NORTECH

SUSTAINABLE ENVIRONMENT, ENERGY, HEALTH & SAFETY PROFESSIONAL SERVICES

***NORTECH*, Inc.**

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June 6, 2019

Sent via email to:
wayne@graphicnorth.com

Wayne Clark
157 Old Steese Highway
Fairbanks, Alaska 99701

RE: Indoor Air Screening and Sub-Slab Soil Assessment
157 Old Steese Highway, Fairbanks, Alaska [ADEC File No. 102.23.015]

Wayne:

This report describes the scope of work (SOW) completed following the requests in the Alaska Department of Environmental Conservation (ADEC) Review Comments letter dated October 24, 2018. This letter described ADEC's rationale for additional site information to continue consideration of the site for closure.

Background and Previous Investigations

The Site, referred to as the Letter Shop (former) or Graphic North, is located at 157 Old Steese Highway in Fairbanks, Alaska (see Figures 1 & 2). The Site was first identified as a potential source of contamination in the 1980s due to printing operations, but no specific concerns were noted during an EPA site inspection. Multiple subsurface assessments were completed in the 1990s. The 1991 and 1995 ADOT&PF right-of-way investigations for the expansion of the Old Steese Highway indicated on-site groundwater had been impacted by tetrachloroethylene (PCE) and lead above the drinking water maximum contaminant levels.

A 1995 Phase I Environmental Site Assessment (ESA) concluded that the site has historically been used as a print shop since the 1950s. The Phase I ESA identified historical processes at the shop using hazardous substances which included a variety of solvents and lead. The Phase I ESA also identified liquid disposal practices by former owners/employees included on-site disposal of liquids into cracks/holes in the concrete floor, potentially resulting in an on-site source for the soil and groundwater contamination observed in the Old Steese investigations.

In 2002, Shannon & Wilson completed the Fairbanks Area-wide Industrial Reclamation (FAIR) assessment project at the request of ADEC. This project installed eight monitoring wells between the Railroad Industrial Area and Steese Highway. Two of those wells, MW-7 and MW-8, were located a couple of hundred feet east and west of the Site (Figure 2). MW-7 was considered an upgradient well to the Site and MW-8 is located downgradient of the Site. The 2002 sample results for MW-8 showed concentrations of trichloroethene (TCE) and PCE above groundwater cleanup levels. The results for MW-7 indicated TCE and PCE were not detected, essentially confirming a chlorinated solvent source near Graphic North.

In 2016, additional soil and groundwater assessment was completed on the Site in conjunction with assessments of a former dry cleaner at the intersection of 3rd Street and Forty Mile Avenue (referred to as 229 3rd Street) and a petroleum release at the Steese Mall on the north side of 2nd Street (referred to as Steese Mall). The soil results indicated that soil contamination was not present at the former boring locations

and as close to the building as could be safely drilled. Groundwater results confirmed that PCE contamination was present beneath the Site and that the concentrations were consistent with the off-site upgradient source referred to as 229 3rd Street. This report concluded that the data for the site was not consistent with an on-site source and recommended working with ADEC to find a pathway for removing the site from the Contaminated Sites database.

Objectives

The October 2018 letter from ADEC indicated general agreement that 229 3rd Street is the current and historical source of PCE contamination in groundwater beneath the Site. However, the letter requested additional information related to vapor intrusion prior to considering the closure of the site. These specific concerns related to vapor intrusion are the presence of PCE above the groundwater cleanup levels beneath the site and the reported historic practice of disposal of solvents through the floor. The objective of this investigation is to evaluate the interior of the building for potential subsurface release locations/mechanisms and evaluate the potential for documented or suspected contaminants vapor intrusion pathway as a potential exposure mechanism to occupants of the building.

Pre-proposal Site Inspection

A pre-proposal site inspection was completed by Peter Beardsley in November 2018 to identify potential concerns and develop the proposal and work plan which guided this assessment. The inspection focused on a preliminary identification of potential source areas and locations with the highest potential for vapor intrusion. Most of the building appeared to be slab on grade construction with some subgrade spaces. The largest subgrade space is a mechanical room beneath the southeast part of the building, which contains the boiler, a sump, and a sump pump. A shallow utilidor with a concrete floor and sides extends from that mechanical room beneath several parts of the building and contains the heat distribution lines. Neither of these had specific concerns for releases to the environment or vapor intrusion other than being below grade and closer to the contaminated groundwater.

A third subgrade space was visible through a penetration approximately 4” in the concrete floor on the west side of building related to the water utility connection. This hole leads to a hollow area beneath the slab that was estimated to be about three feet in diameter and up to two feet deep. This utility penetration was identified as the specific location that liquids were discharged “through cracks and holes in the slab” several decades ago. In addition, the current owner indicated that he had not observed waste disposal through this hole directly, but had heard anecdotes about the previous owner/operators doing this prior to his acquisition of the property. Small debris (paper scraps, etc) was visible through the penetration and the debris/soil was soft when a scrap of conduit was pushed into it by hand. No chemical or solvent odor was observed emanating from the penetration or on the scrap of conduit after removal.

Scope of Work

Based on discussions with ADEC and these observations, ***NORTECH***’s scope of work consisted of the following activities:

- A screening level indoor air quality assessment of potential indoor air quality concerns using Appendix I of the ADEC Vapor Intrusion Guidance
- Field screening and laboratory sampling of the soil beneath the floor at the utility penetration to assess this as a potential source area
- Review existing groundwater data from 229 Third Street

Methodology

Indoor Air Quality Assessment

An air quality assessment was completed using the Building Inventory and Indoor Air Sampling Questionnaire provided in Appendix H of the ADEC Vapor Intrusion (VI) Guidance. This includes a detailed description of the building construction, occupancy, heating systems, and airflow within the building. This also identifies factors that may influence indoor air quality and an inventory of products that may interfere with indoor air sampling. A calibrated RAE Systems ppbRAE VOC monitor (ppbRAE) was used to evaluate exterior, interior, and sub-slab air during the Site visit.

Headspace Field Screening and Soil Sampling – Soil Boring

One soil boring was planned to be advanced by hand through the utility penetration on the west side of the building. Soil headspace field screening and laboratory sampling were performed as described in the ADEC FSG. The calibrated MiniRAE 3000 PID was used to field screen soils and delineate contamination. The PID was calibrated with fresh air and isobutylene standard gas of 100 ppm. Field screening samples were collected every foot below grade using an AMS hand auger, disposable nitrile gloves and a clean, decontaminated sampling trowel to partially fill (30-50%) a new re-sealable bag with freshly uncovered soil. The sample bags were then sealed, labeled, and set aside to allow organic vapors to develop in the headspace for at least ten minutes and not more than one hour.

After headspace development, the bag was agitated for up to 15 seconds and the tip of the PID probe was inserted into a small opening in the bag to draw vapors from the center of the space, above the soil. The highest PID reading observed from each sample was recorded in the field notes. The soil headspace screening method was used to guide contaminated soil evaluation, perform an initial characterization, and determine laboratory sample locations.

Analyses of soil included the following methods:

- Volatile Organic Compounds (VOCs) by EPA 8260
- Lead by EPA 6020b
- Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E
- Gasoline Range Organics (GRO) by AK 101
- Diesel Range Organics (DRO) by AK 102

Adjacent Site Review

Long-term monitoring wells were installed near the northeast corner of the Site (MW-7, along 2nd Street) and west of the Site (MW-6, on the west side of the Old Steese Highway), as well as farther east near the 229 3rd Street source area. These wells will be part of a multi-year sampling event to characterize the PCE contamination from this source. A preliminary review of this data indicates that the PCE concentration steadily decreases from the 229 3rd Street source area to the west. The hydraulic gradient in these wells is also generally to the west. The PCE concentration is above the cleanup level in MW-7 and below the cleanup level in MW-6. These results provide additional confirmation that the PCE identified on this property is from the 229 3rd Street source. This ongoing study is expected to be reported on an annual or biennial basis.

Field Activities

NORTECH personnel arrived on site on Wednesday, January 9, 2019, to assess indoor air quality and complete the soil boring activities. These activities are discussed below.

Air Screening

The building survey was conducted with the assistance of the building owner and manager of Graphic North, Wayne Clark. He has owned/operated the building since the early 1990s. He provided a tour of the building, including the basement, and identified the suspected areas of concern that he was aware of. He provided information regarding construction, heat distribution, and ventilation of the building. He also provided the historical use of the building, including the anecdotal stories about the disposal of waste cleaning through the floor of the building prior to his ownership. He indicated that he had personally seen water flow across the floor and through the floor penetration when a water supply pipe had leaked and when a fired had occurred in the western part of the building more than a decade ago. The building and occupancy information provided by Mr. Clark and observed during the site inspection is provided in the attached Appendix I.

In addition, Mr. Clark's tour of the facility was used to identify potential sources of VOCs used in the operation of the business that could bias air and soil samples. Over 110 VOC-containing products such as cleaners, solvents, strippers, polishes, adhesives, inks and other sources of VOCs were identified. Additionally, a print job using a large rotary print machine was in progress which produced strong solvent vapors throughout the facility. A list of VOC-containing products is included in the attached Appendix I.

Following the overall tour and VOC identification, ***NORTECH*** staff completed VOC screening with the ppbRAE throughout the facility. The locations and results are shown in Figures 3 and 4. The ppbRAE was calibrated with fresh air as 0 ppb and an isobutylene standard gas of 10 parts per million (10,000 ppb). On the first floor, the screening results ranged from 28,000 ppb to 81,000 ppb in the middle of the shop. The basement mechanical room results ranged from 18,500 to 23,000 ppb. The source of the basement VOC vapors was likely from the first-floor printing operation due to air exchange through the stairwell as no specific source of VOCs was observed in the basement.

The ppbRAE was also used to assess VOC concentrations in the sub-slab utility chase and the sub-slab space beneath the floor penetration. These locations are identified in Figure 3 and had results ranging from 0 to 10 ppb. These results are consistent with background outdoor VOC concentrations and indicated that these areas are not sources of VOCs.

Differential pressure was also evaluated between the area beneath the slab and occupied spaces at two locations along the utility chase. The readings were 0.001 inches of water with pressure greater beneath the concrete slab. This means that air is moving from within the utility chase to the occupied space and provided a rationale for the lower VOC readings in the utility chases. This pressure differential minimizes the potential for the solvent vapors present on the first floor of the facility to migrate below the slab.

The floor penetration had even more stark evidence of infiltration. Air flow from the floor penetration to the occupied space could be felt on the skin and the differential pressure was 0.001 inches of water. The air felt cold, suggesting that the infiltration was likely linked to outdoor air. The VOC screening results below the slab at the floor penetration ranged from 0 to 5 ppb, consistent with outdoor air.

Sub-slab Soil Investigation
Following the air assessment, a soil assessment was completed of the soil beneath the foundation at the floor penetration. This consisted of using a hand auger to advance a soil boring through the floor penetration and retrieve soil and debris. An AMS 1.5-inch hand auger was used to collect a headspace sample at approximately one-foot increments.

The debris/soil surface was 20 inches below the top (finished) surface of the concrete slab. Paper debris was limited to the top few inches of soil and the top 3-4 feet of soil were loose. Headspace samples were collected 3, 4, 5.5 and 6.5 feet below the slab. Refusal was encountered at 7 feet. Because of the elevated VOC contamination in the indoor air, the headspace samples were collected quickly and brought to the vehicle outside for the headspace analysis. PID results were 0.0 – 0.5 ppm and are shown in the top portion of Table 1. No odor or other evidence of contamination was observed. An analytical sample was collected at 5.5-7 feet below the top of the slab. The sample was delivered to SGS for analysis as described above.

Results with Discussion
Indoor Air Quality Assessment
The primary objective of this investigation was to evaluate potential impacts to the indoor air in the building from anecdotal historic sub-slab releases of printing solvents and chemicals. In order to assess this vapor intrusion concern, the air exchange relationship between the occupied spaces and sub-slab spaces were evaluated using a ppbRAE PID and differential air pressure measurements.

A calibrated ppbRAE was used to assess indoor VOC concentrations in the subgrade mechanical room, utility chase and occupied areas of the facility. Field screening with the ppbRAE indicated that occupied areas of the building had VOC concentrations well above background (up to ~80,000 ppb) due to the printing operations. The basement mechanical room with the boiler also had elevated VOC concentrations (up to ~18,000 ppb), which was lower than the first floor. Field personnel indicated that the elevated basement results were likely due to the vapors migrating to the basement by opening the door and personnel entry to the basement. Sub-slab areas in the utility chase and within the cavity at the hole in the floor had results no higher than 10 ppb, consistent with background outdoor concentrations and three orders of magnitude below the indoor air concentrations. These results indicate the sub-slab air is not a VOC source for the building.

Differential pressure measurements were also used to evaluate the potential for vapor intrusion from the sub-slab spaces. Measurements at both locations confirmed a slight differential pressure of 0.001 inches of water with pressure greater beneath the concrete slab and lower within the building. This means that the building is actively drawing air from the sub-slab areas and that VOCs from printing operations are not migrating to the sub-slab. While this relationship was evaluated during winter conditions when the “chimney effect” of a building is expected to be greatest, similar conditions are expected to be present year-round based on the temperature differential between the soil and occupied spaces.

Taken together, these relative VOC concentrations and pressure results indicate that vapor intrusion from the sub-slab spaces to the occupied spaces is occurring. The results, as well as field observations regarding temperature, indicate that this vapor intrusion is consistent with outdoor air infiltration and does not contain an elevated concentration of VOCs. Overall, holes in the slab are acting as uncontrolled sources of outdoor air and appear to be having a neutral to positive impact on the indoor air quality at this industrial printing facility.

In addition to the observations that sub-slab air is similar to fresh air, the printing activities at the facility release VOCs to the indoor air. While the overall use and release of VOCs in the processes have decreased over time, the field observations and experience with similar facilities indicates that elevated levels of VOCs are present in the indoor air. These chemicals have likely penetrated the building materials and would present a confounding source of VOCs during indoor air testing. Due to this, indoor air testing for potential vapor intrusion would require careful planning and design to minimize the potential for misleading results.

Sub-Slab Soil Results

The second objective of this assessment was to evaluate the soil beneath the building for evidence of the potential historic sub-slab release. ***NORTECH*** advanced a soil boring using a hand auger at the location solvents were reportedly poured down the opening in the concrete. The soil surface was at 20" below the top the concrete slab, consistent with settlement of the soil and possible water discharge. The soil was a loose fine sandy silt mixed organic matter from 20" to 4' below the slab. The top few inches had paper debris, consistent with dust and debris entering the hole from the shop floor. The material was dry, suggesting that no fluids had entered the hole recently. Soils were sandy silt to fine sands from 4' to 7' below the slab, consistent with the native soils in the area as observed in soil borings on and near the property. No visual or olfactory evidence of contamination was observed, consistent with the background headspace readings at all depths.

A primary laboratory soil sample and duplicate were collected from 5.5 to 7 feet below the slab, which was the depth with the highest field screening result. The previously reported and currently detected soil results are shown in Table 1 and the laboratory report is included in Attachment 3. The lab reported detectable concentrations of 1,3,5 trimethylbenzene, DRO, lead, and tetrachloroethene below their respective ADEC cleanup levels. Other VOCs and PAHs were not detected in the duplicate sample pair.

An ADEC laboratory data review checklist (LDRC) has been completed and is included in Attachment 3. Precision which is 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 according to ADEC's Field Sampling Guidance (the difference between the field duplicate results expressed as a percentage of the average of those results) and is shown in Table 1. Other data quality objectives are discussed in the LDRC in Attachment 2 with no significant data concerns noted. The data is of adequate quality for use as discussed in this report.

As documented in the previous reports, some or all of these compounds could be related to printing and cleaning products used at this facility. Alternatively, each of these compounds could be related to residual contamination from a documented nearby source, including the PCE from 229 3rd Street and petroleum contamination from nearby former gas stations. Regardless of the source of these trace concentrations of these contaminants, the soil results indicate that a regulated condition does not exist beneath in the sub-slab soil below the hole in the floor.

These results confirm that the anecdotal historic discharge, whether representative of actual activities or not, has not resulted in a condition that exceeds the ADEC cleanup levels for the compounds of concern. All identified potential contaminants of concern at the most suspect location are below their respective ADEC cleanup levels. Based on these results, the soil beneath the hole in the slab is not considered a potential reservoir of VOCs or other potential contaminants that could impact the occupants of the building now or in the future.

Conclusions and Recommendations

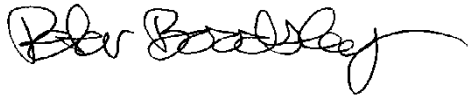
NORTECH has completed a Building Survey, differential pressure measurements, and a sub-slab soil investigation at 157 Old Steese Highway in Fairbanks, Alaska. Based on the field and laboratory results, ***NORTECH*** has developed the following conclusions regarding conditions at the Site:

- VOCs are present at elevated levels within the building due to commercial printing activities
  - Concentrations appear to be highest during routine cleaning of the printing equipment
  - Concentrations in the basement mechanical room are lower and related to activities in the occupied spaces
  - Concentrations in the sub-slab utilidor and sub-slab hole are the same as outdoor air (background)
  - Sub-slab air is not a VOC source for the building
- Field observations indicate that air infiltration from the sub-slab areas is occurring
  - A cool draft was felt coming up through the hole in the slab
  - Pressure differential measurements confirm the building is drawing air from the sub-slab utilidor and hole
  - This infiltration represents an uncontrolled source of outdoor air
- Soil testing indicates that the soil beneath the hole in the slab is not consistent with a regulated release
  - Field screening results were in the background range throughout the soil boring
  - Detected VOC concentrations are below the ADEC cleanup levels
  - Detected petroleum fractions are below the ADEC cleanup levels
  - Lead is below the ADEC cleanup level
  - Detected compounds are consistent with other known sources in the area
  - Additional soil and groundwater testing related to historic fluid disposal practices is not considered necessary

These results support the previous conclusion that the soil and groundwater conditions at the site are not representative of an onsite release. Instead, these results provide direct evidence that the most suspect area at the site, the hole in the slab, is not contaminated. No additional assessment of the sub-slab soil or indoor air is recommended to assess the potential impacts from an on-site source of contamination. This report should be provided to ADEC to document the additional assessment that has been completed and further review of site closure or removal from the database.

Please contact me at your earliest convenience if you have any questions or comments about this report or other conditions at the site.

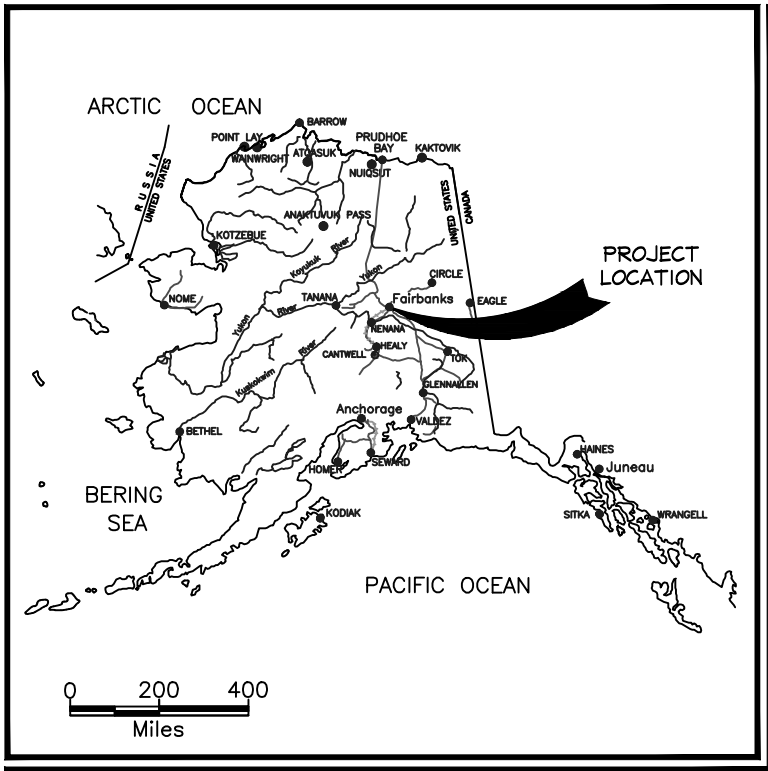
Sincerely,
NORTECH

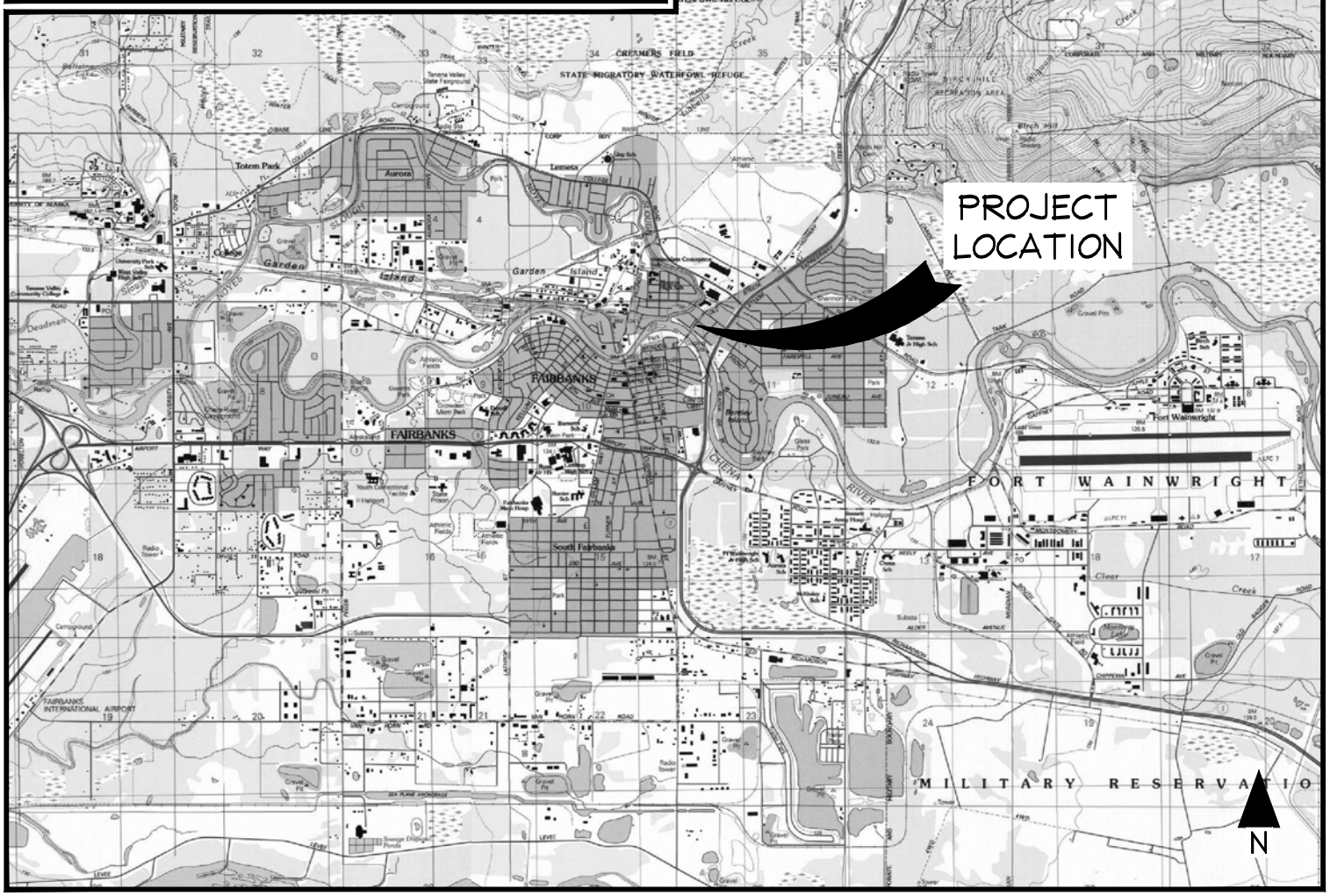


Peter Beardsley, PE
Principal, Environmental Engineer

Attachments:
Attachment 1: Figures and Table
Attachment 2: Site Photographs
Attachment 3: DEC Building Survey
Attachment 4: Laboratory Report and LDCR

Attachment 1





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Location Map
Graphic North Sampling
Fairbanks, Alaska

SCALE: 1" = 1 MILE	FIGURE: 1
DESIGN: DSD	
DRAWN: KAO	
PROJECT NO: 19-1001	
DWG: 191001a(01)	
DATE: 03/04/2019	

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Vicinity Map
Graphic North Sampling
Fairbanks, Alaska

SCALE: 1" = 150'	FIGURE: 2
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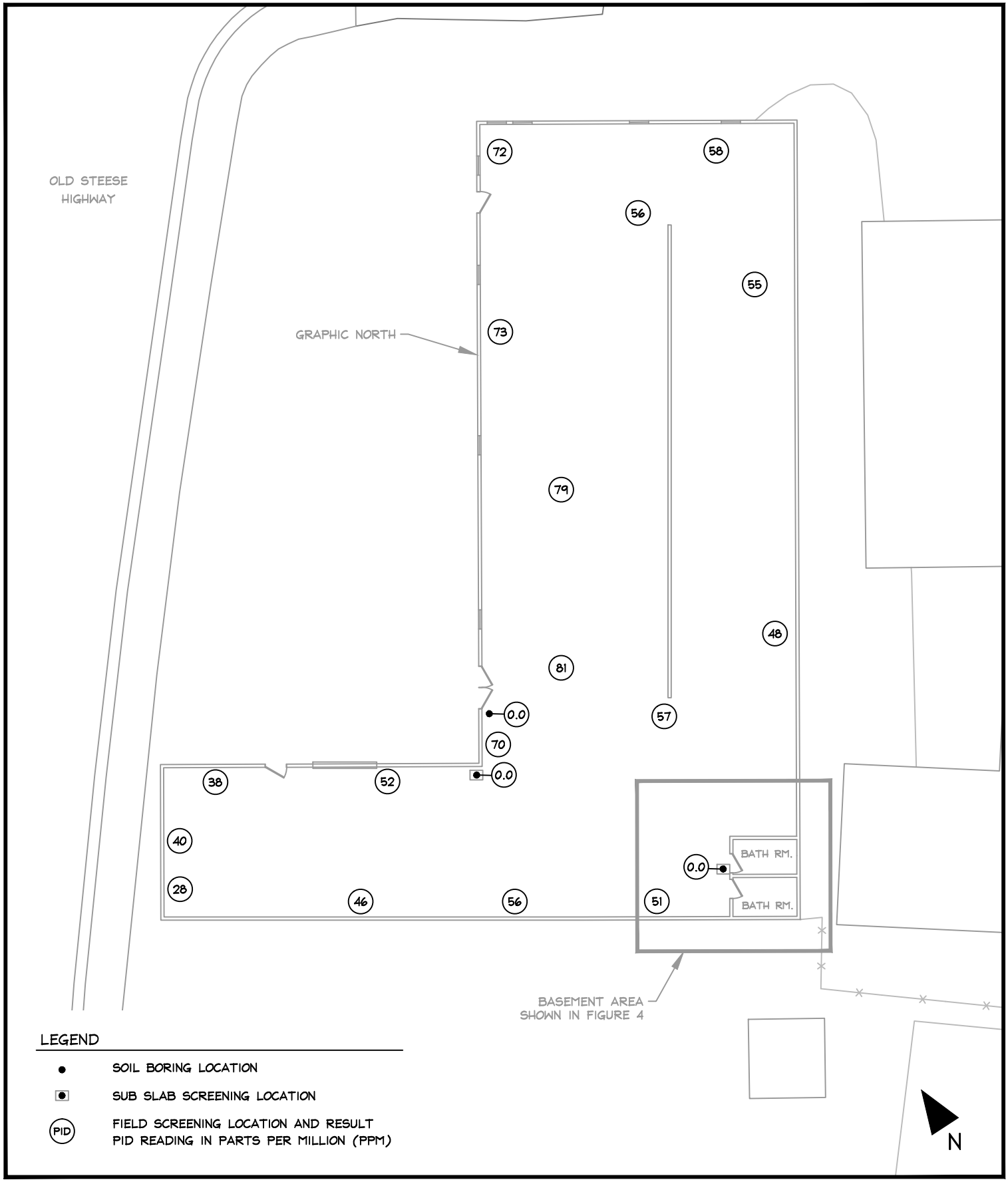
DRAWN: KAO	
PROJECT NO: 19-1001	
DWG: 191001a(02)	
DATE: 03/04/2019	



LEGEND

- SOIL BORING LOCATION
- SUB SLAB SCREENING LOCATION
- (PID) FIELD SCREENING LOCATION AND RESULT PID READING IN PARTS PER MILLION (PPM)

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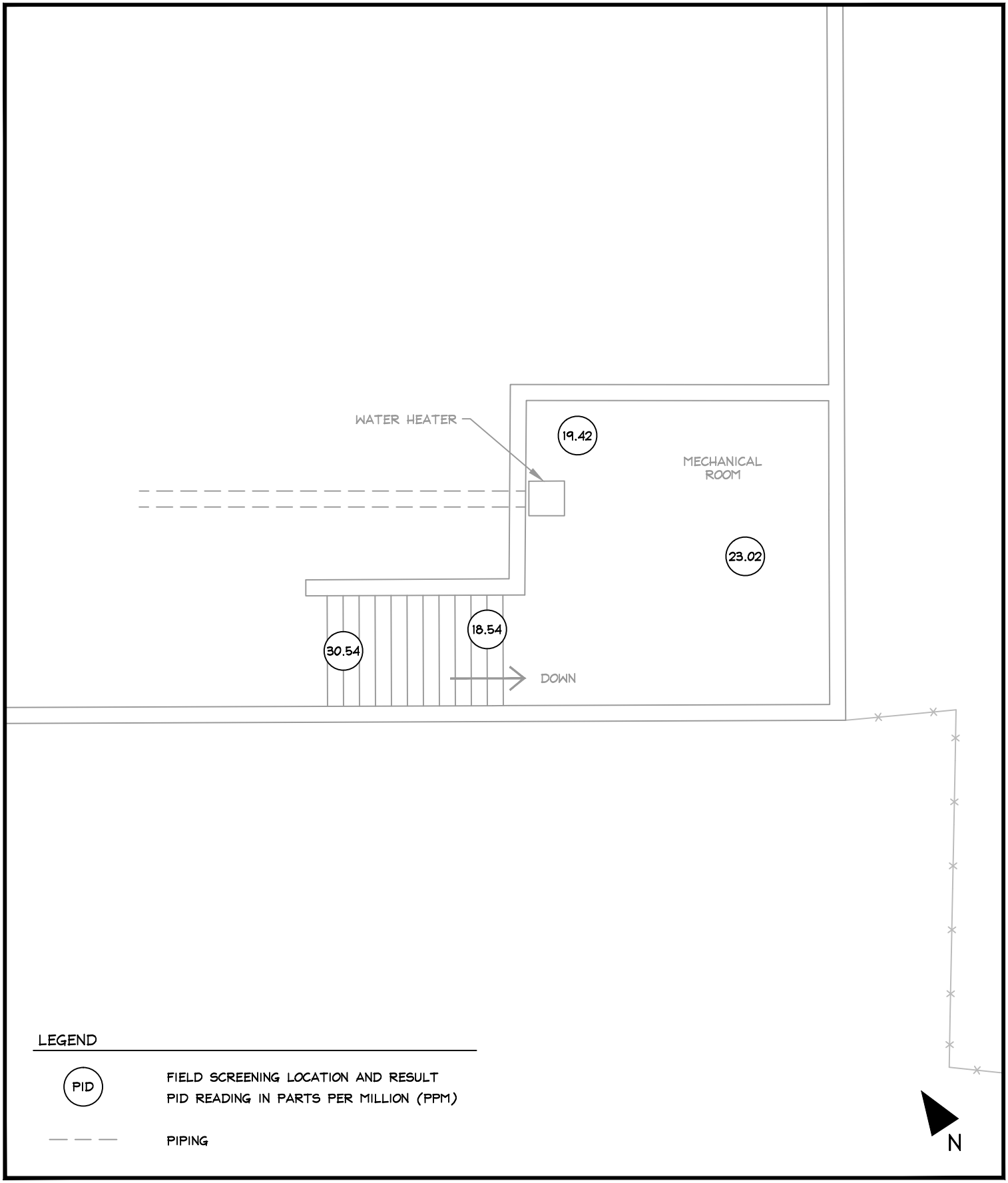
First Floor Sample Locations and PID Results
Graphic North Sampling
Fairbanks, Alaska

SCALE: 1" = 20'	FIGURE: 3
DESIGN: DSD	
DRAWN: KAO	
PROJECT NO: 19-1001	
DWG: 191001a(03)	
DATE: 03/04/2019	



LEGEND

PID — FIELD SCREENING LOCATION AND RESULT
PID READING IN PARTS PER MILLION (PPM)

— — — PIPING

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Mechanical Room Sample Locations and PID Results
Graphic North Sampling
Fairbanks, Alaska

SCALE: 1" = 4'	FIGURE: 4
DESIGN: DSD	
DRAWN: KAO	
PROJECT NO: 19-1001	
DWG: 191001a(04)	
DATE: 03/04/2019	

Table 1
Soil Boring Observations and Results

Soil Type and Field Screening Results			
Depth Below Top of Slab	**Soil Type**	**PID Results**	**Comment**
0" - 20"	No soil	NA	<10 ppb in air
20" - 24"	Debris and organics		No odor
24" - 30"	Fine sand	0 ppm	No odor
30" - 42"	Fine sand		No odor
42" - 48"	Fine sand	0 ppm	No odor
48" - 66"	Fine sand		No odor, moist
66" - 72"	Fine sand	0 ppm	No odor
72" - 78"	Fine sand		No odor
78" - 84"	Fine sand	0 ppm	No odor, lab
84"	Refusal		sample

Laboratory Sample Results			
Contaminant of Conern	**ADEC Cleanup Levels**	**SB1-7**	**SB2-7**
AK101 Gasoline Range Organics (mg/Kg)			
Gasoline Range Organics	300	3.19 U	3.63 U
AK102 Diesel Range Organics (mg/Kg)			
Diesel Range Organics	250	71.0	62.8
SW6020A Lead (mg/Kg)			
Lead	400	345	229
Detected VOCs by SW8260C (ug/Kg)			
1,3,5-Trimethylbenzene	1.3	0.0319 U	0.0498
Tetrachloroethene	0.19	0.0267	0.034
8270D SIM (PAH) (ug/Kg)			
No detected PAH compounds	Varies	ND	ND

Notes:

# U or ND	Analyte not detected at the listed limit of quantitation (LOQ)
Shade	Analyte detected in concentration below the ADEC Cleanup level

Quality Control Summary			
Sample ID	**SB1-7**	**SB2-7**	**RPD**
Analyte	mg/Kg	mg/Kg	%
DRO	71	62.8	12%
GRO	3.63 U	3.19 U	NC
Lead	345	229	40%
1,3,5-Trimethylbenzene	0.0319 U	0.0498	NC
Tetrachloroethene	0.027	0.0340	24%

Notes:

RPD	Relative Percent Difference
NC	Not calculable

Attachment 2

Photo 1: *Hole in the concrete slab that was reportedly used for fluid disposal. Pipes coming from the hole appear to be the connection to the public water utility and the "T" handle is the hand auger that was used to collect soil samples for field screening and laboratory testing from below the concrete slab. Recovered soil is visible in the bucket.*

Photo 2: *Typical indoor air reading near a printing unit during indoor air quality assessment.*

Photo 3: *Measuring different pressure between occupied space and utilidor. Basement boiler room is present beneath the bathroom at back of photo.*

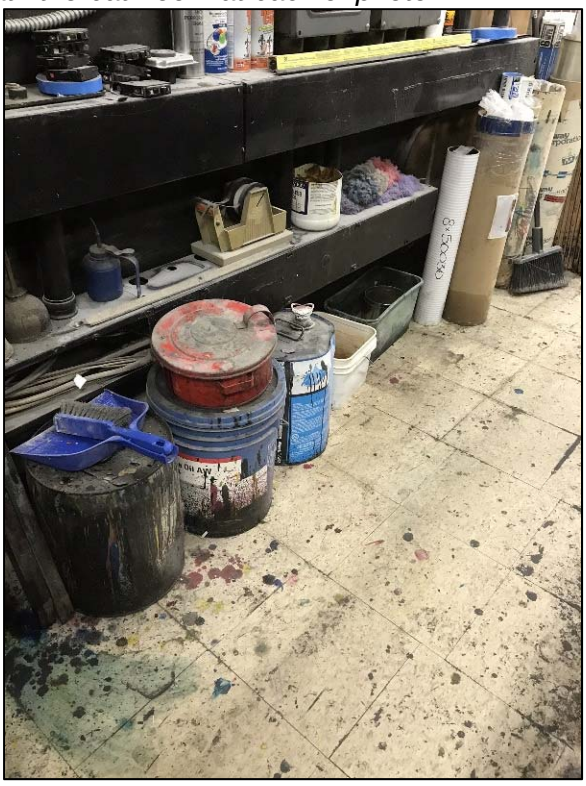

Photo 4: *Typical printing and cleaning materials storage*

Attachment 3

APPENDIX I

DEC Building Survey and Indoor Air Sampling Questionnaire

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ALASKA DEPARTMENT OF ENVIRONMENAL CONSERVATION
BUILDING INVENTORY AND INDOOR AIR SAMPLING QUESTIONNAIRE

This form should be prepared by a person familiar with indoor air assessments with assistance from a person knowledgeable about the building. Complete this form for each building where interior samples (e.g., indoor air, crawl space, or subslab soil gas samples) will be collected. Section I of this form should be used to assist in choosing an investigative strategy during workplan development. Section II should be used to assist in identification of complicating factors during a presampling building walk-through.

Preparer's Name __Jeanette Danial_____Date/Time Prepared_____1/9/19_____

Preparer's Affiliation____Nortech_____Phone No.___907 385-7587_____

Purpose of Investigation__Investigate Vapor Intrusion Potential_____

SECTION I: BUILDING INVENTORY

1. OCCUPANT OR BUILDING PERSONNEL:

Interviewed: Y / N

Last Name Clark First Name_____Wayne

Address__157 Old Steese Highway_____

City___Fairbanks _____

Phone No.____907 452-1907_____

Number of Occupants/people at this location____6_____Age of Occupants___30 plus_____

2. OWNER or LANDLORD: (Check if same as occupant __X__.)

Interviewed: _Yes

Last Name_____First Name_____

Address_____

City_____

Phone No._____

3. BUILDING CHARACTERISTICS

Type of Building: (Circle appropriate response.)

Commercial

_____

If the property is residential, what type? (Circle appropriate response.)

Ranch	2-Family	3-Family
Raised Ranch	Split Level	Colonial
Cape Cod	Contemporary	Mobile Home
Duplex	Apartment House	Townhouse/Condo
Modular	Log Home	Other_____NA_____

If multiple units, how many?_____

If the property is commercial, what type?

Business types(s)___Printing _____

Does it include residences (i.e., multi-use)? No If yes, how many?_____

Other characteristics:

Number of floors_1 + partial Basement Building age____Built in 1955_____

Is the building insulated? Yes How airtight? Average

Have occupants noticed chemical odors in the building? Yes

If yes, please describe:___Strong solvent and ink odors used in printing _____

---

4. AIRFLOW

Use air current tubes, tracer smoke, or knowledge about the building to evaluate airflow patterns and qualitatively describe:

Airflow between floors very slight flow from space under slab into first floor

_____

_____

_____

Airflow in building near suspected source

_____from hole in slab into occupied space. based on 0.001 differential pressure

_____Pressure higher in hole_____

_____

Outdoor air infiltration

_____Yes, from doors and hole in floor _____

_____

_____

Infiltration into air ducts

_____No ducts_____

_____

_____

5. BASEMENT AND CONSTRUCTION CHARACTERISTICS (Circle all that apply.)

a. Above-grade construction: CMU

b. Basement type: full height 20%, remainder slab on grade

c. Basement floor: Concrete

d. Basement floor unsealed

e. Foundation walls: block

f. Foundation walls: unsealed

g. The basement is: wet damp dry

h. The basement is: unfinished

i. Sump present? Yes

j. Water in sump? Y / N / not applicable

Basement or lowest level depth below grade_____8_____(feet).

Identify potential soil vapor entry points and approximate size (e.g., cracks, utility ports, and drains).

_Slab on Grade where water utility enters building_____

_____

6. HEATING, VENTING, and AIR CONDITIONING (Circle all that apply.)

Type of heating system(s) used in this building: (Circle all that apply – not just primary.)

Boiler with unit heaters

_

The primary type of fuel used is:

Fuel Oil

Domestic hot water tank is fueled by:___Boiler _____

Boiler/furnace is located in: Basement

Do any of the heating appliances have cold-air intakes? No
Type of air conditioning or ventilation used in this building:

None

Are there air distribution ducts present? No

Describe the ventilation system in the building, its condition where visible, and the tightness of duct joints. Indicate the location of air supply and exhaust points on the floor plan.

_____

_____

_____

_____

Is there a radon mitigation system for the building/structure? No

Is the system active or passive? Active/Passive

7. OCCUPANCY

Is basement/lowest level occupied? Almost never

Level	**General Use of Each Floor (e.g., family room, bedroom, laundry, workshop, or storage).**
Basement	_Location of boiler plumbing _____
1st Floor	__Printing operation and office duties_____
2nd Floor	_____
3rd Floor	_____

8. WATER AND SEWAGE

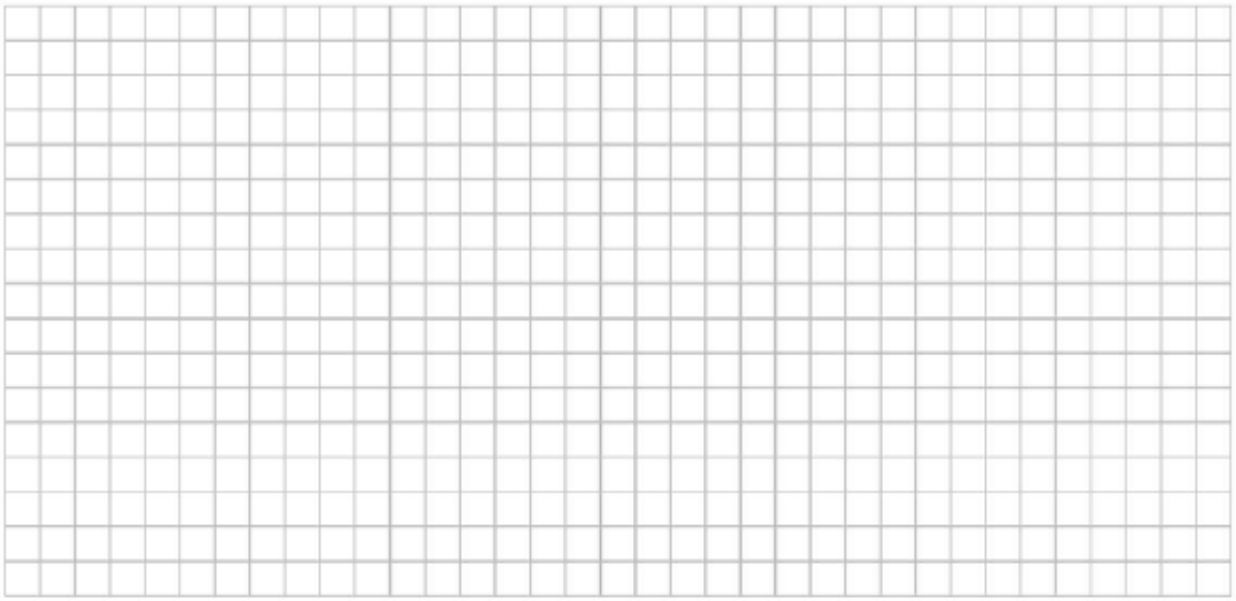
Water supply: Public water

Sewage disposal: Public sewer

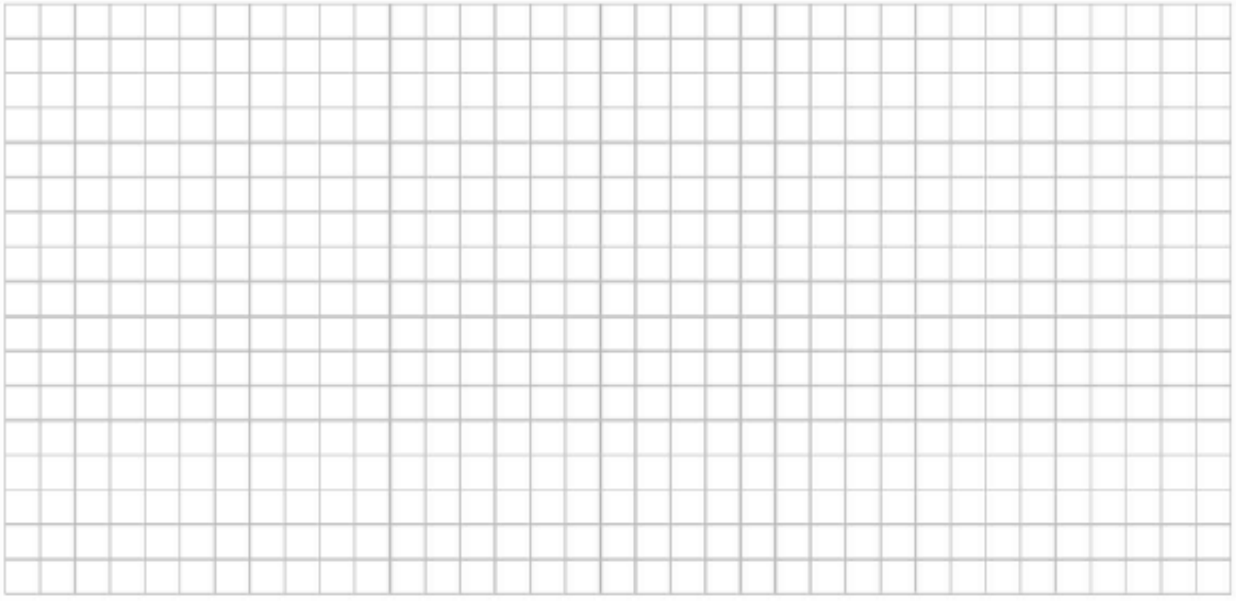
9. FLOOR PLANS

Draw a plan view sketch of the basement and first floor of the building. Indicate air sampling locations, possible indoor air pollution sources and PID meter readings. If the building does not have a basement, please note that.

Basement: See Attached Drawings



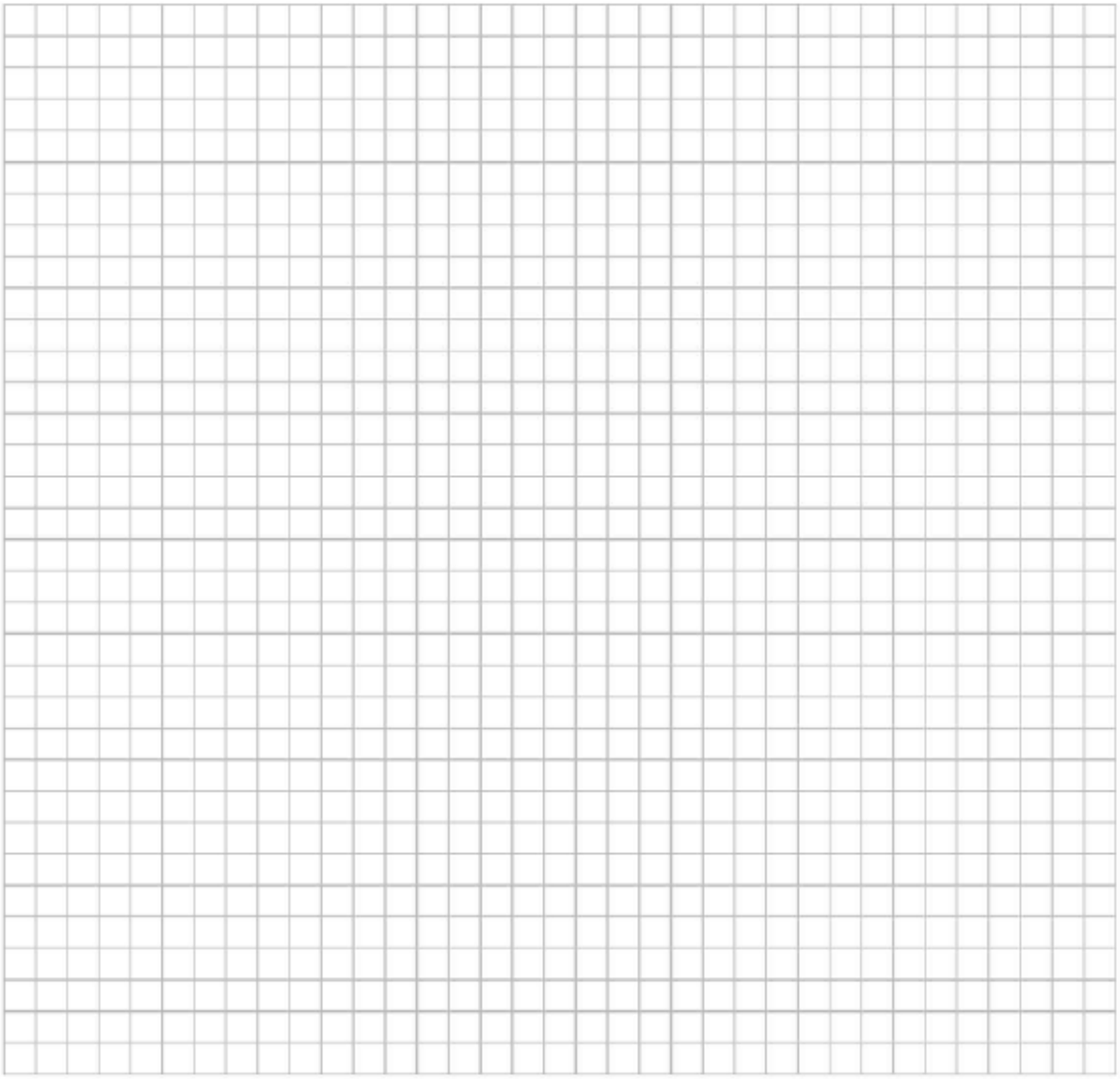
First Floor:



10. OUTDOOR PLOT

Draw a sketch of the area surrounding the building being sampled. If applicable, provide information on spill locations, potential air contamination sources (e.g., industries, gas stations, repair shops, landfills, etc.), outdoor air sampling locations and PID meter readings.

Also indicate compass direction, wind direction and speed during sampling, the location of the well and septic system, if applicable, and a qualifying statement to help locate the site on a topographic map.



SECTION II: INDOOR AIR SAMPLING QUESTIONNAIRE

This section should be completed during a presampling walk-through. If indoor air sources of COCs are identified and removed, consider ventilating the building prior to sampling. However, ventilation and heating systems should be operating normally for 24 hours prior to sampling.

a) 1. FACTORS THAT MAY INFLUENCE INDOOR AIR QUALITY

Is there an attached garage? No

Does the garage have a separate heating unit? Y / N / NA

Are petroleum-powered machines or vehicles stored in the garage (e.g., lawnmower, ATV, or car) **No**

Please specify_____

Has the building ever had a fire? Yes When?_____

Is a kerosene or unvented gas space heater present? No Where?_____

Is there a workshop or hobby/craft area? Yes Main Area _____

Is there smoking in the building? No How frequently?_____

Has painting/staining been done in the last six months? Yes Where and when?__ink paint daily_____

Is there new carpet, drapes or other textiles? No

Is there a kitchen exhaust fan? No

Is there a bathroom exhaust fan? No

Is there a clothes dryer? No If yes, is it vented outside? Y / N

Are cleaning products, cosmetic products, or pesticides used that could interfere with indoor air sampling? Yes

If yes, please describ__Various Printing and _Cleaning Chemicals_____

_____

_____

Do any of the building occupants use solvents at work? Yes

(For example, is the building used for chemical manufacturing or a laboratory, auto mechanic or auto body shop, painting shop, fuel oil delivery area, or do any of the occupants work as a boiler mechanic, pesticide applicator, or cosmetologist?)

If yes, what types of solvents are used?__Inks, Solvents for Printing and Cleaning _____

If yes, are his/her/their clothes washed at work? No

Do any of the building occupants regularly use or work at a dry-cleaning service? (Circle appropriate response)

Yes, use dry cleaning regularly (weekly) No

Yes, use dry cleaning infrequently (monthly or less) Unknown

Yes, work at a dry cleaning services

2. PRODUCT INVENTORY FORM (For use during building walk-through.)

Make and model of field instrument used:_____NA_____

List specific products found in the residence that have the potential to affect indoor air quality:

Location	Product Description	Site (units)	Condition[1]	Chemical Ingredients	Field Instrument Reading (units)	Photo[2] Y / N
West	5-gallon bucket	3	U			Y
West	1-gallon container	5	U			
West	Misc	6	U			
West	Various Tins	50	U	Techo Color		
East	5-gallon container	1	U	Pump Oil		
East	5-gallon container	1	U	Humidifier Treatment		
East	HHW	2	U	Cleaning Duster		
East	HHW	1	U	Anti-static spray		
East	5-gallon container	2	U	Concrete Bonding Agent		
East	55-gallon Drum	1	U	STP Oil		
East	55-gallon Drum	1	U	Unknown		
East	1-gallon container	2	U	Citrus Clean		
East	1-gallon container	1	U	Prestone		
East	1 gallon		U	Varn	3 containers	
East	5-gallon container	1	U	Power Clean		
East	1-gallon containe	3	U	Unknown		
East	HHW	25	U	Misc.		
East	Tins	5	U	Zipset		
South	5-gallon container	2	U	Clear Dripping		

[1] Describe the condition of the product containers as **Unopened (UO), Used (U),** or **Deteriorated (D)**.

[2] Photographs of the front and back of product containers can replace the handwritten list of chemical ingredients. However, the photographs must be of good quality and ingredient labels must be legible.

This form was modified from:

ITRC (Interstate Technology and Regulatory Council). 2007. *Vapor Intrusion Pathway: A Practical Guideline*. VI-1. Washington, D.C.: Interstate Technology and Regulatory Council, Vapor Intrusion Team. Available at: www.itrcweb.org.

The Alaska Department of Environmental Conservation's Contaminated Sites Program protects human health and the environment by managing the cleanup of contaminated soil and groundwater in Alaska.For more information, please contact our staff at the Contaminated Sites Program closest to you:
Juneau: 907-465-5390 / Anchorage: 907-269-7503
Fairbanks: 907-451-2153 / Kenai: 907-262-5210

Attachment 4

Laboratory Report of Analysis

To: Nortech
2400 College Road
Fairbanks, AK 99709

Report Number: **1199007**

Client Project: **16-1104**

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.

Alaska Division Technical Director

Stephen Ede
2019.01.22
08:12:16 -09'00'

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

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Case Narrative

SGS Client: **Nortech**
SGS Project: **1199007**
Project Name/Site: **16-1104**
Project Contact: **Doug Dusek**

Refer to sample receipt form for information on sample condition.

1199007001DUP (1494436) DUP

6020A - Metals MS/MSD RPD for lead does not meet QC criteria. Metals Sample/DUP RPD for lead does not meet QC criteria. Sample is non-homogenous for lead.

MB for HBN 1790415 [XXX/41064] (1494214) MB

AK102/103 - RRO is detect in the MB greater than one half the LOQ, but less than the LOQ.

1199007001MS (1494433) MS

6020A - Metals MS recovery for lead does not meet QC criteria. The post digestion spike was successful.

1199007001MSD (1494270) MSD

8270D SIM - PAH MS/MSD RPD for Benzo[k]fluoranthene does not meet QC criteria. This analyte was not detected above the LOQ in the parent sample.
8270D SIM - PAH MS recovery for Benzo[k]fluoranthene does not meet QC criteria. Refer to the LCS for accuracy requirements.

1199007001MSD (1494434) MSD

6020A - Metals MSD recovery for lead does not meet QC criteria. The post digestion spike was successful.
6020A - Metals MS/MSD RPD for lead does not meet QC criteria. Metals Sample/DUP RPD for lead does not meet QC criteria. Sample is non-homogenous for lead.

*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)				
1494268	LCS for HBN 1790435 [XXX/41067	XMS11280	Benzo[b]Fluoranthene	RP

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.

Print Date: 01/21/2019 4:49:54PM

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 12/06/2018 for Uranium by EPA200.8, TDS by SM 2540C and Nitrate by SM 4500-NO3-F) & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). 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
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
SB1-7	1199007001	01/09/2019	01/10/2019	Soil/Solid (dry weight)
SB2-7	1199007002	01/09/2019	01/10/2019	Soil/Solid (dry weight)
Trip Blank	1199007003	01/09/2019	01/10/2019	Soil/Solid (dry weight)

Method	Method Description
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel Range Organics (S)
AK101	Gasoline Range Organics (S)
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G
SW8260C	VOC 8260 (S) Field Extracted

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Detectable Results Summary

Client Sample ID: **SB1-7**
Lab Sample ID: 1199007001

	Parameter	Result	Units
Metals by ICP/MS	Lead	345	mg/Kg
Semivolatile Organic Fuels	Diesel Range Organics	71.0	mg/Kg
Volatile GC/MS	Tetrachloroethene	26.7	ug/Kg

Client Sample ID: **SB2-7**
Lab Sample ID: 1199007002

	Parameter	Result	Units
Metals by ICP/MS	Lead	229	mg/Kg
Semivolatile Organic Fuels	Diesel Range Organics	62.8	mg/Kg
Volatile GC/MS	1,3,5-Trimethylbenzene	49.8	ug/Kg
	Tetrachloroethene	34.0	ug/Kg

Client Sample ID: **Trip Blank**
Lab Sample ID: 1199007003

	Parameter	Result	Units
Volatile GC/MS	Methylene chloride	263	ug/Kg

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Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Lead	345		0.574	0.178	mg/Kg	25		01/17/19 16:15

Batch Information

Analytical Batch: MMS10419
Analytical Method: SW6020A
Analyst: DSH
Analytical Date/Time: 01/17/19 16:15
Container ID: 1199007001-A

Prep Batch: MXX32195
Prep Method: SW3050B
Prep Date/Time: 01/17/19 10:15
Prep Initial Wt./Vol.: 1.06 g
Prep Extract Vol: 50 mL

Print Date: 01/21/2019 4:49:59PM

Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
2-Methylnaphthalene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Acenaphthene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Acenaphthylene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Anthracene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Benzo(a)Anthracene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Benzo[a]pyrene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Benzo[b]Fluoranthene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Benzo[g,h,i]perylene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Benzo[k]fluoranthene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Chrysene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Dibenzo[a,h]anthracene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Fluoranthene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Fluorene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Indeno[1,2,3-c,d] pyrene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Naphthalene	24.2	U	24.2	6.04	ug/Kg	1		01/18/19 11:01
Phenanthrene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Pyrene	30.2	U	30.2	7.55	ug/Kg	1		01/18/19 11:01
Surrogates								
2-Methylnaphthalene-d10 (surr)	76.7		58-103		%	1		01/18/19 11:01
Fluoranthene-d10 (surr)	80.4		54-113		%	1		01/18/19 11:01

Batch Information

Analytical Batch: XMS11280
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 01/18/19 11:01
Container ID: 1199007001-A

Prep Batch: XXX41067
Prep Method: SW3550C
Prep Date/Time: 01/16/19 08:42
Prep Initial Wt./Vol.: 22.655 g
Prep Extract Vol: 5 mL

Print Date: 01/21/2019 4:49:59PM

Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	71.0		24.2	7.51	mg/Kg	1		01/18/19 10:59
Surrogates								
5a Androstane (surr)	93.5		50-150		%	1		01/18/19 10:59

Batch Information

Analytical Batch: XFC14866
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 01/18/19 10:59
Container ID: 1199007001-A

Prep Batch: XXX41064
Prep Method: SW3550C
Prep Date/Time: 01/15/19 09:29
Prep Initial Wt./Vol.: 30.142 g
Prep Extract Vol: 5 mL

Print Date: 01/21/2019 4:49:59PM

Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.19	U	3.19	0.957	mg/Kg	1		01/14/19 13:08
Surrogates								
4-Bromofluorobenzene (surr)	77.6		50-150		%	1		01/14/19 13:08

Batch Information

Analytical Batch: VFC14613
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/14/19 13:08
Container ID: 1199007001-B

Prep Batch: VXX33694
Prep Method: SW5035A
Prep Date/Time: 01/09/19 11:50
Prep Initial Wt./Vol.: 72.087 g
Prep Extract Vol: 37.8228 mL

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Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	25.5	U	25.5	7.91	ug/Kg	1		01/16/19 17:02
1,1,1-Trichloroethane	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,1,2,2-Tetrachloroethane	2.55	U	2.55	0.791	ug/Kg	1		01/16/19 17:02
1,1,2-Trichloroethane	1.02	U	1.02	0.319	ug/Kg	1		01/16/19 17:02
1,1-Dichloroethane	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,1-Dichloroethene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,1-Dichloropropene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,2,3-Trichlorobenzene	63.8	U	63.8	19.1	ug/Kg	1		01/16/19 17:02
1,2,3-Trichloropropane	1.28	U	1.28	0.791	ug/Kg	1		01/16/19 17:02
1,2,4-Trichlorobenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,2,4-Trimethylbenzene	63.8	U	63.8	19.1	ug/Kg	1		01/16/19 17:02
1,2-Dibromo-3-chloropropane	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
1,2-Dibromoethane	2.55	U	2.55	0.791	ug/Kg	1		01/16/19 17:02
1,2-Dichlorobenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,2-Dichloroethane	2.55	U	2.55	0.791	ug/Kg	1		01/16/19 17:02
1,2-Dichloropropane	12.8	U	12.8	3.96	ug/Kg	1		01/16/19 17:02
1,3,5-Trimethylbenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,3-Dichlorobenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
1,3-Dichloropropane	12.8	U	12.8	3.96	ug/Kg	1		01/16/19 17:02
1,4-Dichlorobenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
2,2-Dichloropropane	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
2-Butanone (MEK)	319	U	319	99.6	ug/Kg	1		01/16/19 17:02
2-Chlorotoluene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
2-Hexanone	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
4-Chlorotoluene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
4-Isopropyltoluene	128	U	128	31.9	ug/Kg	1		01/16/19 17:02
4-Methyl-2-pentanone (MIBK)	319	U	319	99.6	ug/Kg	1		01/16/19 17:02
Acetone	319	U	319	99.6	ug/Kg	1		01/16/19 17:02
Benzene	16.0	U	16.0	4.98	ug/Kg	1		01/16/19 17:02
Bromobenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Bromochloromethane	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Bromodichloromethane	2.55	U	2.55	0.791	ug/Kg	1		01/16/19 17:02
Bromoform	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Bromomethane	25.5	U	25.5	7.91	ug/Kg	1		01/16/19 17:02
Carbon disulfide	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
Carbon tetrachloride	16.0	U	16.0	4.98	ug/Kg	1		01/16/19 17:02
Chlorobenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02

Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	255	U	255	79.1	ug/Kg	1		01/16/19 17:02
Chloroform	2.55	U	2.55	0.791	ug/Kg	1		01/16/19 17:02
Chloromethane	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
cis-1,2-Dichloroethene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
cis-1,3-Dichloropropene	16.0	U	16.0	4.98	ug/Kg	1		01/16/19 17:02
Dibromochloromethane	2.55	U	2.55	0.791	ug/Kg	1		01/16/19 17:02
Dibromomethane	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Dichlorodifluoromethane	63.8	U	63.8	19.1	ug/Kg	1		01/16/19 17:02
Ethylbenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Freon-113	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
Hexachlorobutadiene	25.5	U	25.5	7.91	ug/Kg	1		01/16/19 17:02
Isopropylbenzene (Cumene)	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Methylene chloride	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
Methyl-t-butyl ether	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
Naphthalene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
n-Butylbenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
n-Propylbenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
o-Xylene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
P & M -Xylene	63.8	U	63.8	19.1	ug/Kg	1		01/16/19 17:02
sec-Butylbenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Styrene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
tert-Butylbenzene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
Tetrachloroethene	26.7		16.0	4.98	ug/Kg	1		01/16/19 17:02
Toluene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
trans-1,2-Dichloroethene	31.9	U	31.9	9.96	ug/Kg	1		01/16/19 17:02
trans-1,3-Dichloropropene	16.0	U	16.0	4.98	ug/Kg	1		01/16/19 17:02
Trichloroethene	6.38	U	6.38	1.91	ug/Kg	1		01/16/19 17:02
Trichlorofluoromethane	63.8	U	63.8	19.1	ug/Kg	1		01/16/19 17:02
Vinyl acetate	128	U	128	39.6	ug/Kg	1		01/16/19 17:02
Vinyl chloride	1.02	U	1.02	0.319	ug/Kg	1		01/16/19 17:02
Xylenes (total)	95.7	U	95.7	29.1	ug/Kg	1		01/16/19 17:02
Surrogates								
1,2-Dichloroethane-D4 (surr)	110		71-136		%	1		01/16/19 17:02
4-Bromofluorobenzene (surr)	89.4		55-151		%	1		01/16/19 17:02
Toluene-d8 (surr)	99.9		85-116		%	1		01/16/19 17:02

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Results of **SB1-7**

Client Sample ID: **SB1-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007001
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.2
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18680
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 01/16/19 17:02
Container ID: 1199007001-B

Prep Batch: VXX33700
Prep Method: SW5035A
Prep Date/Time: 01/09/19 11:50
Prep Initial Wt./Vol.: 72.087 g
Prep Extract Vol: 37.8228 mL

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Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Metals by ICP/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Lead	229		0.224	0.0693	mg/Kg	10		01/17/19 16:00

Batch Information

Analytical Batch: MMS10419
Analytical Method: SW6020A
Analyst: DSH
Analytical Date/Time: 01/17/19 16:00
Container ID: 1199007002-A

Prep Batch: MXX32195
Prep Method: SW3050B
Prep Date/Time: 01/17/19 10:15
Prep Initial Wt./Vol.: 1.086 g
Prep Extract Vol: 50 mL

Print Date: 01/21/2019 4:49:59PM

Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
2-Methylnaphthalene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Acenaphthene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Acenaphthylene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Anthracene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Benzo(a)Anthracene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Benzo[a]pyrene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Benzo[b]Fluoranthene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Benzo[g,h,i]perylene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Benzo[k]fluoranthene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Chrysene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Dibenzo[a,h]anthracene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Fluoranthene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Fluorene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Indeno[1,2,3-c,d] pyrene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Naphthalene	24.3	U	24.3	6.06	ug/Kg	1		01/18/19 12:03
Phenanthrene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Pyrene	30.3	U	30.3	7.58	ug/Kg	1		01/18/19 12:03
Surrogates								
2-Methylnaphthalene-d10 (surr)	79.3		58-103		%	1		01/18/19 12:03
Fluoranthene-d10 (surr)	81.6		54-113		%	1		01/18/19 12:03

Batch Information

Analytical Batch: XMS11280
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 01/18/19 12:03
Container ID: 1199007002-A

Prep Batch: XXX41067
Prep Method: SW3550C
Prep Date/Time: 01/16/19 08:42
Prep Initial Wt./Vol.: 22.516 g
Prep Extract Vol: 5 mL

Print Date: 01/21/2019 4:49:59PM

Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	62.8		24.2	7.50	mg/Kg	1		01/18/19 11:09
Surrogates								
5a Androstane (surr)	86.7		50-150		%	1		01/18/19 11:09

Batch Information

Analytical Batch: XFC14866
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 01/18/19 11:09
Container ID: 1199007002-A

Prep Batch: XXX41064
Prep Method: SW3550C
Prep Date/Time: 01/15/19 09:29
Prep Initial Wt./Vol.: 30.09 g
Prep Extract Vol: 5 mL

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Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	3.63	U	3.63	1.09	mg/Kg	1		01/14/19 13:26
Surrogates								
4-Bromofluorobenzene (surr)	76		50-150		%	1		01/14/19 13:26

Batch Information

Analytical Batch: VFC14613
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/14/19 13:26
Container ID: 1199007002-B

Prep Batch: VXX33694
Prep Method: SW5035A
Prep Date/Time: 01/09/19 11:55
Prep Initial Wt./Vol.: 59.205 g
Prep Extract Vol: 35.4206 mL

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Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	29.0	U	29.0	9.00	ug/Kg	1		01/16/19 17:18
1,1,1-Trichloroethane	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,1,2,2-Tetrachloroethane	2.90	U	2.90	0.900	ug/Kg	1		01/16/19 17:18
1,1,2-Trichloroethane	1.16	U	1.16	0.363	ug/Kg	1		01/16/19 17:18
1,1-Dichloroethane	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,1-Dichloroethene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,1-Dichloropropene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,2,3-Trichlorobenzene	72.6	U	72.6	21.8	ug/Kg	1		01/16/19 17:18
1,2,3-Trichloropropane	1.45	U	1.45	0.900	ug/Kg	1		01/16/19 17:18
1,2,4-Trichlorobenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,2,4-Trimethylbenzene	72.6	U	72.6	21.8	ug/Kg	1		01/16/19 17:18
1,2-Dibromo-3-chloropropane	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
1,2-Dibromoethane	2.90	U	2.90	0.900	ug/Kg	1		01/16/19 17:18
1,2-Dichlorobenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,2-Dichloroethane	2.90	U	2.90	0.900	ug/Kg	1		01/16/19 17:18
1,2-Dichloropropane	14.5	U	14.5	4.50	ug/Kg	1		01/16/19 17:18
1,3,5-Trimethylbenzene	49.8		36.3	11.3	ug/Kg	1		01/16/19 17:18
1,3-Dichlorobenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
1,3-Dichloropropane	14.5	U	14.5	4.50	ug/Kg	1		01/16/19 17:18
1,4-Dichlorobenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
2,2-Dichloropropane	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
2-Butanone (MEK)	363	U	363	113	ug/Kg	1		01/16/19 17:18
2-Chlorotoluene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
2-Hexanone	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
4-Chlorotoluene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
4-Isopropyltoluene	145	U	145	36.3	ug/Kg	1		01/16/19 17:18
4-Methyl-2-pentanone (MIBK)	363	U	363	113	ug/Kg	1		01/16/19 17:18
Acetone	363	U	363	113	ug/Kg	1		01/16/19 17:18
Benzene	18.2	U	18.2	5.66	ug/Kg	1		01/16/19 17:18
Bromobenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Bromochloromethane	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Bromodichloromethane	2.90	U	2.90	0.900	ug/Kg	1		01/16/19 17:18
Bromoform	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Bromomethane	29.0	U	29.0	9.00	ug/Kg	1		01/16/19 17:18
Carbon disulfide	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
Carbon tetrachloride	18.2	U	18.2	5.66	ug/Kg	1		01/16/19 17:18
Chlorobenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18

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Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroethane	290	U	290	90.0	ug/Kg	1		01/16/19 17:18
Chloroform	2.90	U	2.90	0.900	ug/Kg	1		01/16/19 17:18
Chloromethane	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
cis-1,2-Dichloroethene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
cis-1,3-Dichloropropene	18.2	U	18.2	5.66	ug/Kg	1		01/16/19 17:18
Dibromochloromethane	2.90	U	2.90	0.900	ug/Kg	1		01/16/19 17:18
Dibromomethane	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Dichlorodifluoromethane	72.6	U	72.6	21.8	ug/Kg	1		01/16/19 17:18
Ethylbenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Freon-113	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
Hexachlorobutadiene	29.0	U	29.0	9.00	ug/Kg	1		01/16/19 17:18
Isopropylbenzene (Cumene)	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Methylene chloride	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
Methyl-t-butyl ether	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
Naphthalene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
n-Butylbenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
n-Propylbenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
o-Xylene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
P & M -Xylene	72.6	U	72.6	21.8	ug/Kg	1		01/16/19 17:18
sec-Butylbenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Styrene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
tert-Butylbenzene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
Tetrachloroethene	34.0		18.2	5.66	ug/Kg	1		01/16/19 17:18
Toluene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
trans-1,2-Dichloroethene	36.3	U	36.3	11.3	ug/Kg	1		01/16/19 17:18
trans-1,3-Dichloropropene	18.2	U	18.2	5.66	ug/Kg	1		01/16/19 17:18
Trichloroethene	7.26	U	7.26	2.18	ug/Kg	1		01/16/19 17:18
Trichlorofluoromethane	72.6	U	72.6	21.8	ug/Kg	1		01/16/19 17:18
Vinyl acetate	145	U	145	45.0	ug/Kg	1		01/16/19 17:18
Vinyl chloride	1.16	U	1.16	0.363	ug/Kg	1		01/16/19 17:18
Xylenes (total)	109	U	109	33.1	ug/Kg	1		01/16/19 17:18
Surrogates								
1,2-Dichloroethane-D4 (surr)	109		71-136		%	1		01/16/19 17:18
4-Bromofluorobenzene (surr)	84.8		55-151		%	1		01/16/19 17:18
Toluene-d8 (surr)	99.7		85-116		%	1		01/16/19 17:18

Print Date: 01/21/2019 4:49:59PM

Results of **SB2-7**

Client Sample ID: **SB2-7**
Client Project ID: **16-1104**
Lab Sample ID: 1199007002
Lab Project ID: 1199007

Collection Date: 01/09/19 11:55
Received Date: 01/10/19 13:29
Matrix: Soil/Solid (dry weight)
Solids (%):82.4
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18680
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 01/16/19 17:18
Container ID: 1199007002-B

Prep Batch: VXX33700
Prep Method: SW5035A
Prep Date/Time: 01/09/19 11:55
Prep Initial Wt./Vol.: 59.205 g
Prep Extract Vol: 35.4206 mL

Print Date: 01/21/2019 4:49:59PM

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **16-1104**
Lab Sample ID: 1199007003
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 08:26
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	2.51	U	2.51	0.754	mg/Kg	1		01/14/19 12:49
Surrogates								
4-Bromofluorobenzene (surr)	77		50-150		%	1		01/14/19 12:49

Batch Information

Analytical Batch: VFC14613
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 01/14/19 12:49
Container ID: 1199007003-A

Prep Batch: VXX33694
Prep Method: SW5035A
Prep Date/Time: 01/09/19 11:50
Prep Initial Wt./Vol.: 49.733 g
Prep Extract Vol: 25 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **16-1104**
Lab Sample ID: 1199007003
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 08:26
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	20.1	U	20.1	6.23	ug/Kg	1		01/16/19 16:45
1,1,1-Trichloroethane	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,1,2,2-Tetrachloroethane	2.01	U	2.01	0.623	ug/Kg	1		01/16/19 16:45
1,1,2-Trichloroethane	0.804	U	0.804	0.251	ug/Kg	1		01/16/19 16:45
1,1-Dichloroethane	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,1-Dichloroethene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,1-Dichloropropene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,2,3-Trichlorobenzene	50.3	U	50.3	15.1	ug/Kg	1		01/16/19 16:45
1,2,3-Trichloropropane	1.01	U	1.01	0.623	ug/Kg	1		01/16/19 16:45
1,2,4-Trichlorobenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,2,4-Trimethylbenzene	50.3	U	50.3	15.1	ug/Kg	1		01/16/19 16:45
1,2-Dibromo-3-chloropropane	101	U	101	31.2	ug/Kg	1		01/16/19 16:45
1,2-Dibromoethane	2.01	U	2.01	0.623	ug/Kg	1		01/16/19 16:45
1,2-Dichlorobenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,2-Dichloroethane	2.01	U	2.01	0.623	ug/Kg	1		01/16/19 16:45
1,2-Dichloropropane	10.1	U	10.1	3.12	ug/Kg	1		01/16/19 16:45
1,3,5-Trimethylbenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,3-Dichlorobenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
1,3-Dichloropropane	10.1	U	10.1	3.12	ug/Kg	1		01/16/19 16:45
1,4-Dichlorobenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
2,2-Dichloropropane	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
2-Butanone (MEK)	251	U	251	78.4	ug/Kg	1		01/16/19 16:45
2-Chlorotoluene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
2-Hexanone	101	U	101	31.2	ug/Kg	1		01/16/19 16:45
4-Chlorotoluene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
4-Isopropyltoluene	101	U	101	25.1	ug/Kg	1		01/16/19 16:45
4-Methyl-2-pentanone (MIBK)	251	U	251	78.4	ug/Kg	1		01/16/19 16:45
Acetone	251	U	251	78.4	ug/Kg	1		01/16/19 16:45
Benzene	12.6	U	12.6	3.92	ug/Kg	1		01/16/19 16:45
Bromobenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Bromochloromethane	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Bromodichloromethane	2.01	U	2.01	0.623	ug/Kg	1		01/16/19 16:45
Bromoform	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Bromomethane	20.1	U	20.1	6.23	ug/Kg	1		01/16/19 16:45
Carbon disulfide	101	U	101	31.2	ug/Kg	1		01/16/19 16:45
Carbon tetrachloride	12.6	U	12.6	3.92	ug/Kg	1		01/16/19 16:45
Chlorobenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **16-1104**
Lab Sample ID: 1199007003
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 08:26
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	201	U	201	62.3	ug/Kg	1		01/16/19 16:45
Chloroform	2.01	U	2.01	0.623	ug/Kg	1		01/16/19 16:45
Chloromethane	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
cis-1,2-Dichloroethene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
cis-1,3-Dichloropropene	12.6	U	12.6	3.92	ug/Kg	1		01/16/19 16:45
Dibromochloromethane	2.01	U	2.01	0.623	ug/Kg	1		01/16/19 16:45
Dibromomethane	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Dichlorodifluoromethane	50.3	U	50.3	15.1	ug/Kg	1		01/16/19 16:45
Ethylbenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Freon-113	101	U	101	31.2	ug/Kg	1		01/16/19 16:45
Hexachlorobutadiene	20.1	U	20.1	6.23	ug/Kg	1		01/16/19 16:45
Isopropylbenzene (Cumene)	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Methylene chloride	263		101	31.2	ug/Kg	1		01/16/19 16:45
Methyl-t-butyl ether	101	U	101	31.2	ug/Kg	1		01/16/19 16:45
Naphthalene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
n-Butylbenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
n-Propylbenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
o-Xylene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
P & M -Xylene	50.3	U	50.3	15.1	ug/Kg	1		01/16/19 16:45
sec-Butylbenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Styrene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
tert-Butylbenzene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
Tetrachloroethene	12.6	U	12.6	3.92	ug/Kg	1		01/16/19 16:45
Toluene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
trans-1,2-Dichloroethene	25.1	U	25.1	7.84	ug/Kg	1		01/16/19 16:45
trans-1,3-Dichloropropene	12.6	U	12.6	3.92	ug/Kg	1		01/16/19 16:45
Trichloroethene	5.03	U	5.03	1.51	ug/Kg	1		01/16/19 16:45
Trichlorofluoromethane	50.3	U	50.3	15.1	ug/Kg	1		01/16/19 16:45
Vinyl acetate	101	U	101	31.2	ug/Kg	1		01/16/19 16:45
Vinyl chloride	0.804	U	0.804	0.251	ug/Kg	1		01/16/19 16:45
Xylenes (total)	75.4	U	75.4	22.9	ug/Kg	1		01/16/19 16:45
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		71-136		%	1		01/16/19 16:45
4-Bromofluorobenzene (surr)	92.6		55-151		%	1		01/16/19 16:45
Toluene-d8 (surr)	97.5		85-116		%	1		01/16/19 16:45

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **16-1104**
Lab Sample ID: 1199007003
Lab Project ID: 1199007

Collection Date: 01/09/19 11:50
Received Date: 01/10/19 08:26
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18680
Analytical Method: SW8260C
Analyst: NRO
Analytical Date/Time: 01/16/19 16:45
Container ID: 1199007003-A

Prep Batch: VXX33700
Prep Method: SW5035A
Prep Date/Time: 01/09/19 11:50
Prep Initial Wt./Vol.: 49.733 g
Prep Extract Vol: 25 mL

Print Date: 01/21/2019 4:49:59PM

Method Blank

Blank ID: MB for HBN 1790461 [MXX/32195]
Blank Lab ID: 1494431

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002

Results by **SW6020A**

Parameter	Results	LOQ/CL	DL	Units
Lead	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS10419
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: DSH
Analytical Date/Time: 1/17/2019 3:23:26PM

Prep Batch: MXX32195
Prep Method: SW3050B
Prep Date/Time: 1/17/2019 10:15:12AM
Prep Initial Wt./Vol.: 1 g
Prep Extract Vol: 50 mL

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Duplicate Sample Summary

Original Sample ID: 1199007001
Duplicate Sample ID: 1494436
QC for Samples:
1199007001, 1199007002

Analysis Date: 01/17/2019 16:38
Matrix: Soil/Solid (dry weight)

Results by **SW6020A**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Lead	345	448	mg/Kg	25.80*	(< 20)

Batch Information

Analytical Batch: MMS10419
Analytical Method: SW6020A
Instrument: Perkin Elmer NexIon P5
Analyst: DSH

Prep Batch: MXX32195
Prep Method: SW3050B
Prep Date/Time: 1/17/2019 10:15:12AM

Print Date: 01/21/2019 4:50:03PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199007 [MXX32195]
Blank Spike Lab ID: 1494432
Date Analyzed: 01/17/2019 15:28

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002

Results by **SW6020A**

Blank Spike (mg/Kg)

Parameter	Spike	Result	Rec (%)	CL
Lead	50	49.4	99	(84-118)

Batch Information

Analytical Batch: **MMS10419**
Analytical Method: **SW6020A**
Instrument: **Perkin Elmer Nexion P5**
Analyst: **DSH**

Prep Batch: **MXX32195**
Prep Method: **SW3050B**
Prep Date/Time: **01/17/2019 10:15**
Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL
Dupe Init Wt./Vol.: Extract Vol:

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Matrix Spike Summary

Original Sample ID: 1199007001
MS Sample ID: 1494433 MS
MSD Sample ID: 1494434 MSD

Analysis Date: 01/17/2019 16:15
Analysis Date: 01/17/2019 16:19
Analysis Date: 01/17/2019 16:24
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Lead	345	60.3	242	-172 *	56.8	300	-79 *	84-118	21.90 *	(< 20)

Batch Information

Analytical Batch: MMS10419
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: DSH
Analytical Date/Time: 1/17/2019 4:19:49PM

Prep Batch: MXX32195
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 1/17/2019 10:15:12AM
Prep Initial Wt./Vol.: 1.01g
Prep Extract Vol: 50.00mL

Print Date: 01/21/2019 4:50:06PM

Bench Spike Summary

Original Sample ID: 1199007001
MS Sample ID: 1494435 BND
MSD Sample ID:

Analysis Date: 01/17/2019 16:15
Analysis Date: 01/17/2019 16:29
Analysis Date:
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002

Results by **SW6020A**

		Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Lead	345	359	697	98				80-120		

Batch Information

Analytical Batch: MMS10419
Analytical Method: SW6020A
Instrument: Perkin Elmer Nexlon P5
Analyst: DSH
Analytical Date/Time: 1/17/2019 4:29:12PM

Prep Batch: MXX32195
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 1/17/2019 10:15:12AM
Prep Initial Wt./Vol.: 1.06g
Prep Extract Vol: 50.00mL

Print Date: 01/21/2019 4:50:06PM

Method Blank

Blank ID: MB for HBN 1790411 [SPT/10710]
Blank Lab ID: 1494204

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002

Results by **SM21 2540G**

Parameter	Results	LOQ/CL	DL	Units
Total Solids	100			%

Batch Information

Analytical Batch: SPT10710
Analytical Method: SM21 2540G
Instrument:
Analyst: BRP
Analytical Date/Time: 1/14/2019 1:55:00PM

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Duplicate Sample Summary

Original Sample ID: 1190200002
Duplicate Sample ID: 1494205
QC for Samples:
1199007001, 1199007002

Analysis Date: 01/14/2019 13:55
Matrix: Soil/Solid (dry weight)

Results by **SM21 2540G**

NAME	Original	Duplicate	Units	RPD (%)	RPD CL
Total Solids	81.0	80.6	%	0.44	(< 15)

Batch Information

Analytical Batch: SPT10710
Analytical Method: SM21 2540G
Instrument:
Analyst: BRP

Print Date: 01/21/2019 4:50:08PM

Method Blank

Blank ID: MB for HBN 1790409 [VXX/33694]
Blank Lab ID: 1494198

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002, 1199007003

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	1.66J	2.50	0.750	mg/Kg
Surrogates				
4-Bromofluorobenzene (surr)	97.8	50-150		%

Batch Information

Analytical Batch: VFC14613
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 1/14/2019 12:31:00PM

Prep Batch: VXX33694
Prep Method: SW5035A
Prep Date/Time: 1/14/2019 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199007 [VXX33694]
Blank Spike Lab ID: 1494199
Date Analyzed: 01/14/2019 11:55

Spike Duplicate ID: LCSD for HBN 1199007 [VXX33694]
Spike Duplicate Lab ID: 1494200
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **AK101**

	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	12.5	12.6	101	12.5	12.5	100	(60-120)	0.77	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	112	112	1.25	116	116	(50-150)	3.60	

Batch Information

Analytical Batch: **VFC14613**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX33694**
Prep Method: **SW5035A**
Prep Date/Time: **01/14/2019 08:00**
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

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Method Blank

Blank ID: MB for HBN 1790495 [VXX/33700]
Blank Lab ID: 1494514

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002, 1199007003

Results by **SW8260C**

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	0.400U	0.800	0.250	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	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	0.500U	1.00	0.620	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	1.00U	2.00	0.620	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	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	50.0U	100	31.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	50.0U	100	25.0	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Acetone	125U	250	78.0	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	6.20	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 1790495 [VXX/33700]
Blank Lab ID: 1494514

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002, 1199007003

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloroform	1.00U	2.00	0.620	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	1.00U	2.00	0.620	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	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	2.50U	5.00	1.50	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)	107	71-136		%
4-Bromofluorobenzene (surr)	104	55-151		%
Toluene-d8 (surr)	99.1	85-116		%

Method Blank

Blank ID: MB for HBN 1790495 [VXX/33700]
Blank Lab ID: 1494514

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002, 1199007003

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS18680
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 1/16/2019 2:19:00PM

Prep Batch: VXX33700
Prep Method: SW5035A
Prep Date/Time: 1/16/2019 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 1199007 [VXX33700]
Blank Spike Lab ID: 1494515
Date Analyzed: 01/16/2019 14:35

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1,1,1,2-Tetrachloroethane	750	836	111	(78-125)
1,1,1-Trichloroethane	750	786	105	(73-130)
1,1,2,2-Tetrachloroethane	750	748	100	(70-124)
1,1,2-Trichloroethane	750	862	115	(78-121)
1,1-Dichloroethane	750	747	100	(76-125)
1,1-Dichloroethene	750	783	104	(70-131)
1,1-Dichloropropene	750	837	112	(76-125)
1,2,3-Trichlorobenzene	750	809	108	(66-130)
1,2,3-Trichloropropane	750	742	99	(73-125)
1,2,4-Trichlorobenzene	750	810	108	(67-129)
1,2,4-Trimethylbenzene	750	748	100	(75-123)
1,2-Dibromo-3-chloropropane	750	795	106	(61-132)
1,2-Dibromoethane	750	844	113	(78-122)
1,2-Dichlorobenzene	750	764	102	(78-121)
1,2-Dichloroethane	750	723	96	(73-128)
1,2-Dichloropropane	750	809	108	(76-123)
1,3,5-Trimethylbenzene	750	769	103	(73-124)
1,3-Dichlorobenzene	750	778	104	(77-121)
1,3-Dichloropropane	750	848	113	(77-121)
1,4-Dichlorobenzene	750	780	104	(75-120)
2,2-Dichloropropane	750	778	104	(67-133)
2-Butanone (MEK)	2250	2610	116	(51-148)
2-Chlorotoluene	750	777	104	(75-122)
2-Hexanone	2250	2540	113	(53-145)
4-Chlorotoluene	750	788	105	(72-124)
4-Isopropyltoluene	750	779	104	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2150	96	(65-135)
Acetone	2250	2520	112	(36-164)
Benzene	750	775	103	(77-121)
Bromobenzene	750	777	104	(78-121)
Bromochloromethane	750	726	97	(78-125)
Bromodichloromethane	750	789	105	(75-127)
Bromoform	750	860	115	(67-132)
Bromomethane	750	684	91	(53-143)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199007 [VXX33700]
Blank Spike Lab ID: 1494515
Date Analyzed: 01/16/2019 14:35

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Carbon disulfide	1130	1240	111	(63-132)
Carbon tetrachloride	750	816	109	(70-135)
Chlorobenzene	750	777	104	(79-120)
Chloroethane	750	760	101	(59-139)
Chloroform	750	755	101	(78-123)
Chloromethane	750	781	104	(50-136)
cis-1,2-Dichloroethene	750	731	98	(77-123)
cis-1,3-Dichloropropene	750	827	110	(74-126)
Dibromochloromethane	750	793	106	(74-126)
Dibromomethane	750	737	98	(78-125)
Dichlorodifluoromethane	750	794	106	(29-149)
Ethylbenzene	750	754	101	(76-122)
Freon-113	1130	1220	108	(66-136)
Hexachlorobutadiene	750	812	108	(61-135)
Isopropylbenzene (Cumene)	750	786	105	(68-134)
Methylene chloride	750	764	102	(70-128)
Methyl-t-butyl ether	1130	1210	107	(73-125)
Naphthalene	750	775	103	(62-129)
n-Butylbenzene	750	791	105	(70-128)
n-Propylbenzene	750	802	107	(73-125)
o-Xylene	750	731	97	(77-123)
P & M -Xylene	1500	1470	98	(77-124)
sec-Butylbenzene	750	802	107	(73-126)
Styrene	750	784	105	(76-124)
tert-Butylbenzene	750	793	106	(73-125)
Tetrachloroethene	750	832	111	(73-128)
Toluene	750	736	98	(77-121)
trans-1,2-Dichloroethene	750	758	101	(74-125)
trans-1,3-Dichloropropene	750	847	113	(71-130)
Trichloroethene	750	835	111	(77-123)
Trichlorofluoromethane	750	780	104	(62-140)
Vinyl acetate	750	842	112	(50-151)
Vinyl chloride	750	769	103	(56-135)
Xylenes (total)	2250	2200	98	(78-124)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199007 [VXX33700]
Blank Spike Lab ID: 1494515
Date Analyzed: 01/16/2019 14:35

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **SW8260C**

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	97.6	98	(71-136)
4-Bromofluorobenzene (surr)	750	102	102	(55-151)
Toluene-d8 (surr)	750	102	102	(85-116)

Batch Information

Analytical Batch: **VMS18680**
Analytical Method: **SW8260C**
Instrument: **VQA 7890/5975 GC/MS**
Analyst: **NRO**

Prep Batch: **VXX33700**
Prep Method: **SW5035A**
Prep Date/Time: **01/16/2019 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: 1199007001
MS Sample ID: 1494516 MS
MSD Sample ID: 1494517 MSD

Analysis Date: 01/16/2019 17:02
Analysis Date: 01/16/2019 15:07
Analysis Date: 01/16/2019 15:23
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **SW8260C**

		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	25.5U	954	987	103	954	1061	111	78-125	7.30	(< 20)
1,1,1-Trichloroethane	31.9U	954	1013	106	954	1010	106	73-130	0.36	(< 20)
1,1,2,2-Tetrachloroethane	2.55U	954	922	97	954	945	99	70-124	2.50	(< 20)
1,1,2-Trichloroethane	1.02U	954	1056	111	954	1119	117	78-121	5.90	(< 20)
1,1-Dichloroethane	31.9U	954	966	101	954	956	100	76-125	0.93	(< 20)
1,1-Dichloroethene	31.9U	954	1054	111	954	1015	106	70-131	3.80	(< 20)
1,1-Dichloropropene	31.9U	954	1078	113	954	1078	113	76-125	0.02	(< 20)
1,2,3-Trichlorobenzene	63.8U	954	918	96	954	1032	108	66-130	11.60	(< 20)
1,2,3-Trichloropropane	1.28U	954	925	97	954	951	100	73-125	2.90	(< 20)
1,2,4-Trichlorobenzene	31.9U	954	918	96	954	999	105	67-129	8.40	(< 20)
1,2,4-Trimethylbenzene	63.8U	954	866	91	954	923	97	75-123	6.40	(< 20)
1,2-Dibromo-3-chloropropane	128U	954	972	102	954	1012	106	61-132	4.00	(< 20)
1,2-Dibromoethane	2.55U	954	1030	108	954	1107	116	78-122	7.20	(< 20)
1,2-Dichlorobenzene	31.9U	954	884	93	954	928	97	78-121	4.80	(< 20)
1,2-Dichloroethane	2.55U	954	909	95	954	929	97	73-128	2.30	(< 20)
1,2-Dichloropropane	12.8U	954	1000	105	954	1035	109	76-123	3.40	(< 20)
1,3,5-Trimethylbenzene	31.9U	954	898	94	954	948	99	73-124	5.40	(< 20)
1,3-Dichlorobenzene	31.9U	954	900	95	954	931	98	77-121	3.30	(< 20)
1,3-Dichloropropane	12.8U	954	1036	109	954	1086	114	77-121	4.80	(< 20)
1,4-Dichlorobenzene	31.9U	954	889	93	954	917	96	75-120	3.10	(< 20)
2,2-Dichloropropane	31.9U	954	1011	106	954	1000	105	67-133	1.10	(< 20)
2-Butanone (MEK)	319U	2859	3200	112	2859	3370	118	51-148	5.10	(< 20)
2-Chlorotoluene	31.9U	954	914	96	954	937	98	75-122	2.50	(< 20)
2-Hexanone	128U	2859	3163	110	2859	3382	118	53-145	6.90	(< 20)
4-Chlorotoluene	31.9U	954	911	96	954	940	99	72-124	3.10	(< 20)
4-Isopropyltoluene	128U	954	905	95	954	934	98	73-127	3.20	(< 20)
4-Methyl-2-pentanone (MIBK)	319U	2859	2652	93	2859	2847	100	65-135	7.40	(< 20)
Acetone	319U	2859	3090	108	2859	3236	113	36-164	4.80	(< 20)
Benzene	16.0U	954	971	102	954	991	104	77-121	2.10	(< 20)
Bromobenzene	31.9U	954	939	99	954	950	100	78-121	1.10	(< 20)
Bromochloromethane	31.9U	954	916	96	954	925	97	78-125	0.87	(< 20)
Bromodichloromethane	2.55U	954	985	103	954	1013	106	75-127	2.80	(< 20)
Bromoform	31.9U	954	1046	110	954	1113	117	67-132	6.20	(< 20)
Bromomethane	25.5U	954	953	100	954	946	99	53-143	0.60	(< 20)
Carbon disulfide	128U	1436	1691	118	1436	1606	112	63-132	5.60	(< 20)
Carbon tetrachloride	16.0U	954	1063	111	954	1054	110	70-135	0.92	(< 20)
Chlorobenzene	31.9U	954	944	99	954	981	103	79-120	3.70	(< 20)

Print Date: 01/21/2019 4:50:15PM

Matrix Spike Summary

Original Sample ID: 1199007001
MS Sample ID: 1494516 MS
MSD Sample ID: 1494517 MSD

Analysis Date: 01/16/2019 17:02
Analysis Date: 01/16/2019 15:07
Analysis Date: 01/16/2019 15:23
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **SW8260C**

		Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Chloroethane	255U	954	1027	108	954	999	105	59-139	2.70	(< 20)
Chloroform	2.55U	954	955	100	954	960	101	78-123	0.61	(< 20)
Chloromethane	31.9U	954	1102	116	954	1073	113	50-136	2.60	(< 20)
cis-1,2-Dichloroethene	31.9U	954	956	100	954	927	97	77-123	3.00	(< 20)
cis-1,3-Dichloropropene	16.0U	954	1018	107	954	1064	112	74-126	4.40	(< 20)
Dibromochloromethane	2.55U	954	974	102	954	1021	107	74-126	4.60	(< 20)
Dibromomethane	31.9U	954	936	98	954	954	100	78-125	2.00	(< 20)
Dichlorodifluoromethane	63.8U	954	1109	116	954	1054	110	29-149	5.20	(< 20)
Ethylbenzene	31.9U	954	918	96	954	945	99	76-122	2.90	(< 20)
Freon-113	128U	1436	1606	112	1436	1582	110	66-136	1.30	(< 20)
Hexachlorobutadiene	25.5U	954	1277	134	954	1120	117	61-135	13.00	(< 20)
Isopropylbenzene (Cumene)	31.9U	954	937	98	954	994	104	68-134	5.90	(< 20)
Methylene chloride	128U	954	973	102	954	977	102	70-128	0.34	(< 20)
Methyl-t-butyl ether	128U	1436	1460	102	1436	1557	109	73-125	7.00	(< 20)
Naphthalene	31.9U	954	875	92	954	967	101	62-129	10.00	(< 20)
n-Butylbenzene	31.9U	954	937	98	954	945	99	70-128	1.00	(< 20)
n-Propylbenzene	31.9U	954	926	97	954	966	101	73-125	4.30	(< 20)
o-Xylene	31.9U	954	882	93	954	925	97	77-123	4.70	(< 20)
P & M -Xylene	63.8U	1910	1764	93	1910	1861	98	77-124	5.10	(< 20)
sec-Butylbenzene	31.9U	954	908	95	954	964	101	73-126	6.00	(< 20)
Styrene	31.9U	954	950	100	954	987	104	76-124	3.90	(< 20)
tert-Butylbenzene	31.9U	954	906	95	954	950	100	73-125	4.80	(< 20)
Tetrachloroethene	26.7	954	1043	107	954	1092	112	73-128	4.60	(< 20)
Toluene	31.9U	954	906	95	954	937	98	77-121	3.40	(< 20)
trans-1,2-Dichloroethene	31.9U	954	988	104	954	967	101	74-125	2.10	(< 20)
trans-1,3-Dichloropropene	16.0U	954	1032	108	954	1082	113	71-130	4.70	(< 20)
Trichloroethene	6.38U	954	1062	111	954	1069	112	77-123	0.73	(< 20)
Trichlorofluoromethane	63.8U	954	1040	109	954	1039	109	62-140	0.06	(< 20)
Vinyl acetate	128U	954	1038	109	954	1100	115	50-151	5.80	(< 20)
Vinyl chloride	1.02U	954	1071	112	954	1027	108	56-135	4.20	(< 20)
Xylenes (total)	95.7U	2859	2652	93	2859	2786	97	78-124	5.00	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		954	964	101	954	951	100	71-136	1.30	
4-Bromofluorobenzene (surr)		1055	811	77	1055	827	78	55-151	2.00	
Toluene-d8 (surr)		954	973	102	954	967	101	85-116	0.69	

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Matrix Spike Summary

Original Sample ID: 1199007001
MS Sample ID: 1494516 MS
MSD Sample ID: 1494517 MSD

Analysis Date:
Analysis Date: 01/16/2019 15:07
Analysis Date: 01/16/2019 15:23
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002, 1199007003

Results by **SW8260C**

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

Batch Information

Analytical Batch: VMS18680
Analytical Method: SW8260C
Instrument: VQA 7890/5975 GC/MS
Analyst: NRO
Analytical Date/Time: 1/16/2019 3:07:00PM

Prep Batch: VXX33700
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 1/16/2019 6:00:00AM
Prep Initial Wt./Vol.: 72.09g
Prep Extract Vol: 37.82mL

Print Date: 01/21/2019 4:50:15PM

Method Blank

Blank ID: MB for HBN 1790415 [XXX/41064]
Blank Lab ID: 1494214

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	87.5	60-120		%

Batch Information

Analytical Batch: XFC14865
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 1/17/2019 9:20:00AM

Prep Batch: XXX41064
Prep Method: SW3550C
Prep Date/Time: 1/15/2019 9:29:12AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

Print Date: 01/21/2019 4:50:16PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1199007 [VVVX103X6
Blank Spike La4 ID: 1X9X] 1b
Date Analyzed: 01/17/] 019 09:21

Spike D5pliuate ID: LCSD for HBN 1199007 [VVVX103X6
Spike D5pliuate La4 ID: 1X9X] 13
s atriM Soil/Solid xdry (eiwgth

KC for SaP pleR 1199007001Q119900700]

c eR5ltR4y **AK102**

	Blank Spike xP w/%wh			Spike D5pliuate xP w/%wh					
) araP eter	Spike	c eR5lt	c eu xmh	Spike	c eR5lt	c eu xmh	CL	c) D xmh	c) D CL
DieRel c anwe , rwaniuR	G22	G2G	101	G22	G32	10X	x7bC1] b h	] -90	x] 0 h
Surrogates									
ba AndroRtane xR5rrh	13-7	99-3	100	13-7	10b	10b	x30C1] 0 h	X-90	

Batch Information

Analytiual Batug: **XFC14865**
Analytiual s etgod: **AK102**
InRtr5P ent: **Agilent 7890B R**
AnalyRt: **CMS**

) rep Batug: **XXX41064**
) rep s etgod: **SW3550C**
) rep Date/<iP e: **01/15/2019 09:29**
Spike Init T t-/Wbl-: G22 P w/%w EMraut Wbl: b P L
D5pe Init T t-/Wbl-: G22 P w/%w EMraut Wbl: b P L

) rint Date: 01/] 1/] 019 X:b0:17) s

Method Blank

Blank ID: MB for HBN 1790435 [XXX/41067]
Blank Lab ID: 1494267

Matrix: Soil/Solid (dry weight)

QC for Samples:
1199007001, 1199007002

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)	76.8	58-103		%
Fluoranthene-d10 (surr)	79.3	54-113		%

Batch Information

Analytical Batch: XMS11280
Analytical Method: 8270D SIM (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 1/18/2019 10:20:00AM

Prep Batch: XXX41067
Prep Method: SW3550C
Prep Date/Time: 1/16/2019 8:42:06AM
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 1199007 [XXX41067]
Blank Spike Lab ID: 1494268
Date Analyzed: 01/18/2019 10:41

Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002

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

Blank Spike (ug/Kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	95.1	86	(43-111)
2-Methylnaphthalene	111	102	92	(39-114)
Acenaphthene	111	95.7	86	(44-111)
Acenaphthylene	111	94.8	85	(39-116)
Anthracene	111	109	98	(50-114)
Benzo(a)Anthracene	111	98.5	89	(54-122)
Benzo[a]pyrene	111	99.7	90	(50-125)
Benzo[b]Fluoranthene	111	105	95	(53-128)
Benzo[g,h,i]perylene	111	99.8	90	(49-127)
Benzo[k]fluoranthene	111	99.8	90	(56-123)
Chrysene	111	99.8	90	(57-118)
Dibenzo[a,h]anthracene	111	105	94	(50-129)
Fluoranthene	111	99.2	89	(55-119)
Fluorene	111	103	92	(47-114)
Indeno[1,2,3-c,d] pyrene	111	108	97	(49-130)
Naphthalene	111	93.9	85	(38-111)
Phenanthrene	111	103	93	(49-113)
Pyrene	111	100	90	(55-117)
Surrogates				
2-Methylnaphthalene-d10 (surr)	111	80.4	80	(58-103)
Fluoranthene-d10 (surr)	111	83	83	(54-113)

Batch Information

Analytical Batch: **XMS11280**
Analytical Method: **8270D SIM (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **DSD**

Prep Batch: **XXX41067**
Prep Method: **SW3550C**
Prep Date/Time: **01/16/2019 08:42**
Spike Init Wt./Vol.: 111 ug/Kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: Extract Vol:

Print Date: 01/21/2019 4:50:19PM

Matrix Spike Summary

Original Sample ID: 1199007001
MS Sample ID: 1494269 MS
MSD Sample ID: 1494270 MSD

Analysis Date: 01/18/2019 11:01
Analysis Date: 01/18/2019 11:22
Analysis Date: 01/18/2019 11:42
Matrix: Soil/Solid (dry weight)

QC for Samples: 1199007001, 1199007002

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	30.2U	134	120	89	135	120	89	43-111	0.22	(< 20)
2-Methylnaphthalene	30.2U	134	127	94	135	127	94	39-114	0.30	(< 20)
Acenaphthene	30.2U	134	113	84	135	113	84	44-111	0.11	(< 20)
Acenaphthylene	30.2U	134	119	89	135	120	89	39-116	0.70	(< 20)
Anthracene	30.2U	134	118	88	135	129	96	50-114	9.40	(< 20)
Benzo(a)Anthracene	30.2U	134	127	94	135	127	94	54-122	0.08	(< 20)
Benzo[a]pyrene	30.2U	134	130	97	135	129	95	50-125	0.94	(< 20)
Benzo[b]Fluoranthene	30.2U	134	142	106	135	137	101	53-128	3.80	(< 20)
Benzo[g,h,i]perylene	30.2U	134	124	92	135	123	91	49-127	1.10	(< 20)
Benzo[k]fluoranthene	30.2U	134	115	85	135	48.7	36 *	56-123	80.90 *	(< 20)
Chrysene	30.2U	134	118	88	135	117	87	57-118	0.95	(< 20)
Dibenzo[a,h]anthracene	30.2U	134	120	89	135	119	89	50-129	0.38	(< 20)
Fluoranthene	30.2U	134	120	90	135	121	90	55-119	0.96	(< 20)
Fluorene	30.2U	134	125	93	135	127	94	47-114	1.20	(< 20)
Indeno[1,2,3-c,d] pyrene	30.2U	134	128	95	135	127	94	49-130	0.99	(< 20)
Naphthalene	24.2U	134	119	89	135	117	87	38-111	1.50	(< 20)
Phenanthrene	30.2U	134	130	97	135	130	96	49-113	0.12	(< 20)
Pyrene	30.2U	134	130	96	135	127	93	55-117	2.80	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		134	108	81	135	108	80	58-103	0.04	
Fluoranthene-d10 (surr)		134	111	82	135	112	83	54-113	1.20	

Batch Information

Analytical Batch: XMS11280
Analytical Method: 8270D SIM (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 1/18/2019 11:22:00AM

Prep Batch: XXX41067
Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
Prep Date/Time: 1/16/2019 8:42:06AM
Prep Initial Wt./Vol.: 22.63g
Prep Extract Vol: 5.00mL

Print Date: 01/21/2019 4:50:20PM

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1199007

Locations Nationwide

Alaska	Maryland
New Jersey	New York
North Carolina	Indiana
West Virgina	Kentucky

www.us.sgs.com

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

Page 1 of 1

Section 1

CLIENT: NORTECH

CONTACT: DOUG DUSEK PHONE NO: 907-452-5688

PROJECT NAME: 16-1104 PROJECT/ PWSID/ PERMIT#:

REPORTS TO: DOUG DUSEK E-MAIL: ddusek@nortechengr.com

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	Type C = COMP G = GRAB MI = Multi Incremental Soils	Preservative: NONE	SOC's 8260	PAH 8270	MET 6020B	GRO AK101	DRO AK102	REMARKS/ LOC ID
(1) A-C	SB1-7	1/9/18	11:50	S			✓	✓	✓	✓	✓	✓	
(2) A-C	SB2-7	1/9/18	11:55	S			✓	✓	✓	✓	✓	✓	
(3) A													

Section 5

	Date	Time		
Relinquished By: (1)	1/9/19	1247	Received By:	1/9/19 12:47
Relinquished By: (2)	1/9/19	1600 ~~1500~~ AW	Received By:	
Relinquished By: (3)			Received By:	
Relinquished By: (4)	1/10/19	0826	Received For Laboratory By:	NSW

Section 4

DOD Project? Yes No

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:

Standard

Temp Blank °C:

or Ambient AT

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301

[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

ANC: C5: H, I8

TB: 2.8 D21

http://www.sgs.com/terms-and-conditions

F083-Kit_Request_and_COC_Templates-Blank
Revised 2013-03-24

SGS

1199007

FAIRBANKS SAMPLE RECEIPT FORM

Note: This form is to be completed by Fairbanks Receiving Staff for all samples

Review Criteria:	Condition:	Comments/Actions Taken
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No (N/A) (Yes) No N/A	*Exemption permitted if sampler hand carries/delivers.*
Temperature blank compliant* (i.e., 0-6°C) *If >6°C, were samples collected <8 hours ago?* *If <0°C, were all sample containers ice free?* Cooler ID:_____@_____w/Therm. ID:_____ Cooler ID:_____@_____w/Therm. ID:_____ Cooler ID:_____@_____w/Therm. ID:_____ Cooler ID:_____@_____w/Therm. ID:_____ Cooler ID:_____@_____w/Therm. ID:_____ If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank and "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note ambient (✓) or chilled ( ). Please check one.	Yes No Yes No (N/A) Yes No (N/A)	*Exemption permitted if chilled & collected <8hrs ago* ***Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.***
Delivery Method: (Client) (hand carried) Other:_____	Tracking/AB# : Or see attached Or (N/A)	
→For samples received with payment, note amount ($) and whether cash / check / CC (**circle one**) was received.		
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): Bubble Wrap Separate plastic bags Vermiculite Other:_____	(Yes) No N/A	***Note: some samples are sent to Anchorage without inspection by SGS Fairbanks personnel.***
Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	(Yes) No N/A	
For **RUSH/SHORT Hold Time**, were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	Yes No (N/A) Yes No (N/A)	

Additional notes (if applicable):

* Volatiles have extra volume

Profile #: 341954

Note to Client: any "no" circled above indicates non-compliance with standard procedures and may impact data quality.

027 FAI 3907 0835 027-3907 0835

Shipper's Name and Address	Shipper's Account Number	Not Negotiable
SGS CT and ENVIRONM 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	27400215947 Customer's ID Number 9069	**Air Waybill** Issued By Alaska. AIR CARGO P.O. BOX 68900 SEATTLE, WA 98168 800-225-2752 ALASKACARGO.COM
Consignee's Name and Address	**Consignee's Account Number**	**Also Notify**
SGS CT and ENVIRONM 200 W Potter Drive Anchorage, AK 99518 USA Tel: 907-562-2343	27400215947	N Tel:
Issuing Carrier's Agent and City		**Accounting Information** 9069
		SGS CT and ENVIRONMENTAL SVS 200 W Potter Drive Anchorage, AK 99518 USA
Agent's IATA Code	**Account No.**	
Airport of Departure (Addr. of First Carrier) and Requested Routing		GoldStreak
Fairbanks		

To	By First Carrier	To / By	To / By	Currency		WT/VAL		Other		Declared Value For Carriage	Declared Value For Customs
ANC	Alaska Airlines			USD	PX	X		X		NVD	NCV

Airport of Destination	Flight/Date	Flight/Date	Amount of Insurance
Anchorage	AS 194/09		XXX

Handling Information
AMBIENT - DO NOT FREEZE

SCI

No of Pieces	Gross Weight	kg lb	Commodity Item No.	Chargeable Weight	Rate / Charge	Total	Nature and Quantity of Goods (Incl. Dimensions or Volume)
1	30.0	L		30.0		AS AGREED	WATER SAMPLES Dims: 24 x 13 x14 x 1 GSX
1	30.0					AS AGREED	Volume: 2.528

Prepaid	Weight Charge	Collect	Other Charges
AS AGREED			XBC 10.00
Valuation Charge			
Tax			
Total Other Charges Due Agent			
Total Other Charges Due Carrier			
Total Prepaid	Total Collect		
AS AGREED			

Shipper certifies that the particulars on the face hereof are correct and that **insofar as any part of the consignment contains dangerous goods, such part is properly described by name and is in proper condition for carriage by air according to the applicable Dangerous Goods Regulations. I consent to the inspection of this cargo.**

For: SGS CT and ENVIRONMENTAL SVS

Signature of Shipper or his Agent

JD THIS SHIPMENT DOES NOT CONTAIN DANGEROUS GOODS

THIS SHIPMENT DOES CONTAIN DANGEROUS GOODS

09 Jan 2019 16:16 — Executed On (Date)

Fairbanks — at (Place)

Alaska Airlines — Signature of Issuing Carrier or its Agent

027-3907 0835

Alert Expeditors Inc. **#390179**

Citywide Delivery • 440-3351
8421 Flamingo Drive • Anchorage, Alaska 99502

Date 1-10-19

From SGS FAI

To SGS Labs Anc

Collect ☐	Prepay ☐ Account ☐	Advance Charges ☐
Job #	PO# AS 3902.035	

Samples

Shipped Signature

Total Charge

Received By:

e-Sample Receipt Form

SGS Workorder #: 1199007

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		n/a Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	yes	1F, 1B
COC accompanied samples?	yes	
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 @ 2.8 °C Therm. ID: D21
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
	n/a	Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	n/a	
If <0°C, were sample containers ice free?	n/a	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
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.
Were samples received within holding time?	yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	yes	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	yes	
		n/a ***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	yes	
Volatile / LL-Hg Requirements		
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?	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
1199007001-A	No Preservative Required	OK			
1199007001-B	Methanol field pres. 4 C	OK			
1199007001-C	Methanol field pres. 4 C	OK			
1199007002-A	No Preservative Required	OK			
1199007002-B	Methanol field pres. 4 C	OK			
1199007002-C	Methanol field pres. 4 C	OK			
1199007003-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.
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.

Laboratory Data Review Checklist

Completed By:

Doug Dusek

Title:

16-1104

Date:

1/29/2019

CS Report Name:

Report Date:

1/22/2019

Consultant Firm:

Nortech

Laboratory Name:

SGS Inc.

Laboratory Report Number:

1199007

ADEC File Number:

102.23.015

Hazard Identification Number:

1199007

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:

   Delivered samples to SGS immediately after sampling (

   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:

Not affected

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:

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

Comments:

PAH MS/MSD RPD for Benzo[k]fluoranthene does not meet QC criteria. This analyte was not detected above the LOQ in the parent sample

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:

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:

yes, RRO is detect in the MB greater than one half the LOQ, but less than the LOQ.

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:

v. Data quality or usability affected?

Comments:

No

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:

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:

No

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:

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:

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

Comments:

No

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:

Na

ii. If above LOQ, what samples are affected?

Comments:

Na

iii. Data quality or usability affected?

Comments:

Na

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

a. Defined and appropriate?

☑ Yes ☐ No Comments:

6020A - Metals MS/MSD RPD for lead does not meet QC criteria. Metals Sample/DUP RPD for lead does not meet QC criteria. Sample is non-homogenous for lead.