**

Client Sample ID: **V22**
Client Project ID: **Drake**
Lab Sample ID: 1226505003
Lab Project ID: 1226505

Collection Date: 10/20/22 10:45
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):76.9
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	50800		3240	809	ug/kg	100		11/08/22 21:55
2-Methylnaphthalene	68500		3240	809	ug/kg	100		11/08/22 21:55
Acenaphthene	1440		324	80.9	ug/kg	10		11/08/22 00:30
Acenaphthylene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Anthracene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Benzo(a)Anthracene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Benzo[a]pyrene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Benzo[b]Fluoranthene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Benzo[g,h,i]perylene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Benzo[k]fluoranthene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Chrysene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Dibenzo[a,h]anthracene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Fluoranthene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Fluorene	6750		324	80.9	ug/kg	10		11/08/22 00:30
Indeno[1,2,3-c,d] pyrene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Naphthalene	32100		2590	647	ug/kg	100		11/08/22 21:55
Phenanthrene	14200		3240	809	ug/kg	100		11/08/22 21:55
Pyrene	324	U	324	80.9	ug/kg	10		11/08/22 00:30
Surrogates								
2-Methylnaphthalene-d10 (surr)	559	*	58-103		%	10		11/08/22 00:30
Fluoranthene-d10 (surr)	237	*	54-113		%	10		11/08/22 00:30

Batch Information

Analytical Batch: XMS13441
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 11/08/22 00:30
Container ID: 1226505003-A

Prep Batch: XXX47282
Prep Method: SW3550C
Prep Date/Time: 11/02/22 13:30
Prep Initial Wt./Vol.: 22.624 g
Prep Extract Vol: 5 mL

Analytical Batch: XMS13443
Analytical Method: 8270D SIM (PAH)
Analyst: NGG
Analytical Date/Time: 11/08/22 21:55
Container ID: 1226505003-A

Prep Batch: XXX47282
Prep Method: SW3550C
Prep Date/Time: 11/02/22 13:30
Prep Initial Wt./Vol.: 22.624 g
Prep Extract Vol: 5 mL

Results of **V22**

Client Sample ID: **V22**
Client Project ID: **Drake**
Lab Sample ID: 1226505003
Lab Project ID: 1226505

Collection Date: 10/20/22 10:45
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):76.9
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	21600		259	117	mg/kg	10		11/01/22 14:49
Surrogates								
5a Androstane (surr)	185	*	50-150		%	10		11/01/22 14:49

Batch Information

Analytical Batch: XFC16393
Analytical Method: AK102
Analyst: MAP
Analytical Date/Time: 11/01/22 14:49
Container ID: 1226505003-A

Prep Batch: XXX47263
Prep Method: SW3550C
Prep Date/Time: 10/31/22 09:30
Prep Initial Wt./Vol.: 30.094 g
Prep Extract Vol: 5 mL

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Results of **V22**

Client Sample ID: **V22**
Client Project ID: **Drake**
Lab Sample ID: 1226505003
Lab Project ID: 1226505

Collection Date: 10/20/22 10:45
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):76.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	126	U	126	39.0	ug/kg	5		10/26/22 15:15
1,1,1-Trichloroethane	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,1,2,2-Tetrachloroethane	12.6	U	12.6	3.90	ug/kg	5		10/26/22 15:15
1,1,2-Trichloroethane	6.30	U	6.30	3.15	ug/kg	5		10/26/22 15:15
1,1-Dichloroethane	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,1-Dichloroethene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,1-Dichloropropene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,2,3-Trichlorobenzene	630	U	630	189	ug/kg	5		10/26/22 15:15
1,2,3-Trichloropropane	12.6	U	12.6	3.90	ug/kg	5		10/26/22 15:15
1,2,4-Trichlorobenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,2,4-Trimethylbenzene	13900		630	189	ug/kg	5		10/26/22 15:15
1,2-Dibromo-3-chloropropane	630	U	630	195	ug/kg	5		10/26/22 15:15
1,2-Dibromoethane	9.44	U	9.44	4.72	ug/kg	5		10/26/22 15:15
1,2-Dichlorobenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,2-Dichloroethane	12.6	U	12.6	4.41	ug/kg	5		10/26/22 15:15
1,2-Dichloropropane	63.0	U	63.0	31.5	ug/kg	5		10/26/22 15:15
1,3,5-Trimethylbenzene	5450		157	49.1	ug/kg	5		10/26/22 15:15
1,3-Dichlorobenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
1,3-Dichloropropane	63.0	U	63.0	19.5	ug/kg	5		10/26/22 15:15
1,4-Dichlorobenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
2,2-Dichloropropane	157	U	157	49.1	ug/kg	5		10/26/22 15:15
2-Butanone (MEK)	1570	U	1570	491	ug/kg	5		10/26/22 15:15
2-Chlorotoluene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
2-Hexanone	755	U	755	378	ug/kg	5		10/26/22 15:15
4-Chlorotoluene	126	U	126	63.0	ug/kg	5		10/26/22 15:15
4-Isopropyltoluene	661		504	252	ug/kg	5		10/26/22 15:15
4-Methyl-2-pentanone (MIBK)	1570	U	1570	491	ug/kg	5		10/26/22 15:15
Acetone	1570	U	1570	693	ug/kg	5		10/26/22 15:15
Benzene	78.7	U	78.7	24.6	ug/kg	5		10/26/22 15:15
Bromobenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
Bromochloromethane	157	U	157	49.1	ug/kg	5		10/26/22 15:15
Bromodichloromethane	12.6	U	12.6	3.90	ug/kg	5		10/26/22 15:15
Bromoform	157	U	157	49.1	ug/kg	5		10/26/22 15:15
Bromomethane	126	U	126	50.4	ug/kg	5		10/26/22 15:15
Carbon disulfide	630	U	630	195	ug/kg	5		10/26/22 15:15
Carbon tetrachloride	78.7	U	78.7	24.6	ug/kg	5		10/26/22 15:15
Chlorobenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15

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Results of **V22**

Client Sample ID: **V22**
Client Project ID: **Drake**
Lab Sample ID: 1226505003
Lab Project ID: 1226505

Collection Date: 10/20/22 10:45
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):76.9
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	1260	U	1260	390	ug/kg	5		10/26/22 15:15
Chloroform	37.8	U	37.8	18.9	ug/kg	5		10/26/22 15:15
Chloromethane	157	U	157	49.1	ug/kg	5		10/26/22 15:15
cis-1,2-Dichloroethene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
cis-1,3-Dichloropropene	78.7	U	78.7	24.6	ug/kg	5		10/26/22 15:15
Dibromochloromethane	31.5	U	31.5	9.44	ug/kg	5		10/26/22 15:15
Dibromomethane	157	U	157	49.1	ug/kg	5		10/26/22 15:15
Dichlorodifluoromethane	630	U	630	189	ug/kg	5		10/26/22 15:15
Ethylbenzene	2730		157	49.1	ug/kg	5		10/26/22 15:15
Freon-113	630	U	630	195	ug/kg	5		10/26/22 15:15
Hexachlorobutadiene	126	U	126	39.0	ug/kg	5		10/26/22 15:15
Isopropylbenzene (Cumene)	1250		157	49.1	ug/kg	5		10/26/22 15:15
Methylene chloride	630	U	630	195	ug/kg	5		10/26/22 15:15
Methyl-t-butyl ether	630	U	630	195	ug/kg	5		10/26/22 15:15
Naphthalene	10000		157	49.1	ug/kg	5		10/26/22 15:15
n-Butylbenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
n-Propylbenzene	2410		157	49.1	ug/kg	5		10/26/22 15:15
o-Xylene	8370		157	49.1	ug/kg	5		10/26/22 15:15
P & M -Xylene	12400		315	94.4	ug/kg	5		10/26/22 15:15
sec-Butylbenzene	850		157	49.1	ug/kg	5		10/26/22 15:15
Styrene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
tert-Butylbenzene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
Tetrachloroethene	78.7	U	78.7	24.6	ug/kg	5		10/26/22 15:15
Toluene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
trans-1,2-Dichloroethene	157	U	157	49.1	ug/kg	5		10/26/22 15:15
trans-1,3-Dichloropropene	78.7	U	78.7	24.6	ug/kg	5		10/26/22 15:15
Trichloroethene	63.0	U	63.0	20.1	ug/kg	5		10/26/22 15:15
Trichlorofluoromethane	315	U	315	94.4	ug/kg	5		10/26/22 15:15
Vinyl acetate	630	U	630	195	ug/kg	5		10/26/22 15:15
Vinyl chloride	5.04	U	5.04	1.57	ug/kg	5		10/26/22 15:15
Xylenes (total)	20700		472	144	ug/kg	5		10/26/22 15:15
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		71-136		%	5		10/26/22 15:15
4-Bromofluorobenzene (surr)	100		55-151		%	5		10/26/22 15:15
Toluene-d8 (surr)	95.9		85-116		%	5		10/26/22 15:15

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Results of **V22**

Client Sample ID: **V22**
Client Project ID: **Drake**
Lab Sample ID: 1226505003
Lab Project ID: 1226505

Collection Date: 10/20/22 10:45
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):76.9
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS22102
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 10/26/22 15:15
Container ID: 1226505003-B

Prep Batch: VXX39396
Prep Method: SW5035A
Prep Date/Time: 10/20/22 10:45
Prep Initial Wt./Vol.: 99.052 g
Prep Extract Vol: 47.9257 mL

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Results of **Trip**

Client Sample ID: **Trip**
Client Project ID: **Drake**
Lab Sample ID: 1226505004
Lab Project ID: 1226505

Collection Date: 10/20/22 00:00
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	20.0	U	20.0	6.20	ug/kg	1		10/26/22 17:18
1,1,1-Trichloroethane	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,1,2,2-Tetrachloroethane	2.00	U	2.00	0.620	ug/kg	1		10/26/22 17:18
1,1,2-Trichloroethane	0.999	U	0.999	0.500	ug/kg	1		10/26/22 17:18
1,1-Dichloroethane	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,1-Dichloroethene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,1-Dichloropropene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,2,3-Trichlorobenzene	99.9	U	99.9	30.0	ug/kg	1		10/26/22 17:18
1,2,3-Trichloropropane	2.00	U	2.00	0.620	ug/kg	1		10/26/22 17:18
1,2,4-Trichlorobenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,2,4-Trimethylbenzene	99.9	U	99.9	30.0	ug/kg	1		10/26/22 17:18
1,2-Dibromo-3-chloropropane	99.9	U	99.9	31.0	ug/kg	1		10/26/22 17:18
1,2-Dibromoethane	1.50	U	1.50	0.750	ug/kg	1		10/26/22 17:18
1,2-Dichlorobenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,2-Dichloroethane	2.00	U	2.00	0.700	ug/kg	1		10/26/22 17:18
1,2-Dichloropropane	9.99	U	9.99	5.00	ug/kg	1		10/26/22 17:18
1,3,5-Trimethylbenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,3-Dichlorobenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
1,3-Dichloropropane	9.99	U	9.99	3.10	ug/kg	1		10/26/22 17:18
1,4-Dichlorobenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
2,2-Dichloropropane	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
2-Butanone (MEK)	250	U	250	78.0	ug/kg	1		10/26/22 17:18
2-Chlorotoluene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
2-Hexanone	120	U	120	60.0	ug/kg	1		10/26/22 17:18
4-Chlorotoluene	20.0	U	20.0	9.99	ug/kg	1		10/26/22 17:18
4-Isopropyltoluene	80.0	U	80.0	40.0	ug/kg	1		10/26/22 17:18
4-Methyl-2-pentanone (MIBK)	250	U	250	78.0	ug/kg	1		10/26/22 17:18
Acetone	250	U	250	110	ug/kg	1		10/26/22 17:18
Benzene	12.5	U	12.5	3.90	ug/kg	1		10/26/22 17:18
Bromobenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Bromochloromethane	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Bromodichloromethane	2.00	U	2.00	0.620	ug/kg	1		10/26/22 17:18
Bromoform	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Bromomethane	20.0	U	20.0	8.00	ug/kg	1		10/26/22 17:18
Carbon disulfide	99.9	U	99.9	31.0	ug/kg	1		10/26/22 17:18
Carbon tetrachloride	12.5	U	12.5	3.90	ug/kg	1		10/26/22 17:18
Chlorobenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18

Results of **Trip**

Client Sample ID: **Trip**
Client Project ID: **Drake**
Lab Sample ID: 1226505004
Lab Project ID: 1226505

Collection Date: 10/20/22 00:00
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	200	U	200	62.0	ug/kg	1		10/26/22 17:18
Chloroform	6.00	U	6.00	3.00	ug/kg	1		10/26/22 17:18
Chloromethane	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
cis-1,2-Dichloroethene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
cis-1,3-Dichloropropene	12.5	U	12.5	3.90	ug/kg	1		10/26/22 17:18
Dibromochloromethane	5.00	U	5.00	1.50	ug/kg	1		10/26/22 17:18
Dibromomethane	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Dichlorodifluoromethane	99.9	U	99.9	30.0	ug/kg	1		10/26/22 17:18
Ethylbenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Freon-113	99.9	U	99.9	31.0	ug/kg	1		10/26/22 17:18
Hexachlorobutadiene	20.0	U	20.0	6.20	ug/kg	1		10/26/22 17:18
Isopropylbenzene (Cumene)	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Methylene chloride	99.9	U	99.9	31.0	ug/kg	1		10/26/22 17:18
Methyl-t-butyl ether	99.9	U	99.9	31.0	ug/kg	1		10/26/22 17:18
Naphthalene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
n-Butylbenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
n-Propylbenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
o-Xylene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
P & M -Xylene	50.0	U	50.0	15.0	ug/kg	1		10/26/22 17:18
sec-Butylbenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Styrene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
tert-Butylbenzene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
Tetrachloroethene	12.5	U	12.5	3.90	ug/kg	1		10/26/22 17:18
Toluene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
trans-1,2-Dichloroethene	25.0	U	25.0	7.80	ug/kg	1		10/26/22 17:18
trans-1,3-Dichloropropene	12.5	U	12.5	3.90	ug/kg	1		10/26/22 17:18
Trichloroethene	9.99	U	9.99	3.20	ug/kg	1		10/26/22 17:18
Trichlorofluoromethane	50.0	U	50.0	15.0	ug/kg	1		10/26/22 17:18
Vinyl acetate	99.9	U	99.9	31.0	ug/kg	1		10/26/22 17:18
Vinyl chloride	0.800	U	0.800	0.250	ug/kg	1		10/26/22 17:18
Xylenes (total)	75.0	U	75.0	22.8	ug/kg	1		10/26/22 17:18
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		71-136		%	1		10/26/22 17:18
4-Bromofluorobenzene (surr)	96.4		55-151		%	1		10/26/22 17:18
Toluene-d8 (surr)	94.8		85-116		%	1		10/26/22 17:18

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Results of **Trip**

Client Sample ID: **Trip**
Client Project ID: **Drake**
Lab Sample ID: 1226505004
Lab Project ID: 1226505

Collection Date: 10/20/22 00:00
Received Date: 10/25/22 09:00
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS22102
Analytical Method: SW8260D
Analyst: S.S
Analytical Date/Time: 10/26/22 17:18
Container ID: 1226505004-A

Prep Batch: VXX39396
Prep Method: SW5035A
Prep Date/Time: 10/20/22 00:00
Prep Initial Wt./Vol.: 50.029 g
Prep Extract Vol: 25 mL

Method Blank

Blank ID: MB for HBN 1847424 [SPT/11670]
Blank Lab ID: 1694559

Matrix: Soil/Solid (dry weight)

QC for Samples:
1226505001, 1226505002, 1226505003

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT11670
Analytical Method: SM21 2540G
Instrument:
Analyst: APS
Analytical Date/Time: 10/28/2022 4:49:00PM

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Duplicate Sample Summary

Original Sample ID: 1226421002
Duplicate Sample ID: 1694561
QC for Samples:
1226505001, 1226505002, 1226505003

Analysis Date: 10/28/2022 16:49
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	79.9	79.8	%	0.12	(< 15)

Batch Information

Analytical Batch: SPT11670
Analytical Method: SM21 2540G
Instrument:
Analyst: APS

Print Date: 11/15/2022 4:50:24PM

Duplicate Sample Summary

Original Sample ID: 1226557005
Duplicate Sample ID: 1694562
QC for Samples:
1226505001, 1226505002, 1226505003

Analysis Date: 10/28/2022 16:49
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	80.6	79.9	%	0.85	(< 15)

Batch Information

Analytical Batch: SPT11670
Analytical Method: SM21 2540G
Instrument:
Analyst: APS

Print Date: 11/15/2022 4:50:24PM

Duplicate Sample Summary

Original Sample ID: 1226521003
Duplicate Sample ID: 1694563
QC for Samples:

Analysis Date: 10/28/2022 16:49
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	83.6	82.9	%	0.80	(< 15)

Batch Information

Analytical Batch: SPT11670
Analytical Method: SM21 2540G
Instrument:
Analyst: APS

Print Date: 11/15/2022 4:50:24PM

Method Blank

Blank ID: MB for HBN 1847293 [VXX/39396]
Blank Lab ID: 1693760

Matrix: Soil/Solid (dry weight)

QC for Samples:
1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	10.0U	20.0	6.20	ug/kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/kg
1,1,2,2-Tetrachloroethane	1.00U	2.00	0.620	ug/kg
1,1,2-Trichloroethane	0.500U	1.00	0.500	ug/kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/kg
1,2,3-Trichlorobenzene	50.0U	100	30.0	ug/kg
1,2,3-Trichloropropane	1.00U	2.00	0.620	ug/kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/kg
1,2,4-Trimethylbenzene	50.0U	100	30.0	ug/kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/kg
1,2-Dibromoethane	0.750U	1.50	0.750	ug/kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/kg
1,2-Dichloroethane	1.00U	2.00	0.700	ug/kg
1,2-Dichloropropane	5.00U	10.0	5.00	ug/kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/kg
2-Butanone (MEK)	125U	250	78.0	ug/kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/kg
2-Hexanone	60.0U	120	60.0	ug/kg
4-Chlorotoluene	10.0U	20.0	10.0	ug/kg
4-Isopropyltoluene	40.0U	80.0	40.0	ug/kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/kg
Acetone	125U	250	110	ug/kg
Benzene	6.25U	12.5	3.90	ug/kg
Bromobenzene	12.5U	25.0	7.80	ug/kg
Bromochloromethane	12.5U	25.0	7.80	ug/kg
Bromodichloromethane	1.00U	2.00	0.620	ug/kg
Bromoform	12.5U	25.0	7.80	ug/kg
Bromomethane	10.0U	20.0	8.00	ug/kg
Carbon disulfide	50.0U	100	31.0	ug/kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/kg
Chlorobenzene	12.5U	25.0	7.80	ug/kg
Chloroethane	100U	200	62.0	ug/kg

Method Blank

Blank ID: MB for HBN 1847293 [VXX/39396]
Blank Lab ID: 1693760

Matrix: Soil/Solid (dry weight)

QC for Samples:
1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
Chloroform	3.00U	6.00	3.00	ug/kg
Chloromethane	12.5U	25.0	7.80	ug/kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/kg
cis-1,3-Dichloropropene	6.25U	12.5	3.90	ug/kg
Dibromochloromethane	2.50U	5.00	1.50	ug/kg
Dibromomethane	12.5U	25.0	7.80	ug/kg
Dichlorodifluoromethane	50.0U	100	30.0	ug/kg
Ethylbenzene	12.5U	25.0	7.80	ug/kg
Freon-113	50.0U	100	31.0	ug/kg
Hexachlorobutadiene	10.0U	20.0	6.20	ug/kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/kg
Methylene chloride	50.0U	100	31.0	ug/kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/kg
Naphthalene	12.5U	25.0	7.80	ug/kg
n-Butylbenzene	12.5U	25.0	7.80	ug/kg
n-Propylbenzene	12.5U	25.0	7.80	ug/kg
o-Xylene	12.5U	25.0	7.80	ug/kg
P & M -Xylene	25.0U	50.0	15.0	ug/kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/kg
Styrene	12.5U	25.0	7.80	ug/kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/kg
Tetrachloroethene	6.25U	12.5	3.90	ug/kg
Toluene	12.5U	25.0	7.80	ug/kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/kg
trans-1,3-Dichloropropene	6.25U	12.5	3.90	ug/kg
Trichloroethene	5.00U	10.0	3.20	ug/kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/kg
Vinyl acetate	50.0U	100	31.0	ug/kg
Vinyl chloride	0.400U	0.800	0.250	ug/kg
Xylenes (total)	37.5U	75.0	22.8	ug/kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	109	71-136		%
4-Bromofluorobenzene (surr)	102	55-151		%
Toluene-d8 (surr)	93	85-116		%

Method Blank

Blank ID: MB for HBN 1847293 [VXX/39396]
Blank Lab ID: 1693760

Matrix: Soil/Solid (dry weight)

QC for Samples:
1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS22102
Analytical Method: SW8260D
Instrument: VQA 7890/5975 GC/MS
Analyst: S.S
Analytical Date/Time: 10/26/2022 11:45:00AM

Prep Batch: VXX39396
Prep Method: SW5035A
Prep Date/Time: 10/26/2022 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1226505 [VXX39396]
Blank Spike Lab ID: 1693761
Date Analyzed: 10/26/2022 12:02

Matrix: Soil/Solid (dry weight)

QC for Samples: 1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

Blank Spike (ug/kg)

Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	750	803	107	(78-125)
1,1,1-Trichloroethane	750	791	105	(73-130)
1,1,2,2-Tetrachloroethane	750	725	97	(70-124)
1,1,2-Trichloroethane	750	793	106	(78-121)
1,1-Dichloroethane	750	763	102	(76-125)
1,1-Dichloroethene	750	782	104	(70-131)
1,1-Dichloropropene	750	765	102	(76-125)
1,2,3-Trichlorobenzene	750	767	102	(66-130)
1,2,3-Trichloropropane	750	756	101	(73-125)
1,2,4-Trichlorobenzene	750	773	103	(67-129)
1,2,4-Trimethylbenzene	750	812	108	(75-123)
1,2-Dibromo-3-chloropropane	750	817	109	(61-132)
1,2-Dibromoethane	750	802	107	(78-122)
1,2-Dichlorobenzene	750	760	101	(78-121)
1,2-Dichloroethane	750	760	101	(73-128)
1,2-Dichloropropane	750	777	104	(76-123)
1,3,5-Trimethylbenzene	750	827	110	(73-124)
1,3-Dichlorobenzene	750	771	103	(77-121)
1,3-Dichloropropane	750	763	102	(77-121)
1,4-Dichlorobenzene	750	773	103	(75-120)
2,2-Dichloropropane	750	787	105	(67-133)
2-Butanone (MEK)	2250	2380	106	(51-148)
2-Chlorotoluene	750	766	102	(75-122)
2-Hexanone	2250	2410	107	(53-145)
4-Chlorotoluene	750	767	102	(72-124)
4-Isopropyltoluene	750	833	111	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2380	106	(65-135)
Acetone	2250	2480	110	(36-164)
Benzene	750	756	101	(77-121)
Bromobenzene	750	748	100	(78-121)
Bromochloromethane	750	758	101	(78-125)
Bromodichloromethane	750	851	113	(75-127)
Bromoform	750	791	105	(67-132)
Bromomethane	750	658	88	(53-143)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1226505 [VXX39396]
Blank Spike Lab ID: 1693761
Date Analyzed: 10/26/2022 12:02

Matrix: Soil/Solid (dry weight)

QC for Samples: 1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

	Blank Spike (ug/kg)			
Parameter	Spike	Result	Rec (%)	CL
Carbon disulfide	1130	1250	111	(63-132)
Carbon tetrachloride	750	827	110	(70-135)
Chlorobenzene	750	739	99	(79-120)
Chloroethane	750	775	103	(59-139)
Chloroform	750	762	102	(78-123)
Chloromethane	750	682	91	(50-136)
cis-1,2-Dichloroethene	750	742	99	(77-123)
cis-1,3-Dichloropropene	750	844	113	(74-126)
Dibromochloromethane	750	779	104	(74-126)
Dibromomethane	750	795	106	(78-125)
Dichlorodifluoromethane	750	793	106	(29-149)
Ethylbenzene	750	758	101	(76-122)
Freon-113	1130	1200	106	(66-136)
Hexachlorobutadiene	750	752	100	(61-135)
Isopropylbenzene (Cumene)	750	805	107	(68-134)
Methylene chloride	750	782	104	(70-128)
Methyl-t-butyl ether	1130	1150	102	(73-125)
Naphthalene	750	771	103	(62-129)
n-Butylbenzene	750	829	110	(70-128)
n-Propylbenzene	750	803	107	(73-125)
o-Xylene	750	782	104	(77-123)
P & M -Xylene	1500	1530	102	(77-124)
sec-Butylbenzene	750	822	110	(73-126)
Styrene	750	791	105	(76-124)
tert-Butylbenzene	750	816	109	(73-125)
Tetrachloroethene	750	770	103	(73-128)
Toluene	750	649	87	(77-121)
trans-1,2-Dichloroethene	750	784	105	(74-125)
trans-1,3-Dichloropropene	750	751	100	(71-130)
Trichloroethene	750	768	102	(77-123)
Trichlorofluoromethane	750	801	107	(62-140)
Vinyl acetate	750	829	111	(50-151)
Vinyl chloride	750	753	100	(56-135)
Xylenes (total)	2250	2320	103	(78-124)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1226505 [VXX39396]
Blank Spike Lab ID: 1693761
Date Analyzed: 10/26/2022 12:02

Matrix: Soil/Solid (dry weight)

QC for Samples: 1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

Blank Spike (ug/kg)

Parameter	Spike	Result	Rec (%)	CL
Surrogates				
1,2-Dichloroethane-D4 (surr)	750		99	(71-136)
4-Bromofluorobenzene (surr)	750		101	(55-151)
Toluene-d8 (surr)	750		96	(85-116)

Batch Information

Analytical Batch: **VMS22102**
Analytical Method: **SW8260D**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **S.S**

Prep Batch: **VXX39396**
Prep Method: **SW5035A**
Prep Date/Time: **10/26/2022 06:00**
Spike Init Wt./Vol.: 750 ug/kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1693762
MS Sample ID: 1693763 MS
MSD Sample ID: 1693764 MSD

Analysis Date: 10/26/2022 17:53
Analysis Date: 10/26/2022 13:13
Analysis Date: 10/26/2022 13:30
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

		Matrix Spike (ug/kg)			Spike Duplicate (ug/kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	20.6U	1540	1720	111	1540	1690	110	78-125	1.30	(< 20)
1,1,1-Trichloroethane	25.7U	1540	1650	107	1540	1630	106	73-130	1.40	(< 20)
1,1,2,2-Tetrachloroethane	2.06U	1540	1540	100	1540	1530	99	70-124	0.44	(< 20)
1,1,2-Trichloroethane	1.03U	1540	1660	107	1540	1640	106	78-121	1.10	(< 20)
1,1-Dichloroethane	25.7U	1540	1550	100	1540	1540	100	76-125	0.93	(< 20)
1,1-Dichloroethene	25.7U	1540	1580	102	1540	1550	100	70-131	1.90	(< 20)
1,1-Dichloropropene	25.7U	1540	1590	103	1540	1580	102	76-125	1.00	(< 20)
1,2,3-Trichlorobenzene	103U	1540	1660	108	1540	1650	107	66-130	0.30	(< 20)
1,2,3-Trichloropropane	2.06U	1540	1620	105	1540	1600	104	73-125	1.00	(< 20)
1,2,4-Trichlorobenzene	25.7U	1540	1620	105	1540	1600	104	67-129	1.30	(< 20)
1,2,4-Trimethylbenzene	103U	1540	1670	108	1540	1660	108	75-123	0.74	(< 20)
1,2-Dibromo-3-chloropropane	103U	1540	1660	108	1540	1650	107	61-132	0.58	(< 20)
1,2-Dibromoethane	1.54U	1540	1660	108	1540	1660	108	78-122	0.13	(< 20)
1,2-Dichlorobenzene	25.7U	1540	1580	103	1540	1570	102	78-121	1.00	(< 20)
1,2-Dichloroethane	2.06U	1540	1560	101	1540	1540	100	73-128	1.30	(< 20)
1,2-Dichloropropane	10.3U	1540	1620	105	1540	1600	104	76-123	0.77	(< 20)
1,3,5-Trimethylbenzene	25.7U	1540	1750	113	1540	1730	112	73-124	1.30	(< 20)
1,3-Dichlorobenzene	25.7U	1540	1610	104	1540	1580	103	77-121	1.80	(< 20)
1,3-Dichloropropane	10.3U	1540	1580	103	1540	1570	102	77-121	1.00	(< 20)
1,4-Dichlorobenzene	25.7U	1540	1630	105	1540	1610	104	75-120	1.00	(< 20)
2,2-Dichloropropane	25.7U	1540	1680	109	1540	1650	107	67-133	1.60	(< 20)
2-Butanone (MEK)	257U	4630	4840	105	4630	4720	102	51-148	2.40	(< 20)
2-Chlorotoluene	25.7U	1540	1630	106	1540	1610	104	75-122	1.40	(< 20)
2-Hexanone	124U	4630	4920	106	4630	4850	105	53-145	1.60	(< 20)
4-Chlorotoluene	20.6U	1540	1620	105	1540	1630	106	72-124	0.39	(< 20)
4-Isopropyltoluene	82.5U	1540	1750	113	1540	1750	114	73-127	0.49	(< 20)
4-Methyl-2-pentanone (MIBK)	257U	4630	5040	109	4630	4940	107	65-135	1.80	(< 20)
Acetone	257U	4630	4890	106	4630	4690	101	36-164	4.20	(< 20)
Benzene	12.9U	1540	1570	102	1540	1560	101	77-121	0.88	(< 20)
Bromobenzene	25.7U	1540	1550	101	1540	1550	101	78-121	0.17	(< 20)
Bromochloromethane	25.7U	1540	1580	103	1540	1550	101	78-125	1.80	(< 20)
Bromodichloromethane	2.06U	1540	1780	115	1540	1750	113	75-127	1.80	(< 20)
Bromoform	25.7U	1540	1700	110	1540	1670	108	67-132	1.90	(< 20)
Bromomethane	20.6U	1540	1460	95	1540	1470	95	53-143	0.37	(< 20)
Carbon disulfide	103U	2310	2590	112	2310	2530	109	63-132	2.40	(< 20)
Carbon tetrachloride	12.9U	1540	1730	112	1540	1700	110	70-135	1.80	(< 20)
Chlorobenzene	25.7U	1540	1570	102	1540	1530	99	79-120	2.60	(< 20)

Print Date: 11/15/2022 4:50:31PM

Matrix Spike Summary

Original Sample ID: 1693762
MS Sample ID: 1693763 MS
MSD Sample ID: 1693764 MSD

Analysis Date: 10/26/2022 17:53
Analysis Date: 10/26/2022 13:13
Analysis Date: 10/26/2022 13:30
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

		Matrix Spike (ug/kg)			Spike Duplicate (ug/kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chloroethane	206U	1540	1610	104	1540	1570	102	59-139	2.10	(< 20)
Chloroform	6.15U	1540	1580	103	1540	1570	102	78-123	0.91	(< 20)
Chloromethane	25.7U	1540	1470	95	1540	1450	94	50-136	1.50	(< 20)
cis-1,2-Dichloroethene	25.7U	1540	1550	100	1540	1540	100	77-123	0.59	(< 20)
cis-1,3-Dichloropropene	12.9U	1540	1740	113	1540	1720	112	74-126	0.83	(< 20)
Dibromochloromethane	5.15U	1540	1620	105	1540	1590	103	74-126	1.40	(< 20)
Dibromomethane	25.7U	1540	1640	106	1540	1620	105	78-125	1.50	(< 20)
Dichlorodifluoromethane	103U	1540	1560	101	1540	1540	100	29-149	1.50	(< 20)
Ethylbenzene	25.7U	1540	1580	103	1540	1560	101	76-122	1.60	(< 20)
Freon-113	103U	2310	2510	109	2310	2460	106	66-136	2.20	(< 20)
Hexachlorobutadiene	20.6U	1540	1760	114	1540	1860	121	61-135	5.20	(< 20)
Isopropylbenzene (Cumene)	25.7U	1540	1680	109	1540	1650	107	68-134	1.80	(< 20)
Methylene chloride	103U	1540	1590	103	1540	1560	101	70-128	1.70	(< 20)
Methyl-t-butyl ether	103U	2310	2340	101	2310	2330	101	73-125	0.38	(< 20)
Naphthalene	25.7U	1540	1630	106	1540	1620	105	62-129	0.53	(< 20)
n-Butylbenzene	25.7U	1540	1770	115	1540	1760	114	70-128	0.78	(< 20)
n-Propylbenzene	25.7U	1540	1680	109	1540	1660	108	73-125	1.30	(< 20)
o-Xylene	25.7U	1540	1580	102	1540	1570	102	77-123	0.38	(< 20)
P & M -Xylene	51.5U	3090	3200	104	3090	3180	103	77-124	0.56	(< 20)
sec-Butylbenzene	25.7U	1540	1730	112	1540	1710	111	73-126	1.10	(< 20)
Styrene	25.7U	1540	1630	106	1540	1620	105	76-124	0.21	(< 20)
tert-Butylbenzene	25.7U	1540	1700	110	1540	1690	109	73-125	0.67	(< 20)
Tetrachloroethene	12.9U	1540	1670	108	1540	1640	106	73-128	1.90	(< 20)
Toluene	25.7U	1540	1410	91	1540	1400	91	77-121	0.71	(< 20)
trans-1,2-Dichloroethene	25.7U	1540	1650	107	1540	1600	104	74-125	2.90	(< 20)
trans-1,3-Dichloropropene	12.9U	1540	1540	100	1540	1540	100	71-130	0.31	(< 20)
Trichloroethene	10.3U	1540	1600	104	1540	1590	103	77-123	1.00	(< 20)
Trichlorofluoromethane	51.5U	1540	1940	126	1540	1810	117	62-140	6.90	(< 20)
Vinyl acetate	103U	1540	1710	111	1540	1690	109	50-151	1.20	(< 20)
Vinyl chloride	0.825U	1540	1620	105	1540	1600	104	56-135	1.70	(< 20)
Xylenes (total)	77.0U	4630	4770	103	4630	4750	103	78-124	0.50	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		1540	1530	99	1540	1510	98	71-136	1.30	
4-Bromofluorobenzene (surr)		2570	1990	77	2570	1980	77	55-151	0.42	
Toluene-d8 (surr)		1540	1520	99	1540	1520	98	85-116	0.11	

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Matrix Spike Summary

Original Sample ID: 1693762
MS Sample ID: 1693763 MS
MSD Sample ID: 1693764 MSD

Analysis Date:
Analysis Date: 10/26/2022 13:13
Analysis Date: 10/26/2022 13:30
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1226505001, 1226505002, 1226505003, 1226505004

Results by **SW8260D**

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

Batch Information

Analytical Batch: VMS22102
Analytical Method: SW8260D
Instrument: VQA 7890/5975 GC/MS
Analyst: S.S
Analytical Date/Time: 10/26/2022 1:13:00PM

Prep Batch: VXX39396
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 10/26/2022 6:00:00AM
Prep Initial Wt./Vol.: 24.31g
Prep Extract Vol: 25.00mL

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Method Blank

Blank ID: MB for HBN 1847418 [XXX/47263]
Blank Lab ID: 1694532

Matrix: Soil/Solid (dry weight)

QC for Samples:
1226505001, 1226505002, 1226505003

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	9.00	mg/kg
Surrogates				
5a Androstane (surr)	96.6	60-120		%

Batch Information

Analytical Batch: XFC16392
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: HMW
Analytical Date/Time: 10/31/2022 2:46:00PM

Prep Batch: XXX47263
Prep Method: SW3550C
Prep Date/Time: 10/31/2022 9:30:26AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1226505 [XXX47263]
Blank Spike Lab ID: 1694533
Date Analyzed: 10/31/2022 14:56

Spike Duplicate ID: LCSD for HBN 1226505 [XXX47263]
Spike Duplicate Lab ID: 1694534
Matrix: Soil/Solid (dry weight)

QC for Samples: 1226505001, 1226505002, 1226505003

Results by **AK102**

	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	667	612	92	667	622	93	(75-125)	1.60	(< 20)
Surrogates									
5a Androstane (surr)	16.7		98	16.7		98	(60-120)	0.65	

Batch Information

Analytical Batch: **XFC16392**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **HMW**

Prep Batch: **XXX47263**
Prep Method: **SW3550C**
Prep Date/Time: **10/31/2022 09:30**
Spike Init Wt./Vol.: 16.7 mg/kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 16.7 mg/kg Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1847516 [XXX/47282]
Blank Lab ID: 1694869

Matrix: Soil/Solid (dry weight)

QC for Samples:
1226505002, 1226505003

Results by **8270D SIM (PAH)**

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	12.5U	25.0	6.25	ug/kg
2-Methylnaphthalene	12.5U	25.0	6.25	ug/kg
Acenaphthene	12.5U	25.0	6.25	ug/kg
Acenaphthylene	12.5U	25.0	6.25	ug/kg
Anthracene	12.5U	25.0	6.25	ug/kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/kg
Chrysene	12.5U	25.0	6.25	ug/kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/kg
Fluoranthene	12.5U	25.0	6.25	ug/kg
Fluorene	12.5U	25.0	6.25	ug/kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/kg
Naphthalene	10.0U	20.0	5.00	ug/kg
Phenanthrene	12.5U	25.0	6.25	ug/kg
Pyrene	12.5U	25.0	6.25	ug/kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	93	58-103		%
Fluoranthene-d10 (surr)	94.5	54-113		%

Batch Information

Analytical Batch: XMS13440
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent 8890 GC/MS US2210A024
Analyst: NGG
Analytical Date/Time: 11/5/2022 2:25:00AM

Prep Batch: XXX47282
Prep Method: SW3550C
Prep Date/Time: 11/2/2022 1:30:51PM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1226505 [XXX47282]
Blank Spike Lab ID: 1694870
Date Analyzed: 11/05/2022 02:40

Matrix: Soil/Solid (dry weight)

QC for Samples: 1226505002, 1226505003

Results by **8270D SIM (PAH)**

	Blank Spike (ug/kg)			
Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	105	95	(43-111)
2-Methylnaphthalene	111	110	99	(39-114)
Acenaphthene	111	108	97	(44-111)
Acenaphthylene	111	103	93	(39-116)
Anthracene	111	104	94	(50-114)
Benzo(a)Anthracene	111	109	98	(54-122)
Benzo[a]pyrene	111	103	93	(50-125)
Benzo[b]Fluoranthene	111	109	98	(53-128)
Benzo[g,h,i]perylene	111	98.8	89	(49-127)
Benzo[k]fluoranthene	111	108	97	(56-123)
Chrysene	111	108	97	(57-118)
Dibenzo[a,h]anthracene	111	103	93	(50-129)
Fluoranthene	111	109	98	(55-119)
Fluorene	111	106	96	(47-114)
Indeno[1,2,3-c,d] pyrene	111	103	92	(49-130)
Naphthalene	111	106	95	(38-111)
Phenanthrene	111	104	94	(49-113)
Pyrene	111	109	98	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111		94	(58-103)
Fluoranthene-d10 (surr)	111		95	(54-113)

Batch Information

Analytical Batch: **XMS13440**
Analytical Method: **8270D SIM (PAH)**
Instrument: **Agilent 8890 GC/MS US2210A024**
Analyst: **NGG**

Prep Batch: **XXX47282**
Prep Method: **SW3550C**
Prep Date/Time: **11/02/2022 13:30**
Spike Init Wt./Vol.: 111 ug/kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1226608007
MS Sample ID: 1694871 MS
MSD Sample ID: 1694872 MSD

Analysis Date: 11/05/2022 2:56
Analysis Date: 11/05/2022 3:12
Analysis Date: 11/05/2022 3:28
Matrix: Soil/Solid (dry weight)

QC for Samples: 1226505002, 1226505003

Results by **8270D SIM (PAH)**

		Matrix Spike (ug/kg)				Spike Duplicate (ug/kg)					
Parameter	Sample	Spike	Result	Rec (%)		Spike	Result	Rec (%)		CL	RPD (%)	RPD CL
1-Methylnaphthalene	136U	121	120J	99		119	119J	100		43-111	0.35	(< 20)
2-Methylnaphthalene	136U	121	123J	102		119	121J	102		39-114	2.50	(< 20)
Acenaphthene	136U	121	135J	112	*	119	135J	114	*	44-111	0.11	(< 20)
Acenaphthylene	136U	121	132J	109		119	135J	114		39-116	2.20	(< 20)
Anthracene	136U	121	126J	105		119	129J	108		50-114	1.70	(< 20)
Benzo(a)Anthracene	136U	121	130J	107		119	129J	109		54-122	0.19	(< 20)
Benzo[a]pyrene	136U	121	125J	104		119	124J	105		50-125	0.73	(< 20)
Benzo[b]Fluoranthene	136U	121	133J	110		119	133J	112		53-128	0.16	(< 20)
Benzo[g,h,i]perylene	136U	121	121J	100		119	122J	103		49-127	0.90	(< 20)
Benzo[k]fluoranthene	136U	121	129J	106		119	129J	108		56-123	0.21	(< 20)
Chrysene	136U	121	132J	110		119	125J	105		57-118	5.60	(< 20)
Dibenzo[a,h]anthracene	136U	121	119J	98		119	118J	99		50-129	0.67	(< 20)
Fluoranthene	136U	121	139	115		119	139	117		55-119	0.01	(< 20)
Fluorene	136U	121	136	113		119	143	121	*	47-114	4.80	(< 20)
Indeno[1,2,3-c,d] pyrene	136U	121	119J	98		119	118J	99		49-130	1.10	(< 20)
Naphthalene	108U	121	121	100		119	119	100		38-111	1.70	(< 20)
Phenanthrene	136U	121	126J	105		119	125J	106		49-113	0.97	(< 20)
Pyrene	136U	121	174	103		119	202	128	*	55-117	14.70	(< 20)
Surrogates												
2-Methylnaphthalene-d10 (surr)		121	159	131	*	119	171	144	*	58-103	7.60	
Fluoranthene-d10 (surr)		121	129	107		119	126	106		54-113	2.20	

Batch Information

Analytical Batch: XMS13440
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent 8890 GC/MS US2210A024
Analyst: NGG
Analytical Date/Time: 11/5/2022 3:12:00AM

Prep Batch: XXX47282
Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
Prep Date/Time: 11/2/2022 1:30:51PM
Prep Initial Wt./Vol.: 22.56g
Prep Extract Vol: 5.00mL

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CHAIN OF CUSTODY RECORD

Profile: 341954

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Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.

Section 1

CLIENT: NORTECH

CONTACT: DOUG DUSEK — PHONE #: 907-452-5688

PROJECT NAME: DRAKE — PROJECT/ PWSID/ PERMIT#:

REPORTS TO: DOUG DUSEK — E-MAIL: doug.dusek@nortechengr.com — Profile #:

INVOICE TO: DOUG DUSEK — QUOTE #: — P.O. #:

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Comp Grab MI (Multi-incremental)	Analysis*: DRO	VOC 8260	PAH 8270	REMARKS/LOC ID
1AB	U1	10/20/22	10:20	SOIL		G	✓	✓		
2AB	U2	↓	10:35	SOIL		G	✓	✓	✓	
3AB	U22		10:45	SOIL		G	✓	✓	✓	
4A	TRIP							✓		

NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS

1226505

Section 5

Relinquished By:	Date	Time	Received By:
(1)	10/21/22	9:40	
(2)	10/24/22	1400	
(3)			
(4)	10/25/22	9:00	Received For Laboratory By: CDS

Section 4

DOD Project? Yes No

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: 1.1 or Ambient [ ] ANC = 3.1 DS5

Chain of Custody Seal: (Circle) IF IB INTACT BROKEN ABSENT

Delivery Method: Hand Delivery[ ] Commerical Delivery [ ]

e-Sample Receipt Form FBK

SGS Workorder #: **Nortech** | Nortech

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		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	
**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 @ 1.1 °C Therm. ID: D23
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*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.		
Holding Time / Documentation / Sample Condition Requirements		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?	N/A	

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

Additional notes (if applicable):

SGS Profile #	341954	341954

e-Sample Receipt Form

SGS Workorder #:	1226505	1226505

Review Criteria	Condition (Yes, No, N/A	Exceptions Noted below
Chain of Custody / Temperature Requirements	*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)*		
Holding Time / Documentation / Sample Condition Requirements	*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	
Note: *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?	Yes	
(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)		
Were proper containers (type/mass/volume/preservative)used?	Yes	
Note: Exemption for metals analysis by 200.8/6020 in water.		
Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)		
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.		
Additional notes (if applicable):		

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1226505001-A	No Preservative Required	OK			
1226505001-B	Methanol field pres. 4 C	OK			
1226505002-A	No Preservative Required	OK			
1226505002-B	Methanol field pres. 4 C	OK			
1226505003-A	No Preservative Required	OK			
1226505003-B	Methanol field pres. 4 C	OK			
1226505004-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.

Laboratory Data Review Checklist

Completed By:

Doug Dusek

Title:

Environmental Specialist

Date:

December 8, 2022

CS Report Name:

Drake

Report Date:

11/16/22

Consultant Firm:

NORTECH

Laboratory Name:

SGS

Laboratory Report Number:

1226505

ADEC File Number:

100.38.191 1226505

Hazard Identification Number:

3956

1226505

1. Laboratory

   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

   ◉ Yes ○ No Comments:

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

   ○ Yes ○ No Comments:

   na

2. Chain of Custody (CoC)

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

   ◉ Yes ○ No Comments:

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (0° to 6° C)?

   ◉ Yes ○ No Comments:

   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

   ◉ Yes ○ No Comments:

   c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

   ◉ Yes ○ No Comments:

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, etc.?

(•) Yes ( ) No Comments:

e. Data quality or usability affected?

Comments:

no

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No Comments:

b. Discrepancies, errors, or QC failures identified by the lab?

( ) Yes (•) No Comments:

c. Were all corrective actions documented?

(•) Yes ( ) No Comments:

na

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

Comments:

LOQ are higher for many compounds, Target compounds have high contamination levels but project conclusions not affected

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

(•) Yes ( ) No Comments:

b. All applicable holding times met?

(•) Yes ( ) No Comments:

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c. All soils reported on a dry weight basis?

(●) Yes ( ) No Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project?

( ) Yes (●) No Comments:

Target compounds not affected

e. Data quality or usability affected?

( ) Yes (●) No Comments:

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

(●) Yes ( ) No Comments:

ii. All method blank results less than limit of quantitation (LOQ)?

(●) Yes ( ) No Comments:

iii. If above LOQ, what samples are affected?

Comments:

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

( ) Yes ( ) No Comments:

na

v. Data quality or usability affected?

Comments:

Not affected

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

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

(•) Yes ( ) No Comments:

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

( ) Yes ( ) No Comments:

na

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

(•) Yes ( ) No Comments:

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

(•) Yes ( ) No Comments:

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

Comments:

na

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

( ) Yes ( ) No Comments:

na

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

Na

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c. Surrogates – Organics Only

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

(●) Yes ( ) No Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

(●) Yes ( ) No Comments:

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

( ) Yes ( ) No Comments:

na

iv. Data quality or usability affected?

Comments:

Data usable

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples?
(If not, enter explanation below.)

(●) Yes ( ) No Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

(●) Yes ( ) No Comments:

iii. All results less than LOQ?

(●) Yes ( ) No Comments:

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iv. If above LOQ, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

Usable

e. Field Duplicate

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

◉ Yes ○ No Comments:

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

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

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

◉ Yes ○ No Comments:

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

Usable

f. Decontamination or Equipment Blank (If not applicable, a comment stating why must be entered below).

○ Yes ○ No ◉ Not Applicable

na

i. All results less than LOQ?

○ Yes ○ No Comments:

ii. If above LOQ, what samples are affected?

Comments:

iii. Data quality or usability affected?

Comments:

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

a. Defined and appropriate?

○ Yes ◉ No Comments: