Ahtna Engineering Services, LLC
110 W. 38th Avenue, Suite 200A
Anchorage, AK 99503
www.ahtnaes.com
Phone: (907) 646-2969
Fax: (907) 868-8285

Design-Build • Construction • Environmental • Government Services

August 2, 2021

Ms. Laurie Butler
Environmental Manager
Menzies Aviation
6000 De Havilland Avenue
Anchorage, AK 99502

Subject: Final Letter Report for 2021 Groundwater Sampling,
16th Avenue & C Street, Anchorage, Alaska
ADEC File ID 2100.38.439

Dear Ms. Butler:

This letter presents the Ahtna Engineering Services, LLC, (Ahtna) report for groundwater sampling at the Anchorage Fueling and Service Company (AFSC) site, located at 16th Avenue and C Street in Anchorage, Alaska (Figure 1) on behalf of Menzies Aviation (Menzies). The work is associated with a 1998 pipeline release of jet fuel at the site. This fieldwork was conducted to evaluate and assess seasonal groundwater flow conditions (spring through fall) and current contaminant concentrations in groundwater at the site.

CONTAMINANTS OF CONCERN

Based on the petroleum product released and previous groundwater sampling conducted, the contaminants of concern for this site are gasoline-range organics (GRO), diesel-range organics (DRO), polycyclic aromatic hydrocarbons (PAHs), and fuel-related volatile organic compounds (VOC-F), including benzene, toluene, ethylbenzene, and xylenes. In addition, based on soil samples collected to the west of the site at the Cook Inlet Native Head Start (CINHS) property (Tellus, 2020), other VOC compounds, in particular 2-tetrachloroethane and 1,1,2–trichloroethane, were analyzed for as part of this sampling event.

Groundwater sample concentrations are evaluated against the Alaska Department of Environmental Conservation (ADEC) groundwater cleanup levels as stated in Title 18 Alaska Administrative Code (AAC) Chapter 75 (18 AAC 75), Section 345 Table C (ADEC, 2021). Groundwater cleanup levels are provided in the attached analytical results tables.

WORK PERFORMED

This project was managed and executed by Ahtna on behalf of Menzies. The project manager and field scientists performing the sampling meet the definition of "qualified environmental professionals" as per 18 AAC 75 (ADEC, 2021) and 18 AAC 78 (ADEC, 2019a). Samples and measurements were collected in accordance with the ADEC *Field Sampling Guidance* (ADEC, 2019b) by individuals meeting the definition of a "qualified person", with the exception that the pump inlet was placed within the well screen interval rather than on the top foot of the water column. This could potentially result in a low bias for the results.

The field notebook and field forms for this project are provided in Attachment 1; the laboratory data is provided in Attachment 2; the data quality review and ADEC checklist are provided in Attachment 3; and the project conceptual site model (CSM) graphic form is provided in Attachment 4.

Groundwater Sampling

On June 9, 2021, two Ahtna field scientists mobilized to the 16th Avenue and C Street site. Monitoring wells MW-4 and MW-5 were located, opened, and the water level measured (Figure 2). Upon arrival, the wells were found to be buried and some of the bentonite seal inside the well monuments had pushed up into the space around the well casing, but had not gone into the well itself. After clearing out the bentonite, the wells were purged and sampled using low-flow sampling techniques with a bladder pump and flow-through cell. The depth of pump intake at all wells was near the middle of the water column. Purge water from monitoring well MW-5 was noted to have product sheen and a hydrocarbon odor. Monitoring well MW-4 purge water had no odor or sheen.

An oil-water interface probe was used to measure light non-aqueous phase liquid (LNAPL) that could potentially be present in the monitoring wells. LNAPL was not detected in monitoring well MW-5 for this sampling event.

Groundwater samples were collected once monitored groundwater parameters had stabilized per the ADEC *Field Sampling Guidance.* Ahtna collected and documented water quality parameters every three to five minutes using a QED™ MP50 bladder pump, a YSI Pro Plus water meter with a flow-through cell, and a Hach® 2100Q turbidimeter. Samples were collected after stabilization of at least four of the six parameters summarized in the following table.

Water-Quality Parameter Criteria	
Temperature	± 3%
pH	± 0.1
Conductivity	± 3%
Redox Potential	± 10 millivolts
Dissolved Oxygen	± 10%
Turbidity	± 10%

Samples were collected for GRO and VOCs first, followed by DRO and PAHs. Samples were labeled with the date and time of collection, the requested analyses, and the sampler's initials. Samples were stored in a cooler with gel ice to maintain a temperature of approximately 4 degrees Celsius (°C) and then delivered to SGS North America, Inc., (SGS) in Anchorage, under standard chain-of-custody procedures.

All purge water was collected and transported to US Ecology Viking facility on June 10, 2021. Field notes and the groundwater sampling forms are provided in Attachment 1.

LABORATORY RESULTS

The following section presents the analytical results of groundwater sampling. The laboratory report is provided in Attachment 2 and completed ADEC Laboratory Data Review Checklist for groundwater analytical samples in Attachment 3.

Groundwater Analytical Results

Groundwater samples were analyzed for GRO (Alaska Method [AK] 101) DRO (AK 102), PAHs (Method 8270D selected ion monitoring [SIM]), and VOCs (Method 8260C). Groundwater analytical results are summarized in Tables 1-1 and 1-2.

The groundwater sample from monitoring well MW-4 resulted in three detections, none of which were above their respective ADEC Table C Groundwater Cleanup Levels.

The groundwater sample from monitoring well MW-5 resulted in numerous detections, with 1,2,4-trimethylbenzene, benzene, ethylbenzene, naphthalene [VOCs and PAHs], DRO, and 1-methylnaphthalene exceeding the ADEC groundwater cleanup levels.

Of note, neither 2-tetrachloroethane nor 1,1,2–trichloroethane were detected in the groundwater samples collected from MW-4 and MW-5.

MANN-KENDALL ANALYSIS

Historically, MW-5 is the only well with DRO and benzene detections reported from more than one sampling event. A Mann-Kendall (M-K) analysis was performed for DRO and benzene concentrations in MW-5. The concentrations and results of the benzene and DRO M-K analyses are provided in Table 2-1 and 2-2, respectively.

The M-K analyses for DRO and benzene concentrations in MW-5 suggest no trend for either analyte in the well. Table 3 was used to determine the percent confidence for the trend analysis.

CONCEPTUAL SITE MODEL

As stated in the *Guidance on Developing Conceptual Site Models* (ADEC, 2017), a CSM shows the current and future scenarios for contamination in the environment and is considered a critical

step in the assessment and cleanup process. A CSM was generated in accordance with ADEC requirements for the 2019 letter report for this site; it is included in Attachment 4.

Media that are potentially contaminated from the 1998 release of jet fuel at the site includes vapor, groundwater, and subsurface soil. Potential receptors include construction workers and commercial/industrial workers. It is unknown if the groundwater on site will be used as a drinking water site in the future. The incidental soil ingestion and incidental groundwater ingestion pathways are considered complete. Construction workers and commercial/industrial workers digging on site could encounter contaminated soil or groundwater at 4.5–5.5 feet below ground surface. The dermal absorption of contaminants from soil or groundwater pathways are considered complete.

Several compounds were found above the ADEC groundwater cleanup levels in MW-5 and exhibit risk for dermal exposure. Any worker digging in the area could be exposed to the groundwater and soil. Inhalation of outdoor air is considered a complete pathway. VOCs have been detected above ADEC cleanup levels in the groundwater. Workers digging at the site could be exposed to contaminants volatilizing from the groundwater or soil.

CONCLUSIONS AND RECOMMENDATIONS

Upon locating the wells, they were found to be buried and had bentonite pushed up inside the well monument. This may indicate that they were run over at some point, presumably during construction activities at the CINHS property immediately to the west of the wells. If run over, the monitoring well point elevations may have changed. At this time, this is not highly significant as only two wells are present at the site so groundwater flow direction cannot be determined. However, if in the future a or multiple wells are installed for this project, both the new and existing well elevations (and locations) should be surveyed by a professional land surveyor to provide accurate groundwater elevations and flow direction/gradient calculations.

MW-4 exhibited no analytical ADEC groundwater cleanup level exceedances; this is consistent with previous findings. As in past sampling events, several analytes were detected in MW-5 at concentrations above ADEC groundwater cleanup levels. For this event, these include DRO, benzene, naphthalene, 1,2,4-trimethylbenzene, ethylbenzene, 1-methylnaphthalene. The M-K trend analysis performed on DRO and benzene concentrations in MW-5 suggests that those levels are exhibiting no trend.

Figure 3 presents groundwater flow directions determined from measurements taken from MW-4, MW-5, and MW-6 before MW-6 was decommissioned in 2020. Monitoring well measurements were made in in October 2018 and May, August, and November, 2019. All inferred groundwater flow direction determinations were very consistent and showed a flow direction away from the CINHS property (located to the west of the site). Analytical results from MW-6 in 2018 and 2019 did not have any analytes detected except for a very low concentration of DRO in 2019 (220 micrograms per liter (µg/L); the cleanup level is 1,500 µg/L). The VOC analytes detected above cleanup levels in soil by Tellus during excavation activities (2-tetrachloroethane and 1,1,2–

trichloroethane) were not detected in groundwater in either MW4 or MW-5. Additionally, these two chlorinated solvents are not components of jet fuel. These factors point to a separate contamination source for the 2-tetrachloroethane and 1,1,2–trichloroethane detected at the CINHS.

Based on the long-term results of sampling in MW-4 and MW-5 indicating the presence of cleanup-level analyte exceedances in MW-5, Ahtna recommends continued biennial sampling of MW-4 and MW-5.

We trust this is sufficient for your needs at this time. Please contact us if you should have any further questions regarding this letter report.

REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2017. *Guidance on Developing Conceptual Site Models.* January.

ADEC, 2019a. 18 Alaska Administrative Code (AAC) 78, Underground Storage Tanks. September 29.

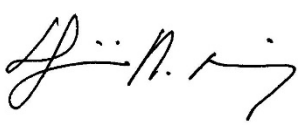
ADEC, 2019b. *Field Sampling Guidance.* October.

ADEC, 2021. 18 Alaska Administrative Code (AAC) 75, Oil and Other Hazardous Substances Pollution Control. June 24.

Tellus, 2020. *Field Summary Report for Cook Inlet Native Head Start School Site, Tract A-3 Gay Subdivision, 16th Avenue and C Street, Anchorage, Alaska.* May.

Sincerely,

Ahtna Engineering Services, LLC



Luke Hoffmann
Project Manager

Herminio (Nino) Muniz, PG
Program Manager

Tables:

- Table 1-1 – Groundwater Analytical Results for GRO and VOC
- Table 1-2 – Groundwater Analytical Results For DRO and PAH
- Table 2-1 – Mann-Kendall Trend Analysis for Benzene in MW-5
- Table 2-2 – Mann-Kendall Trend Analysis for DRO in MW-5
- Table 3 – Mann-Kendall Confidence Level Table

Figures:

Figure 1 – State and Site Vicinity Map
Figure 2 – Site Layout
Figure 3 – Groundwater Flow Directions 2018 and 2019

Attachments:

1. 2021 Field Notes and Groundwater Sampling Forms
2. Laboratory Report
3. Data Quality Review and ADEC Laboratory Data Review Checklist
4. Conceptual Site Model
5. ADEC Response to Comments

TABLES

(This Page Intentionally Left Blank)

Table 1-1: Laboratory Analytical Reports for GRO and VOC
AFSC 16th Ave. and C St. Groundwater Sampling
Anchorage, Alaska

16th and C			Client Sample Id:	21-C16-MW-4	21-C16-MW-5	21-C16-MW-8	21-C16-TB-W
			Lab Sample Id:	1213184001	1213184004	1213184002	1213184003
			Date/Time	6/9/2021 1:55 PM	6/9/2021 4:25 PM	6/9/2021 4:30 PM	6/9/2021 8:00 AM
						duplicate of 21-C16-MW-5	
Method	**Analyte**	**Unit**	**ADEC Table C[1]**				
AK101	Gasoline Range Organics	mg/L	1.5	0.0500 U	0.538	0.499	0.0500 U
SW8260D	1,1,1,2-Tetrachloroethane	µg/L	5.7	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	1,1,1-Trichloroethane	µg/L	8000	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,1,2,2-Tetrachloroethane	µg/L	0.76	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	1,1,2-Trichloroethane	µg/L	0.41	0.200 U	0.200 U	0.200 U	0.200 U
SW8260D	1,1-Dichloroethane	µg/L	28	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,1-Dichloroethene	µg/L	280	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,1-Dichloropropene	µg/L	n/a	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,2,3-Trichlorobenzene	µg/L	7.0	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,2,3-Trichloropropane	µg/L	0.0075	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,2,4-Trichlorobenzene	µg/L	4.0	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,2,4-Trimethylbenzene	µg/L	56	0.500 U	**111**	**113**	0.500 U
SW8260D	1,2-Dibromo-3-chloropropane	µg/L	n/a	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	1,2-Dibromoethane	µg/L	0.075	0.0375 U	0.0375 U	0.0375 U	0.0375 U
SW8260D	1,2-Dichlorobenzene	µg/L	300	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,2-Dichloroethane	µg/L	1.7	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	1,2-Dichloropropane	µg/L	8.2	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,3,5-Trimethylbenzene	µg/L	60	0.500 U	**24.8**	**25.7**	0.500 U
SW8260D	1,3-Dichlorobenzene	µg/L	300	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	1,3-Dichloropropane	µg/L	n/a	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	1,4-Dichlorobenzene	µg/L	4.8	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	2,2-Dichloropropane	µg/L	n/a	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	2-Butanone (MEK)	µg/L	5600	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	2-Chlorotoluene	µg/L	n/a	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	2-Hexanone	µg/L	38	**14.6**	5.00 U	5.00 U	5.00 U
SW8260D	4-Chlorotoluene	µg/L	n/a	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	4-Isopropyltoluene	µg/L	n/a	0.500 U	**18.2**	**18.3**	0.500 U
SW8260D	4-Methyl-2-pentanone (MIBK)	µg/L	6300	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	Benzene	µg/L	4.6	0.200 U	**14.6**	**14.7**	0.200 U
SW8260D	Bromobenzene	µg/L	62	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Bromochloromethane	µg/L	n/a	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Bromodichloromethane	µg/L	1.3	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	Bromoform	µg/L	33	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Bromomethane	µg/L	7.5	2.50 U	2.50 U	2.50 U	2.50 U
SW8260D	Carbon disulfide	µg/L	810	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	Carbon tetrachloride	µg/L	4.6	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Chlorobenzene	µg/L	78	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	Chloroethane	µg/L	21,000	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Chloroform	µg/L	2.2	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Chloromethane	µg/L	190	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Dibromochloromethane	µg/L	8.7	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	Dibromomethane	µg/L	8.3	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Dichlorodifluoromethane	µg/L	200	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Ethylbenzene	µg/L	15	0.500 U	**30.3**	**31.0**	0.500 U
SW8260D	Freon-113	µg/L	10,000	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	Hexachlorobutadiene	µg/L	1.4	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Isopropylbenzene (Cumene)	µg/L	450	0.500 U	**12.3**	**12.5**	0.500 U
SW8260D	Methyl-t-butyl ether	µg/L	140	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	Methylene chloride	µg/L	110	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	Naphthalene	µg/L	1.7	0.500 U	**81**	**83**	0.500 U
SW8260D	Styrene	µg/L	1200	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Tetrachloroethene	µg/L	41	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Toluene	µg/L	1100	0.500 U	**0.316 J**	**0.330 J**	0.500 U
SW8260D	Trichloroethene	µg/L	2.8	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Trichlorofluoromethane	µg/L	5200	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	Vinyl acetate	µg/L	410	5.00 U	5.00 U	5.00 U	5.00 U
SW8260D	Vinyl chloride	µg/L	0.19	0.0750 U	0.0750 U	0.0750 U	0.0750 U
SW8260D	Xylenes (total)	µg/L	190	1.50 U	**45.2**	**46.3**	1.50 U
SW8260D	cis-1,2-Dichloroethene	µg/L	36	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	cis-1,3-Dichloropropene	µg/L	n/a	0.250 U	0.250 U	0.250 U	0.250 U
SW8260D	n-Butylbenzene	µg/L	1000	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	n-Propylbenzene	µg/L	660	0.500 U	**17.6**	**17.7**	0.500 U
SW8260D	sec-Butylbenzene	µg/L	2000	0.500 U	**5.72**	**5.73**	0.500 U
SW8260D	tert-Butylbenzene	µg/L	690	0.500 U	**1.22**	**1.22**	0.500 U
SW8260D	trans-1,2-Dichloroethene	µg/L	360	0.500 U	0.500 U	0.500 U	0.500 U
SW8260D	trans-1,3-Dichloropropene	µg/L	n/a	0.500 U	0.500 U	0.500 U	0.500 U

Notes:

[1] 18 ACC 75.345 Table C

Results may be biased low as pump inlet was placed within the screened interval, not within top foot of water column.

bold	detected
yellow highlight	exceeds 18 ACC 75.345 Table C value
ADEC	Alaska Department of Environmental Conservation
GRO	gasoline range organics
J	estimated below LOQ
LOQ	limit of quantitation
mg/L	milligrams per liter
µg/L	micrograms per liter
n/a	not analyzed
U	not detected at LOQ
VOC	volatile organic compounds

Ahtna Engineering Services, LLC

(This Page Intentionally Left Blank)

Table 1-2: Laboratory Analytical Reports for DRO and PAH
AFSC 16th Ave. and C St. Groundwater Sampling
Anchorage, Alaska

16th and C			Client Sample Id:	21-C16-MW-4	21-C16-MW-5	21-C16-MW-8
			Lab Sample Id:	1213184001	1213184004	1213184002
			Date/Time	6/9/2021 1:55 PM	6/9/2021 4:25 PM	6/9/2021 4:30 PM
						duplicate of 21-C16-MW-5
Method	**Analyte**	**Unit**	**ADEC Table C**			
AK102	Diesel Range Organics	mg/L	1.1	**0.688**	**8.18 QN**	**12.2 QN**
8270D SIM	1-Methylnaphthalene	µg/L	11	0.0250 U	**24**	**28.4**
8270D SIM	2-Methylnaphthalene	µg/L	36	0.0250 U	**4.13**	**3.66**
8270D SIM	Acenaphthene	µg/L	530	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Acenaphthylene	µg/L	260	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Anthracene	µg/L	43	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Benzo(a)Anthracene	µg/L	0.30	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Benzo[a]pyrene	µg/L	0.25	0.0100 U	0.00980 U	0.0102 U
8270D SIM	Benzo[b]Fluoranthene	µg/L	2.5	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Benzo[g,h,i]perylene	µg/L	0.26	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Benzo[k]fluoranthene	µg/L	0.80	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Chrysene	µg/L	2.0	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Dibenzo[a,h]anthracene	µg/L	0.25	0.0100 U	0.00980 U	0.0102 U
8270D SIM	Fluoranthene	µg/L	260	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Fluorene	µg/L	290	0.0250 U	**1.00**	**1.26**
8270D SIM	Indeno[1,2,3-c,d] pyrene	µg/L	0.19	0.0250 U	0.0245 U	0.0255 U
8270D SIM	Naphthalene	µg/L	1.7	0.0500 U	**21.9**	**23.1**
8270D SIM	Phenanthrene	µg/L	170	**0.0311 J**	**0.143**	**0.184**
8270D SIM	Pyrene	µg/L	120	0.0250 U	0.0245 U	0.0255 U

Notes:

[1] 18 ACC 75.345 Table C

Results may be biased low as pump inlet was placed within the screened interval, not within top foot of water column.

bold	detected
yellow highlight	exceeds 18 ACC 75.345 Table C value
ADEC	Alaska Department of Environmental Conservation
DRO	diesel range organics
J	estimated below LOQ
LOQ	limit of quantitation
mg/L	milligrams per liter
µg/L	micrograms per liter
n/a	not analyzed
PAH	polycyclic aromatic hydrocarbons
QN	estimated with an unknown bias due to duplicate
SIM	selected ion monitoring
U	not detected at LOQ

Ahtna Engineering Services, LLC

(This Page Intentionally Left Blank)

Table 2-1: Mann-Kendall Analysis for Benzene in MW-5
AFSC 16th Avenue & C Street Groundwater Sampling
Anchorage, Alaska

Monitoring Well: MW-5
Contaminant: Benzene

Monitoring Date:	Jul-08	Sep-09	Jun-10	Jul-12	Aug-14	Jul-16	Oct-17	Oct-18	Aug-19	Jun-21	
	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10	
Benzene in mg/L:	0.011	0.011	0.030	0.014	0.008	0.012	0.013	0.006	0.023	0.013	
Row 1: Compare to Event 1		0	1	1	-1	1	1	-1	1	1	4
Row 2: Compare to Event 2			1	1	-1	1	1	-1	1	1	4
Row 3: Compare to Event 3				-1	-1	-1	-1	-1	-1	-1	-7
Row 4: Compare to Event 4					-1	-1	-1	-1	1	-1	-4
Row 5: Compare to Event 5						1	1	-1	1	1	3
Row 6: Compare to Event 6							1	-1	1	1	2
Row 7: Compare to Event 7								-1	1	0	0
Row 8: Compare to Event 8									1	1	2
Row 9: Compare to Event 9										1	1

Notes:

– A minimum of four (4) independent sampling events are required for the Mann-Kendall test to be valid.
– Non-detects are listed as 1/2 of the Reporting Limit (RL).
– A negative S value with confidence > 90% and < 95% indicates a probable decreasing concentration trend.
– A negative S value with confidence > 95% indicates a decreasing concentration trend.
– A positive S value with confidence > 90% and < 95% indicates a probable increasing concentration trend.
– A positive S value with confidence > 95% indicates an increasing concentration trend.
– A positive S value with confidence < 90% indicates that there is likely no concentration trend.
– A negative S value with confidence < 90% and CV > 1 indicates that there is likely no concentration trend.
– A negative S value with confidence < 90% and CV < 1 indicates a stable concentration trend.
– The closer to zero the CV is, the less variation in concentrations between sampling events.
Confidence Level Determination Based on Table A18 (Gilbert 1987)
Effects of Coefficient of Variance based on Table 3.2 (AFCEE, 2000)

Mann-Kendall Statistic (S) = Total	**5**
Confidence Level	**67%**
Coefficient of Variance (CV)	**0.51**
Result	**Likely no trend**

Ahtna Engineering Services, LLC

(This Page Intentionally Left Blank)

Table 2-2: Mann-Kendall Analysis for DRO in MW-5
AFSC 16th Avenue & C Street Groundwater Sampling
Anchorage, Alaska

Monitoring Well: MW-5
Contaminant: DRO

Monitoring Date:	Jul-08	Sep-09	Jun-10	Jul-12	Aug-14	Jul-16	Oct-17	Oct-18	Aug-19	Jun-21
	Event 1	Event 2	Event 3	Event 4	Event 5	Event 6	Event 7	Event 8	Event 9	Event 10
DRO in mg/L:	1.90	1.47	1.80	1.30	1.00	0.85	13.10	4.44	19.00	12.20

Row 1: Compare to Event 1	-1	-1	-1	-1	-1	1	1	1	1	-1
Row 2: Compare to Event 2		1	-1	-1	-1	1	1	1	1	2
Row 3: Compare to Event 3			-1	-1	-1	1	1	1	1	1
Row 4: Compare to Event 4				-1	-1	1	1	1	1	2
Row 5: Compare to Event 5					-1	1	1	1	1	3
Row 6: Compare to Event 6						1	1	1	1	4
Row 7: Compare to Event 7							-1	1	-1	-1
Row 8: Compare to Event 8								1	1	2
Row 9: Compare to Event 9									-1	-1

Notes:

– A minimum of four (4) independent sampling events are required for the Mann-Kendall test to be valid.
– Non-detects are listed as 1/2 of the Reporting Limit (RL)
– A negative S value with confidence > 90% and < 95% indicates a probable decreasing concentration trend.
– A negative S value with confidence > 95% indicates a decreasing concentration trend.
– A positive S value with confidence > 90% and < 95% indicates a probable increasing concentration trend.
– A positive S value with confidence > 95% indicates an increasing concentration trend.
– A positive S value with confidence < 90% indicates that there is likely no concentration trend.
– A negative S value with confidence < 90% and CV > 1 indicates that there is likely no concentration trend.
– A negative S value with confidence < 90% and CV < 1 indicates a stable concentration trend.
– The closer to zero the CV is, the less variation in concentrations between sampling events.
Confidence Level Determination Based on Table A18 (Gilbert 1987)
Effects of Coefficient of Variance based on Table 3.2 (AFCEE, 2000)

Mann-Kendall Statistic (S) = Total	**11**
Confidence Level	**81%**
Coefficient of Variance (CV)	**1.15**
Result	**Likely no trend**

Ahtna Engineering Services, LLC

(This Page Intentionally Left Blank)

Table 3: Confidence Levels for Mann-Kendall S Statistic and Sample Size From Normal Z-Score
AFSC 16th Avenue C Street Groundwater Sampling
Anchorage, Alaska

S (+/-)	4	5	6	7	8	9	10
4	0.9128843	0.8364066	0.7738148	0.7259972	0.689655	0.661671	0.639743
5	0.9552853	0.8896643	0.826221	0.7736554	0.731907	0.698916	0.672640
6	0.97923	0.9291777	0.8701718	0.8162396	0.771049	0.734193	0.704247
7	0.9912914	0.9567946	0.905757	0.853443	0.806762	0.767244	0.734375
8	0.9967108	0.9749782	0.9335725	0.8852219	0.83885	0.797876	0.762863
9	0.9988827	0.9862568	0.954563	0.9117629	0.867245	0.825959	0.789586
10	0.9996591	0.9928471	0.9698554	0.9334358	0.89199	0.851427	0.814453
11	0.9999067	0.9964746	0.9806112	0.9507395	0.913227	0.874274	0.83741
12	0.999977	0.9983557	0.9879147	0.9642473	0.931177	0.894549	0.858435
13	0.999995	0.9992746	0.9927025	0.9745571	0.946119	0.912346	0.877536
14	0.999999	0.9996974	0.9957325	0.9822509	0.958368	0.9278	0.894751
15	0.9999998	0.9998807	0.9975839	0.9878647	0.968257	0.941075	0.910144
16	1	0.9999556	0.9986759	0.9918695	0.976119	0.952354	0.923797
17	1	0.9999844	0.9992978	0.9946630	0.982276	0.961834	0.935811
18	1	0.9999948	0.9996397	0.9965681	0.987024	0.969716	0.946298
19	1	0.9999984	0.9998212	0.9978384	0.990629	0.976198	0.955379

Number of Sampling Events

Key:

	> 90% and < 95% Confidence
	> 95% Confidence

Notes:

– The test statistic, tau, is computed as $\tau = S/(n(n-1)/2)$
Donald W. Meals, Jean Spooner, Steven A. Dressing, and Jon B. Harcum. 2011. Statistical analysis for monotonic trends, Tech Notes 6, November 2011. Developed for U.S. Environmental Protection Agency by Tetra Tech, Inc., Fairfax, VA, 23 p. Available online at www.bae.ncsu.edu/programs/extension/wqg/319monitoring/tech_notes.htm.

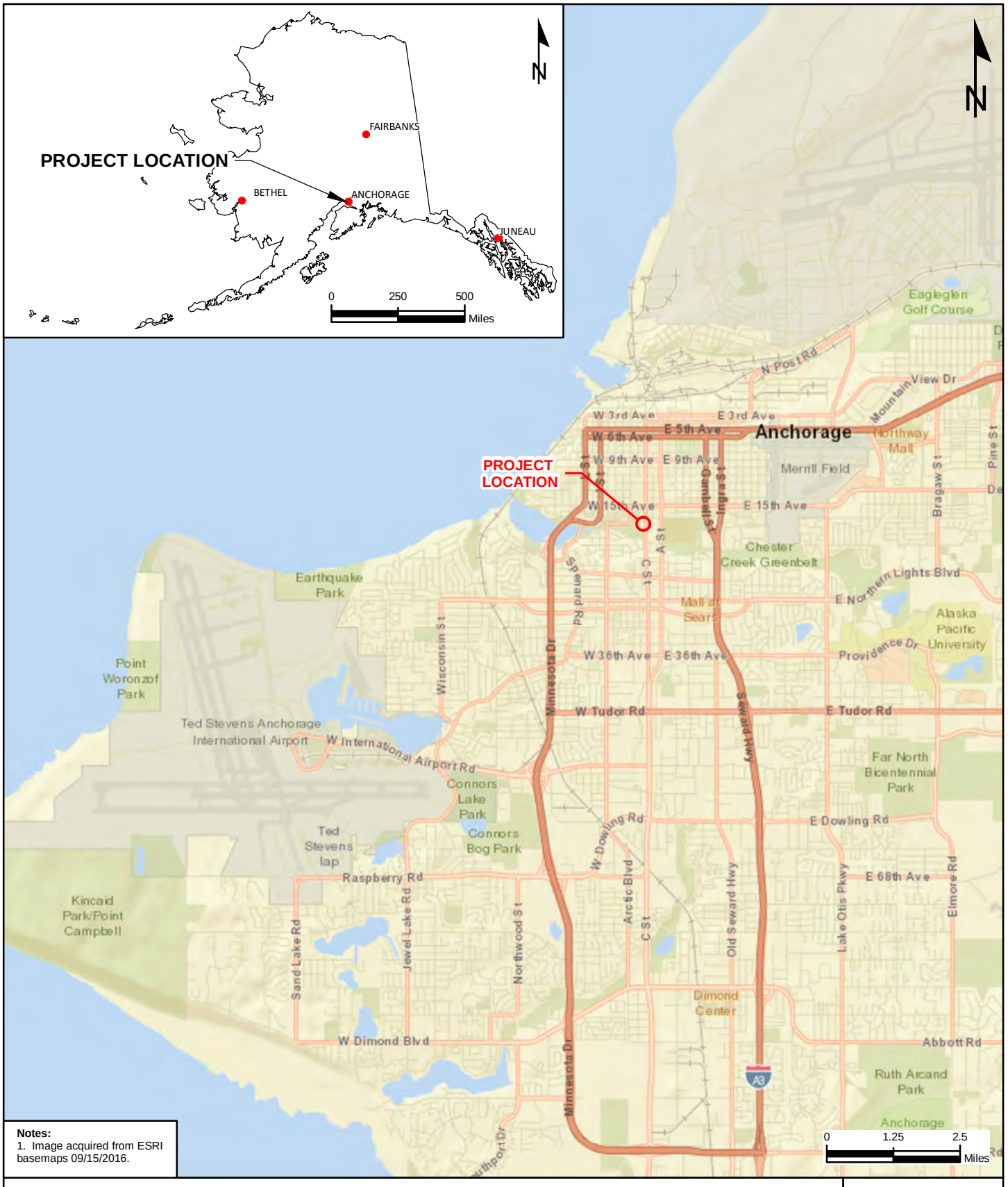
– The standard normal z-score is defined as $z = \tau((9n(n-1))/(2(2n+5)))1/2$
Ajit C. Tamhane and Dorothy D. Dunlop. 2000. Statistics and Data Analysis, from Elementary to Intermediate. Prentice Hall, Upper Saddle River, NJ 07458. p. 591

Ahtna Engineering Services, LLC

(This Page Intentionally Left Blank)

FIGURES

(This Page Intentionally Left Blank)



Notes:
1. Image acquired from ESRI basemaps 09/15/2016.

Menzies Aviation 16th Avenue and C Street Groundwater Sampling 2021

Ahtna Engineering Services, LLC

State and Site Vicinity Map

Project Number:	Figure Number:
20204.058.02	1
Date: 6/23/2020	
Drafted By: L.H.	

Prepared by mebert, 10/31/2018; L:\Anchorage\20204029\GIS\MXD\F1State&SiteVicinityME.mxd

(This Page Intentionally Left Blank)

LEGEND

- Monitoring Wells
- Former Recovery Well
- Existing Pipeline (abandoned in place)
- Property Boundaries
- Former Excavation

Notes:

1. Locations are approximate.
2. Image acquired from ESRI basemaps 09/15/2016.
3. Results shown are reported in micrograms per liter and exceed the Alaska Department of Environmental Conservation Table C Groundwater Cleanup Levels

Menzies Aviation 16th Avenue and C Street
Groundwater Sampling 2021

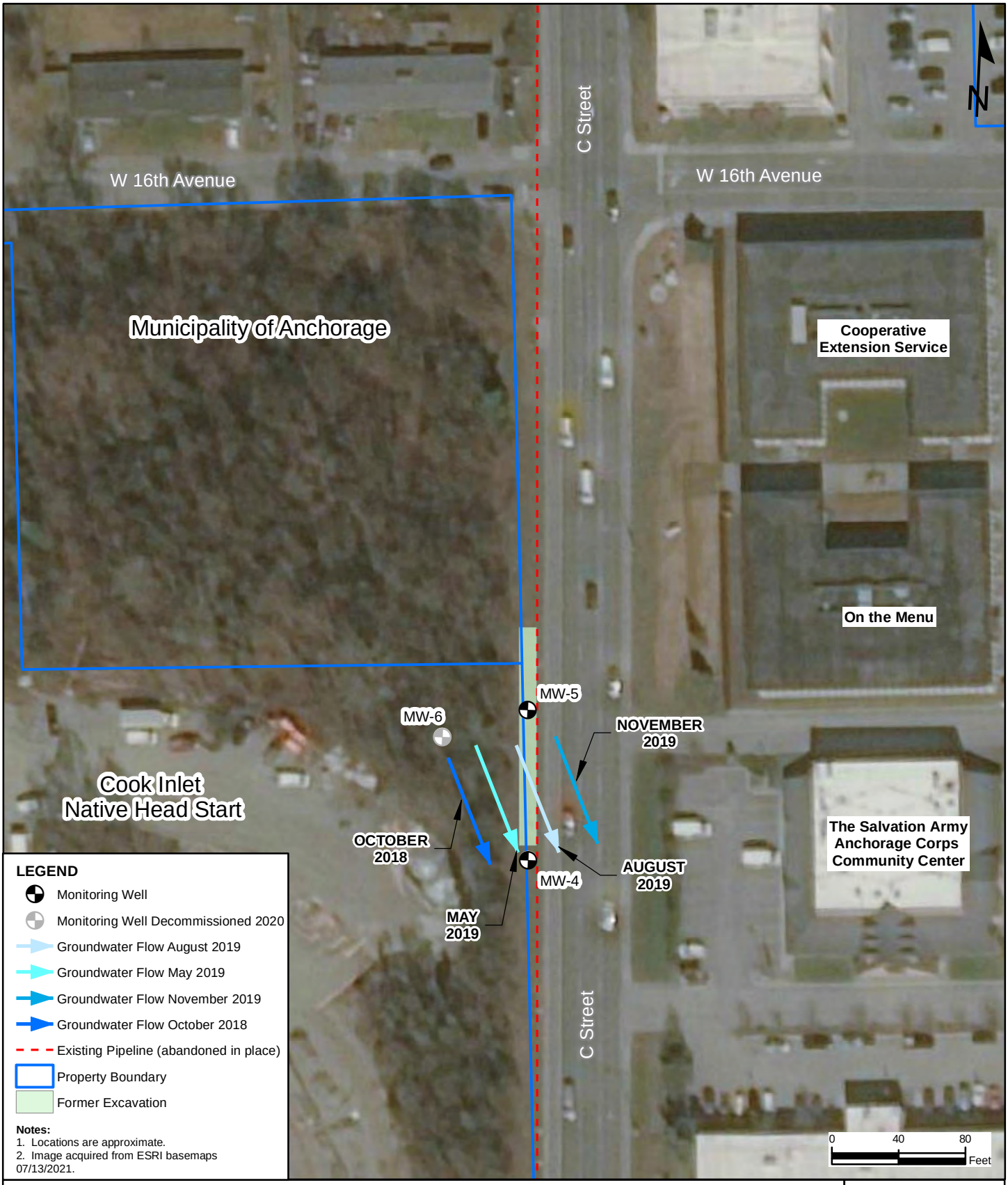
Ahtna Engineering Services, LLC

Site Layout

Project Number:	Figure Number:
20204.058.02	2
Date: 6/23/2020	
Drafted By: L.H.	

Prepared by mebert, 10/4/2019; L:\Anchorage\20204.029\GIS\MXD\F2SitePlan.mxd

(This Page Intentionally Left Blank)



Menzies Aviation 16th Avenue and C Street
Groundwater Sampling 2021

Ahtna Engineering Services, LLC

Groundwater Flow Directions
2018 & 2019

Project Number:	Figure Number:
20204.058.02	3
Date: 7/19/2021	
Drafted By: R.H.	

Prepared by rhueteson, 7/19/2021; \\200-data01\AutoCAD-GIS\Anchorage\20204.058\GIS\MXD\F3_GW2018&2019.mxd

(This Page Intentionally Left Blank)

ATTACHMENT 1

2021 FIELD NOTES AND GROUNDWATER SAMPLING FORMS

(This Page Intentionally Left Blank)

DEFYING
MOTHER NATURE®
SINCE 1916

RECYCLABLE

All components of this product are recyclable

Rite in the Rain

A patented, environmentally responsible, all-weather writing paper that sheds water and enables you to write anywhere, in any weather.

Using a pencil or all-weather pen, *Rite in the Rain* ensures that your notes survive the rigors of the field, regardless of the conditions.

JL DARLING LLC
Tacoma, WA 98424-1017 USA
www.RiteintheRain.com

Item No. 371FX
NSN: 7530-01-642-7769
ISBN: 978-1-60134-186-0

Made in the USA
US Pat No. 6,863,940

6 32281 03718 7

A.S.I.G.

AA The Engineering Services

Rite in the Rain®
ALL-WEATHER
UNIVERSAL
№ 371FX

16th and C-Street

12

Luke H — 16th Cst MW6 Removal — 6/27/2020 Sunny 65°

1030 – Arrive onsite @ 16th & C st & check in with Barry, the site Manager @ the property on which MW6 is located & inform him that I will be onsite.

1106 – find MW6 & attach PVC Putter attachment to well casing & wait for glue to cure. while setting up for well abandonment.

1245 – Pull well casing out of MW6 & Backfill w/ Bentonite. Hydrate Bentonite using clean tap water until surface seal becomes impermeable. Remove surface mount & backfill top 1 foot w/ native soil from the site.

1345 – Remove all waste & tools from the site & check out w/ the Site Manager Barry & leave the site EOD

Scale: 1 square = _____

G. Manikenson
L. Hoffman — 16th & C St. — 6/9/2021 Cloudy 68°F

13

1100	Arrive on site and check wells location
1115	Dig out wells with shovel. It appears that when wells were buried the bentonite came up and covered the well tops. Bentonite was removed and no bentonite was inside the PVC well.
1300	Begin setting up well purge and sample equipment at MW-4
1330	Begin well purge.
1350	well parameters stabilized w/a GW parameter
1355	Begin sampling MW-4; 21-C16-MW-4.
1530	Begin ~~collecting parameters~~ Setting up well purge and sampling equipment @ MW-5.
1555	Begin collecting parameters @ MW-5
1620	Groundwater parameters stabilize @ MW-5
1625	Begin collecting sample @ MW-5
	21-C16-MW-5, 1625 (Primary)
	21-C16-MW-9, 1630 (duplicate)
note:	Visible sheen and slight odor in sample.
1845	Depart site with 15 gallon drum of purge water from 16th & 19th & C. Will dispose of GW on 7/10 when facility is open.

Scale: 1 square = _____

Rite in the Rain

G. Mamikunian
L. Hoffman

16th & C St.

6/9/21

1900 Arrive @ warehouse to decon and put away equipment. Sample QC.

Note: Morning safety brief was conducted @ 0930 on site @ 19th & C where field work was conducted concurrently. Sample kits were picked up on 6/8/21 in preparation for field work.

Sample ID	Time	QC Type
21-C16-MW-4	1355	Primary
21-C16-MW-5	1625	Primary
21-C16 MW-8	1630	Duplicate

* Field notes were updated and QC'd @ office after field event.

1930 EOD

Gary Mamikunian 6/9/21

Scale: 1 square = _____

G. Mamikunian
L. Hoffman

16th & C St.

6/10/21

1010 Drop off sample cooler with groundwater samples @ SGS Lab.

1100 Transport 15 gallon purge water drum to US Ecology, Vicinity Drive Facility for disposal.

1130 EOD

Gary Mamikunian 6/10/21

Scale: 1 square = _____

(This Page Intentionally Left Blank)

Ahtna Engineering Services, LLC

GROUNDWATER SAMPLING FORM

PROJECT NUMBER:

WELL NUMBER: MW-4

SHEET: of

PROJECT NAME	16th & C St.	WELL CONDITION	good / fair
CLIENT	Menzies	DEPTH TO BASE (ft FROM TOC)	12.61
DATE	6/9/21	DEPTH TO WATER (ft FROM TOC)	5.10
AOC	—	HEIGHT OF WATER COLUMN (ft)	7.51
SCIENTIST	Greg M / Luke N	WELL VOLUME (gal)	0.826
WEATHER/ TEMPERATURE	55° Cloudy	3 WELL VOLUMES (gal)	2.47
WIND	N/A		

NOMINAL DIAMETER	O.D.	I.D.	VOLUME (GAL/LIN FT)
1"	1.315"	1.049"	0.04
(1.5")	1.9"	1.610"	(0.11)
2"	2.375"	2.067"	0.17
3"	3.5"	3.068"	0.38
4"	4.5"	4.026"	0.66

SAMPLING DATA

DEPTH OF PUMP INTAKE: 8.5'

SAMPLE COLLECTED WITH: __ Bailer; X Pump, Type: bladder; __ Other, Specify:

MADE OF: X Stainless Steel; __ PVC; __ Teflon; __ Disposable LDPE; __ Other, Specify:

SAMPLING DECON PROCEDURE: Alconox / DI

SAMPLE DESCRIPTION: (color, free product thickness, odor, turbidity) Clear

FIELD WATER QUALITY PARAMETERS

						Stabilization Requirements (3 must be stable)						
						± 3%	± 10%	± 0.1	± 10 mV	± 10%		
Time	Purged Volume (Gal)	Purge Rate (mL/min)	Water Level	Draw Down (ft)	Temperature (°C)	Spec. Cond. (µS/cm)[C]	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
1330	0.05	55	5.10	0	7.1	316	0.96	7.00	75.1	34.9	clear	N/A
1335	0.10	55	5.10	0	6.9	314	0.76	7.02	67.5	28.2	clear	N/A
1340	0.15	55	5.10	0	6.9	314	0.66	7.01	62.0	22.4	clear	N/A
1345	0.20	55	5.10	0	7.1	313	0.58	7.00	56.5	17.1	clear	N/A
1350	0.25	55	5.10	0	7.0	314	0.53	6.99	52.4	13.6	clear	N/A

ANALYTICAL SAMPLE INFORMATION

Sample ID	Time	Analytes
21-C16-MW-4	1355	DRO RRO GRO BTEX PAH VOCs PEST HERB
~~21-C16-MW-8~~ (Dup)	~~1400~~	DRO RRO GRO BTEX PAH VOCs PEST HERB
		DRO RRO GRO BTEX PAH VOCs PEST HERB

Sampling Notes:

Collected duplicate @ MW-5 because it was dirty well.

Ahtna Engineering Services, LLC

GROUNDWATER SAMPLING FORM

PROJECT NUMBER:

WELL NUMBER: MW-5

SHEET: of

PROJECT NAME	16th & C St.	WELL CONDITION	Fair
CLIENT	Menzies	DEPTH TO BASE (ft FROM TOC)	12.70
DATE	6/9/21	DEPTH TO WATER (ft FROM TOC)	4.44
AOC		HEIGHT OF WATER COLUMN (ft)	8.26
SCIENTIST	Greg Mannikka	WELL VOLUME (gal)	0.91
WEATHER/ TEMPERATURE	Cloudy 56°	3 WELL VOLUMES (gal)	2.73
WIND	5 mph		

NOMINAL DIAMETER	O.D.	I.D.	VOLUME (GAL/LIN FT)
1"	1.315"	1.049"	0.04
(1.5")	1.9"	1.610"	(0.11)
2"	2.375"	2.067"	0.17
3"	3.5"	3.068"	0.38
4"	4.5"	4.026"	0.66

SAMPLING DATA

DEPTH OF PUMP INTAKE: 8.5' bgs

SAMPLE COLLECTED WITH: __ Bailer; X Pump, Type: bladder; __ Other, Specify:

MADE OF: X Stainless Steel; __ PVC; __ Teflon; __ Disposable LDPE; __ Other, Specify:

SAMPLING DECON PROCEDURE: Alconox / DI

SAMPLE DESCRIPTION: (color, free product thickness, odor, turbidity)

FIELD WATER QUALITY PARAMETERS

						Stabilization Requirements (3 must be stable)						
						± 3%	± 10%	± 0.1	± 10 mV	± 10%		
Time	Purged Volume (Gal)	Purge Rate (mL/min)	Water Level	Draw Down (ft)	Temperature (°C)	Spec. Cond. (µS/cm)[c]	D.O. (mg/L)	pH	ORP (mV)	Turbidity (NTU)	Color	Odor
1555	0.10	50	4.44	0	5.0	950	1.60	6.38	43.8	30.9	grey	POL
1600	0.15	50	4.44	0	7.9	94	1.11	6.44	36.7	19.7	grey	POL
1605	0.20	50	4.44	0	7.9	93	1.01	6.49	32.9	12.8	grey	POL
1610	0.25	50	4.44	0	7.9	93	0.84	6.53	30.7	9.68	clear	POL
1615	0.30	50	4.44	0	7.8	93	0.76	6.54	29.4	8.22	clear	POL
1620	0.35	50	4.44	0	7.8	92	0.77	6.55	27.6	7.91	clear	POL

ANALYTICAL SAMPLE INFORMATION

Sample ID	Time	Analytes
21-C16-MW-5	1625	(DRO) RRO (GRO) BTEX (PAH) (VOCs) PEST HERB
21-C16-MW-8	1630	(DRO) RRO (GRO) BTEX (PAH) (VOCs) PEST HERB
		DRO RRO GRO BTEX PAH VOCs PEST HERB

Sampling Notes: visible sheen and POL odor in GW.

ATTACHMENT 2

LABORATORY REPORT

(This Page Intentionally Left Blank)

Laboratory Report of Analysis

To: Ahtna Engineering Svs
110 W 38th Ave
Anchorage, AK 99503
(907)744-6973

Report Number: **1213184**

Client Project: **16th and C**

Dear Melissa Kottke,

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 Justin 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.

_____

Justin Nelson Date
Project Manager
Justin.Nelson@sgs.com

Case Narrative

SGS Client: **Ahtna Engineering Svs**
SGS Project: **1213184**
Project Name/Site: **16th and C**
Project Contact: **Melissa Kottke**

Refer to sample receipt form for information on sample condition.

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

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

Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 DW Chemistry (Provisionally Certified as of 05/27/2021 for Mercury by EPA200.8, Nitrate as N by SM 4500NO3-F and VOCs by EPA 524.2) & Microbiology & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the

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

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

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

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

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
21-C16-MW-4	1213184001	06/09/2021	06/10/2021	Water (Surface, Eff., Ground)
21-C16-MW-8	1213184002	06/09/2021	06/10/2021	Water (Surface, Eff., Ground)
21-C16-TB-W	1213184003	06/09/2021	06/10/2021	Water (Surface, Eff., Ground)
21-C16-MW-5	1213184004	06/09/2021	06/10/2021	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
AK102	DRO Low Volume (W)
AK101	Gasoline Range Organics (W)
SW8260D	Volatile Organic Compounds (W) FULL

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

Detectable Results Summary

Client Sample ID: **21-C16-MW-4**
Lab Sample ID: 1213184001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	Phenanthrene	0.0311J	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.688	mg/L
Volatile GC/MS	2-Hexanone	14.6	ug/L

Client Sample ID: **21-C16-MW-8**
Lab Sample ID: 1213184002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	28.4	ug/L
	2-Methylnaphthalene	3.66	ug/L
	Fluorene	1.26	ug/L
	Naphthalene	23.1	ug/L
	Phenanthrene	0.184	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	12.2	mg/L
Volatile Fuels	Gasoline Range Organics	0.499	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	113	ug/L
	1,3,5-Trimethylbenzene	25.7	ug/L
	4-Isopropyltoluene	18.3	ug/L
	Benzene	14.7	ug/L
	Ethylbenzene	31.0	ug/L
	Isopropylbenzene (Cumene)	12.5	ug/L
	Naphthalene	83.0	ug/L
	n-Propylbenzene	17.7	ug/L
	o-Xylene	11.6	ug/L
	P & M -Xylene	34.7	ug/L
	sec-Butylbenzene	5.73	ug/L
	tert-Butylbenzene	1.22	ug/L
	Toluene	0.330J	ug/L
	Xylenes (total)	46.3	ug/L

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

Detectable Results Summary

Client Sample ID: **21-C16-MW-5**
Lab Sample ID: 1213184004

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	24.0	ug/L
	2-Methylnaphthalene	4.13	ug/L
	Fluorene	1.00	ug/L
	Naphthalene	21.9	ug/L
	Phenanthrene	0.143	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	8.18	mg/L
Volatile Fuels	Gasoline Range Organics	0.538	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	111	ug/L
	1,3,5-Trimethylbenzene	24.8	ug/L
	4-Isopropyltoluene	18.2	ug/L
	Benzene	14.6	ug/L
	Ethylbenzene	30.3	ug/L
	Isopropylbenzene (Cumene)	12.3	ug/L
	Naphthalene	81.0	ug/L
	n-Propylbenzene	17.6	ug/L
	o-Xylene	11.2	ug/L
	P & M -Xylene	34.0	ug/L
	sec-Butylbenzene	5.72	ug/L
	tert-Butylbenzene	1.22	ug/L
	Toluene	0.316J	ug/L
	Xylenes (total)	45.2	ug/L

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

Results of **21-C16-MW-4**

Client Sample ID: **21-C16-MW-4**
Client Project ID: **16th and C**
Lab Sample ID: 1213184001
Lab Project ID: 1213184

Collection Date: 06/09/21 13:55
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
2-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Acenaphthene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Acenaphthylene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	ug/L	1		06/23/21 01:57
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Chrysene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	ug/L	1		06/23/21 01:57
Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Fluorene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Naphthalene	0.0500	U	0.100	0.0310	ug/L	1		06/23/21 01:57
Phenanthrene	0.0311	J	0.0500	0.0150	ug/L	1		06/23/21 01:57
Pyrene	0.0250	U	0.0500	0.0150	ug/L	1		06/23/21 01:57
Surrogates								
2-Methylnaphthalene-d10 (surr)	60.7		42-86		%	1		06/23/21 01:57
Fluoranthene-d10 (surr)	79.7		50-97		%	1		06/23/21 01:57

Batch Information

Analytical Batch: XMS12685
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 06/23/21 01:57
Container ID: 1213184001-C

Prep Batch: XXX44978
Prep Method: SW3535A
Prep Date/Time: 06/16/21 14:28
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-4**

Client Sample ID: **21-C16-MW-4**
Client Project ID: **16th and C**
Lab Sample ID: 1213184001
Lab Project ID: 1213184

Collection Date: 06/09/21 13:55
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.688		0.652	0.196	mg/L	1		06/22/21 18:27
Surrogates								
5a Androstane (surr)	83.2		50-150		%	1		06/22/21 18:27

Batch Information

Analytical Batch: XFC15962
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 06/22/21 18:27
Container ID: 1213184001-A

Prep Batch: XXX44981
Prep Method: SW3520C
Prep Date/Time: 06/16/21 15:39
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

Results of **21-C16-MW-4**

Client Sample ID: **21-C16-MW-4**
Client Project ID: **16th and C**
Lab Sample ID: 1213184001
Lab Project ID: 1213184

Collection Date: 06/09/21 13:55
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		06/12/21 04:09
Surrogates								
4-Bromofluorobenzene (surr)	63		50-150		%	1		06/12/21 04:09

Batch Information

Analytical Batch: VFC15646
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 06/12/21 04:09
Container ID: 1213184001-E

Prep Batch: VXX37215
Prep Method: SW5030B
Prep Date/Time: 06/11/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **21-C16-MW-4**

Client Sample ID: **21-C16-MW-4**
Client Project ID: **16th and C**
Lab Sample ID: 1213184001
Lab Project ID: 1213184

Collection Date: 06/09/21 13:55
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		06/17/21 19:30
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		06/17/21 19:30
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
2-Hexanone	14.6		10.0	3.10	ug/L	1		06/17/21 19:30
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
Benzene	0.200	U	0.400	0.120	ug/L	1		06/17/21 19:30
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
Bromoform	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Bromomethane	2.50	U	5.00	2.00	ug/L	1		06/17/21 19:30
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
Chloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-4**

Client Sample ID: **21-C16-MW-4**
Client Project ID: **16th and C**
Lab Sample ID: 1213184001
Lab Project ID: 1213184

Collection Date: 06/09/21 13:55
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Chloromethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:30
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Freon-113	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Methylene chloride	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
Naphthalene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
o-Xylene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		06/17/21 19:30
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Styrene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Toluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:30
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:30
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		06/17/21 19:30
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		06/17/21 19:30
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		06/17/21 19:30
4-Bromofluorobenzene (surr)	101		85-114		%	1		06/17/21 19:30
Toluene-d8 (surr)	99.9		89-112		%	1		06/17/21 19:30

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-4**

Client Sample ID: **21-C16-MW-4**
Client Project ID: **16th and C**
Lab Sample ID: 1213184001
Lab Project ID: 1213184

Collection Date: 06/09/21 13:55
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 06/17/21 19:30
Container ID: 1213184001-H

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 06/17/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **21-C16-MW-8**

Client Sample ID: **21-C16-MW-8**
Client Project ID: **16th and C**
Lab Sample ID: 1213184002
Lab Project ID: 1213184

Collection Date: 06/09/21 16:30
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	28.4		0.255	0.0765	ug/L	5		06/23/21 13:26
2-Methylnaphthalene	3.66		0.0510	0.0153	ug/L	1		06/23/21 02:17
Acenaphthene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Acenaphthylene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Anthracene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Benzo(a)Anthracene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Benzo[a]pyrene	0.0102	U	0.0204	0.00633	ug/L	1		06/23/21 02:17
Benzo[b]Fluoranthene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Benzo[g,h,i]perylene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Benzo[k]fluoranthene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Chrysene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Dibenzo[a,h]anthracene	0.0102	U	0.0204	0.00633	ug/L	1		06/23/21 02:17
Fluoranthene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Fluorene	1.26		0.0510	0.0153	ug/L	1		06/23/21 02:17
Indeno[1,2,3-c,d] pyrene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Naphthalene	23.1		0.510	0.158	ug/L	5		06/23/21 13:26
Phenanthrene	0.184		0.0510	0.0153	ug/L	1		06/23/21 02:17
Pyrene	0.0255	U	0.0510	0.0153	ug/L	1		06/23/21 02:17
Surrogates								
2-Methylnaphthalene-d10 (surr)	59.1		42-86		%	1		06/23/21 02:17
Fluoranthene-d10 (surr)	70.6		50-97		%	1		06/23/21 02:17

Batch Information

Analytical Batch: XMS12685
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 06/23/21 02:17
Container ID: 1213184002-C

Prep Batch: XXX44978
Prep Method: SW3535A
Prep Date/Time: 06/16/21 14:28
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS12690
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 06/23/21 13:26
Container ID: 1213184002-C

Prep Batch: XXX44978
Prep Method: SW3535A
Prep Date/Time: 06/16/21 14:28
Prep Initial Wt./Vol.: 245 mL
Prep Extract Vol: 1 mL

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-8**

Client Sample ID: **21-C16-MW-8**
Client Project ID: **16th and C**
Lab Sample ID: 1213184002
Lab Project ID: 1213184

Collection Date: 06/09/21 16:30
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	12.2		0.588	0.176	mg/L	1		06/22/21 19:28
Surrogates								
5a Androstane (surr)	88.2		50-150		%	1		06/22/21 19:28

Batch Information

Analytical Batch: XFC15962
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 06/22/21 19:28
Container ID: 1213184002-A

Prep Batch: XXX44981
Prep Method: SW3520C
Prep Date/Time: 06/16/21 15:39
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **21-C16-MW-8**

Client Sample ID: **21-C16-MW-8**
Client Project ID: **16th and C**
Lab Sample ID: 1213184002
Lab Project ID: 1213184

Collection Date: 06/09/21 16:30
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.499		0.100	0.0310	mg/L	1		06/12/21 04:27
Surrogates								
4-Bromofluorobenzene (surr)	141		50-150		%	1		06/12/21 04:27

Batch Information

Analytical Batch: VFC15646
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 06/12/21 04:27
Container ID: 1213184002-E

Prep Batch: VXX37215
Prep Method: SW5030B
Prep Date/Time: 06/11/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **21-C16-MW-8**

Client Sample ID: **21-C16-MW-8**
Client Project ID: **16th and C**
Lab Sample ID: 1213184002
Lab Project ID: 1213184

Collection Date: 06/09/21 16:30
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		06/17/21 19:45
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,2,4-Trimethylbenzene	113		1.00	0.310	ug/L	1		06/17/21 19:45
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:45
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		06/17/21 19:45
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,3,5-Trimethylbenzene	25.7		1.00	0.310	ug/L	1		06/17/21 19:45
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:45
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:45
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
4-Isopropyltoluene	18.3		1.00	0.310	ug/L	1		06/17/21 19:45
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:45
Benzene	14.7		0.400	0.120	ug/L	1		06/17/21 19:45
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
Bromoform	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
Bromomethane	2.50	U	5.00	2.00	ug/L	1		06/17/21 19:45
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		06/17/21 19:45
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		06/17/21 19:45
Chloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 19:45

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-8**

Client Sample ID: **21-C16-MW-8**
Client Project ID: **16th and C**
Lab Sample ID: 1213184002
Lab Project ID: 1213184

Collection Date: 06/09/21 16:30
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Chloromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		06/17/21 19:45
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 19:45
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Ethylbenzene	31.0		1.00	0.310	ug/L	1		06/17/21 19:45
Freon-113	5.00 U		10.0	3.10	ug/L	1		06/17/21 19:45
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Isopropylbenzene (Cumene)	12.5		1.00	0.310	ug/L	1		06/17/21 19:45
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		06/17/21 19:45
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		06/17/21 19:45
Naphthalene	83.0		1.00	0.310	ug/L	1		06/17/21 19:45
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
n-Propylbenzene	17.7		1.00	0.310	ug/L	1		06/17/21 19:45
o-Xylene	11.6		1.00	0.310	ug/L	1		06/17/21 19:45
P & M -Xylene	34.7		2.00	0.620	ug/L	1		06/17/21 19:45
sec-Butylbenzene	5.73		1.00	0.310	ug/L	1		06/17/21 19:45
Styrene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
tert-Butylbenzene	1.22		1.00	0.310	ug/L	1		06/17/21 19:45
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Toluene	0.330 J		1.00	0.310	ug/L	1		06/17/21 19:45
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 19:45
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		06/17/21 19:45
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		06/17/21 19:45
Xylenes (total)	46.3		3.00	1.00	ug/L	1		06/17/21 19:45
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		06/17/21 19:45
4-Bromofluorobenzene (surr)	104		85-114		%	1		06/17/21 19:45
Toluene-d8 (surr)	101		89-112		%	1		06/17/21 19:45

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-8**

Client Sample ID: **21-C16-MW-8**
Client Project ID: **16th and C**
Lab Sample ID: 1213184002
Lab Project ID: 1213184

Collection Date: 06/09/21 16:30
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 06/17/21 19:45
Container ID: 1213184002-H

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 06/17/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **21-C16-TB-W**

Client Sample ID: **21-C16-TB-W**
Client Project ID: **16th and C**
Lab Sample ID: 1213184003
Lab Project ID: 1213184

Collection Date: 06/09/21 08:00
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		06/11/21 23:20
Surrogates								
4-Bromofluorobenzene (surr)	69.4		50-150		%	1		06/11/21 23:20

Batch Information

Analytical Batch: VFC15646
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 06/11/21 23:20
Container ID: 1213184003-A

Prep Batch: VXX37215
Prep Method: SW5030B
Prep Date/Time: 06/11/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **21-C16-TB-W**

Client Sample ID: **21-C16-TB-W**
Client Project ID: **16th and C**
Lab Sample ID: 1213184003
Lab Project ID: 1213184

Collection Date: 06/09/21 08:00
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		06/17/21 17:44
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		06/17/21 17:44
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		06/17/21 17:44
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		06/17/21 17:44
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		06/17/21 17:44
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		06/17/21 17:44
Benzene	0.200	U	0.400	0.120	ug/L	1		06/17/21 17:44
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
Bromoform	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
Bromomethane	2.50	U	5.00	2.00	ug/L	1		06/17/21 17:44
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		06/17/21 17:44
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		06/17/21 17:44
Chloroethane	0.500	U	1.00	0.310	ug/L	1		06/17/21 17:44

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-TB-W**

Client Sample ID: **21-C16-TB-W**
Client Project ID: **16th and C**
Lab Sample ID: 1213184003
Lab Project ID: 1213184

Collection Date: 06/09/21 08:00
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Chloromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		06/17/21 17:44
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 17:44
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Freon-113	5.00 U		10.0	3.10	ug/L	1		06/17/21 17:44
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		06/17/21 17:44
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		06/17/21 17:44
Naphthalene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
o-Xylene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		06/17/21 17:44
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Styrene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Toluene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 17:44
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		06/17/21 17:44
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		06/17/21 17:44
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		06/17/21 17:44
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		06/17/21 17:44
4-Bromofluorobenzene (surr)	101		85-114		%	1		06/17/21 17:44
Toluene-d8 (surr)	99.8		89-112		%	1		06/17/21 17:44

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-TB-W**

Client Sample ID: **21-C16-TB-W**
Client Project ID: **16th and C**
Lab Sample ID: 1213184003
Lab Project ID: 1213184

Collection Date: 06/09/21 08:00
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 06/17/21 17:44
Container ID: 1213184003-D

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 06/17/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **21-C16-MW-5**

Client Sample ID: **21-C16-MW-5**
Client Project ID: **16th and C**
Lab Sample ID: 1213184004
Lab Project ID: 1213184

Collection Date: 06/09/21 16:25
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	24.0		0.245	0.0735	ug/L	5		06/23/21 13:46
2-Methylnaphthalene	4.13		0.0490	0.0147	ug/L	1		06/23/21 02:38
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		06/23/21 02:38
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		06/23/21 02:38
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Fluorene	1.00		0.0490	0.0147	ug/L	1		06/23/21 02:38
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Naphthalene	21.9		0.490	0.152	ug/L	5		06/23/21 13:46
Phenanthrene	0.143		0.0490	0.0147	ug/L	1		06/23/21 02:38
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		06/23/21 02:38
Surrogates								
2-Methylnaphthalene-d10 (surr)	55.8		42-86		%	1		06/23/21 02:38
Fluoranthene-d10 (surr)	68.6		50-97		%	1		06/23/21 02:38

Batch Information

Analytical Batch: XMS12685
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 06/23/21 02:38
Container ID: 1213184004-C

Prep Batch: XXX44978
Prep Method: SW3535A
Prep Date/Time: 06/16/21 14:28
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS12690
Analytical Method: 8270D SIM LV (PAH)
Analyst: LAW
Analytical Date/Time: 06/23/21 13:46
Container ID: 1213184004-C

Prep Batch: XXX44978
Prep Method: SW3535A
Prep Date/Time: 06/16/21 14:28
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-5**

Client Sample ID: **21-C16-MW-5**
Client Project ID: **16th and C**
Lab Sample ID: 1213184004
Lab Project ID: 1213184

Collection Date: 06/09/21 16:25
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	8.18		0.625	0.188	mg/L	1		06/22/21 19:38
Surrogates								
5a Androstane (surr)	86.3		50-150		%	1		06/22/21 19:38

Batch Information

Analytical Batch: XFC15962
Analytical Method: AK102
Analyst: IVM
Analytical Date/Time: 06/22/21 19:38
Container ID: 1213184004-A

Prep Batch: XXX44981
Prep Method: SW3520C
Prep Date/Time: 06/16/21 15:39
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Results of **21-C16-MW-5**

Client Sample ID: **21-C16-MW-5**
Client Project ID: **16th and C**
Lab Sample ID: 1213184004
Lab Project ID: 1213184

Collection Date: 06/09/21 16:25
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.538		0.100	0.0310	mg/L	1		06/12/21 04:45
Surrogates								
4-Bromofluorobenzene (surr)	144		50-150		%	1		06/12/21 04:45

Batch Information

Analytical Batch: VFC15646
Analytical Method: AK101
Analyst: MDT
Analytical Date/Time: 06/12/21 04:45
Container ID: 1213184004-E

Prep Batch: VXX37215
Prep Method: SW5030B
Prep Date/Time: 06/11/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **21-C16-MW-5**

Client Sample ID: **21-C16-MW-5**
Client Project ID: **16th and C**
Lab Sample ID: 1213184004
Lab Project ID: 1213184

Collection Date: 06/09/21 16:25
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
n-Propylbenzene	17.6		1.00	0.310	ug/L	1		06/17/21 20:01
o-Xylene	11.2		1.00	0.310	ug/L	1		06/17/21 20:01
P & M -Xylene	34.0		2.00	0.620	ug/L	1		06/17/21 20:01
sec-Butylbenzene	5.72		1.00	0.310	ug/L	1		06/17/21 20:01
Styrene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
tert-Butylbenzene	1.22		1.00	0.310	ug/L	1		06/17/21 20:01
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Toluene	0.316 J		1.00	0.310	ug/L	1		06/17/21 20:01
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		06/17/21 20:01
Xylenes (total)	45.2		3.00	1.00	ug/L	1		06/17/21 20:01
1,1,1,2-Tetrachloroethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
1,1,1-Trichloroethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,1,2,2-Tetrachloroethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
1,1,2-Trichloroethane	0.200 U		0.400	0.120	ug/L	1		06/17/21 20:01
1,1-Dichloroethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,1-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,1-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,2,3-Trichlorobenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,2,3-Trichloropropane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,2,4-Trichlorobenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,2,4-Trimethylbenzene	111		1.00	0.310	ug/L	1		06/17/21 20:01
1,2-Dibromo-3-chloropropane	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
1,2-Dibromoethane	0.0375 U		0.0750	0.0180	ug/L	1		06/17/21 20:01
1,2-Dichlorobenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,2-Dichloroethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
1,2-Dichloropropane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,3,5-Trimethylbenzene	24.8		1.00	0.310	ug/L	1		06/17/21 20:01
1,3-Dichlorobenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
1,3-Dichloropropane	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
1,4-Dichlorobenzene	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
2,2-Dichloropropane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
2-Butanone (MEK)	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-5**

Client Sample ID: **21-C16-MW-5**
Client Project ID: **16th and C**
Lab Sample ID: 1213184004
Lab Project ID: 1213184

Collection Date: 06/09/21 16:25
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2-Chlorotoluene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
2-Hexanone	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
4-Chlorotoluene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
4-Isopropyltoluene	18.2		1.00	0.310	ug/L	1		06/17/21 20:01
4-Methyl-2-pentanone (MIBK)	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
Benzene	14.6		0.400	0.120	ug/L	1		06/17/21 20:01
Bromobenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Bromochloromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Bromodichloromethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
Bromoform	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Bromomethane	2.50 U		5.00	2.00	ug/L	1		06/17/21 20:01
Carbon disulfide	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
Carbon tetrachloride	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Chlorobenzene	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
Chloroethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Chloroform	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Chloromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		06/17/21 20:01
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Ethylbenzene	30.3		1.00	0.310	ug/L	1		06/17/21 20:01
Freon-113	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Isopropylbenzene (Cumene)	12.3		1.00	0.310	ug/L	1		06/17/21 20:01
Methylene chloride	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		06/17/21 20:01
Naphthalene	81.0		1.00	0.310	ug/L	1		06/17/21 20:01
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		06/17/21 20:01
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		06/17/21 20:01
4-Bromofluorobenzene (surr)	105		85-114		%	1		06/17/21 20:01
Toluene-d8 (surr)	99.6		89-112		%	1		06/17/21 20:01

Print Date: 06/25/2021 4:21:13PM

J flagging is activated

Results of **21-C16-MW-5**

Client Sample ID: **21-C16-MW-5**
Client Project ID: **16th and C**
Lab Sample ID: 1213184004
Lab Project ID: 1213184

Collection Date: 06/09/21 16:25
Received Date: 06/10/21 10:11
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Analyst: JMG
Analytical Date/Time: 06/17/21 20:01
Container ID: 1213184004-H

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 06/17/21 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1820678 [VXX/37215]
Blank Lab ID: 1615859

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184003, 1213184004

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	75.1	50-150		%

Batch Information

Analytical Batch: VFC15646
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: MDT
Analytical Date/Time: 6/11/2021 9:16:00AM

Prep Batch: VXX37215
Prep Method: SW5030B
Prep Date/Time: 6/11/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213184 [VXX37215]
Blank Spike Lab ID: 1615860
Date Analyzed: 06/11/2021 10:10

Spike Duplicate ID: LCSD for HBN 1213184 [VXX37215]
Spike Duplicate Lab ID: 1615861
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213184001, 1213184002, 1213184003, 1213184004

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	0.937	94	1.00	0.934	93	(60-120)	0.39	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500		84	0.0500		81	(50-150)	3.00	

Batch Information

Analytical Batch: **VFC15646**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **MDT**

Prep Batch: **VXX37215**
Prep Method: **SW5030B**
Prep Date/Time: **06/11/2021 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1821023 [VXX/37253]
Blank Lab ID: 1617172

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	2.00	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

Method Blank

Blank ID: MB for HBN 1821023 [VXX/37253]
Blank Lab ID: 1617172

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	5.00U	10.0	3.10	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	99.4	89-112		%

Method Blank

Blank ID: MB for HBN 1821023 [VXX/37253]
Blank Lab ID: 1617172

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: JMG
Analytical Date/Time: 6/17/2021 11:31:00AM

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 6/17/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Leaching Blank

Blank ID: LB for HBN 1820354 [TCLP/11216
Blank Lab ID: 1614215

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.203J	0.400	0.120	ug/L

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: JMG
Analytical Date/Time: 6/17/2021 5:59:00PM

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 6/17/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Leaching Blank

Blank ID: LB for HBN 1820666 [TCLP/11228
Blank Lab ID: 1615806

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

Parameter	Results	LOQ/CL	DL	Units
1,1-Dichloroethene	25.0U	50.0	15.5	ug/L
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
1,4-Dichlorobenzene	12.5U	25.0	7.50	ug/L
2-Butanone (MEK)	250U	500	155	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Carbon tetrachloride	25.0U	50.0	15.5	ug/L
Chlorobenzene	12.5U	25.0	7.50	ug/L
Chloroform	25.0U	50.0	15.5	ug/L
Hexachlorobutadiene	25.0U	50.0	15.5	ug/L
Tetrachloroethene	25.0U	50.0	15.5	ug/L
Trichloroethene	25.0U	50.0	15.5	ug/L
Vinyl chloride	25.0U	50.0	15.5	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	100	81-118		%
4-Bromofluorobenzene (surr)	102	85-114		%
Toluene-d8 (surr)	99.9	89-112		%

Batch Information

Analytical Batch: VMS20824
Analytical Method: SW8260D
Instrument: VPA 780/5975 GC/MS
Analyst: JMG
Analytical Date/Time: 6/17/2021 3:58:00PM

Prep Batch: VXX37253
Prep Method: SW5030B
Prep Date/Time: 6/17/2021 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213184 [VXX37253]
Blank Spike Lab ID: 1617173
Date Analyzed: 06/17/2021 11:47

Spike Duplicate ID: LCSD for HBN 1213184 [VXX37253]
Spike Duplicate Lab ID: 1617174
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	30.5	102	30	29.5	98	(78-124)	3.40	(< 20)
1,1,1-Trichloroethane	30	29.7	99	30	29.9	100	(74-131)	0.55	(< 20)
1,1,2,2-Tetrachloroethane	30	30.3	101	30	28.6	95	(71-121)	5.80	(< 20)
1,1,2-Trichloroethane	30	30.7	102	30	29.3	98	(80-119)	4.90	(< 20)
1,1-Dichloroethane	30	29.9	100	30	29.6	99	(77-125)	1.10	(< 20)
1,1-Dichloroethene	30	32.2	107	30	32.7	109	(71-131)	1.50	(< 20)
1,1-Dichloropropene	30	30.1	100	30	30.3	101	(79-125)	0.73	(< 20)
1,2,3-Trichlorobenzene	30	31.0	103	30	29.7	99	(69-129)	4.20	(< 20)
1,2,3-Trichloropropane	30	30.3	101	30	28.4	95	(73-122)	6.60	(< 20)
1,2,4-Trichlorobenzene	30	30.9	103	30	30.1	100	(69-130)	2.70	(< 20)
1,2,4-Trimethylbenzene	30	29.9	100	30	29.5	98	(79-124)	1.60	(< 20)
1,2-Dibromo-3-chloropropane	30	28.7	96	30	26.4	88	(62-128)	8.40	(< 20)
1,2-Dibromoethane	30	30.9	103	30	29.4	98	(77-121)	4.90	(< 20)
1,2-Dichlorobenzene	30	29.5	99	30	29.2	98	(80-119)	1.00	(< 20)
1,2-Dichloroethane	30	29.5	98	30	28.1	94	(73-128)	4.80	(< 20)
1,2-Dichloropropane	30	30.7	102	30	29.7	99	(78-122)	3.30	(< 20)
1,3,5-Trimethylbenzene	30	30.0	100	30	29.7	99	(75-124)	0.96	(< 20)
1,3-Dichlorobenzene	30	29.9	100	30	29.6	99	(80-119)	1.10	(< 20)
1,3-Dichloropropane	30	30.6	102	30	29.3	98	(80-119)	4.30	(< 20)
1,4-Dichlorobenzene	30	29.9	100	30	29.5	98	(79-118)	1.30	(< 20)
2,2-Dichloropropane	30	30.1	100	30	30.1	100	(60-139)	0.05	(< 20)
2-Butanone (MEK)	90	83.8	93	90	74.5	83	(56-143)	11.80	(< 20)
2-Chlorotoluene	30	29.8	99	30	29.6	99	(79-122)	0.72	(< 20)
2-Hexanone	90	89.2	99	90	82.0	91	(57-139)	8.50	(< 20)
4-Chlorotoluene	30	29.7	99	30	29.5	98	(78-122)	0.64	(< 20)
4-Isopropyltoluene	30	30.3	101	30	30.3	101	(77-127)	0.15	(< 20)
4-Methyl-2-pentanone (MIBK)	90	90.9	101	90	82.4	92	(67-130)	9.80	(< 20)
Benzene	30	29.8	99	30	29.1	97	(79-120)	2.40	(< 20)
Bromobenzene	30	30.1	100	30	29.3	98	(80-120)	2.80	(< 20)
Bromochloromethane	30	30.4	101	30	29.4	98	(78-123)	3.30	(< 20)
Bromodichloromethane	30	30.4	101	30	29.4	98	(79-125)	3.20	(< 20)
Bromoform	30	31.0	103	30	29.0	97	(66-130)	6.60	(< 20)
Bromomethane	30	29.6	99	30	29.5	99	(53-141)	0.31	(< 20)
Carbon disulfide	45	48.6	108	45	48.6	108	(64-133)	0.09	(< 20)

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213184 [VXX37253]
Blank Spike Lab ID: 1617173
Date Analyzed: 06/17/2021 11:47

Spike Duplicate ID: LCSD for HBN 1213184 [VXX37253]
Spike Duplicate Lab ID: 1617174
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	30.3	101	30	30.7	102	(72-136)	1.20	(< 20)
Chlorobenzene	30	29.8	99	30	29.1	97	(82-118)	2.50	(< 20)
Chloroethane	30	37.9	126	30	35.9	120	(60-138)	5.30	(< 20)
Chloroform	30	29.9	100	30	29.2	97	(79-124)	2.30	(< 20)
Chloromethane	30	29.5	98	30	29.4	98	(50-139)	0.58	(< 20)
cis-1,2-Dichloroethene	30	29.2	97	30	28.9	96	(78-123)	1.10	(< 20)
cis-1,3-Dichloropropene	30	31.0	103	30	29.8	99	(75-124)	4.00	(< 20)
Dibromochloromethane	30	30.6	102	30	29.3	98	(74-126)	4.40	(< 20)
Dibromomethane	30	30.1	100	30	28.8	96	(79-123)	4.20	(< 20)
Dichlorodifluoromethane	30	28.8	96	30	29.1	97	(32-152)	0.83	(< 20)
Ethylbenzene	30	29.4	98	30	29.2	97	(79-121)	0.69	(< 20)
Freon-113	45	48.4	108	45	49.0	109	(70-136)	1.30	(< 20)
Hexachlorobutadiene	30	30.4	101	30	30.2	101	(66-134)	0.60	(< 20)
Isopropylbenzene (Cumene)	30	29.9	100	30	29.8	99	(72-131)	0.55	(< 20)
Methylene chloride	30	31.9	106	30	30.9	103	(74-124)	3.30	(< 20)
Methyl-t-butyl ether	45	46.1	102	45	43.5	97	(71-124)	5.70	(< 20)
Naphthalene	30	31.7	106	30	29.6	99	(61-128)	7.00	(< 20)
n-Butylbenzene	30	30.4	101	30	30.4	101	(75-128)	0.27	(< 20)
n-Propylbenzene	30	30.3	101	30	30.4	101	(76-126)	0.38	(< 20)
o-Xylene	30	29.0	97	30	28.6	95	(78-122)	1.30	(< 20)
P & M -Xylene	60	58.3	97	60	57.8	96	(80-121)	0.90	(< 20)
sec-Butylbenzene	30	30.0	100	30	30.4	101	(77-126)	1.30	(< 20)
Styrene	30	30.0	100	30	29.5	98	(78-123)	1.70	(< 20)
tert-Butylbenzene	30	29.9	100	30	29.8	99	(78-124)	0.10	(< 20)
Tetrachloroethene	30	29.9	100	30	30.1	100	(74-129)	0.65	(< 20)
Toluene	30	28.4	95	30	28.1	94	(80-121)	1.20	(< 20)
trans-1,2-Dichloroethene	30	30.2	101	30	30.2	101	(75-124)	0.03	(< 20)
trans-1,3-Dichloropropene	30	31.5	105	30	30.3	101	(73-127)	3.90	(< 20)
Trichloroethene	30	29.8	100	30	29.6	99	(79-123)	0.90	(< 20)
Trichlorofluoromethane	30	30.0	100	30	30.1	100	(65-141)	0.26	(< 20)
Vinyl acetate	30	32.0	107	30	28.7	96	(54-146)	10.80	(< 20)
Vinyl chloride	30	30.1	100	30	30.2	101	(58-137)	0.26	(< 20)
Xylenes (total)	90	87.3	97	90	86.4	96	(79-121)	1.00	(< 20)

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213184 [VXX37253]
Blank Spike Lab ID: 1617173
Date Analyzed: 06/17/2021 11:47

Spike Duplicate ID: LCSD for HBN 1213184 [VXX37253]
Spike Duplicate Lab ID: 1617174
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213184001, 1213184002, 1213184003, 1213184004

Results by **SW8260D**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		98	30		96	(81-118)	2.90	
4-Bromofluorobenzene (surr)	30		100	30		99	(85-114)	0.24	
Toluene-d8 (surr)	30		100	30		101	(89-112)	1.00	

Batch Information

Analytical Batch: **VMS20824**
Analytical Method: **SW8260D**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **JMG**

Prep Batch: **VXX37253**
Prep Method: **SW5030B**
Prep Date/Time: **06/17/2021 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Method Blank

Blank ID: MB for HBN 1820910 [XXX/44978]
Blank Lab ID: 1616672

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184004

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

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	64.5	42-86		%
Fluoranthene-d10 (surr)	82.5	50-97		%

Batch Information

Analytical Batch: XMS12685
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: LAW
Analytical Date/Time: 6/23/2021 12:14:00AM

Prep Batch: XXX44978
Prep Method: SW3535A
Prep Date/Time: 6/16/2021 2:28:35PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213184 [XXX44978]
Blank Spike Lab ID: 1616673
Date Analyzed: 06/23/2021 00:35

Spike Duplicate ID: LCSD for HBN 1213184 [XXX44978]
Spike Duplicate Lab ID: 1616674
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213184001, 1213184002, 1213184004

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

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.36	68	2	1.30	65	(41-115)	4.40	(< 20)
2-Methylnaphthalene	2	1.33	67	2	1.28	64	(39-114)	4.50	(< 20)
Acenaphthene	2	1.60	80	2	1.53	76	(48-114)	4.60	(< 20)
Acenaphthylene	2	1.61	81	2	1.54	77	(35-121)	4.40	(< 20)
Anthracene	2	1.58	79	2	1.50	75	(53-119)	5.60	(< 20)
Benzo(a)Anthracene	2	1.53	77	2	1.38	69	(59-120)	10.00	(< 20)
Benzo[a]pyrene	2	1.57	79	2	1.45	72	(53-120)	8.10	(< 20)
Benzo[b]Fluoranthene	2	1.56	78	2	1.40	70	(53-126)	10.80	(< 20)
Benzo[g,h,i]perylene	2	1.69	84	2	1.55	77	(44-128)	8.60	(< 20)
Benzo[k]fluoranthene	2	1.67	84	2	1.54	77	(54-125)	8.00	(< 20)
Chrysene	2	1.66	83	2	1.51	76	(57-120)	9.60	(< 20)
Dibenzo[a,h]anthracene	2	1.65	83	2	1.54	77	(44-131)	7.30	(< 20)
Fluoranthene	2	1.60	80	2	1.48	74	(58-120)	8.10	(< 20)
Fluorene	2	1.63	81	2	1.54	77	(50-118)	5.10	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.65	82	2	1.52	76	(48-130)	7.90	(< 20)
Naphthalene	2	1.29	65	2	1.24	62	(43-114)	3.90	(< 20)
Phenanthrene	2	1.62	81	2	1.54	77	(53-115)	5.00	(< 20)
Pyrene	2	1.62	81	2	1.48	74	(53-121)	8.80	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2		61	2		62	(42-86)	1.10	
Fluoranthene-d10 (surr)	2		78	2		74	(50-97)	4.30	

Batch Information

Analytical Batch: **XMS12685**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **LAW**

Prep Batch: **XXX44978**
Prep Method: **SW3535A**
Prep Date/Time: **06/16/2021 14:28**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 06/25/2021 4:21:27PM

Method Blank

Blank ID: MB for HBN 1820929 [XXX/44981]
Blank Lab ID: 1616756

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1213184001, 1213184002, 1213184004

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	91.3	60-120		%

Batch Information

Analytical Batch: XFC15962
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: IVM
Analytical Date/Time: 6/22/2021 3:12:00PM

Prep Batch: XXX44981
Prep Method: SW3520C
Prep Date/Time: 6/16/2021 3:39:07PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1213184 [XXX44981]
Blank Spike Lab ID: 1616757
Date Analyzed: 06/22/2021 15:23

Spike Duplicate ID: LCSD for HBN 1213184 [XXX44981]
Spike Duplicate Lab ID: 1616758
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1213184001, 1213184002, 1213184004

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	18.8	94	20	20.0	100	(75-125)	6.20	(< 20)
Surrogates									
5a Androstane (surr)	0.4		97	0.4		106	(60-120)	9.00	

Batch Information

Analytical Batch: **XFC15962**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **IVM**

Prep Batch: **XXX44981**
Prep Method: **SW3520C**
Prep Date/Time: **06/16/2021 15:39**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

SGS

SGS North America Inc.
CHAIN OF CUSTODY RECORD

1213184

PM# 360049 JD

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

Page ____ of ____

Section 1

CLIENT: Ahtna Engineering Services

CONTACT: Luke Hoffmann

PHONE #: 907-947-6011

PROJECT NAME: 16th & C

PROJECT/ PWSID/ PERMIT#:

REPORTS TO: Luke Hoffmann

E-MAIL: lhoffmann@ahtna.net

Profile #:

INVOICE TO:

QUOTE #:

P.O. #: 20204-058.02.02

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Comp Grab MI (Multi-incremental)	Analysis* 8260D 1loc's	AK101/1600	AK102/DRO	8270 SIM PAH							REMARKS/LOC ID
							HCl	HCl	HCl								
1AJ	21-C16-MW-4	6/9/21	1355	W	10	6	X	X	X	X							Standard TAT
2AJ	21-C16-MW-8	6/9/21	~~1630~~ 1630	W	10	6	X	X	X	X							"
	~~21-C16-TB~~																"
3AJ	21-C16-TB-W	6/9/21	0800	W	6	6	X	X									"
4AJ	21-C16-MW-5	6/9/21	1625	W	10	6	X	X	X	X							"

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

Section 5

	Date	Time	
Relinquished By: (1) Luke Hoffmann	6/10/21	1011	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	6/10/21	10:11	Received For Laboratory By: RJC

Section 4

DOD Project? Yes No

Data Deliverable Requirements:

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

STD TAT

Temp Blank °C: 0.4 060

or Ambient [ ]

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Delivery Method: Hand Delivery [ ] Commerical Delivery [ ]

AHTNA ENGINEERING 16TH AND C 20210607

SGS North America Inc.

200 W. Potter Dr., Anchorage, AK 99518 (ph) 907-562-2343, (fax) 907-561-5301

3180 Peger Rd. Ste. 190, Fairbanks, AK 99709 (ph) 907-474-8656

Sample Kit Request

Client pickup Date: 6/7/2021 **Time:** 17:00

Be sure to ask if client will ship by ground (DOT) or air carrier (IATA)

Does a Profile exist in LIMS? **If not, please send a request for new profile build.**

Client Name: Ahtna Engineering

Ordered By: Luke Hoffmann

Email: lhoffmann@ahtna.net; gmamikunian@ahtna.net

Project Name: 16th and C **Profile #:**

Quote #: **PO#:**

Delivery Address:

Deliver to client:

Ship by/Air Carrier:

Airbill Number:

Date to ship by:

Notes:

Kit request taken by: JAN **Date:** June 7, 2021

Kit prepared by: EBH **Date:** 6/7/21

Kit *(including lid tightness for pres'd bottles)* checked by: DMM **Date:** 6/7/21

Kit packed & shipped by: EBH **Date:** 6/7/21

Filename: SKIT_Ahtna Engineering_16th and C_2021-06-07 *Required Items

No. Samples	Matrix	Analysis	Container Size & Type		Pres.	Bottle Lot #	Preservative Lot #	Hold Time	# QC Bottles	Total Bottles
4	Water	8260D - VOC	3 x 40 mL	VOA	HCl			14 d	0	12
4	Water	AK101 - GRO	3 x 40 mL	VOA	HCl			14 d	0	12
4	Water	AK102 - DRO	2 x 250 mL	Amber	HCl			14 d	0	8
4	Water	8270D SIM - PAH	2 x 250 mL	Amber	None			7 d	0	8

Note: The first 10 Analysis and Preservative columns will auto-fill up to the capacity of the associated COC.

Additional Information		Notes for Kit Prep
Pack for Shipment via:	N/A	
Temperature Blank:	Yes - Small (125 mL)	
Trip Blank:	Yes - Water (8260, AK101, 8021, 624)	2 x Water Trip Blanks
Coolers:	Yes	
Gel Ice:	Yes	
Labels:	Yes	
Custody Seals:	Yes	
Paper Chain of Custody:	Yes - Standard COC	
Lot Number Tracking (Required for DOD):	No	

Attention Client/Sampler:

1. Do not rinse container, be aware of any acid preservative.
2. Fill container, but do not overfill (except volatiles).
3. Label the container with your sample ID and date/time of collection
4. Fill out the Chain of Custody.
5. Add frozen gel packs to your cooler and pack to prevent breakage.

If you have any questions please contact your Project Manager.

e-Sample Receipt Form

SGS Workorder #: **1213184** | 1213184

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		Yes — Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	Yes	1F
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
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 @ 0.4 °C Therm. ID: D60
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		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	
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.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
	N/A	***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	No	**Sample 2B and 2c were received in opposite containers. Proceeded by using correct preserved container for each analysis. Proceed with analysis.**
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)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

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

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition
1213184001-A	HCL to pH < 2	OK			
1213184001-B	HCL to pH < 2	OK			
1213184001-C	No Preservative Required	OK			
1213184001-D	No Preservative Required	OK			
1213184001-E	HCL to pH < 2	OK			
1213184001-F	HCL to pH < 2	OK			
1213184001-G	HCL to pH < 2	OK			
1213184001-H	HCL to pH < 2	OK			
1213184001-I	HCL to pH < 2	OK			
1213184001-J	HCL to pH < 2	OK			
1213184002-A	HCL to pH < 2	OK			
1213184002-B	HCL to pH < 2	OK			
1213184002-C	No Preservative Required	OK			
1213184002-D	No Preservative Required	OK			
1213184002-E	HCL to pH < 2	OK			
1213184002-F	HCL to pH < 2	OK			
1213184002-G	HCL to pH < 2	OK			
1213184002-H	HCL to pH < 2	OK			
1213184002-I	HCL to pH < 2	OK			
1213184002-J	HCL to pH < 2	OK			
1213184003-A	HCL to pH < 2	OK			
1213184003-B	HCL to pH < 2	OK			
1213184003-C	HCL to pH < 2	OK			
1213184003-D	HCL to pH < 2	OK			
1213184003-E	HCL to pH < 2	OK			
1213184003-F	HCL to pH < 2	OK			
1213184004-A	HCL to pH < 2	OK			
1213184004-B	HCL to pH < 2	OK			
1213184004-C	No Preservative Required	OK			
1213184004-D	No Preservative Required	OK			
1213184004-E	HCL to pH < 2	OK			
1213184004-F	HCL to pH < 2	OK			
1213184004-G	HCL to pH < 2	OK			
1213184004-H	HCL to pH < 2	OK			
1213184004-I	HCL to pH < 2	OK			
1213184004-J	HCL to pH < 2	OK			

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

Container Condition Glossary

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

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM - The container was received damaged.
FR - The container was received frozen and not usable for Bacteria or BOD analyses.
IC - The container provided for microbiology analysis was not a laboratory-supplied, pre-sterilized container and therefore was not suitable for analysis.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
QN - Insufficient sample quantity provided.

(This Page Intentionally Left Blank)

ATTACHMENT 3

DATA QUALITY REVIEW AND ADEC LABORATORY DATA REVIEW CHECKLIST

(This Page Intentionally Left Blank)

DATA QUALITY REVIEW

Date: 7/2/2021

Project: Menzies 16th & C Street 2021
Laboratory: SGS North America, Inc.
Work Orders: 1213184

Reviewer Name: Keather McLoone, Ahtna
Reviewer Title: Project Chemist

1.0 INTRODUCTION

A Stage 2A data review was conducted accordance with the United States Environmental Protection Agency (USEPA) document *Test Methods for Evaluating Solid Wastes, SW-846,* revision 8 (July 2014 and updates), USEPA *Contract Laboratory Program National Functional Guidelines for Organic* (January 2017) *Methods Data Review*, and Alaska Department of Environmental Conservation's (ADEC's) *Minimum Quality Assurance Requirements for Sample Handling, Reports, and Laboratory Data Technical Memorandum* (October 2019) where and when applicable.

The key data quality indicators (DQIs) of precision, accuracy, representativeness, comparability, completeness, and sensitivity (PARCCS) of the project data were evaluated in this Data Quality Review (DQR) by reviewing, where appropriate, the following parameters:

- Chain of Custody (COC) and Sample Receipt Conditions
- Holding times and preservation
- Analytical reporting limits (limits of quantitation [LOQ] and limits of detection [LOD])
- Blank analysis results
- Surrogate recoveries (organics only)
- Field duplicates
- Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
- Matrix spike (MS) and matrix spike duplicate (MSD) results

1.1 Data Qualifier Definitions

For the purpose of this DQR the following code letters and associated definitions are provided for use by the project chemist to summarize the data quality.

- B Result is considered biased high due to blank contamination (method, trip, or equipment blank).
- J Result is considered estimated because it was detected above detection limit (DL), but below LOQ.

- Q Result is considered an estimated value because quality control (QC) criteria were not met; may be biased high (QH) or low (QL) or unknown (QN).
- R Result is rejected and unusable.
- U Analyte is reported as not detected at the LOD.

In the case where a sample result was affected by more than one sample-handling anomaly or QC failure that would result in differing qualifiers, a determination was made as to which qualifier was most conservative, and only that qualifier was retained and reported with the results. The ranking of the qualifiers is generally as follows: R>B>Q>J>U.

1.2 Chain of Custody (CoC) and Sample Receipt Condition

Samples were submitted to SGS, North America, Inc. located in Anchorage, Alaska. Four water samples, including two duplicates and two trip blanks were submitted in under intact custody seals. Data was reported in SDG 1213184. The sample summary table presents field and sample identification (ID) and sampling details.

Table 1 summarizes field quality control samples by matrix and analyses.

TABLE 1: FIELD QUALITY CONTROL SAMPLES

Field ID	Lab ID	Analyses	Quality Control
21-C16-MW-4	1213184001	VOCs, GRO, DRO, PAH	Primary
21-C16-MW-8	1213184002	VOCs, GRO, DRO, PAH	Primary
21- C16 -TB-W	1213184003	VOCs, GRO	Trip Blank
21-C16-MW-5	1213184004	VOCs, GRO, DRO, PAH	Duplicate

Key:
GRO gasoline range organics
DRO diesel range organics
PAH polynuclear aromatic hydrocarbons
VOC volatile organic carbon

1.3 Holding Times and Preservation

Samples were received in good condition, within acceptable temperature range, properly preserved, and within the method specified hold times.

1.4 Analytical Reporting Limits

Analytical reporting limits were compared to project action/screening limits to determine if the lab had adequate analytical sensitivity to support project data quality objectives. Project action limits were based upon 18 AAC 75 Table C Groundwater Cleanup Levels.

1.5 Blanks

1.5.1 Trip Blanks

A trip blank accompanied the sample cooler that contained samples for volatiles analyses. There were no trip blank detections.

1.5.2 Method Blanks

No analytes were detected in the method blanks.

1.5.3 Equipment Blanks

No equipment blanks were submitted.

1.6 Surrogates

Surrogate spike recoveries were evaluated as a measure of analytical accuracy and assessment of potential matric effects.

1.7 Field Duplicates

Field duplicates were collected at the required frequency as specified in the work plan. 21-C16-MW-5 and 21-C16-MW-8 were submitted as field primary and duplicate QC samples. The relative percent difference (RPD) between the primary and field duplicate sample results were evaluated as a measure of field precision. Duplicate RPDs were calculated when a given analyte was detected in both samples. Duplicate RPDs were compared to the 30% criteria for waters. DRO results had RPD of 39.5 percent and are qualified QN. These should be considered estimated with an unknown bias.

1.8 Laboratory Control Spike/Laboratory Control Spike Duplicate (LCS/LCSD)

Percent recoveries of spiked analyte concentrations were evaluated for the Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (LCSD) samples as a measure of analytical accuracy. RPDs of LCS/LCSD analyte concentrations were evaluated to assess analytical precision.

1.9 Matrix Spikes/Matrix Spike Duplicate (MS/MSD)

No project specific MS/MSD were analyzed.

2.0 OVERALL ASSSESSMENT

All data necessary to complete this review were provided. Based on the data review completed, minimal data were qualified, no data were rejected, and project completeness goal was met. Although qualified results are considered estimated, they are considered usable. All other sample results are valid with no data qualifiers assigned. All samples were collected in accordance with the work plan and considered representative of site conditions. All analytical data is considered usable for the purpose of evaluating the presence or absence and magnitude of the suspected site contaminants.

3.0 REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2019. *Field Sampling Guidance for Contaminated Sites and Leaking Underground Storage Tank Sites.*

ADEC. 2019. *Minimum Quality Assurance Requirements for Sample Handling, Reports, and Laboratory Data.*

EPA, 2017. *National Functional Guidelines for Organic Superfund Methods Data Review* (SOM02.4).

EPA, 2014. SW-846 Update V: *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*.

(This Page Intentionally Left Blank)

Laboratory Data Review Checklist

Completed By:

Keather McLoone

Title:

Senior Chemist

Date:

7/2/21

Consultant Firm:

Ahtna

Laboratory Name:

SGS

Laboratory Report Number:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

ADEC File Number:

2100.38.439

Hazard Identification Number:

593

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

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

1. Laboratory

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

   Yes☒ No☐ N/A☐ 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☐ N/A☒ Comments:

   No transfer

2. Chain of Custody (CoC)

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

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

3. Laboratory Sample Receipt Documentation

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

   Yes☒ No☐ N/A☐ Comments:

   0.4 degrees C

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

   Yes☒ No☐ N/A☐ Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

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

Yes☐ No☐ N/A☒ 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☐ N/A☐ Comments:

Sample receipt documentation mentions "Sample 2B and 2c were received in opposite containers. Proceeded by using correct preserved container for each analysis. Proceed with analysis." This is in reference to containers for the same sample id; therefore, there is no impact on data quality.

e. Data quality or usability affected?

Comments:

No.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☒ Comments:

None to identify.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions warranted.

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

Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

5. Samples Results

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

Yes☒ No☐ N/A☐ Comments:

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

c. All soils reported on a dry weight basis?

Yes☐ No☐ N/A☒ Comments:

Water samples only.

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

Yes☒ No☐ N/A☐ Comments:

e. Data quality or usability affected?

No.

6. QC Samples

a. Method Blank

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

Yes☒ No☐ N/A☐ Comments:

ii. All method blank results less than limit of quantitation (LOQ) or project specified objectives?

Yes☒ No☐ N/A☐ Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

iii. If above LOQ or project specified objectives, what samples are affected?

Comments:

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

Yes☐ No☐ N/A☒ Comments:

v. Data quality or usability affected?

Comments:

No method blank detections.

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☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☒ Comments:

Organics only.

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

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

Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Comments:

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

Note: Leave blank if not required for project

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

Yes☐ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☐ Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

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

Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Comments:

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

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

iv. Data quality or usability affected?

Comments:

No surrogate exceedances.

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

e. Trip Blanks

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

Yes☒ No☐ N/A☐ 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☐ N/A☐ Comments:

iii. All results less than LOQ and project specified objectives?

Yes☒ No☐ N/A☐ Comments:

iv. If above LOQ or project specified objectives, what samples are affected?

Comments:

v. Data quality or usability affected?

Comments:

No trip blank detections.

f. Field Duplicate

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

Yes☒ No☐ N/A☐ Comments:

21-C16-MW-5 is the duplicate of 21-C16-MW-8.

ii. Submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

iii. Precision – All relative percent differences (RPD) less than specified project objectives? (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☒ N/A☐ Comments:

DRO results had RPD of 39.5 percent and are qualified QN.

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

Comments:

These should be considered estimated with an unknown bias.

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

Yes☐ No☐ N/A☒ Comments:

Disposable sampling equipment was used during field sample collection.

i. All results less than LOQ and project specified objectives?

Yes☐ No☐ N/A☐ Comments:

ii. If above LOQ or project specified objectives, what samples are affected?

Comments:

iii. Data quality or usability affected?

Comments:

1213184 (Rev 1)

Laboratory Report Date:

7/2/21

CS Site Name:

16th and C Street

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

   a. Defined and appropriate?

      Yes☒ No☐ N/A☐ Comments:

ATTACHMENT 4

CONCEPTUAL SITE MODEL

(This Page Intentionally Left Blank)

Print Form

Appendix A - Human Health Conceptual Site Model Scoping Form and Standardized Graphic

Site Name: 16th Avenue & C Street, Anchorage, Alaska

File Number: 2100.38.439

Completed by: M. Ebert

Introduction

The form should be used to reach agreement with the Alaska Department of Environmental Conservation (DEC) about which exposure pathways should be further investigated during site characterization. From this information, summary text about the CSM and a graphic depicting exposure pathways should be submitted with the site characterization work plan and updated as needed in later reports.

General Instructions: Follow the italicized instructions in each section below.

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☐ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☒ Other: Pipeline

Release Mechanisms *(check potential release mechanisms at the site)*

- ☐ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

Impacted Media *(check potentially-impacted media at the site)*

- ☐ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☐ Surface water
- ☒ Biota
- ☐ Other:

Receptors *(check receptors that could be affected by contamination at the site)*

- ☐ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☐ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

2. Exposure Pathways: *(The answers to the following questions will identify complete exposure pathways at the site. Check each box where the answer to the question is "yes".)*

a) Direct Contact -

1. Incidental Soil Ingestion

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site-specific basis.) ☒

If the box is checked, label this pathway complete: Complete

Comments:

It is possible that the subsurface soil is contaminated near the soil/water interface.

2. Dermal Absorption of Contaminants from Soil

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Can the soil contaminants permeate the skin (see Appendix B in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

It is possible that the subsurface soil is contaminated near the groundwater interface. Multiple contaminates with dermal exposure risk were detected in the groundwater and are likely contaminating the sub surface soil at the soil/water interface.

b) Ingestion -

1. Ingestion of Groundwater

Have contaminants been detected or are they expected to be detected in the groundwater, or are contaminants expected to migrate to groundwater in the future? ☒

Could the potentially affected groundwater be used as a current or future drinking water source? Please note, only leave the box unchecked if DEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350. ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Groundwater is at 4.5 feet below ground surface. Potential for construction workers digging in that area to be exposed.

2. Ingestion of Surface Water

Have contaminants been detected or are they expected to be detected in surface water, or are contaminants expected to migrate to surface water in the future? ☐

Could potentially affected surface water bodies be used, currently or in the future, as a drinking water source? Consider both public water systems and private use (i.e., during residential, recreational or subsistence activities). ☐

If both boxes are checked, label this pathway complete: Incomplete

Comments:

No surface water at site.

3. Ingestion of Wild and Farmed Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild or farmed foods? ☒

Do the site contaminants have the potential to bioaccumulate (see Appendix C in the guidance document)? ☐

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. soil within the root zone for plants or burrowing depth for animals, in groundwater that could be connected to surface water, etc.) ☒

If all of the boxes are checked, label this pathway complete: Incomplete

Comments:

No contaminants have potential for bioaccumulation

c) Inhalation-

1. Inhalation of Outdoor Air

Are contaminants present or potentially present in surface soil between 0 and 15 feet below the ground surface? (Contamination at deeper depths may require evaluation on a site specific basis.) ☒

Are the contaminants in soil volatile (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Complete

Comments:

Volatile compounds in groundwater at 4.5 feet below ground surface.

2. Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be occupied or placed on the site in an area that could be affected by contaminant vapors? (within 30 horizontal or vertical feet of petroleum contaminated soil or groundwater; within 100 feet of non-petroleum contaminted soil or groundwater; or subject to "preferential pathways," which promote easy airflow like utility conduits or rock fractures) ☐

Are volatile compounds present in soil or groundwater (see Appendix D in the guidance document)? ☒

If both boxes are checked, label this pathway complete: Incomplete

Comments:

No buildings with in 30 feet of site

3. **Additional Exposure Pathways:** *(Although there are no definitive questions provided in this section, these exposure pathways should also be considered at each site. Use the guidelines provided below to determine if further evaluation of each pathway is warranted.)*

Dermal Exposure to Contaminants in Groundwater and Surface Water

Dermal exposure to contaminants in groundwater and surface water may be a complete pathway if:

- Climate permits recreational use of waters for swimming.
- Climate permits exposure to groundwater during activities, such as construction.
- Groundwater or surface water is used for household purposes, such as bathing or cleaning.

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are deemed protective of this pathway because dermal absorption is incorporated into the groundwater exposure equation for residential uses.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Groundwater near MW-5 has naphthalene and 1-methylnaphthalene concentrations above cleanup levels. 2-methylnaphthalene was detected below cleanup levels. Potential risk for person digging in this area below 4.5 feet below ground surface to be exposed to impacted groundwater.

Inhalation of Volatile Compounds in Tap Water

Inhalation of volatile compounds in tap water may be a complete pathway if:

- The contaminated water is used for indoor household purposes such as showering, laundering, and dish washing.
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix D in the guidance document.)

DEC groundwater cleanup levels in 18 AAC 75, Table C are protective of this pathway because the inhalation of vapors during normal household activities is incorporated into the groundwater exposure equation.

Check the box if further evaluation of this pathway is needed: ☒

Comments:

Unknown if groundwater drinking wells are present in residential area south or southeast of the site.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.

DEC human health soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because the inhalation of particulates is incorporated into the soil exposure equation.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

Area is vegetated.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during some recreational, subsistence, or industrial activity. People then incidentally ingest sediment from normal hand-to-mouth activities. In addition, dermal absorption of contaminants may be of concern if the the contaminants are able to permeate the skin (see Appendix B in the guidance document). This type of exposure should be investigated if:

- Climate permits recreational activities around sediment.
- The community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

Generally, DEC direct contact soil cleanup levels in 18 AAC 75, Table B1, are assumed to be protective of direct contact with sediment.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No sediment on site.

4. Other Comments *(Provide other comments as necessary to support the information provided in this form.)*

(This Page Intentionally Left Blank)

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: 16th Avenue and C Street, Anchorage, Alaska

Completed By: M. Ebert

Date Completed: 10/4/2019

***Instructions*: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.**

(1)

Check the media that could be directly affected by the release.

(2)

For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

(3)

Check all exposure media identified in (2).

(4)

*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)

Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☐ Surface Soil (0-2 ft bgs)	☐ Direct release to surface soil — check soil									
	☐ Migration to subsurface — check soil									
	☐ Migration to groundwater — check groundwater									
	☐ Volatilization — check air									
	☐ Runoff or erosion — check surface water									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Subsurface Soil (2-15 ft bgs)	☐ Direct release to subsurface soil — check soil									
	☑ Migration to groundwater — check groundwater									
	☑ Volatilization — check air									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									
☑ Ground-water	☐ Direct release to groundwater — check groundwater									
	☑ Volatilization — check air	☑ soil	☑ Incidental Soil Ingestion		C/F	C/F	C/F			
	☐ Flow to surface water body — check surface water		☑ Dermal Absorption of Contaminants from Soil		C/F	C/F	C/F			
	☐ Flow to sediment — check sediment		☐ Inhalation of Fugitive Dust							
	☐ Uptake by plants or animals — check biota	☑ groundwater	☑ Ingestion of Groundwater		C/F	C/F	C/F			
	☐ Other (list):		☑ Dermal Absorption of Contaminants in Groundwater		C/F	C/F	C/F			
			☐ Inhalation of Volatile Compounds in Tap Water							
		☑ air	☑ Inhalation of Outdoor Air		C/F	C/F	C/F			
			☐ Inhalation of Indoor Air							
			☐ Inhalation of Fugitive Dust							
☐ Surface Water	☐ Direct release to surface water — check surface water	☐ surface water	☐ Ingestion of Surface Water							
	☐ Volatilization — check air		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Sedimentation — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ Uptake by plants or animals — check biota	☐ sediment	☐ Direct Contact with Sediment							
	☐ Other (list):	☐ biota	☐ Ingestion of Wild or Farmed Foods							
☐ Sediment	☐ Direct release to sediment — check sediment									
	☐ Resuspension, runoff, or erosion — check surface water									
	☐ Uptake by plants or animals — check biota									
	☐ Other (list):									

Revised, 10/01/2010

(This Page Intentionally Left Blank)

ATTACHMENT 5

ADEC RESPONSE TO COMMENTS

(This Page Intentionally Left Blank)

Ahtna
Engineering Services, LLC

110 W. 38th Ave., Suite 200A
Anchorage, AK 99503
Phone: 907.646.2969 Fax: 907.561.5475

Memorandum

Design-Build • Construction • Environmental • Government Services

Date: July 27, 2021

To: Shawn Tisdell, ADEC

cc: Laurie Butler, Menzies Aviation; Todd Blessing, ADEC

From: Nino Muniz, PG, AES

Subject: ADEC Comments for 16th Ave and C St Groundwater Monitoring Report 2021

Mr. Tisdell – Please find our responses to your comments for the above referenced project as follows:

1) Page 2, Groundwater Sampling first paragraph- indicates that the samples were collected from near the middle of the water column. The approved work plan indicated that the samples were to be collected from the top foot of the water column. Please explain the apparent deviation.

Response: Pump placement was set at the depths noted to ensure that if there was drawdown in the well during well purging and sampling, that there would be sufficient water to collect a sample. Please note that our Ahtna SOP for groundwater sampling (attached below) specifies placing the pump within the screened interval. In future, this SOP will be referenced for all AFSC groundwater sampling.

2) Field notes indicate that the wells were buried and that when they were uncovered, bentonite was observed covering the casing, but did not get into the casing. These site observations and actions should be noted in the report text. It is possible that well casing elevations were also impacted so these well casings should be surveyed prior to any future use for calculating groundwater flow gradients or directions. With the current configuration of two wells, this is not currently an issue.

Response: We will note that bentonite was observed in the monument around the casing in the main body of the report. It is not an uncommon occurrence, depending on soil moisture and frost depth, to observe bentonite that has moved up into the monument. However, due to the construction near these wells associated with CINHS, this may be an indication that the wells were run over at some point, which could affect well elevation. As ADEC pointed out, this may have affected the well elevation(s) but this is moot at this time as only two wells are present; therefore, groundwater flow determination cannot be made. If in the future, one or more wells is installed related to this project, all well elevations (and locations) would be surveyed and established by a professional land surveyor.

(This Page Intentionally Blank)

From:	Tisdell, Shawn E (DEC)
To:	Nino Muniz
Cc:	Laurie Butler (laurie.butler@menziesaviation.com); Luke Hoffmann; Blessing, Todd C (DEC)
Subject:	RE: RTCs for AFSC 16th & C St.
Date:	Monday, August 02, 2021 3:00:37 PM
Attachments:	image002.png

Thank you for looking into this, Nino,

Indicating potential sample bias in the results section would be fine, I suggest making a note on the results table as well. With the changes noted, please finalize the report.

The Ahtna SOP #5 for groundwater sampling (Section 4.3 #11) indicates low flow sampling rates of 100 to 150 mL/min. The 2019 ADEC Field Sampling Guidance (Section 6.4.1) describes reducing the flow rate to 100 to 150 mL/min **or less** for low flow sampling. You may wish to add similar clarification to the SOP. For example, the flow rate for the June 2019 sample event was set at 50 mL/min to minimize drawdown, which is lower than the range provided in SOP #5, yet acceptable in ADEC guidance for low flow sampling.

-Shawn

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Shawn Tisdell (he/him)
Environmental Project Specialist
Contaminated Sites Program
Spill Prevention and Response
Department of Environmental Conservation
610 University Ave, Fairbanks AK 99709
Phone: 907-451-2752
Email: Shawn.Tisdell@Alaska.gov

From: Nino Muniz <nmuniz@ahtna.net>
Sent: Monday, August 2, 2021 10:49 AM
To: Tisdell, Shawn E (DEC) <shawn.tisdell@alaska.gov>
Cc: Laurie Butler (laurie.butler@menziesaviation.com) <laurie.butler@menziesaviation.com>; Luke Hoffmann <lhoffmann@ahtna.net>; Blessing, Todd C (DEC) <todd.blessing@alaska.gov>
Subject: RE: RTCs for AFSC 16th & C St.

Shawn,
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

While our SOP states that samples will be collected from within the screened zone which is in line with DOD, EAP and other standards of practice, in our work plan we did state that the sampling would be done in accordance with the ADEC Field Sampling Guidance. Therefore, in the results section of the report, we will state that the results may be biased low due to the pump placement within the screen interval and not in the top foot of the water column.

Will this be satisfactory?

NM

Herminio (Nino) Muniz, PG

Ahtna Solutions, LLC

Sr. Hydrogeologist
Ahtna Solutions, LLC
110 West 38th Avenue, Suite 200L, Anchorage, AK 99503
907.433.0731 OF | 907.306.2040 CL | nmuniz@ahtna.net

From: Tisdell, Shawn E (DEC) <shawn.tisdell@alaska.gov>
Sent: Friday, July 30, 2021 12:10 PM
To: Nino Muniz <nmuniz@ahtna.net>
Cc: Laurie Butler (laurie.butler@menziesaviation.com) <laurie.butler@menziesaviation.com>; Luke Hoffmann <lhoffmann@ahtna.net>; Blessing, Todd C (DEC) <todd.blessing@alaska.gov>
Subject: RE: RTCs for AFSC 16th & C St.

Thanks for your responses, Nino,

I would like additional clarification of your response to the first comment. Could you send the SOP for groundwater sampling? I could not find one attached to the work plan or to the RTCs. I did see that the reference I made in review of the 2021 Draft Groundwater Monitoring Report to collecting groundwater samples in the top foot of the water column was in the April 2021 draft work plan, but removed from the ADEC approved June work plan. This was my oversight as it should have been included in the final work plan. The 2019 Field Sampling Guidance, Section 6.3, specifies that groundwater samples must be collected as close as possible (within the top foot of water column) at the time of sampling unless approved by CSP on a site-specific basis.

Are you aware of any site-specific reason why groundwater should be sampled at a depth greater than one foot beneath the water column? Groundwater sampling forms provided in the report

indicate that drawdown was negligible at a purge rate of 50 ml/min. The screened interval of the wells at this site should be located across the water table. If not, this should be noted, as the results may not represent contaminant concentrations near the groundwater surface.

Regards,

-Shawn

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Shawn Tisdell (he/him)
Environmental Project Specialist
Contaminated Sites Program
Spill Prevention and Response
Department of Environmental Conservation
610 University Ave, Fairbanks AK 99709
Phone: 907-451-2752
Email: Shawn.Tisdell@Alaska.gov

From: Nino Muniz <nmuniz@ahtna.net>
Sent: Thursday, July 29, 2021 3:49 PM
To: Tisdell, Shawn E (DEC) <shawn.tisdell@alaska.gov>
Cc: Laurie Butler (laurie.butler@menziesaviation.com) <laurie.butler@menziesaviation.com>; Luke Hoffmann <lhoffmann@ahtna.net>
Subject: RTCs for AFSC 16th & C St.

Shawn,

I sent these Tuesday, I just wanted to make sure you them. Upon your acceptance of our responses, we will finalize and submit the report.

NM

Herminio (Nino) Muniz, PG
Sr. Hydrogeologist
Ahtna Solutions, LLC
110 West 38th Avenue, Suite 200L, Anchorage, AK 99503
907.433.0731 OF | 907.306.2040 CL | nmuniz@ahtna.net
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~