



INTERIM GROUNDWATER MONITORING REPORT
Beluga River Unit
Beluga River, Alaska

Prepared by



November 2021

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Acronyms and Abbreviations

µg/L	micrograms per liter
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADS	Arctic Data Services, LLC
AK	Alaska Method
bgs	below ground surface
BRU	Beluga River Unit
BTOC	below top of casing
CoC	chain-of-custody
DO	dissolved oxygen
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline range organics
Hilcorp	Hilcorp Alaska, LLC
LCS	lab control spike
LCSD	lab control spike duplicate
LOD	level of detection
LOQ	limit of quantitation
mg/kg	milligrams per kilogram
mg/L	micrograms per liter
NTU	nephelometric turbidity units
ORP	oxidized redox potential
PAL	project action levels
QA/QC	quality assurance/quality control
RPD	relative percent difference
RRO	residual range organics
SGS	SGS Environmental
Susitna	Susitna Environmental, LLC
TPH	total petroleum hydrocarbons
VOC	volatile organic compounds
YSI	YSI 556 Multiparameter Instrument

1 INTRODUCTION

This document has been prepared on behalf of Hilcorp Alaska, LLC (Hilcorp) by Susitna Environmental, LLC (Susitna) to summarize the results of the 2021 groundwater sampling event at Beluga River Unit (BRU) (Figure 1). Each site is listed as an active site in the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program Database and are listed below:

- Beluga River 221-23 – ADEC Hazard ID: 656 | ADEC File Number: 2337.38.026 | Status: Active (Figure 3)
- Beluga River 224-13 – ADEC Hazard ID: 989 | ADEC File Number: 2337.38.021 | Status: Active (Figure 4)
- Beluga River Abandoned Diesel Tank Farm – ADEC Hazard ID: 1000 | ADEC File Number: 2337.38.015 | Status: Active (Figure 5)
- Beluga River Pump Area Assessment – ADEC Hazard ID: 990 | ADEC File Number: 2337.38.031 | Status: Active (Figure 6)
- Beluga River Tank Farm – ADEC Hazard ID: 991 | ADEC File Number: 2337.38.029 | Status: Active (Figure 7)

Historical groundwater contamination was previously documented at each of the above-listed sites. Therefore, follow-up groundwater sampling was conducted in 2021 to assess the current condition of the contaminant plume at each site. Groundwater sampling was conducted at all sites except the former North Stockpile at the Beluga River 221-23 site; a historical site evaluation was conducted instead and is summarized in Section 2.3. Each site location is shown on Figure 2 and site-specific information is shown on Figures 3 through Figure 7.

2 FIELD WORK

To meet the project objectives, existing monitoring wells were re-developed and sampled at sites Beluga River 224-13, Beluga River Abandoned Diesel Tank Farm, Beluga River Pump Area Assessment and Beluga River Tank Farm. Monitoring Well Development Records are provided in Attachment 1 and Groundwater Sampling Records are provided in Attachment 2.

2.1 MONITORING WELL DEVELOPMENT

In July 2021, viable groundwater monitoring wells at each site were developed and sampled according to the Monitoring Well Guidance (ADEC 2013b) and relevant standard operating procedures. Prior to groundwater sampling, each monitoring well was re-developed to remove any sediment that had settled in the well over time and to ensure proper hydraulic connection to the aquifer. Once well development was complete, each monitoring well was allowed to sit for at least 24 hours prior to sampling. Groundwater volumes removed from each well are provided in each of the following site-specific sections.

2.2 GROUNDWATER SAMPLING

After a 24-hour period had passed since well development, groundwater sampling was conducted using a submersible pump. Depth to groundwater was measured from the top of each well casing and documented on groundwater field forms prior to purging the well. All depth measurements were taken from a marked measuring point on the well casing. The field team purged the monitoring wells in accordance with low-flow techniques outlined in the U.S Environmental Protection Agency (EPA) *Low Stress (low flow) Purging and Sampling Procedures for the Collection of Ground Water Samples from Monitoring Wells* published in 2017 (EPA, 2017) and the *ADEC Field Sampling Guidance* (ADEC, 2019). Water was pumped through a flow-through cell connected to a YSI 556 Multiparameter Instrument (YSI) and water quality parameters were monitored and recorded on field forms. Parameters are considered stable when three successive readings, collected three to five minutes apart, are within:

- $\pm 3\%$ for temperature (minimum of $\pm 0.2^{\circ}\text{C}$),
- ± 0.1 for pH,
- $\pm 3\%$ for conductivity,
- ± 10 mv for oxidized redox potential (ORP),
- $\pm 10\%$ or ≤ 5 nephelometric turbidity units (NTU) for turbidity, and
- $\pm 10\%$ for dissolved oxygen (DO).

While purging, the field team monitored the depth to water to avoid water level drawdown greater than 0.3 feet.

Prior to sampling, groundwater was purged until at least three of the water quality parameters stabilized. All development and purge water was containerized at each site in 55-gallon drums for subsequent recycling or disposal. Groundwater samples were analyzed according to the site-specific list of analytes as described in the following site-specific sections and include some or all of the following list of analytes and methods:

- Gasoline range organics (GRO) by Alaska Method (AK)101
- Diesel range organics (DRO) by AK102
- Residual range organics (RRO) by AK103
- Petroleum-volatile organic compounds (VOCs) by SW8260C
- Polycyclic aromatic hydrocarbons (PAHs) by SW8270D-SIM

Groundwater sample results are compared to ADEC Title 18 Alaska Administrative Code (AAC) 75 Table C, Groundwater Human Health cleanup levels (ADEC, 2020). Groundwater sample results are summarized in site-specific Tables 1 through 4. Groundwater samples were submitted to SGS Environmental, LLC (SGS) in Anchorage, Alaska, under chain-of custody for laboratory analyses.

2.3 SITE-SPECIFIC DETAILS

2.3.1 Beluga River 221-23

Site Beluga River 221-23 was the location for stockpiling (Former Northern Stockpile) impacted material from a spill that occurred at the Contactor Sump. Well Beluga River 221-23 is located on L Pad (Figure 3), 2.6 miles northeast of the airstrip and 2.5 miles west of Beluga River at latitude 61°12'32.38" N and longitude 151° 1'24.70"W. Currently, the well is out of production, and the gravel pad is used for materials storage/materials stockpiles to support activities throughout the Beluga River Unit.

In June of 1989, diesel fuel was identified seeping from the eastern toe of the gravel pad near the dehydrator building contactor sump (Spill No. 1989-23-01-180-02). The sump was removed in July 1989; in June 1990, approximately 650 cubic yards of impacted soil was excavated and placed into a lined and bermed containment area on the pad (Former North Stockpile Site, File # 2337.38.026).

Contaminated soils stockpiled on pad from the Beluga River 221-23 Contactor sump spill were approved for land spreading with the stipulation that an assessment of the soils below the stockpiles be conducted to ensure the underlying and adjacent soils were not contaminated due to the extended time that the stockpiles were staged.

Soil samples collected from the north stockpile footprint in 1992 identified DRO concentrations up to 725 milligrams per kilogram (mg/kg), and total petroleum hydrocarbons (TPH) concentrations from 6.0 to 1,100 mg/kg between 0 and 2 feet below ground surface (bgs). In 1993, samples collected from the former north stockpile contained DRO concentrations in soil between 161 and 3,500 mg/kg from 4 to 5 feet bgs and DRO in groundwater between 0.4 and 2.5 milligrams per liter (mg/L).

At the time of the spill, impacted soil was stockpiled on a liner and contained by berms to keep the soils in place. The depth of the 1993 soil and groundwater impact indicates the contamination is not a result of the stored stockpile but is likely associated with historical field activities. In 1995, the Site Closure letter for the Contactor Sump issued by ADEC did not include the contamination encountered beneath the stockpile area. However, the letter did acknowledge that the limited contamination encountered beneath the stockpile was "from an unrelated source from this spill."

2.3.2 Beluga River 224-13

Beluga River 224-13 is located on M pad (Figure 3), approximately 3.25 miles northeast of the airstrip and west of Beluga River at latitude 61°12'46.05" N and longitude 150°59'31.02" W. This is an active pad in good condition.

On July 28 and 29, 2021, groundwater monitoring well 224-13-2 was re-developed and sampled, respectively. The monitoring well was in good condition, located next to a facility building. Approximately 31.5 gallons of water was removed during development and three gallons of water was purged prior to groundwater sampling. The depth to water was 9.92 feet below top of casing (BTOC). One primary groundwater sample (224132-072921) and one duplicate (224133-072921) were collected and submitted to SGS for analysis. Both samples were analyzed for GRO, DRO, RRO, petroleum-VOCs, and PAHs.

2.3.3 Beluga River Abandoned Diesel Tank Farm

Beluga River Abandoned Diesel Tank Farm is located on A Pad (Figure 4), 1 mile southwest of the airstrip at latitude 61° 9'21.78" N and longitude 151° 3'34.09" W. The pad is in good condition and used for storage of various equipment and supplies. There are no active production wells on this pad.

Monitoring wells ATF-3, ATF-8 and ATF-10 were found to be in good condition, each located where risk to damage is minimal. Each well was re-developed in preparation for groundwater sampling, and approximately 40 gallons, 32 gallons and 17.5 gallons of groundwater were removed from the wells, respectively. Monitoring well ATF-11 was located after initially identifying it as well ATF-8. Approximately 21 gallons of groundwater was removed prior to discovering the correct well identification. No sheen or petroleum odor was observed in ATF-11. Because ATF-11 sampling was not part of the project scope, no groundwater samples were collected from this well.

The depth to water in wells ATF-3, ATF-8 and ATF-10 ranged between 15.76 to 17.85 feet BTOC. One primary groundwater sample was collected from each monitoring well and submitted to SGS and analyzed for GRO, DRO, BTEX and PAHs.

2.3.4 Beluga River Pump Area Assessment

Beluga River Pump Area Assessment is located along the eastern side of Beluga Airstrip runway 18-36, at the BRU Office Building Pad, and continuing southeast to the entrance of E Pad (Figure 5). The site is located at approximately 61°10'37.47" N latitude and 151° 2'13.56" W longitude. Two groundwater plumes were previously identified at the site, one beginning near monitoring well FG-03 (western plume), and another in the vicinity of monitoring wells FG-24 and FG-25 (eastern plume). Although some of the groundwater monitoring wells are located near high traffic areas, there appears little risk to their integrity.

Monitoring wells FG-3, FG-10, FG-14, and FG-21 were re-developed and sampled to determine current contaminant concentrations in the western plume. Wells FG-20, FG-23 and FG-24 were re-developed and sampled to determine current contaminant concentrations in the eastern plume. Approximately 28 gallons, 15 gallons, 35 gallons, and 36 gallons were removed from western plume wells; approximately 27 gallons, 20 gallons and 20 gallons were removed from the eastern plume wells, respectively. Although monitoring well FG-25 was located, the well casing was blocked, and sampling was not possible with the submersible pump.

The depth to water in FG-3, FG-10, FG-14, FG-20, FG-21, FG-23 and FG-24 ranged between 6.66 to 18.23 feet BTOC. One primary groundwater sample was collected from each monitoring well and submitted to SGS and analyzed for GRO, DRO and BTEX.

2.3.5 Beluga River Tank Farm

Beluga River Tank Farm is located on the P&S Yard (Figure 6) at the HOS building site, immediately northeast of the Beluga airstrip. The site is located at approximately 61°10'33.74" N latitude and 151° 2'17.93" W longitude. An attempt was made to locate well HOS-11 in 2021, but it was not found. This is a high traffic area and wells may have been removed to ease traffic patterns or lost from traffic use. Monitoring well HOS-5, located off roadways, was re-developed

in preparation for groundwater sampling and approximately 23 gallons was removed from the well. The depth to water was 12.78 feet BTOC. One primary groundwater sample (HOS5-072921) and one duplicate (HOS6-072921) was collected and submitted to SGS for analysis. All groundwater samples were analyzed for GRO, DRO and BTEX.

2.4 QUALITY CONTROL SAMPLES

Analytical sampling included collection of duplicate samples at a frequency of ten percent. One primary and one duplicate sample set was collected from both monitoring wells 224-13 and HOS-5. In addition, matrix spike / matrix spike duplicate (MS/MSD) samples were collected at a frequency of twenty percent; one MS/MSD was collected from monitoring well FG-20. All data generated by the laboratory was reviewed by Arctic Data Services, LLC (ADS). The data quality review conducted by ADS evaluated precision, accuracy, sensitivity, representativeness, comparability, and completeness of the data by reviewing laboratory-supplied quality assurance/quality control (QA/QC) information as well as conducting independent QA/QC checks on the data. The review was conducted in accordance with ADS Standard Operating Procedures for Stage 2A Data Validation v1.1, which meet requirements of the ADEC Technical Memorandum on Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling (ADEC, 2017). Laboratory QC sample recoveries and relative percent differences (RPDs) were compared to laboratory control limits. Field-duplicate RPDs were compared to ADEC-recommended measurement quality objectives.

2.5 INVESTIGATIVE DERIVED WASTE

Waste generated during this project included monitoring well purge water, and trash, such as nitrile gloves, plastic cores, and paper towels. Waste such as nitrile gloves, plastic cores, and paper towels were disposed as household waste. Purge water was stored in 55-gallon drums staged at each site while analytical results were pending. Once results were received, the water was injected into Wastewater Well BRU 232-9.

3 RESULTS AND RECOMMENDATIONS

Analytical groundwater samples were submitted to SGS for analysis of GRO, DRO, RRO, BTEX, petroleum-VOCs and PAHs based on site-specific requirements. Groundwater analytical results were compared to 18 AAC 75.345 Table C Groundwater Cleanup Levels (ADEC, 2020). Detected analytes are reported in Tables 1 through 4. The complete analytical laboratory report is provided in Attachment D.

3.1 BELUGA RIVER 221-23

The source of contamination near the former north stockpile area has not been determined. Historically, DRO contamination in soil ranged from 161 to 3,500 mg/kg (4 to 5 ft bgs), and in groundwater ranged from 0.4 to 2.5 mg/L (including silica gel cleanup results). It is recommended that ADEC close this site and open a separate site to address the potential subsurface soil and groundwater impact that may be present at this location.

3.2 BELUGA RIVER 224-13

Monitoring well 224-13-2 contained concentrations of DRO (0.239 milligrams per liter [mg/L]) and phenanthrene (0.0446 micrograms per liter [$\mu\text{g/L}$]) below ADEC cleanup levels. All other analytes were non-detect. There was no indication of surface water at or near the monitoring well location, and no apparent risk to the integrity of the well. One more round of groundwater sampling is recommended to move the site towards closure.

3.3 BELUGA RIVER ABANDONED DIESEL TANK FARM

Monitoring wells ATF-3 (in-source), ATF-8 and ATF-10 exhibited concentrations of DRO (0.463 mg/L, 0.851 mg/L, and 0.296 mg/L, respectively) that were below the ADEC cleanup level. Monitoring wells ATF-3 and ATF-8 also exhibited concentrations of phenanthrene (0.0264 $\mu\text{g/L}$ and 0.0241 $\mu\text{g/L}$, respectively, below the ADEC cleanup level. Additionally, ATF-8 had detectable concentrations of ethylbenzene, xylenes, 1-methylnaphthalene, acenaphthene, fluorene and naphthalene that were also below ADEC cleanup levels (Table 2). All other analytes in the three monitoring wells were non-detect.

In-source monitoring well ATF-3 showed a DRO concentration reduction from 31 mg/L in 2013 to 0.463 mg/L in 2021. The DRO concentration in downgradient well ATF-8 reduced from 4.0 mg/L in 2013 to 0.851 mg/L in 2021; downgradient well ATF-10 DRO concentration increased slightly from 0.2 mg/L in 2013 to 0.296 mg/L in 2021. There was no nearby surface water noted during this monitoring event, and no apparent risk to the integrity of the monitoring wells. DRO concentrations have decreased significantly at this site; one additional round of groundwater sampling is recommended to progress the site to closure.

3.4 BELUGA RIVER PUMP AREA ASSESSMENT

All seven monitoring wells sampled at the Pump Area Assessment had detectable concentrations of DRO that were below the ADEC cleanup level (Table 3). Monitoring well FG-24 also exhibited a concentration of GRO that was below the ADEC cleanup level, and well FG-3 contained benzene below the ADEC cleanup level. There were no other detections in groundwater wells at this site.

In 2005, the western plume in-source monitoring well, FG-3, had DRO and benzene concentrations above ADEC Table C cleanup levels, with DRO at 2.0 mg/L and benzene at 5.41 µg/L. In 2021, FG-3 had reduced concentrations of DRO at 0.628 mg/L and benzene at 0.209 µg/L, both below cleanup levels (Table 3). In 2005, the DRO concentration in downgradient well FG-8 was 3.5 mg/L and benzene was 1.1 µg/L. FG-8 was not relocated in 2019 or 2021; however, FG-10 was located and sampled in 2021 with no detections above ADEC cleanup levels. In 2021, western plume downgradient wells FG-14 and FG-21 had DRO concentrations of 0.192 mg/L and 0.498 mg/L, respectively, with no detections of benzene in either well.

The DRO concentration in the eastern plume in-source monitoring well, FG-24, has significantly decreased from 31 mg/L in 2005 to 1.11 mg/L in 2021. Eastern plume wells, FG-20 and FG-23 had no detections above ADEC cleanup levels in 2021.

There was no nearby surface water noted during this monitoring event, and no apparent risk to the integrity of the monitoring wells. One more round of groundwater sampling is recommended for the same suite of wells to move the site towards closure. Downgradient well FG-25 had a DRO concentration of 4.43 mg/L in 2005 but the well couldn't be sampled in 2021 with the submersible pump due to an obstruction in the well or frost jacking. Sampling well FG-25 with a peristaltic pump, a narrow bailer, or a bladder pump for DRO is recommended.

3.5 BELUGA RIVER TANK FARM

Monitoring well HOS-5 was the only well located at this site and exhibited concentrations of DRO (2.06 mg/L) and benzene (28 µg/L) that were above the respective ADEC Table C cleanup levels. All other analytes were either non-detect or below ADEC cleanup levels. Well HOS-11 was not located in 2021. There was no nearby surface water noted during this monitoring event, and no apparent risk to the integrity of the monitoring wells. Further monitoring of contaminants in groundwater is recommended and annual sampling of HOS-5 should be implemented. In addition, another attempt should be made to locate downgradient wells HOS-10 and HOS-13. If located, these wells should be sampled to evaluate whether contaminants have migrated. If these wells cannot be located, then one downgradient well should be installed, developed, and sampled in 2022.

3.6 DATA QUALITY ASSESSMENT

Precision, accuracy, sensitivity, representativeness, comparability, and completeness of the data were evaluated by reviewing laboratory-supplied quality assurance/quality control (QA/QC) information as well as conducting independent QC checks on the data. The following information briefly summarizes the findings for each QA/QC element reviewed; anomalies that had no impact to data quality are discussed in the ADEC data review checklists and are not further described herein. Additional details on data quality are included in the Data Quality Assessment report in Appendix D. The ADEC laboratory data review checklist is also included in Appendix D.

There was no sample preservation, handling, custody, or holding time failures affecting project-sample data quality. There were no non-detect results with level of detections (LOD) or limit of quantitation's (LOQs) that exceeded relevant PALs. Phenanthrene was detected below the LOQ in the method blank sample, but the impact to data usability for these results is minimal. GRO was detected in the trip blank detection and two GRO results were affected. Affected GRO results are qualified as estimated and flagged 'J+', indicating a high bias. There were no lab control spike/lab control duplicate (LCS/LCSD) recovery or RPD failures affecting project-sample data quality. There were no matrix spike/matrix spike duplicate failures and a surrogate recovery failure occurred but did not affect project-sample data quality; please refer to the Data Quality Assessment report for further details. Field duplicate samples were collected and submitted, with at least one pair for each matrix and analysis. There were no field duplicate sample pairs RPD failures.

4 REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2020. Title 18 Alaska Administrative Code (AAC), Chapter 75, Table B1 and Table B2. Method Two – Soil Cleanup Levels Table and Table C Groundwater Cleanup Levels. November.

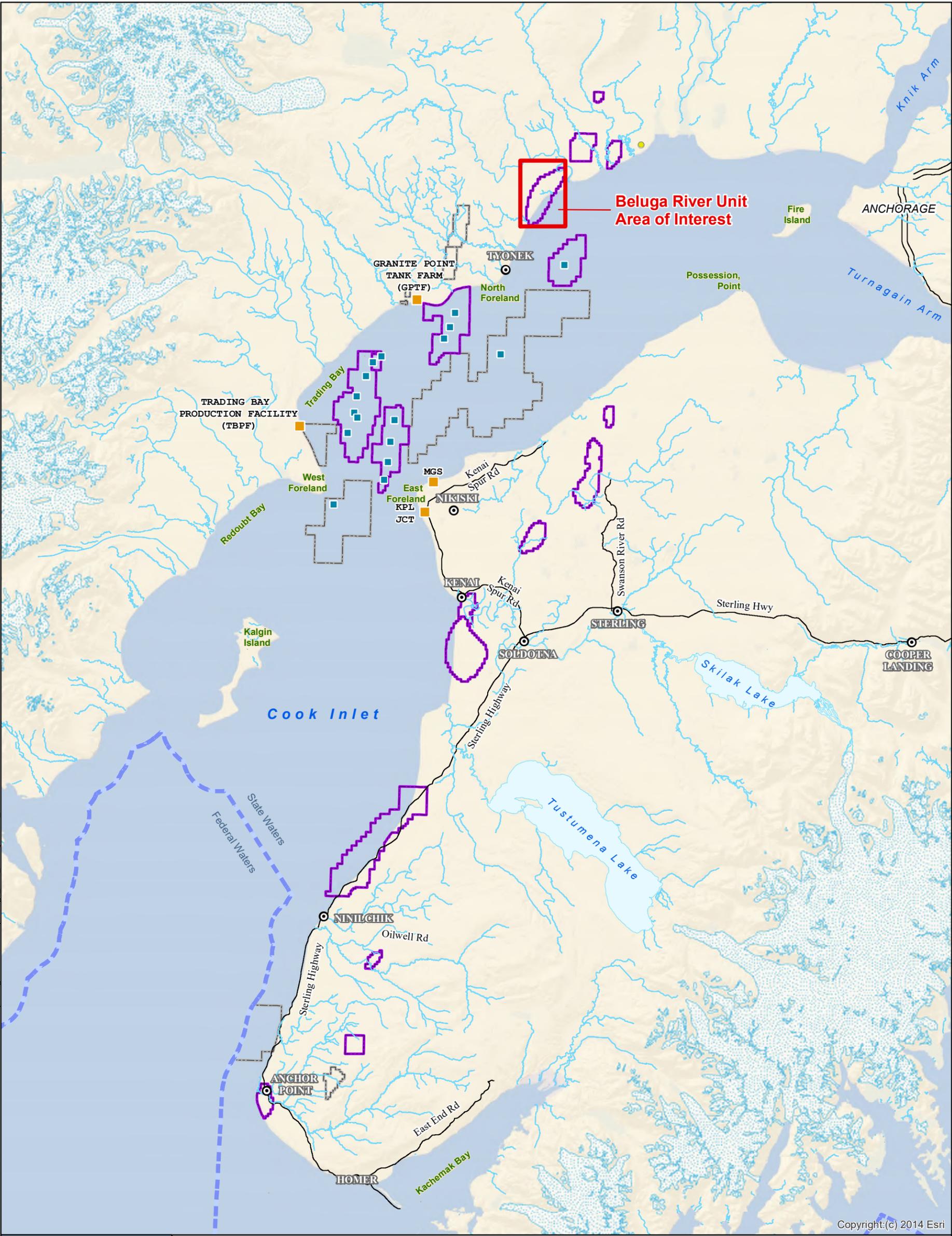
ADEC, 2019. Field Sampling Guidance. October.

ADEC, 2017. ADEC Technical Memorandum: Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling. March.

U.S. Environmental Protection Agency (EPA), 2017. Low Stress (low flow) Purging and Sampling Procedures for the Collection of Ground Water Samples from Monitoring Wells. September.

Figures

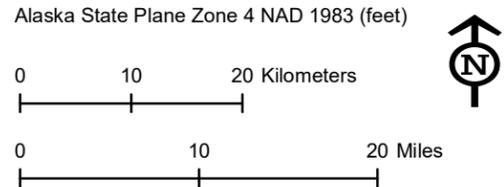
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- Legend**
- Onshore Facilities
 - Offshore Platforms
 - State/Federal Boundary (3 Mile Limit)
 - Oil and Gas Units Operated by HAK
 - Oil and Gas Units - Other
 - Major Roads

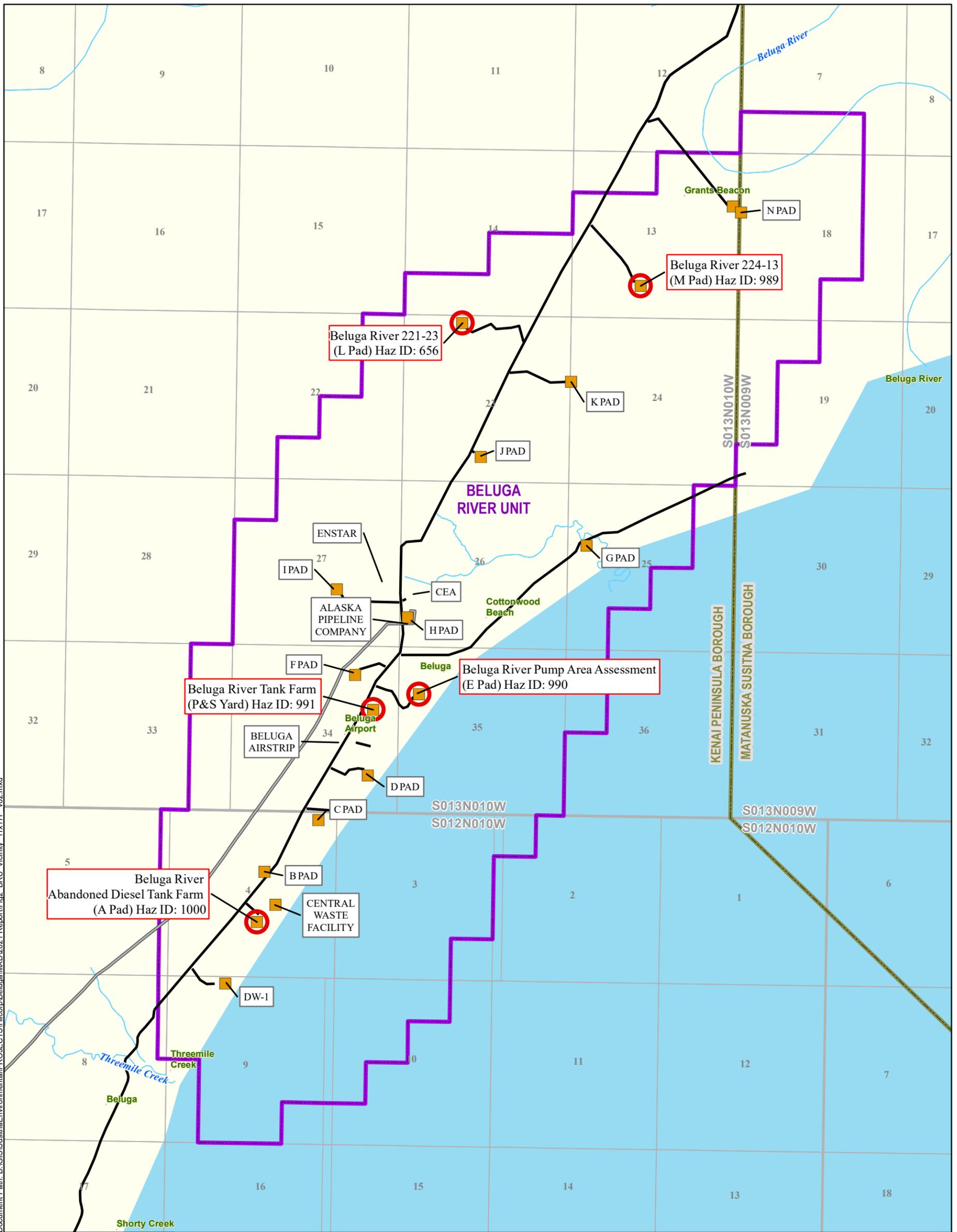


Date Prepared: 10/1/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: HAK - MRA
LOCATION MAP		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 10 miles	Figure No:	1



3800 Centerpoint Drive, Suite 1400
Anchorage, AK 99503

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Legend

- Well Pads
- Beluga River Unit Active ADEC Contaminated Sites (addressed in this report)
- Oil and Gas Units Operated by HAK
- Regional_NAD83

Alaska State Plane Zone 4 NAD 1983 (feet)

0 0.5 1 Kilometers

0 0.5 1 Miles



Date Prepared: 10/6/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: NWC
SITE VICINITY LOCATIONS		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 3,000 feet	Figure No:	2



3800 Centerpoint Drive, Suite 1400
Anchorage, AK 99503

151°1'32"W 151°1'30"W 151°1'28"W 151°1'26"W 151°1'24"W 151°1'22"W 151°1'20"W 151°1'18"W 151°1'16"W

61°12'34"N

61°12'33"N

61°12'32"N

61°12'31"N



Imagery Source: QSI 2017

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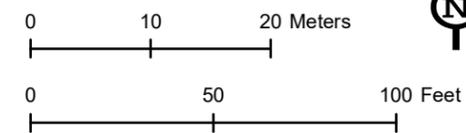
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Legend

- Production Well Surface Hole Location
- ▲ Active ADEC Contaminated Site
- ▲ Closed ADEC Contaminated Site

Alaska State Plane Zone 4 NAD 1983 (feet)



Date Prepared: 10/6/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: NWC
Beluga River 221-23 (L Pad)		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 50 feet	Figure No: 3	

150°59'38"W 150°59'36"W 150°59'34"W 150°59'32"W 150°59'30"W 150°59'28"W 150°59'26"W 150°59'24"W



61°12'46"N
61°12'45"N
61°12'44"N
61°12'43"N

Imagery Source: QSI 2017

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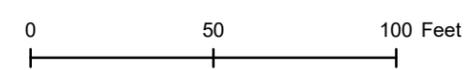
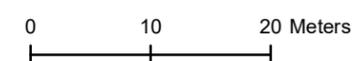
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Anchorage, AK 99503



Legend

- Production Well Surface Hole Location
- ▲ Active ADEC Contaminated Site
- ⊙ Water Supply Well Location
- ⊕ Monitoring Well

Alaska State Plane Zone 4 NAD 1983 (feet)



Date Prepared: 10/5/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: NWC
Monitoring Wells Beluga River 224-13 (M Pad)		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 50 feet	Figure No:	4

151°3'42"W 151°3'40"W 151°3'38"W 151°3'36"W 151°3'34"W 151°3'32"W 151°3'30"W 151°3'28"W 151°3'26"W 151°3'24"W 151°3'22"W 151°3'20"W

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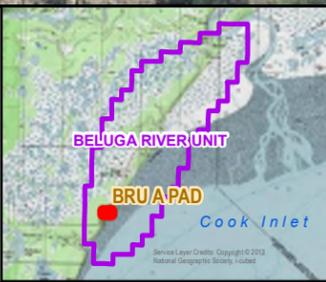


61°9'26"N 61°9'25"N 61°9'24"N 61°9'23"N 61°9'22"N 61°9'21"N

Imagery Source: QSI 2017



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Legend

- Production Well Surface Hole Location
- ▲ Active ADEC Contaminated Site
- ⊗ Monitoring Well
- ⊗ Monitoring Well - Not Found
- ➔ Groundwater Flow Direction

Note:
Presumed groundwater flow direction based on plume depiction in the 2013 Beluga River Abandoned Diesel Tank Farm Memorandum (Weston, 2013).

Alaska State Plane Zone 4 NAD 1983 (feet)

0 10 20 Meters

0 75 150 Feet



Date Prepared: 11/1/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: NWC
Monitoring Wells Beluga River Abandoned Diesel Tank Farm (A Pad)		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 75 feet	Figure No:	5



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Imagery Source: QSI 2017



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Anchorage, AK 99503

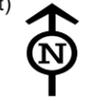
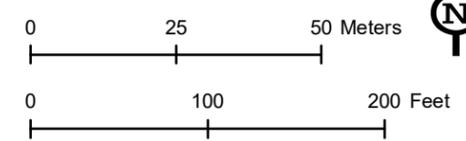


Legend

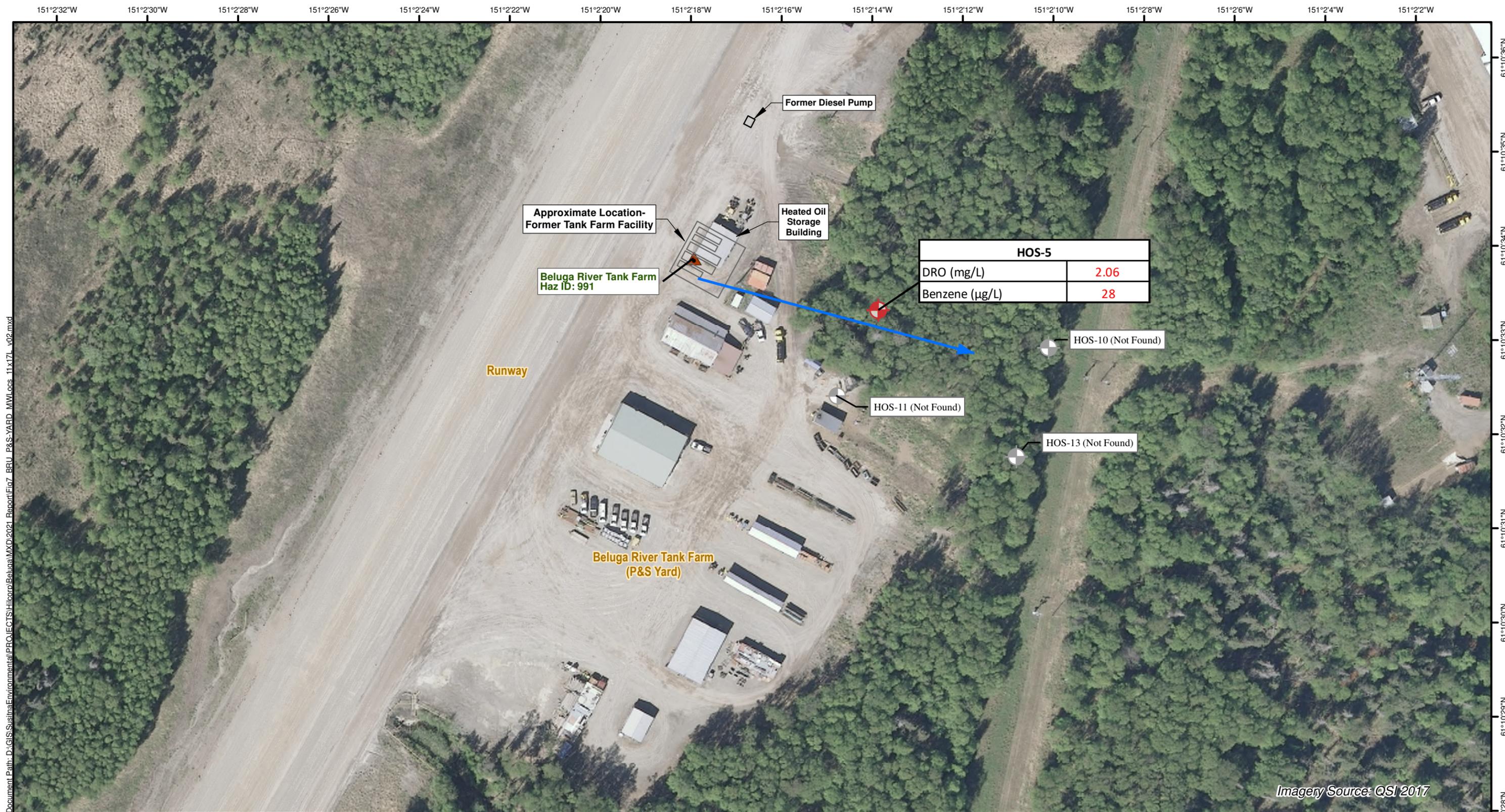
- Production Well Surface Hole Location
- ▲ Active ADEC Contaminated Site
- ⊕ Water Supply Well Location
- ⊕ Monitoring Well
- ⊕ Monitoring Well - Not Found

➔ Groundwater Flow Direction
 Note:
 Groundwater flow direction based on 2013 Beluga River Pump Area Assessment Site Memorandum (Weston, 2013).

Alaska State Plane Zone 4 NAD 1983 (feet)



Date Prepared: 11/1/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: NWC
Monitoring Wells Beluga River Pump Area Assessment (E Pad)		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 103 feet	Figure No:	6

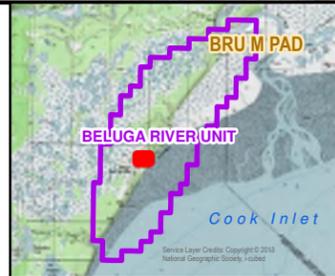


Document Path: D:\GIS\Sustaining\Environmental\PROJECTS\Hilcorp\Beluga\MXD\2021\Report\Fig 7 BRU_P&S_YARD_MW_locs_11x17L_v02.mxd

151°2'32"W 151°2'30"W 151°2'28"W 151°2'26"W 151°2'24"W 151°2'22"W 151°2'20"W 151°2'18"W 151°2'16"W 151°2'14"W 151°2'12"W 151°2'10"W 151°2'8"W 151°2'6"W 151°2'4"W 151°2'2"W

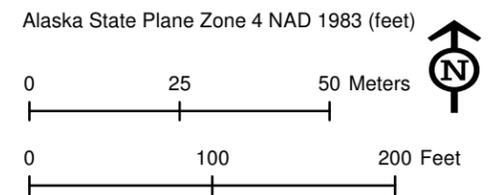
61°10'36"N 61°10'35"N 61°10'34"N 61°10'33"N 61°10'32"N 61°10'31"N 61°10'30"N 61°10'29"N 61°10'28"N

Imagery Source: QSI 2017



- Legend**
- Active ADEC Contaminated Site
 - Monitoring Well
 - Monitoring Well - Not Found
 - Former Tank Farm Infrastructure
 - Groundwater Flow Direction

Note:
 Presumed groundwater flow direction based on plume depiction in the 2013 Beluga River Tank Farm Site Memorandum (Weston, 2013).
 DRO = diesel range organics
 µg/L = microgram per liter
 mg/L = milligrams per liter
 18 AAC 75 Table C Groundwater Cleanup Levels
 DRO = 1.5 mg/L
 Benzene = 4.6 µg/L



Date Prepared: 11/1/2021	Company Name: Hilcorp Alaska, LLC.	Drawn By: NWC
Monitoring Wells Beluga River Tank Farm (P&S Yard)		
BELUGA RIVER UNIT, COOK INLET, ALASKA		
Scale: @ 11x17 map size 1 in = 100 feet	Figure No:	7

Tables

Table 1 BRU 224-13 Analytical Groundwater Results

Hilcorp Beluga River Unit 2021 Groundwater Sampling				Well ID	224-13-2		NA
				Sample ID	224132-072921	224133-072921	Trip Blank
				SDG	1214733	1214733	1214733
				Sample Type	Primary	Field Duplicate	Trip Blank
Collected Date	07/29/2021 14:50:00	07/29/2021 15:50:00	07/28/2021 08:00:00				
Method	Analyte	CAS	Units	PAL	Result	Result	Result
8260D	1,2,4-Trimethylbenzene	95-63-6	µg/L	56	0.500 U	0.500 U	NA
	1,2-Dibromoethane	106-93-4	µg/L	0.075	0.0375 U	0.0375 U	NA
	1,2-Dichloroethane	107-06-2	µg/L	1.7	0.250 U	0.250 U	NA
	1,3,5-Trimethylbenzene	108-67-8	µg/L	60	0.500 U	0.500 U	NA
	Benzene	71-43-2	µg/L	4.6	0.200 U	0.200 U	0.200 U
	Ethylbenzene	100-41-4	µg/L	15	0.500 U	0.500 U	0.500 U
	Isopropylbenzene	98-82-8	µg/L	450	0.500 U	0.500 U	NA
	Methyl-tert-butyl ether (MTBE)	1634-04-4	µg/L	140	5.00 U	5.00 U	NA
	Naphthalene	91-20-3	µg/L	1.7	0.500 U	0.500 U	NA
	Toluene	108-88-3	µg/L	1100	0.500 U	0.500 U	0.500 U
	Xylene, Isomers m & p	179601-23-1	µg/L	NA	1.00 U	1.00 U	1.00 U
	Xylenes	1330-20-7	µg/L	190	1.50 U	1.50 U	1.50 U
	n-Butylbenzene	104-51-8	µg/L	1000	0.500 U	0.500 U	NA
	o-Xylene	95-47-6	µg/L	NA	0.500 U	0.500 U	0.500 U
	sec-Butylbenzene	135-98-8	µg/L	2000	0.500 U	0.500 U	NA
	tert-Butylbenzene	98-06-6	µg/L	NA	0.500 U	0.500 U	NA
8270DSIM	1-Methylnaphthalene	90-12-0	µg/L	11	0.0250 U	0.0250 U	NA
	2-Methylnaphthalene	91-57-6	µg/L	36	0.0250 U	0.0250 U	NA
	Acenaphthene	83-32-9	µg/L	530	0.0250 U	0.0250 U	NA
	Acenaphthylene	208-96-8	µg/L	260	0.0250 U	0.0250 U	NA
	Anthracene	120-12-7	µg/L	43	0.0250 U	0.0250 U	NA
	Benzo(a)anthracene	56-55-3	µg/L	0.3	0.0250 U	0.0250 U	NA
	Benzo(a)pyrene	50-32-8	µg/L	0.25	0.0100 U	0.0100 U	NA
	Benzo(b)fluoranthene	205-99-2	µg/L	2.5	0.0250 U	0.0250 U	NA
	Benzo(g,h,i)perylene	191-24-2	µg/L	0.26	0.0250 U	0.0250 U	NA
	Benzo(k)fluoranthene	207-08-9	µg/L	0.8	0.0250 U	0.0250 U	NA
	Chrysene	218-01-9	µg/L	2	0.0250 U	0.0250 U	NA
	Dibenzo(a,h)anthracene	53-70-3	µg/L	0.25	0.0100 U	0.0100 U	NA
	Fluoranthene	206-44-0	µg/L	260	0.0250 U	0.0250 U	NA
	Fluorene	86-73-7	µg/L	290	0.0250 U	0.0250 U	NA
	Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	0.19	0.0250 U	0.0250 U	NA
	Naphthalene	91-20-3	µg/L	1.7	0.0500 U	0.0500 U	NA
	Phenanthrene	85-01-8	µg/L	NA	0.0285 J B	0.0446 J B	NA
	Pyrene	129-00-0	µg/L	120	0.0250 U	0.0250 U	NA
AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	2.2	0.0500 U	0.0500 U	0.0591 J
AK102	Diesel Range Organics (C10-C25)	DRO-C10-C25	mg/L	1.5	0.239 J	0.239 J	NA
AK103	Residual Range Organics (C25-C360)	RRO-C25-C36	mg/L	1.1	0.255 U	0.250 U	NA

Notes

- bold** The analyte was detected.
- CAS Chemical Abstract Service registry number
- CALC Indicates the result was calculated by the validator following ADEC guidelines.
- PAL project action limit; PALs are the 18 Alaska Administrative Code 75.345 Table C Groundwater Cleanup Levels
- QC quality control
- NA not applicable / not analyzed
- µg/L micrograms per liter
- mg/L milligrams per liter

Data Qualifiers

- J+ The quantitation is considered estimated, biased high, due to a QC anomaly.
- B The result is considered estimated, biased high, and a potential false-positive detection, due to contamination.
- J The result is considered estimated, with an unknown direction of bias, either due to a QC anomaly (*validator-applied*) or detection below the LOQ (*laboratory*).
- U non-detect

Table 2 BRU Abandoned Diesel Tank Farm Analytical Groundwater Results

Hilcorp Beluga River Unit 2021 Groundwater Sampling				Well ID	ATF-3	ATF-8	ATF-10	NA
				Sample ID	ATF3-072921	ATF8-072921	ATF10-072921	Trip Blank
				SDG	1214733	1214733	1214733	1214733
				Sample Type	Primary	Primary	Primary	Trip Blank
				Collected Date	07/29/2021 13:20:00	07/29/2021 14:31:00	07/29/2021 13:18:00	07/28/2021 08:00:00
Method	Analyte	CAS	Units	PAL	Result	Result	Result	Result
8260D	Benzene	71-43-2	µg/L	4.6	0.200 U	0.200 U	0.200 U	0.200 U
	Ethylbenzene	100-41-4	µg/L	15	0.500 U	0.467 J	0.500 U	0.500 U
	Toluene	108-88-3	µg/L	1100	0.500 U	0.500 U	0.500 U	0.500 U
	Xylene, Isomers m & p	179601-23-1	µg/L	NA	1.00 U	3.14	1.00 U	1.00 U
	Xylenes	1330-20-7	µg/L	190	1.50 U	4.64	1.50 U	1.50 U
	o-Xylene	95-47-6	µg/L	NA	0.500 U	1.50	0.500 U	0.500 U
8270DSIM	1-Methylnaphthalene	90-12-0	µg/L	11	0.0255 U	0.721	0.0245 U	NA
	2-Methylnaphthalene	91-57-6	µg/L	36	0.0255 U	0.0240 U	0.0245 U	NA
	Acenaphthene	83-32-9	µg/L	530	0.0255 U	0.0452 J	0.0245 U	NA
	Acenaphthylene	208-96-8	µg/L	260	0.0255 U	0.0240 U	0.0245 U	NA
	Anthracene	120-12-7	µg/L	43	0.0255 U	0.0240 U	0.0245 U	NA
	Benzo(a)anthracene	56-55-3	µg/L	0.3	0.0255 U	0.0240 U	0.0245 U	NA
	Benzo(a)pyrene	50-32-8	µg/L	0.25	0.0102 U	0.00960 U	0.00980 U	NA
	Benzo(b)fluoranthene	205-99-2	µg/L	2.5	0.0255 U	0.0240 U	0.0245 U	NA
	Benzo(g,h,i)perylene	191-24-2	µg/L	0.26	0.0255 U	0.0240 U	0.0245 U	NA
	Benzo(k)fluoranthene	207-08-9	µg/L	0.8	0.0255 U	0.0240 U	0.0245 U	NA
	Chrysene	218-01-9	µg/L	2	0.0255 U	0.0240 U	0.0245 U	NA
	Dibenzo(a,h)anthracene	53-70-3	µg/L	0.25	0.0102 U	0.00960 U	0.00980 U	NA
	Fluoranthene	206-44-0	µg/L	260	0.0255 U	0.0240 U	0.0245 U	NA
	Fluorene	86-73-7	µg/L	290	0.0255 U	0.0683	0.0245 U	NA
	Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	0.19	0.0255 U	0.0240 U	0.0245 U	NA
	Naphthalene	91-20-3	µg/L	1.7	0.0510 U	1.02	0.0490 U	NA
	Phenanthrene	85-01-8	µg/L	NA	0.0264 J B	0.0241 J B	0.0245 U	NA
	Pyrene	129-00-0	µg/L	120	0.0255 U	0.0240 U	0.0245 U	NA
AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	2.2	0.0500 U	0.101 B	0.0500 U	0.0591 J
AK102	Diesel Range Organics (C10-C25)	DRO-C10-C25	mg/L	1.5	0.463 J	0.851	0.296 J	NA

Notes

- bold** The analyte was detected.
- CAS Chemical Abstract Service registry number
- CALC Indicates the result was calculated by the validator following ADEC guidelines.
- PAL project action limit; PALs are the 18 Alaska Administrative Code 75.345 Table C Groundwater Cleanup Levels
- QC quality control
- NA not applicable / not analyzed
- µg/L micrograms per liter
- mg/L milligrams per liter

Data Qualifiers

- J+ The quantitation is considered estimated, biased high, due to a QC anomaly.
- B The result is considered estimated, biased high, and a potential false-positive detection, due to contamination.
- J The result is considered estimated, with an unknown direction of bias, either due to a QC anomaly (*validator-applied*) or detection below the LOQ (*laboratory-applied*).
- U non-detect

Table 3 BRU Pump Area Assessment Analytical Groundwater Results

Hilcorp Beluga River Unit 2021 Groundwater Sampling				Well ID	FG-3	FG-10	FG-14	FG-21	FG-20	FG-23	FG-24	NA
				Sample ID	FG3-072921	FG10-072921	FG14-072921	FG21-072921	FG20-072821	FG-23-072921	FG24-072821	Trip Blank
				SDG	1214733	1214733	1214733	1214733	1214733	1214733	1214733	1214733
				Sample Type	West Primary	West Primary	West Primary	West Primary	East Primary	East Primary	East Primary	Trip Blank
				Collected Date	07/29/2021 09:26:00	07/29/2021 09:31:00	07/29/2021 08:15:00	07/29/2021 08:15:00	07/28/2021 15:45:00	07/29/2021 10:43:00	07/28/2021 15:47:00	07/28/2021 08:00:00
Method	Analyte	CAS	Units	PAL	Result	Result	Result	Result	Result	Result	Result	Result
8260D	Benzene	71-43-2	µg/L	4.6	0.209 J	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U	0.200 U
	Ethylbenzene	100-41-4	µg/L	15	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
	Toluene	108-88-3	µg/L	1100	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
	Xylene, Isomers m & p	179601-23-1	µg/L	NA	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U	1.00 U
	Xylenes	1330-20-7	µg/L	190	1.50 U	1.50 U	1.50 U	1.50 U	1.50 U	1.50 U	1.50 U	1.50 U
	o-Xylene	95-47-6	µg/L	NA	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	2.2	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0500 U	0.0453 J B	0.0591 J
AK102	Diesel Range Organics (C10-C25)	DRO-C10-C25	mg/L	1.5	0.628	0.280 J	0.192 J	0.498 J	0.184 J	0.431 J	1.11	NA

Notes

bold The analyte was detected.

CAS Chemical Abstract Service registry number

CALC Indicates the result was calculated by the validator following ADEC guidelines.

PAL project action limit; PALs are the 18 Alaska Administrative Code 75.345 Table C Groundwater Cleanup Levels

QC quality control

NA not applicable / not analyzed

µg/L micrograms per liter

mg/L milligrams per liter

Data Qualifiers

B The result is considered estimated, biased high, and a potential false-positive detection, due to contamination.

J The result is considered estimated, with an unknown direction of bias, either due to a QC anomaly (*validator-applied*) or detection below the LOQ (laboratory-applied).

U non-detect

Table 4 BRU Tank Farm Analytical Groundwater Results

Hilcorp Beluga River Unit 2021 Groundwater Sampling				Well ID	HOS-5		NA
				Sample ID	HOS5-072921	HOS6-072921	Trip Blank
				SDG	1214733	1214733	1214733
				Sample Type	Primary	Field Duplicate	Trip Blank
				Collected Date	07/29/2021 10:52:00	07/29/2021 10:45:00	07/28/2021 08:00:00
Method	Analyte	CAS	Units	PAL	Result	Result	Result
8260D	<i>Benzene</i>	71-43-2	µg/L	4.6	28.0	25.8	0.200 U
	<i>Ethylbenzene</i>	100-41-4	µg/L	15	13.4	12.4	0.500 U
	<i>Toluene</i>	108-88-3	µg/L	1100	0.500 U	0.500 U	0.500 U
	<i>Xylene, Isomers m & p</i>	179601-23-1	µg/L	NA	35.5	32.8	1.00 U
	<i>Xylenes</i>	1330-20-7	µg/L	190	35.9	33.2	1.50 U
	<i>o-Xylene</i>	95-47-6	µg/L	NA	0.393 J	0.379 J	0.500 U
AK101	<i>Gasoline Range Organics (C6-C10)</i>	GRO-C6-C10	mg/L	2.2	0.401 J+	0.383 J+	0.0591 J
AK102	<i>Diesel Range Organics (C10-C25)</i>	DRO-C10-C25	mg/L	1.5	2.06	1.97	NA

Notes

- red highlight** The analyte was detected at a concentration exceeding the PAL.
- bold** The analyte was detected.
- CAS Chemical Abstract Service registry number
- CALC Indicates the result was calculated by the validator following ADEC guidelines.
- PAL project action limit; PALs are the 18 Alaska Administrative Code 75.345 Table C Groundwater Cleanup Levels
- QC quality control
- NA not applicable / not analyzed
- µg/L micrograms per liter
- mg/L milligrams per liter

Data Qualifiers

- J+ The quantitation is considered estimated, biased high, due to a QC anomaly.
- J The result is considered estimated, with an unknown direction of bias, either due to a QC anomaly (*validator-applied*) or detection below the LOQ (laboratory-applied).
- U non-detect

Attachment A Monitoring Well Development Records

BELUGA RIVER 224-13

BELUGA ABANDONED DIESEL TANK FARM

BELUGA RIVER PUMP AREA ASSESSMENT

WELL DEVELOPMENT

Date: 7/27/21

Well ID: FG-3

Beluga R. Pump
Assessment Area

Well Evacuation / Field Parameters

Time	Depth to Water (TOC)	Volume (gallons)	Temp (°C) Color	Cond (µS/cm)	DO (mg/L)	pH Well Screen Interval	OPR (mV)	Color/ Turbidity NTU
0719	9.99	/	Cloudy, grey, white sediments			middle		258.8
0729	/	7.5	"	"	"	bottom		1100
0740	/	15.0	"	"	"	middle		775.7
0743	/	17.0	"	"	"	Top		916.6
0751	/	19.0	light grey, no odor			bottom		1665.7
0753	/	20.0	"	"		middle		272.2
0758	/	22.0	"	"		Top		420.5
0805	/	23.5	"	"		Bottom		145.9
0810	/	25.0	slightly cloudy			Bottom		93.04
0813	/	26.0	"	"		middle		110.4
0818	/	27.0	"	"		bottom		92.69
0822	/	27.5	"	"		bottom		62.92
0827	/	28.0	mostly clear			bottom		51.36

Notes:

DTW = 9.99 (start) DTB = 18.90 → 8.91 ft × 0.163 = 1.45 gal

DTW = 10.02 (end) Good recharge rate DTB = 19.22

PURGED 28 gallons total.
19.3 well volumes

Date: 7/27/21

WELL DEVELOPMENT

Well ID: FG-20

Well Evacuation / Field Parameters

Time	Depth to Water (TOC)	Volume (gallons)	Temp (°C) Color	CO ₂ (µS/cm)	DO (mg/L)	pH Well Screen Interval	OPR (mV)	Color/Turbidity NTU
1030	15.29	VERY THICK	CLOUDY/MUDDY WATER					—
1051	✓	15.0	orange/grey, thick			bottom		169.7
1058	✓	22.5	st cloudy, grey			bottom		120.9
1104	✓	24.0	slightly cloudy			"		55.31
1109	✓	26.0	"			"		43.88
1113	15.31	27.0	"			"		29.23

Purged 27 gals or 17.6 well volumes

DTW = 15.31
(end)

DTB = 24.65

Notes:

DTW = 15.29

(start)

DTB = 15.87

46.20

24.65

→ 0.28'

x 0.163 =

0.05 gal

* Very soft bottom

depth

last well measurement was

* Bio mass on top of water prevented initial DTB measurement removed * 20 gal first & then started readings

* med sand in gw w/organics

* clumps of organics / possibly roots removed from well

* surged tp, middle & bottom

BELUGA RIVER TANK FARM

Attachment B Groundwater Sampling Forms

BELUGA RIVER 224-13



Groundwater Sampling Record

Project Name: BRU GW sampling Well ID: 224-13-2
 Project Location: M-Pad Sample No.: 224-13-2-072921^{SL} 224132-072921
 Project Number: 215-01984 Sampler(s): BL, MM (DUP + 224133-072921)
 Date/Time: 7/29/21 / 1421 Weather: overcast, slight wind, 56°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1421</u>	<u>17.09</u>	<u>9.92</u>	<u>7.17</u>	<u>1.17 gal → 3.51 (3 well vol)</u>

Meas. Hist. Initial

Water Level Measurement Method: Electric Tape Other: Water Level Meter

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.073

Begin Purge: Time: 1428 Total Volume Purged: 3 gallons (M)

End Purge: Time: 1445 1509 Well Volumes Purged: 0.85 well volumes

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabain Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1450 / DUP - 1550

Sample Collection Method: Pump Type: Sub Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): _____

Sample Containers

Quantity	Duplicates	Size	Bottle Type	Laboratory Analysis
<u>3</u>	<u>0</u>	<u>40 ml</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO</u>
<u>3</u>	<u>6</u>	<u>40 ml</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>Petroleum VOCs, DE</u>
<u>8</u>	<u>4</u>	<u>250 ml</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO/RRO</u>
<u>4</u>	<u>0</u>	<u>250 ml</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>PAH, Non Preserved</u>
_____	_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes:

BELUGA ABANDONED DIESEL TANK FARM



Groundwater Sampling Record

Project Name: BRU GW Sampling Well ID: ATF-3
 Project Location: Abandoned Tank Farm Sample No.: ATF3-072921
 Project Number: 215-01984 Sampler(s): mm/BL
 Date/Time: 7/29/2021 1238 Weather: cloudy, 58°F, wind 0-5mph

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume <small>(2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)</small>
<u>1239</u>	<u>24.68</u> <input checked="" type="checkbox"/> Meas. <input type="checkbox"/> Hist.	<u>17.85</u> Initial	<u>6.83</u>	<u>1.11 (3) = 3.33 gal for 3 well vol</u>

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailer Other: _____

Purge Rate: 0.097

Begin Purge: Time: 1244 Total Volume Purged: 3.2 gal

End Purge: Time: 1317 Well Volumes Purged: 2.9

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1320

Sample Collection Method: Pump Type: sub Dedicated Y N Bailer Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): Slight PDI odor, slightly turbid / orange

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>3</u>	<u>40mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO</u>
<u>3</u>	<u>40mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>BTEX</u>
<u>2</u>	<u>250 mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO</u>
<u>2</u>	<u>250mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>PAHs</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: Pump set @ 21' btoc



Groundwater Sampling Record

Project Name: Beluga River Well ID: ATF-8
 Project Location: Diesel Tank Farm Sample No.: ATF8-072921
 Project Number: _____ Sampler(s): ML/RB
 Date/Time: 7/29/21 Weather: Overcast ~54°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1357</u>	<u>21.13</u>	<u>15.76</u>	<u>5.37</u>	<u>0.86</u>
	<input checked="" type="checkbox"/> Meas. <input type="checkbox"/> Hist.	<input type="checkbox"/> Initial		

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailer Other: _____

Purge Rate: 0.097

Begin Purge: Time: 1400 Total Volume Purged: 2.9

End Purge: Time: 1430 Well Volumes Purged: 3.4

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1431

Sample Collection Method: Pump Type: Mega Monsoon Dedicated Y N Bailer Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): _____

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>2</u>	<u>250ml (HCL)</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO</u>
<u>2</u>	<u>250ml (un)</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>PAH</u>
<u>6</u>	<u>40ml HCL</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO/BTEX</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes:

Set pump @ 18' BTOC



Groundwater Sampling Record

Project Name: Beluga River Well ID: ATF-10
 Project Location: Diesel Tank Farm Sample No.: ATF10-072921
 Project Number: _____ Sampler(s): ML/RB
 Date/Time: 7/29/21 Weather: Overcast 54°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1250</u>	<u>19.99</u>	<u>17.60</u>	<u>2.39</u>	<u>0.39</u>

Meas. Hist. Initial

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.10 gal/min

Begin Purge: Time: 1252 Total Volume Purged: 2.5

End Purge: Time: 1317 Well Volumes Purged: 6.4

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1318

Sample Collection Method: Pump Type: Mega Monsoon Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): clear, no odor or sheen

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>2</u>	<u>250ml (HCL)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO</u>
<u>2</u>	<u>250ml (un)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>PAH</u>
<u>6</u>	<u>40ml HCL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO/BTEX</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes:

Set pump @ 18' BTOC

BELUGA RIVER PUMP AREA ASSESSMENT



Groundwater Sampling Record

Project Name: BRI GW Sampling Well ID: FG-3
 Project Location: Pump Area Assessment Sample No.: FG3-072921
 Project Number: 215-01984 Sampler(s): MM/BL
 Date/Time: 0846 7/29/21 Weather: cloudy, 55°F, breeze (23mph)

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume <small>(2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)</small>
<u>0850</u>	<u>19.22</u>	<u>10.07</u>	<u>9.15</u>	<u>1.5 (4.5 gal = 3 well vol)</u>

Meas. Hist. Initial

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.067 gal/min
0.063

Begin Purge: Time: 0901 Total Volume Purged: 2.0 gal

End Purge: Time: 0931 Well Volumes Purged: 1.3

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 0926

Sample Collection Method: Pump Type: sub Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): Slightly turbid, no odor, no sheen

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>3</u>	<u>40ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO Hcl</u>
<u>3</u>	<u>40ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>BTEX Hcl</u>
<u>2</u>	<u>250ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO Hcl</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: place pump @ 14.5' btoC



Groundwater Sampling Record

Project Name: Beluga River Well ID: FG-10
 Project Location: Pump Area Assess. Sample No.: FG10-072921
 Project Number: _____ Sampler(s): ML/RB
 Date/Time: 7/29/21 Weather: Overcast 52°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>857</u>	<u>10.15</u>	<u>6.66</u>	<u>3.49</u>	<u>0.57</u>
	<input checked="" type="checkbox"/> Meas. <input type="checkbox"/> Hist.	Initial		

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.073

Begin Purge: Time: 900 Total Volume Purged: 2.2

End Purge: Time: 930 Well Volumes Purged: 3.9

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 930

Sample Collection Method: Pump Type: Mega Monsoon Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): orange tint, no odor or sheen

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>2</u>	<u>250ml (HCL)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO</u>
<u>6</u>	<u>40ml (HCL)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO/BTEX</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: Set pump @ 8' BTOL



SUSITNA
ENVIRONMENTAL, LLC

Groundwater Sampling Record

Project Name: Beluga River Well ID: FG-14
 Project Location: Pump Area Assess. Sample No.: FG14-072921
 Project Number: _____ Sampler(s): ML/RB
 Date/Time: 7/29/21 Weather: Overcast 52°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>730</u>	<u>10.68</u> <input type="checkbox"/> Meas. <input type="checkbox"/> Hist.	<u>18.66</u> Initial	<u>7.98</u>	<u>1.30</u>

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailer Other: _____

Purge Rate: 0.073 gal/min

Begin Purge: Time: 737 Total Volume Purged: 2.7

End Purge: Time: 814 Well Volumes Purged: 2.1

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 815

Sample Collection Method: Pump Type: Mega Monsoon Dedicated Y N Bailer Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): orange tint, no odor or sheen

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>2</u>	<u>250 ml (HCL)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO</u>
<u>6</u>	<u>40 ml (HCL)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO/BTEX</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes:

Set pump @ 16' BTOC



Groundwater Sampling Record

Project Name: Beluga River Well ID: FG-20
Project Location: Pump Area Assess. Sample No.: FG20-072821
Project Number: _____ Sampler(s): ML/RB
Date/Time: 7/28/21 Weather: Overcast ~ 60°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1455</u>	<u>24.65</u>	<u>15.332</u>	<u>9.33</u>	<u>1.52</u>

Meas. Hist. Initial

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.078 gal/min

Begin Purge: Time: 1503 Total Volume Purged: 3.2

End Purge: Time: 1944 Well Volumes Purged: 2.1

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1545

Sample Collection Method: Pump Type: Submersible Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): no odor, sheen; orange tint

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>26</u> <u>250ml</u>	<u>250ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>HCL → DRO MS/D</u>
<u>18</u> <u>40ml</u>	<u>40ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>HCL → GRO/BTEX MS/D</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: Set pump @ 22' BTOC



Groundwater Sampling Record

Project Name: 2021 GW Sampling Well ID: FG21
 Project Location: BRV Pump Asses Area Sample No.: FG21-072921
 Project Number: 215-01984 Sampler(s): MM/BL
 Date/Time: 7/29/21 0730 Weather: Cloudy, 52°F, no wind

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>0732</u>	<u>9.55</u> <input checked="" type="checkbox"/> Meas. <input type="checkbox"/> Hist.	<u>21.61</u> Initial	<u>12.06</u>	<u>1.97 (3) = 5.91</u> (3 well vol)

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.11 gal/min

Begin Purge: Time: 0738 42 min

Total Volume Purged: 4.5 gal

End Purge: Time: 0820

Well Volumes Purged: 2.28

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 0815

Sample Collection Method: Pump Type: Sub. Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): Somewhat turbid, no odor

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>3</u>	<u>40mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO Hcl</u>
<u>3</u>	<u>40mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>BTEX Hcl</u>
<u>2</u>	<u>250mL</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DR0 Hcl</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: Pump set @ 16' btoe
Slight sulfur odor

End DTW =
FD =



Groundwater Sampling Record

Project Name: BRU GW Sampling Well ID: FG-23
Project Location: BRU Sample No.: FG23-072921
Project Number: 215-01984 Sampler(s): mm/BL
Date/Time: 1010 7/29/2021 Weather: Cloudy, 58°F, No Wind.

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1016</u>	<u>25.01</u> <input checked="" type="checkbox"/> Meas. <input type="checkbox"/> Hist.	<u>18.23</u> Initial	<u>6.78</u>	<u>1.1 (3) = 3.3 gal</u> (3 well vol)

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.18 gal/min

Begin Purge: Time: 1023 Total Volume Purged: 3 gal

End Purge: Time: 1040 Well Volumes Purged: 2.73

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1043

Sample Collection Method: Pump Type: sub Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): _____

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>3</u>	<u>40m</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO Hcl</u>
<u>3</u>	<u>40m</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>BTEX Hcl</u>
<u>2</u>	<u>250mL</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO Hcl</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: pump set @ 21' to gbtoc



Groundwater Sampling Record

Project Name: _____ Well ID: FG-24
 Project Location: Pump Area Assess. Sample No.: FG24-072821
 Project Number: _____ Sampler(s): 1111 / BL
 Date/Time: 7/28/2021 1455 Weather: cloudy w/wind 5-10 mph

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1558</u>	<u>25.1</u>	<u>17.28</u>	<u>7.3</u>	<u>1.19</u>
	<input type="checkbox"/> Meas. <input type="checkbox"/> Hist.	Initial		

Water Level Measurement Method: Electric Tape Other: interface Meter

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailor Other: _____

Purge Rate: 0.12 gal/min

Begin Purge: Time: 1510

Total Volume Purged: 4.2 gallons

End Purge: Time: 1544

Well Volumes Purged: ~~5.4~~ ⁽¹¹⁾ 3.5

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1547 ~~1553~~

Sample Collection Method: Pump Type: sub Dedicated Y N Bailor Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): clear w/ POL odor slight to moderate, No Turbids

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>3</u>	<u>Voa 40 ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRO Hcl</u>
<u>3</u>	<u>Voa 40 ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>BTEX Hcl</u>
<u>2</u>	<u>250 ml</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>PLO HCl</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes: DTW_{start} = 17.35 DTB = 25.1 → Tubing will be left in the well.
 DTW_{end} = 17.29 DTB_{start}

Set pump @ 21' btoe

BELUGA RIVER TANK FARM



Groundwater Sampling Record

Project Name: Beluga R Well ID: HOS-5
Project Location: P+S yard Sample No.: HOS-072921 / HOS-072921 (dup)
Project Number: _____ Sampler(s): ML/RB
Date/Time: 7/29/21 Weather: Overcast 54°F

Water Level Measurements and Purge Data

Time	Depth of Well (TOC)	Depth to Water (TOC)	Feet of Water in Well	Gallons per Well Volume (2" dia. = 0.163 gal/ft, 4" dia. = 0.653 gal/ft)
<u>1014</u>	<u>17.66</u> <input type="checkbox"/> Meas. <input type="checkbox"/> Hist. <u>18.08</u>	<u>12.78</u> Initial	<u>5.30</u>	<u>0.84</u>

Water Level Measurement Method: Electric Tape Other: _____

Well Evacuation Method: Peristaltic Pump Submersible Pump Bailer Other: _____

Purge Rate: 0.086 gal/min

Begin Purge: Time: 1017 Total Volume Purged: 3.0

End Purge: Time: 1052 Well Volumes Purged: 3.5

Purge Water Disposed: 55-gal Drum Storage Tank Ground Liquabin Other: _____

Sample Collection Method & Analysis

Sample Type: Groundwater Surface Water Other: _____

Sample Time: 1052

Sample Collection Method: Pump Type: Mega Monsoon Dedicated Y N Bailer Other: _____

Decon Procedure: N/A Alconox Wash Tap Rinse DI Water Other: _____

Sample Description (color, turbidity, odor, sheen, etc.): POL ODOR, slight orange tint

Sample Containers

Quantity	Size	Bottle Type	Laboratory Analysis
<u>4</u>	<u>250ml (HCC)</u>	<input checked="" type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>DRO</u>
<u>12</u>	<u>40ml (HCC)</u>	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	<u>GRD/BTEX</u>
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____
_____	_____	<input type="checkbox"/> Glass <input type="checkbox"/> Plastic	_____

Notes:

Collected dup → HOS-072921 w/dummy time 1045

Attachment C Laboratory Analytical Report

Laboratory Report of Analysis

To: Hilcorp Alaska, LLC
3800 Centerpoint Dr
Anchorage, AK 99503
(907)777-8300

Report Number: **1214733**

Client Project: **WBS**

Dear Kelly Nixon,

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
Project Manager
Justin.Nelson@sgs.com

Date

Case Narrative

SGS Client: **Hilcorp Alaska, LLC**
 SGS Project: **1214733**
 Project Name/Site: **WBS**
 Project Contact: **Kelly Nixon**

Refer to sample receipt form for information on sample condition.

HOS5-072921 (1214733010) PS

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

HOS6-072921 (1214733011) PS

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

224133-072921 (1214733016) PS

Revised Report - Petroleum VOCs and RRO have been added, per the COC.

LB for HBN 1823672 [TCLP/11325 (1628574) LB

8260D - Benzene was detected in the LB greater than the LOQ. This analyte was not reported above the LOQ in the associated samples.

MB for HBN 1823448 [XXX/45308] (1627703) MB

8270D SIM - Phenanthrene is detect in the PAH method blank at less than the LOQ. Associated samples contain this analyte at less than the LOQ.

1214798010MS (1627705) MS

8270D SIM - PAH MS recoveries for multiple analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

1214798010MSD (1627706) MSD

8270D SIM - PAH MSD recoveries for multiple analytes do not meet QC criteria. Refer to the LCS for accuracy requirements.

8270D SIM - PAH MS/MSD RPD for multiple analytes does not meet QC criteria. These analytes are not detected above the LOQ in the parent sample.

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

Print Date: 09/30/2021 4:36:22PM

Laboratory Qualifiers

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

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

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

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

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

Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
FG20-072821	1214733001	07/28/2021	07/30/2021	Water (Surface, Eff., Ground)
FG20-072821(1214733001BMS)	1214733002	07/28/2021	07/30/2021	Water (Surface, Eff., Ground)
FG20-072821(1214733001BMSD)	1214733003	07/28/2021	07/30/2021	Water (Surface, Eff., Ground)
FG24-072821	1214733004	07/28/2021	07/30/2021	Water (Surface, Eff., Ground)
FG14-072921	1214733005	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
FG21-072921	1214733006	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
FG3-072921	1214733007	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
FG10-072921	1214733008	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
FG-23-072921	1214733009	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
HOS5-072921	1214733010	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
HOS6-072921	1214733011	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
ATF10-072921	1214733012	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
ATF3-072921	1214733013	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
ATF8-072921	1214733014	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
224132-072921	1214733015	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
224133-072921	1214733016	07/29/2021	07/30/2021	Water (Surface, Eff., Ground)
Trip Blank	1214733017	07/28/2021	07/30/2021	Water (Surface, Eff., Ground)

Method

8270D SIM LV (PAH)
 AK102
 AK102
 AK103
 AK101
 SW8260D

Method Description

8270 PAH SIM GC/MS LV
 DRO Low Volume (W)
 DRO/RRO Low Volume Water
 DRO/RRO Low Volume Water
 Gasoline Range Organics (W)
 Volatile Organic Compounds (W)

Detectable Results Summary

Client Sample ID: FG20-072821			
Lab Sample ID: 1214733001	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	0.184J	mg/L
Client Sample ID: FG24-072821			
Lab Sample ID: 1214733004	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	1.11	mg/L
Volatile Fuels	Gasoline Range Organics	0.0453J	mg/L
Client Sample ID: FG14-072921			
Lab Sample ID: 1214733005	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	0.192J	mg/L
Client Sample ID: FG21-072921			
Lab Sample ID: 1214733006	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	0.498J	mg/L
Client Sample ID: FG3-072921			
Lab Sample ID: 1214733007	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	0.628	mg/L
Volatile GC/MS	Benzene	0.209J	ug/L
Client Sample ID: FG10-072921			
Lab Sample ID: 1214733008	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	0.280J	mg/L
Client Sample ID: FG-23-072921			
Lab Sample ID: 1214733009	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	0.431J	mg/L
Client Sample ID: HOS5-072921			
Lab Sample ID: 1214733010	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	2.06	mg/L
Volatile Fuels	Gasoline Range Organics	0.401	mg/L
Volatile GC/MS	Benzene	28.0	ug/L
	Ethylbenzene	13.4	ug/L
	o-Xylene	0.393J	ug/L
	P & M -Xylene	35.5	ug/L
	Xylenes (total)	35.9	ug/L
Client Sample ID: HOS6-072921			
Lab Sample ID: 1214733011	<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Semivolatile Organic Fuels	Diesel Range Organics	1.97	mg/L
Volatile Fuels	Gasoline Range Organics	0.383	mg/L
Volatile GC/MS	Benzene	25.8	ug/L
	Ethylbenzene	12.4	ug/L
	o-Xylene	0.379J	ug/L
	P & M -Xylene	32.8	ug/L
	Xylenes (total)	33.2	ug/L

Print Date: 09/30/2021 4:36:27PM

Detectable Results Summary

 Client Sample ID: **ATF10-072921**

Lab Sample ID: 1214733012

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.296J	mg/L

 Client Sample ID: **ATF3-072921**

Lab Sample ID: 1214733013

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0264J	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	0.463J	mg/L
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 Client Sample ID: **ATF8-072921**

Lab Sample ID: 1214733014

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.721	ug/L

Acenaphthene	0.0452J	ug/L
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Fluorene	0.0683	ug/L
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Naphthalene	1.02	ug/L
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Phenanthrene	0.0241J	ug/L
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Semivolatile Organic Fuels

Diesel Range Organics	0.851	mg/L
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Volatile Fuels

Gasoline Range Organics	0.101	mg/L
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Volatile GC/MS

Ethylbenzene	0.467J	ug/L
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o-Xylene	1.50	ug/L
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P & M -Xylene	3.14	ug/L
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Xylenes (total)	4.64	ug/L
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 Client Sample ID: **224132-072921**

Lab Sample ID: 1214733015

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0285J	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	0.239J	mg/L
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 Client Sample ID: **224133-072921**

Lab Sample ID: 1214733016

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0446J	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	0.239J	mg/L
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 Client Sample ID: **Trip Blank**

Lab Sample ID: 1214733017

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	0.0591J	mg/L

Results of FG20-072821

Client Sample ID: **FG20-072821**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733001
 Lab Project ID: 1214733

Collection Date: 07/28/21 15:45
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-20

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.184 J	0.577	0.173	mg/L	1		08/09/21 16:23
Surrogates							
5a Androstane (surr)	94.9	50-150		%	1		08/09/21 16:23

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 16:23
 Container ID: 1214733001-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of FG20-072821

Client Sample ID: **FG20-072821**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733001
 Lab Project ID: 1214733

Collection Date: 07/28/21 15:45
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-20

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/03/21 02:06
Surrogates							
4-Bromofluorobenzene (surr)	91.8	50-150		%	1		08/03/21 02:06

Batch Information

Analytical Batch: VFC15745
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/03/21 02:06
 Container ID: 1214733001-A

Prep Batch: VXX37557
 Prep Method: SW5030B
 Prep Date/Time: 08/02/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG20-072821

Client Sample ID: **FG20-072821**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733001
 Lab Project ID: 1214733

Collection Date: 07/28/21 15:45
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-20

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 21:18
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:18
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:18
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 21:18
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:18
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 21:18

Surrogates

1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		08/05/21 21:18
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/05/21 21:18
Toluene-d8 (surr)	100	89-112		%	1		08/05/21 21:18

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 21:18
 Container ID: 1214733001-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG24-072821

Client Sample ID: **FG24-072821**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733004
 Lab Project ID: 1214733

Collection Date: 07/28/21 15:47
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-24

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.11	0.612	0.184	mg/L	1		08/09/21 16:52
Surrogates							
5a Androstane (surr)	103	50-150		%	1		08/09/21 16:52

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 16:52
 Container ID: 1214733004-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 245 mL
 Prep Extract Vol: 1 mL

Results of FG24-072821

Client Sample ID: **FG24-072821**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733004
 Lab Project ID: 1214733

Collection Date: 07/28/21 15:47
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-24

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0453 J	0.100	0.0450	mg/L	1		08/03/21 03:00
Surrogates							
4-Bromofluorobenzene (surr)	98.1	50-150		%	1		08/03/21 03:00

Batch Information

Analytical Batch: VFC15745
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/03/21 03:00
 Container ID: 1214733004-A

Prep Batch: VXX37557
 Prep Method: SW5030B
 Prep Date/Time: 08/02/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG24-072821

Client Sample ID: **FG24-072821**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733004
 Lab Project ID: 1214733

Collection Date: 07/28/21 15:47
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-24

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 21:33
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:33
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:33
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 21:33
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:33
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 21:33
Surrogates							
1,2-Dichloroethane-D4 (surr)	107	81-118		%	1		08/05/21 21:33
4-Bromofluorobenzene (surr)	97.9	85-114		%	1		08/05/21 21:33
Toluene-d8 (surr)	100	89-112		%	1		08/05/21 21:33

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 21:33
 Container ID: 1214733004-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG14-072921

Client Sample ID: **FG14-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733005
 Lab Project ID: 1214733

Collection Date: 07/29/21 08:15
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-14

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.192 J	0.600	0.180	mg/L	1		08/09/21 17:02
Surrogates							
5a Androstane (surr)	92.9	50-150		%	1		08/09/21 17:02

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 17:02
 Container ID: 1214733005-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of FG14-072921

Client Sample ID: **FG14-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733005
 Lab Project ID: 1214733

Collection Date: 07/29/21 08:15
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-14

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 19:43
Surrogates							
4-Bromofluorobenzene (surr)	91.7	50-150		%	1		08/05/21 19:43

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 19:43
 Container ID: 1214733005-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG14-072921

Client Sample ID: **FG14-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733005
 Lab Project ID: 1214733

Collection Date: 07/29/21 08:15
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-14

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 21:48
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:48
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:48
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 21:48
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 21:48
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 21:48
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		08/05/21 21:48
4-Bromofluorobenzene (surr)	99.8	85-114		%	1		08/05/21 21:48
Toluene-d8 (surr)	101	89-112		%	1		08/05/21 21:48

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 21:48
 Container ID: 1214733005-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG21-072921

Client Sample ID: **FG21-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733006
 Lab Project ID: 1214733

Collection Date: 07/29/21 08:15
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-21

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.498 J	0.600	0.180	mg/L	1		08/09/21 17:12
Surrogates							
5a Androstane (surr)	96.6	50-150		%	1		08/09/21 17:12

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 17:12
 Container ID: 1214733006-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of FG21-072921

Client Sample ID: **FG21-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733006
 Lab Project ID: 1214733

Collection Date: 07/29/21 08:15
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-21

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 20:19
Surrogates							
4-Bromofluorobenzene (surr)	89.6	50-150		%	1		08/05/21 20:19

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 20:19
 Container ID: 1214733006-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG21-072921

Client Sample ID: **FG21-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733006
 Lab Project ID: 1214733

Collection Date: 07/29/21 08:15
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-21

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 22:03
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:03
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:03
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 22:03
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:03
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 22:03
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		08/05/21 22:03
4-Bromofluorobenzene (surr)	100	85-114		%	1		08/05/21 22:03
Toluene-d8 (surr)	100	89-112		%	1		08/05/21 22:03

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 22:03
 Container ID: 1214733006-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG3-072921

Client Sample ID: **FG3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733007
 Lab Project ID: 1214733

Collection Date: 07/29/21 09:26
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-3

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.628	0.625	0.188	mg/L	1		08/09/21 17:22
Surrogates							
5a Androstane (surr)	100	50-150		%	1		08/09/21 17:22

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 17:22
 Container ID: 1214733007-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 240 mL
 Prep Extract Vol: 1 mL

Results of FG3-072921

Client Sample ID: **FG3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733007
 Lab Project ID: 1214733

Collection Date: 07/29/21 09:26
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-3

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 20:37
Surrogates							
4-Bromofluorobenzene (surr)	87.7	50-150		%	1		08/05/21 20:37

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 20:37
 Container ID: 1214733007-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG3-072921

Client Sample ID: **FG3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733007
 Lab Project ID: 1214733

Collection Date: 07/29/21 09:26
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-3

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.209 J	0.400	0.120	ug/L	1		08/05/21 22:18
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:18
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:18
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 22:18
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:18
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 22:18

Surrogates

1,2-Dichloroethane-D4 (surr)	106	81-118		%	1		08/05/21 22:18
4-Bromofluorobenzene (surr)	99.3	85-114		%	1		08/05/21 22:18
Toluene-d8 (surr)	99.8	89-112		%	1		08/05/21 22:18

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 22:18
 Container ID: 1214733007-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG10-072921

Client Sample ID: **FG10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733008
 Lab Project ID: 1214733

Collection Date: 07/29/21 09:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-10

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.280 J	0.566	0.170	mg/L	1		08/09/21 17:31
Surrogates							
5a Androstane (surr)	96	50-150		%	1		08/09/21 17:31

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 17:31
 Container ID: 1214733008-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 265 mL
 Prep Extract Vol: 1 mL

Results of FG10-072921

Client Sample ID: **FG10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733008
 Lab Project ID: 1214733

Collection Date: 07/29/21 09:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-10

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 21:31
Surrogates							
4-Bromofluorobenzene (surr)	88.7	50-150		%	1		08/05/21 21:31

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 21:31
 Container ID: 1214733008-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG10-072921

Client Sample ID: **FG10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733008
 Lab Project ID: 1214733

Collection Date: 07/29/21 09:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-10

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 22:34
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:34
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:34
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 22:34
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:34
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 22:34
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		08/05/21 22:34
4-Bromofluorobenzene (surr)	101	85-114		%	1		08/05/21 22:34
Toluene-d8 (surr)	101	89-112		%	1		08/05/21 22:34

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 22:34
 Container ID: 1214733008-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG-23-072921

Client Sample ID: **FG-23-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733009
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:43
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-10

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.431 J	0.600	0.180	mg/L	1		08/09/21 17:41
Surrogates							
5a Androstane (surr)	98.2	50-150		%	1		08/09/21 17:41

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 17:41
 Container ID: 1214733009-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of FG-23-072921

Client Sample ID: **FG-23-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733009
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:43
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-10

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 21:49
Surrogates							
4-Bromofluorobenzene (surr)	90.6	50-150		%	1		08/05/21 21:49

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 21:49
 Container ID: 1214733009-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of FG-23-072921

Client Sample ID: **FG-23-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733009
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:43
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: FG-10

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 22:49
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:49
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:49
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 22:49
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 22:49
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 22:49
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		08/05/21 22:49
4-Bromofluorobenzene (surr)	99.1	85-114		%	1		08/05/21 22:49
Toluene-d8 (surr)	99.8	89-112		%	1		08/05/21 22:49

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 22:49
 Container ID: 1214733009-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of HOS5-072921

Client Sample ID: **HOS5-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733010
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:52
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: HOS-5

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	2.06	0.600	0.180	mg/L	1		08/09/21 17:51
Surrogates							
5a Androstane (surr)	91.9	50-150		%	1		08/09/21 17:51

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 17:51
 Container ID: 1214733010-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of HOS5-072921

Client Sample ID: **HOS5-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733010
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:52
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: HOS-5

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.401		0.100	0.0450	mg/L	1		08/05/21 22:06
Surrogates								
4-Bromofluorobenzene (surr)	169	*	50-150		%	1		08/05/21 22:06

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 22:06
 Container ID: 1214733010-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of HOS5-072921

Client Sample ID: **HOS5-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733010
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:52
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: HOS-5

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	28.0	0.400	0.120	ug/L	1		08/05/21 23:04
Ethylbenzene	13.4	1.00	0.310	ug/L	1		08/05/21 23:04
o-Xylene	0.393 J	1.00	0.310	ug/L	1		08/05/21 23:04
P & M -Xylene	35.5	2.00	0.620	ug/L	1		08/05/21 23:04
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:04
Xylenes (total)	35.9	3.00	1.00	ug/L	1		08/05/21 23:04
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		08/05/21 23:04
4-Bromofluorobenzene (surr)	102	85-114		%	1		08/05/21 23:04
Toluene-d8 (surr)	100	89-112		%	1		08/05/21 23:04

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 23:04
 Container ID: 1214733010-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of HOS6-072921

Client Sample ID: **HOS6-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733011
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:45
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: HOS-6

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.97	0.577	0.173	mg/L	1		08/09/21 18:01
Surrogates							
5a Androstane (surr)	94.8	50-150		%	1		08/09/21 18:01

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 18:01
 Container ID: 1214733011-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of HOS6-072921

Client Sample ID: **HOS6-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733011
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:45
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: HOS-6

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.383	0.100	0.0450	mg/L	1		08/05/21 22:24
Surrogates							
4-Bromofluorobenzene (surr)	165 *	50-150		%	1		08/05/21 22:24

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 22:24
 Container ID: 1214733011-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of HOS6-072921

Client Sample ID: **HOS6-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733011
 Lab Project ID: 1214733

Collection Date: 07/29/21 10:45
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: HOS-6

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	25.8	0.400	0.120	ug/L	1		08/05/21 23:19
Ethylbenzene	12.4	1.00	0.310	ug/L	1		08/05/21 23:19
o-Xylene	0.379 J	1.00	0.310	ug/L	1		08/05/21 23:19
P & M -Xylene	32.8	2.00	0.620	ug/L	1		08/05/21 23:19
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:19
Xylenes (total)	33.2	3.00	1.00	ug/L	1		08/05/21 23:19
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		08/05/21 23:19
4-Bromofluorobenzene (surr)	103	85-114		%	1		08/05/21 23:19
Toluene-d8 (surr)	99.5	89-112		%	1		08/05/21 23:19

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 23:19
 Container ID: 1214733011-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of ATF10-072921

Client Sample ID: **ATF10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733012
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:18
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-10

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
2-Methylnaphthalene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Acenaphthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Acenaphthylene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Benzo(a)Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Benzo[a]pyrene	0.00980 U	0.0196	0.00608	ug/L	1		08/15/21 00:05
Benzo[b]Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Benzo[g,h,i]perylene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Benzo[k]fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Chrysene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Dibenzo[a,h]anthracene	0.00980 U	0.0196	0.00608	ug/L	1		08/15/21 00:05
Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Fluorene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Indeno[1,2,3-c,d] pyrene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Naphthalene	0.0490 U	0.0980	0.0304	ug/L	1		08/15/21 00:05
Phenanthrene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Pyrene	0.0245 U	0.0490	0.0147	ug/L	1		08/15/21 00:05
Surrogates							
2-Methylnaphthalene-d10 (surr)	67.3	42-86		%	1		08/15/21 00:05
Fluoranthene-d10 (surr)	79.8	50-97		%	1		08/15/21 00:05

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: LAW
 Analytical Date/Time: 08/15/21 00:05
 Container ID: 1214733012-I

Prep Batch: XXX45308
 Prep Method: SW3535A
 Prep Date/Time: 08/04/21 14:27
 Prep Initial Wt./Vol.: 255 mL
 Prep Extract Vol: 1 mL

Results of ATF10-072921

Client Sample ID: **ATF10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733012
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:18
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-10

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.296 J	0.577	0.173	mg/L	1		08/09/21 18:11
Surrogates							
5a Androstane (surr)	86.9	50-150		%	1		08/09/21 18:11

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 18:11
 Container ID: 1214733012-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of ATF10-072921

Client Sample ID: **ATF10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733012
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:18
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-10

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 22:42
Surrogates							
4-Bromofluorobenzene (surr)	90.7	50-150		%	1		08/05/21 22:42

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 22:42
 Container ID: 1214733012-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of ATF10-072921

Client Sample ID: **ATF10-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733012
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:18
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-10

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 23:35
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:35
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:35
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 23:35
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:35
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 23:35
Surrogates							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		08/05/21 23:35
4-Bromofluorobenzene (surr)	103	85-114		%	1		08/05/21 23:35
Toluene-d8 (surr)	100	89-112		%	1		08/05/21 23:35

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 23:35
 Container ID: 1214733012-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of ATF3-072921

Client Sample ID: **ATF3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733013
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:20
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-3

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
2-Methylnaphthalene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Acenaphthene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Acenaphthylene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Anthracene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Benzo(a)Anthracene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Benzo[a]pyrene	0.0102 U	0.0204	0.00633	ug/L	1		08/15/21 00:25
Benzo[b]Fluoranthene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Benzo[g,h,i]perylene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Benzo[k]fluoranthene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Chrysene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Dibenzo[a,h]anthracene	0.0102 U	0.0204	0.00633	ug/L	1		08/15/21 00:25
Fluoranthene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Fluorene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Indeno[1,2,3-c,d] pyrene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Naphthalene	0.0510 U	0.102	0.0316	ug/L	1		08/15/21 00:25
Phenanthrene	0.0264 J	0.0510	0.0153	ug/L	1		08/15/21 00:25
Pyrene	0.0255 U	0.0510	0.0153	ug/L	1		08/15/21 00:25
Surrogates							
2-Methylnaphthalene-d10 (surr)	52.5	42-86		%	1		08/15/21 00:25
Fluoranthene-d10 (surr)	79.6	50-97		%	1		08/15/21 00:25

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: LAW
 Analytical Date/Time: 08/15/21 00:25
 Container ID: 1214733013-I

Prep Batch: XXX45308
 Prep Method: SW3535A
 Prep Date/Time: 08/04/21 14:27
 Prep Initial Wt./Vol.: 245 mL
 Prep Extract Vol: 1 mL

Results of ATF3-072921

Client Sample ID: **ATF3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733013
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:20
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-3

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.463 J	0.638	0.191	mg/L	1		08/09/21 18:21
Surrogates							
5a Androstane (surr)	87.6	50-150		%	1		08/09/21 18:21

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 18:21
 Container ID: 1214733013-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 235 mL
 Prep Extract Vol: 1 mL

Results of ATF3-072921

Client Sample ID: **ATF3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733013
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:20
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-3

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 23:00
Surrogates							
4-Bromofluorobenzene (surr)	91.7	50-150		%	1		08/05/21 23:00

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 23:00
 Container ID: 1214733013-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of ATF3-072921

Client Sample ID: **ATF3-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733013
 Lab Project ID: 1214733

Collection Date: 07/29/21 13:20
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-3

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/05/21 23:50
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:50
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:50
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/05/21 23:50
Toluene	0.500 U	1.00	0.310	ug/L	1		08/05/21 23:50
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/05/21 23:50

Surrogates

1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		08/05/21 23:50
4-Bromofluorobenzene (surr)	100	85-114		%	1		08/05/21 23:50
Toluene-d8 (surr)	99.9	89-112		%	1		08/05/21 23:50

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/05/21 23:50
 Container ID: 1214733013-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of ATF8-072921

Client Sample ID: **ATF8-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733014
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-8

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.721	0.0481	0.0144	ug/L	1		08/15/21 00:46
2-Methylnaphthalene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Acenaphthene	0.0452 J	0.0481	0.0144	ug/L	1		08/15/21 00:46
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		08/15/21 00:46
Benzo[b]Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		08/15/21 00:46
Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Fluorene	0.0683	0.0481	0.0144	ug/L	1		08/15/21 00:46
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Naphthalene	1.02	0.0962	0.0298	ug/L	1		08/15/21 00:46
Phenanthrene	0.0241 J	0.0481	0.0144	ug/L	1		08/15/21 00:46
Pyrene	0.0240 U	0.0481	0.0144	ug/L	1		08/15/21 00:46
Surrogates							
2-Methylnaphthalene-d10 (surr)	45.3	42-86		%	1		08/15/21 00:46
Fluoranthene-d10 (surr)	70.6	50-97		%	1		08/15/21 00:46

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: LAW
 Analytical Date/Time: 08/15/21 00:46
 Container ID: 1214733014-I

Prep Batch: XXX45308
 Prep Method: SW3535A
 Prep Date/Time: 08/04/21 14:27
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of ATF8-072921

Client Sample ID: **ATF8-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733014
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-8

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.851	0.577	0.173	mg/L	1		08/09/21 19:20
Surrogates							
5a Androstane (surr)	92.1	50-150		%	1		08/09/21 19:20

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 19:20
 Container ID: 1214733014-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Results of ATF8-072921

Client Sample ID: **ATF8-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733014
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-8

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.101	0.100	0.0450	mg/L	1		08/05/21 23:18
Surrogates							
4-Bromofluorobenzene (surr)	114	50-150		%	1		08/05/21 23:18

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 23:18
 Container ID: 1214733014-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of ATF8-072921

Client Sample ID: **ATF8-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733014
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:31
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: ATF-8

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/06/21 00:05
Ethylbenzene	0.467 J	1.00	0.310	ug/L	1		08/06/21 00:05
o-Xylene	1.50	1.00	0.310	ug/L	1		08/06/21 00:05
P & M -Xylene	3.14	2.00	0.620	ug/L	1		08/06/21 00:05
Toluene	0.500 U	1.00	0.310	ug/L	1		08/06/21 00:05
Xylenes (total)	4.64	3.00	1.00	ug/L	1		08/06/21 00:05
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		08/06/21 00:05
4-Bromofluorobenzene (surr)	99.4	85-114		%	1		08/06/21 00:05
Toluene-d8 (surr)	99.7	89-112		%	1		08/06/21 00:05

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Analyst: JMG
 Analytical Date/Time: 08/06/21 00:05
 Container ID: 1214733014-D

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 224132-072921

Client Sample ID: **224132-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733015
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-2

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
2-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Acenaphthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		08/15/21 01:07
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		08/15/21 01:07
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Fluorene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Naphthalene	0.0500 U	0.100	0.0310	ug/L	1		08/15/21 01:07
Phenanthrene	0.0285 J	0.0500	0.0150	ug/L	1		08/15/21 01:07
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:07
Surrogates							
2-Methylnaphthalene-d10 (surr)	52.9	42-86		%	1		08/15/21 01:07
Fluoranthene-d10 (surr)	71.4	50-97		%	1		08/15/21 01:07

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: LAW
 Analytical Date/Time: 08/15/21 01:07
 Container ID: 1214733015-I

Prep Batch: XXX45308
 Prep Method: SW3535A
 Prep Date/Time: 08/04/21 14:27
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of 224132-072921

Client Sample ID: **224132-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733015
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-2

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.239 J	0.612	0.184	mg/L	1		08/09/21 19:29
Surrogates							
5a Androstane (surr)	93.2	50-150		%	1		08/09/21 19:29

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 19:29
 Container ID: 1214733015-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 245 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.255 U	0.510	0.153	mg/L	1		08/09/21 19:29
Surrogates							
n-Triacontane-d62 (surr)	109	50-150		%	1		08/09/21 19:29

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK103
 Analyst: IVM
 Analytical Date/Time: 08/09/21 19:29
 Container ID: 1214733015-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 245 mL
 Prep Extract Vol: 1 mL

Results of 224132-072921

Client Sample ID: **224132-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733015
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-2

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 23:36
Surrogates							
4-Bromofluorobenzene (surr)	88.8	50-150		%	1		08/05/21 23:36

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 23:36
 Container ID: 1214733015-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 224132-072921

Client Sample ID: **224132-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733015
 Lab Project ID: 1214733

Collection Date: 07/29/21 14:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-2

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/10/21 03:26
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/10/21 03:26
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
Benzene	0.200 U	0.400	0.120	ug/L	1		08/10/21 03:26
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/10/21 03:26
Naphthalene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/10/21 03:26
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
Toluene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:26
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/10/21 03:26
Surrogates							
1,2-Dichloroethane-D4 (surr)	98.7	81-118		%	1		08/10/21 03:26
4-Bromofluorobenzene (surr)	105	85-114		%	1		08/10/21 03:26
Toluene-d8 (surr)	97.7	89-112		%	1		08/10/21 03:26

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 08/10/21 03:26
 Container ID: 1214733015-D

Prep Batch: VXX37617
 Prep Method: SW5030B
 Prep Date/Time: 08/09/21 20:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 224133-072921

Client Sample ID: **224133-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733016
 Lab Project ID: 1214733

Collection Date: 07/29/21 15:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-3

Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
2-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Acenaphthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		08/15/21 01:28
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		08/15/21 01:28
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Fluorene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Naphthalene	0.0500 U	0.100	0.0310	ug/L	1		08/15/21 01:28
Phenanthrene	0.0446 J	0.0500	0.0150	ug/L	1		08/15/21 01:28
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		08/15/21 01:28
Surrogates							
2-Methylnaphthalene-d10 (surr)	58.4	42-86		%	1		08/15/21 01:28
Fluoranthene-d10 (surr)	77.8	50-97		%	1		08/15/21 01:28

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: LAW
 Analytical Date/Time: 08/15/21 01:28
 Container ID: 1214733016-I

Prep Batch: XXX45308
 Prep Method: SW3535A
 Prep Date/Time: 08/04/21 14:27
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of 224133-072921

Client Sample ID: **224133-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733016
 Lab Project ID: 1214733

Collection Date: 07/29/21 15:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-3

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.239 J	0.600	0.180	mg/L	1		08/09/21 19:39

Surrogates

5a Androstane (surr)	86.4	50-150		%	1		08/09/21 19:39
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Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Analyst: IVM
 Analytical Date/Time: 08/09/21 19:39
 Container ID: 1214733016-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.250 U	0.500	0.150	mg/L	1		08/09/21 19:39

Surrogates

n-Triacontane-d62 (surr)	97.8	50-150		%	1		08/09/21 19:39
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Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK103
 Analyst: IVM
 Analytical Date/Time: 08/09/21 19:39
 Container ID: 1214733016-G

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 08/04/21 16:50
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Results of 224133-072921

Client Sample ID: **224133-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733016
 Lab Project ID: 1214733

Collection Date: 07/29/21 15:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-3

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0500 U	0.100	0.0450	mg/L	1		08/05/21 23:54
Surrogates							
4-Bromofluorobenzene (surr)	91	50-150		%	1		08/05/21 23:54

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 23:54
 Container ID: 1214733016-A

Prep Batch: VXX37588
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of 224133-072921

Client Sample ID: **224133-072921**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733016
 Lab Project ID: 1214733

Collection Date: 07/29/21 15:50
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location: 224-13-3

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,2,4-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		08/10/21 03:41
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		08/10/21 03:41
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
Benzene	0.200 U	0.400	0.120	ug/L	1		08/10/21 03:41
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		08/10/21 03:41
Naphthalene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/10/21 03:41
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
Toluene	0.500 U	1.00	0.310	ug/L	1		08/10/21 03:41
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/10/21 03:41
Surrogates							
1,2-Dichloroethane-D4 (surr)	100	81-118		%	1		08/10/21 03:41
4-Bromofluorobenzene (surr)	104	85-114		%	1		08/10/21 03:41
Toluene-d8 (surr)	96.9	89-112		%	1		08/10/21 03:41

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 08/10/21 03:41
 Container ID: 1214733016-D

Prep Batch: VXX37617
 Prep Method: SW5030B
 Prep Date/Time: 08/09/21 20:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733017
 Lab Project ID: 1214733

Collection Date: 07/28/21 08:00
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.0591 J	0.100	0.0450	mg/L	1		08/05/21 17:02
Surrogates							
4-Bromofluorobenzene (surr)	89.8	50-150		%	1		08/05/21 17:02

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Analyst: MDT
 Analytical Date/Time: 08/05/21 17:02
 Container ID: 1214733017-A

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 08/05/21 06:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **WBS**
 Lab Sample ID: 1214733017
 Lab Project ID: 1214733

Collection Date: 07/28/21 08:00
 Received Date: 07/30/21 12:45
 Matrix: Water (Surface, Eff., Ground)
 Solids (%):
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	0.200 U	0.400	0.120	ug/L	1		08/09/21 23:27
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		08/09/21 23:27
o-Xylene	0.500 U	1.00	0.310	ug/L	1		08/09/21 23:27
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		08/09/21 23:27
Toluene	0.500 U	1.00	0.310	ug/L	1		08/09/21 23:27
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		08/09/21 23:27

Surrogates

1,2-Dichloroethane-D4 (surr)	97.8	81-118		%	1		08/09/21 23:27
4-Bromofluorobenzene (surr)	103	85-114		%	1		08/09/21 23:27
Toluene-d8 (surr)	99.2	89-112		%	1		08/09/21 23:27

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 08/09/21 23:27
 Container ID: 1214733017-B

Prep Batch: VXX37616
 Prep Method: SW5030B
 Prep Date/Time: 08/09/21 20:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1823396 [VXX/37557]
 Blank Lab ID: 1627470

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1214733001, 1214733004

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	92.9	50-150		%

Batch Information

Analytical Batch: VFC15745
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: MDT
 Analytical Date/Time: 8/3/2021 1:49:00AM

Prep Batch: VXX37557
 Prep Method: SW5030B
 Prep Date/Time: 8/2/2021 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:31PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [VXX37557]
 Blank Spike Lab ID: 1627471
 Date Analyzed: 08/03/2021 00:02

Spike Duplicate ID: LCSD for HBN 1214733 [VXX37557]
 Spike Duplicate Lab ID: 1627472
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733001, 1214733004

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.968	97	1.00	1.02	102	(60-120)	5.50	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500		107	0.0500		104	(50-150)	2.50	

Batch Information

Analytical Batch: **VFC15745**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **MDT**

Prep Batch: **VXX37557**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/02/2021 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

Print Date: 09/30/2021 4:36:34PM

Billable Matrix Spike Summary

Original Sample ID: 1214733001
 MS Sample ID: 1214733002 BMS
 MSD Sample ID: 1214733003 BMSD

Analysis Date: 08/03/2021 2:06
 Analysis Date: 08/03/2021 2:24
 Analysis Date: 08/03/2021 2:42
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by AK101

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	0.0500U	1.00	1.04	104	1.00	1.01	101	60-120	2.70	(< 20)
Surrogates										
4-Bromofluorobenzene (surr)		0.0500	0.0535	107	0.0500	0.0523	105	50-150	2.10	

Batch Information

Analytical Batch: VFC15745
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: MDT
 Analytical Date/Time: 8/3/2021 2:24:00AM

Prep Batch: VXX37557
 Prep Method: Volatile Fuels Extraction (W)
 Prep Date/Time: 8/2/2021 6:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Print Date: 09/30/2021 4:36:35PM

Method Blank

Blank ID: MB for HBN 1823607 [VXX/37587]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1628353

QC for Samples:

1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014, 1214733015, 1214733017

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	83.9	50-150		%

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: MDT
 Analytical Date/Time: 8/5/2021 10:47:00AM

Prep Batch: VXX37587
 Prep Method: SW5030B
 Prep Date/Time: 8/5/2021 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:37PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [VXX37587]
 Blank Spike Lab ID: 1628354
 Date Analyzed: 08/05/2021 11:40

Spike Duplicate ID: LCSD for HBN 1214733 [VXX37587]
 Spike Duplicate Lab ID: 1628355
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014, 1214733015, 1214733017

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.991	99	1.00	1.09	109	(60-120)	9.10	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500		99	0.0500		104	(50-150)	4.30	
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Batch Information

Analytical Batch: **VFC15751**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **MDT**

Prep Batch: **VXX37587**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/05/2021 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

Print Date: 09/30/2021 4:36:39PM

Method Blank

Blank ID: MB for HBN 1823608 [VXX/37588]
 Blank Lab ID: 1628356

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1214733016

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0500U	0.100	0.0450	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	88.7	50-150		%

Batch Information

Analytical Batch: VFC15751
 Analytical Method: AK101
 Instrument: Agilent 7890A PID/FID
 Analyst: MDT
 Analytical Date/Time: 8/6/2021 12:11:00AM

Prep Batch: VXX37588
 Prep Method: SW5030B
 Prep Date/Time: 8/5/2021 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:42PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [VXX37588]
 Blank Spike Lab ID: 1628359
 Date Analyzed: 08/06/2021 03:28

Spike Duplicate ID: LCSD for HBN 1214733 [VXX37588]
 Spike Duplicate Lab ID: 1628360
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733016

Results by AK101

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	1.00	0.998	100	1.00	1.02	102	(60-120)	2.30	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500		93	0.0500		93	(50-150)	0.71	
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Batch Information

Analytical Batch: **VFC15751**
 Analytical Method: **AK101**
 Instrument: **Agilent 7890A PID/FID**
 Analyst: **MDT**

Prep Batch: **VXX37588**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/05/2021 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

Print Date: 09/30/2021 4:36:43PM

Method Blank

Blank ID: MB for HBN 1823630 [VXX/37591]
 Blank Lab ID: 1628454

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1214733001, 1214733004, 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	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
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	104	81-118		%
4-Bromofluorobenzene (surr)	100	85-114		%
Toluene-d8 (surr)	100	89-112		%

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Instrument: VPA 780/5975 GC/MS
 Analyst: JMG
 Analytical Date/Time: 8/5/2021 4:34:00PM

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 8/5/2021 6:00:00AM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [VXX37591]
 Blank Spike Lab ID: 1628455
 Date Analyzed: 08/05/2021 16:49

Spike Duplicate ID: LCSD for HBN 1214733 [VXX37591]
 Spike Duplicate Lab ID: 1628456
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733001, 1214733004, 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.0	100	30	30.3	101	(79-120)	1.20	(< 20)
Ethylbenzene	30	30.6	102	30	30.5	102	(79-121)	0.34	(< 20)
o-Xylene	30	30.7	102	30	30.7	102	(78-122)	0.02	(< 20)
P & M -Xylene	60	61.5	102	60	61.4	102	(80-121)	0.16	(< 20)
Toluene	30	29.4	98	30	29.6	99	(80-121)	0.67	(< 20)
Xylenes (total)	90	92.2	102	90	92.1	102	(79-121)	0.10	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		101	30		100	(81-118)	0.06	
4-Bromofluorobenzene (surr)	30		97	30		99	(85-114)	1.70	
Toluene-d8 (surr)	30		101	30		100	(89-112)	0.35	

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Instrument: VPA 780/5975 GC/MS
 Analyst: JMG

Prep Batch: VXX37591
 Prep Method: SW5030B
 Prep Date/Time: 08/05/2021 06:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Billable Matrix Spike Summary

Original Sample ID: 1214733001
 MS Sample ID: 1214733002 BMS
 MSD Sample ID: 1214733003 BMSD

Analysis Date: 08/05/2021 21:18
 Analysis Date: 08/05/2021 17:59
 Analysis Date: 08/05/2021 18:15
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by SW8260D

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	0.200U	30.0	30.3	101	30.0	30.3	101	79-120	0.08	(< 20)
Ethylbenzene	0.500U	30.0	32	107	30.0	31.4	105	79-121	2.00	(< 20)
o-Xylene	0.500U	30.0	32.1	107	30.0	31.6	105	78-122	1.50	(< 20)
P & M -Xylene	1.00U	60.0	63.7	106	60.0	63.0	105	80-121	1.00	(< 20)
Toluene	0.500U	30.0	30.7	102	30.0	30.2	101	80-121	1.90	(< 20)
Xylenes (total)	1.50U	90.0	95.7	106	90.0	94.6	105	79-121	1.20	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		30.0	29.8	99	30.0	29.2	98	81-118	1.80	
4-Bromofluorobenzene (surr)		30.0	29.7	99	30.0	29.8	99	85-114	0.37	
Toluene-d8 (surr)		30.0	30.5	102	30.0	30.1	100	89-112	1.20	

Batch Information

Analytical Batch: VMS21023
 Analytical Method: SW8260D
 Instrument: VPA 780/5975 GC/MS
 Analyst: JMG
 Analytical Date/Time: 8/5/2021 5:59:00PM

Prep Batch: VXX37591
 Prep Method: Volatiles Extraction 8240/8260
 Prep Date/Time: 8/5/2021 6:00:00AM
 Prep Initial Wt./Vol.: 5.00mL
 Prep Extract Vol: 5.00mL

Print Date: 09/30/2021 4:36:49PM

Method Blank

Blank ID: MB for HBN 1823902 [VXX/37616]
 Blank Lab ID: 1629308

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1214733017

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	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
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	97	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	98.7	89-112		%

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 8/9/2021 8:28:00PM

Prep Batch: VXX37616
 Prep Method: SW5030B
 Prep Date/Time: 8/9/2021 8:00:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:50PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [VXX37616]
 Blank Spike Lab ID: 1629309
 Date Analyzed: 08/09/2021 20:43

Spike Duplicate ID: LCSD for HBN 1214733 [VXX37616]
 Spike Duplicate Lab ID: 1629310
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733017

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	30	30.9	103	30	31.1	104	(79-120)	0.85	(< 20)
Ethylbenzene	30	30.5	102	30	30.8	103	(79-121)	1.00	(< 20)
o-Xylene	30	30.7	102	30	30.8	103	(78-122)	0.57	(< 20)
P & M -Xylene	60	60.8	101	60	60.9	102	(80-121)	0.22	(< 20)
Toluene	30	30.1	100	30	29.9	100	(80-121)	0.77	(< 20)
Xylenes (total)	90	91.5	102	90	91.8	102	(79-121)	0.34	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30		97	30		97	(81-118)	0.12	
4-Bromofluorobenzene (surr)	30		100	30		100	(85-114)	0.23	
Toluene-d8 (surr)	30		99	30		99	(89-112)	0.71	

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB

Prep Batch: VXX37616
 Prep Method: SW5030B
 Prep Date/Time: 08/09/2021 20:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1823903 [VXX/37617]

Blank Lab ID: 1629311

QC for Samples:

1214733015, 1214733016

Matrix: Water (Surface, Eff., Ground)

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	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
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
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L

Surrogates

1,2-Dichloroethane-D4 (surr)	98.2	81-118	%
4-Bromofluorobenzene (surr)	101	85-114	%
Toluene-d8 (surr)	99.8	89-112	%

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 8/9/2021 10:27:00PM

Prep Batch: VXX37617
 Prep Method: SW5030B
 Prep Date/Time: 8/9/2021 8:00:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:55PM

Leaching Blank

Blank ID: LB for HBN 1823672 [TCLP/11325]
 Blank Lab ID: 1628574

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1214733015, 1214733016

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
Benzene	24.7*	20.0	6.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	101	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	96.4	89-112		%

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 8/10/2021 6:40:00AM

Prep Batch: VXX37617
 Prep Method: SW5030B
 Prep Date/Time: 8/9/2021 8:00:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:55PM

Leaching Blank

Blank ID: LB for HBN 1823734 [TCLP/11327]
 Blank Lab ID: 1628641

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1214733015, 1214733016

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	100	81-118		%
4-Bromofluorobenzene (surr)	105	85-114		%
Toluene-d8 (surr)	97	89-112		%

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 8/10/2021 6:55:00AM

Prep Batch: VXX37617
 Prep Method: SW5030B
 Prep Date/Time: 8/9/2021 8:00:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:55PM

Leaching Blank

Blank ID: LB for HBN 1823756 [TCLP/11328]
 Blank Lab ID: 1628752

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
 1214733015, 1214733016

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	99.6	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	96.3	89-112		%

Batch Information

Analytical Batch: VMS21035
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB
 Analytical Date/Time: 8/10/2021 7:10:00AM

Prep Batch: VXX37617
 Prep Method: SW5030B
 Prep Date/Time: 8/9/2021 8:00:00PM
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Print Date: 09/30/2021 4:36:55PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [VXX37617]
 Blank Spike Lab ID: 1629312
 Date Analyzed: 08/09/2021 21:13

Spike Duplicate ID: LCSD for HBN 1214733 [VXX37617]
 Spike Duplicate Lab ID: 1629313
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733015, 1214733016

Results by SW8260D

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	30	31.9	106	30	32.0	107	(79-124)	0.06	(< 20)
1,2-Dibromoethane	30	29.5	98	30	29.6	99	(77-121)	0.36	(< 20)
1,2-Dichloroethane	30	28.8	96	30	29.0	97	(73-128)	0.53	(< 20)
1,3,5-Trimethylbenzene	30	31.8	106	30	31.9	106	(75-124)	0.08	(< 20)
Benzene	30	31.5	105	30	31.0	103	(79-120)	1.50	(< 20)
Ethylbenzene	30	30.6	102	30	30.5	102	(79-121)	0.50	(< 20)
Isopropylbenzene (Cumene)	30	31.3	104	30	31.3	104	(72-131)	0.24	(< 20)
Methyl-t-butyl ether	45	45.1	100	45	45.4	101	(71-124)	0.49	(< 20)
Naphthalene	30	30.4	101	30	31.0	103	(61-128)	1.90	(< 20)
n-Butylbenzene	30	31.4	105	30	31.6	105	(75-128)	0.65	(< 20)
o-Xylene	30	30.7	102	30	30.8	103	(78-122)	0.17	(< 20)
P & M -Xylene	60	61.1	102	60	60.7	101	(80-121)	0.70	(< 20)
sec-Butylbenzene	30	31.3	104	30	31.0	103	(77-126)	0.90	(< 20)
tert-Butylbenzene	30	31.5	105	30	31.2	104	(78-124)	0.79	(< 20)
Toluene	30	30.1	100	30	29.7	99	(80-121)	1.20	(< 20)
Xylenes (total)	90	91.8	102	90	91.5	102	(79-121)	0.41	(< 20)

Surrogates

1,2-Dichloroethane-D4 (surr)	30		97	30		97	(81-118)	0.06	
4-Bromofluorobenzene (surr)	30		100	30		101	(85-114)	1.10	
Toluene-d8 (surr)	30		99	30		99	(89-112)	0.06	

Batch Information

Analytical Batch: **VMS21035**
 Analytical Method: **SW8260D**
 Instrument: **Agilent 7890-75MS**
 Analyst: **NRB**

Prep Batch: **VXX37617**
 Prep Method: **SW5030B**
 Prep Date/Time: **08/09/2021 20:00**
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Method Blank

Blank ID: MB for HBN 1823448 [XXX/45308]

Matrix: Water (Surface, Eff., Ground)

Blank Lab ID: 1627703

QC for Samples:

1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by 8270D SIM LV (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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	0.0300J	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	63.2	42-86		%
Fluoranthene-d10 (surr)	81.4	50-97		%

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: LAW
 Analytical Date/Time: 8/14/2021 8:59:00PM

Prep Batch: XXX45308
 Prep Method: SW3535A
 Prep Date/Time: 8/4/2021 2:27:53PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 09/30/2021 4:37:00PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [XXX45308]

Blank Spike Lab ID: 1627704

Date Analyzed: 08/14/2021 21:20

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by 8270D SIM LV (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.12	56	(41-115)
2-Methylnaphthalene	2	1.12	56	(39-114)
Acenaphthene	2	1.25	63	(48-114)
Acenaphthylene	2	1.27	64	(35-121)
Anthracene	2	1.32	66	(53-119)
Benzo(a)Anthracene	2	1.41	71	(59-120)
Benzo[a]pyrene	2	1.48	74	(53-120)
Benzo[b]Fluoranthene	2	1.46	73	(53-126)
Benzo[g,h,i]perylene	2	1.58	79	(44-128)
Benzo[k]fluoranthene	2	1.51	75	(54-125)
Chrysene	2	1.48	74	(57-120)
Dibenzo[a,h]anthracene	2	1.59	80	(44-131)
Fluoranthene	2	1.33	66	(58-120)
Fluorene	2	1.30	65	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.56	78	(48-130)
Naphthalene	2	1.14	57	(43-114)
Phenanthrene	2	1.31	65	(53-115)
Pyrene	2	1.33	67	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2		55	(42-86)
Fluoranthene-d10 (surr)	2		68	(50-97)

Batch Information

Analytical Batch: XMS12829

Analytical Method: 8270D SIM LV (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: LAW

Prep Batch: XXX45308

Prep Method: SW3535A

Prep Date/Time: 08/04/2021 14:27

Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 09/30/2021 4:37:02PM

Matrix Spike Summary

Original Sample ID: 1214798010
 MS Sample ID: 1627705 MS
 MSD Sample ID: 1627706 MSD

Analysis Date: 08/15/2021 4:12
 Analysis Date: 08/15/2021 4:33
 Analysis Date: 08/15/2021 4:54
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0232U	1.92	1.2	62	1.82	0.985	54	41-115	19.60	(< 20)
2-Methylnaphthalene	0.0232U	1.92	1.11	58	1.82	0.907	50	39-114	20.40	* (< 20)
Acenaphthene	0.0232U	1.92	1.26	66	1.82	1.04	57	48-114	19.40	(< 20)
Acenaphthylene	0.0232U	1.92	1.27	66	1.82	1.08	59	35-121	16.90	(< 20)
Anthracene	0.0232U	1.92	1.25	65	1.82	1.06	58	53-119	16.70	(< 20)
Benzo(a)Anthracene	0.0232U	1.92	1.12	58 *	1.82	0.800	44 *	59-120	33.60	* (< 20)
Benzo(a)pyrene	0.00925U	1.92	.765	40 *	1.82	0.465	26 *	53-120	48.80	* (< 20)
Benzo(b)Fluoranthene	0.0232U	1.92	1.06	55	1.82	0.733	40 *	53-126	36.50	* (< 20)
Benzo(g,h,i)perylene	0.0232U	1.92	.377	20 *	1.82	0.258	14 *	44-128	37.50	* (< 20)
Benzo(k)fluoranthene	0.0232U	1.92	.749	39 *	1.82	0.457	25 *	54-125	48.50	* (< 20)
Chrysene	0.0232U	1.92	.948	49 *	1.82	0.601	33 *	57-120	44.90	* (< 20)
Dibenzo(a,h)anthracene	0.00925U	1.92	.358	19 *	1.82	0.252	14 *	44-131	34.80	* (< 20)
Fluoranthene	0.0232U	1.92	1.38	72	1.82	1.13	62	58-120	19.60	(< 20)
Fluorene	0.0232U	1.92	1.3	68	1.82	1.11	61	50-118	15.60	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0232U	1.92	.487	25 *	1.82	0.313	17 *	48-130	43.40	* (< 20)
Naphthalene	0.0463U	1.92	1.22	64	1.82	0.976	54	43-114	22.40	* (< 20)
Phenanthrene	0.0232U	1.92	1.26	65	1.82	1.09	60	53-115	14.00	(< 20)
Pyrene	0.0232U	1.92	1.38	72	1.82	1.15	63	53-121	18.20	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.92	1.28	67	1.82	1.04	57	42-86	21.30	
Fluoranthene-d10 (surr)		1.92	1.43	75	1.82	1.21	67	50-97	17.00	

Batch Information

Analytical Batch: XMS12829
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: LAW
 Analytical Date/Time: 8/15/2021 4:33:00AM

Prep Batch: XXX45308
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 8/4/2021 2:27:53PM
 Prep Initial Wt./Vol.: 260.00mL
 Prep Extract Vol: 1.00mL

Print Date: 09/30/2021 4:37:03PM

Method Blank

Blank ID: MB for HBN 1823531 [XXX/45314]
 Blank Lab ID: 1627963

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1214733001, 1214733004, 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	96.1	60-120		%

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Instrument: Agilent 7890B R
 Analyst: IVM
 Analytical Date/Time: 8/9/2021 3:14:00PM

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 8/4/2021 4:50:52PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 09/30/2021 4:37:05PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [XXX45314]
 Blank Spike Lab ID: 1627964
 Date Analyzed: 08/09/2021 16:03

Spike Duplicate ID: LCSD for HBN 1214733 [XXX45314]
 Spike Duplicate Lab ID: 1627965
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733001, 1214733004, 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	21.9	110	20	21.8	109	(75-125)	0.45	(< 20)
Surrogates									
5a Androstane (surr)	0.4		113	0.4		112	(60-120)	1.40	

Batch Information

Analytical Batch: **XFC16037**
 Analytical Method: **AK102**
 Instrument: **Agilent 7890B R**
 Analyst: **IVM**

Prep Batch: **XXX45314**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/04/2021 16:50**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Billable Matrix Spike Summary

Original Sample ID: 1214733001
 MS Sample ID: 1214733002 BMS
 MSD Sample ID: 1214733003 BMSD

Analysis Date: 08/09/2021 16:23
 Analysis Date: 08/09/2021 16:33
 Analysis Date: 08/09/2021 16:42
 Matrix: Water (Surface, Eff., Ground)

QC for Samples:

Results by AK102

Parameter	Sample	Matrix Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	0.184J	18.9	19.6	103	20.0	21.5	107	75-125	9.60	(< 30)
Surrogates										
5a Androstane (surr)		0.377	.416	110	0.400	0.449	112	50-150	7.70	

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK102
 Instrument: Agilent 7890B R
 Analyst: IVM
 Analytical Date/Time: 8/9/2021 4:33:00PM

Prep Batch: XXX45314
 Prep Method: Cont. Liq/Liq Ext. for AK102 Low Volume
 Prep Date/Time: 8/4/2021 4:50:52PM
 Prep Initial Wt./Vol.: 265.00mL
 Prep Extract Vol: 1.00mL

Print Date: 09/30/2021 4:37:09PM

Method Blank

Blank ID: MB for HBN 1823531 [XXX/45314]
 Blank Lab ID: 1627963

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1214733001, 1214733004, 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	102	60-120		%

Batch Information

Analytical Batch: XFC16037
 Analytical Method: AK103
 Instrument: Agilent 7890B R
 Analyst: IVM
 Analytical Date/Time: 8/9/2021 3:14:00PM

Prep Batch: XXX45314
 Prep Method: SW3520C
 Prep Date/Time: 8/4/2021 4:50:52PM
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Print Date: 09/30/2021 4:37:10PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1214733 [XXX45314]
 Blank Spike Lab ID: 1627964
 Date Analyzed: 08/09/2021 16:03

Spike Duplicate ID: LCSD for HBN 1214733 [XXX45314]
 Spike Duplicate Lab ID: 1627965
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1214733001, 1214733004, 1214733005, 1214733006, 1214733007, 1214733008, 1214733009, 1214733010, 1214733011, 1214733012, 1214733013, 1214733014, 1214733015, 1214733016

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL	
	Spike	Result	Rec (%)	Spike	Result	Rec (%)				
Residual Range Organics	20	22.2	111	20	21.3	106	(60-120)	4.20	(< 20)	
Surrogates										
n-Triacontane-d62 (surr)	0.4		117	0.4		114	(60-120)	2.00		

Batch Information

Analytical Batch: **XFC16037**
 Analytical Method: **AK103**
 Instrument: **Agilent 7890B R**
 Analyst: **IVM**

Prep Batch: **XXX45314**
 Prep Method: **SW3520C**
 Prep Date/Time: **08/04/2021 16:50**
 Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 09/30/2021 4:37:13PM

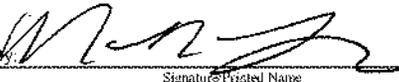
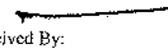
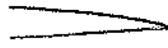
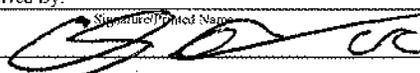
36416074
 # 36936920
 Revised Report - Revision 1

Chain-of-Custody Report

Collection Organization: Susitna Environmental LLC
 Bill to Hilcorp WBS #215-01984
 Chain-of-Custody Laboratory:
 Cooler ID: BELUGA
 Bill To: Susitna Environmental
 NPD Number:
 Report To: Susitna Environmental

COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Preservative	Matrix	Analyses Requested Group	QC	TAT	Notes:
FG20-072821	FG-20	28-Jul-21	1545	ML/RB	9	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO	MS/D	STANDARD	(1-3AC)
FG20-072821	FG-20	28-Jul-21	1545	ML/RB	9	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only	MS/D	STANDARD	(1-3DF)
FG24-072821	FG-24	28-Jul-21	1547	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(4AC)
FG24-072821	FG-24	28-Jul-21	1547	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(4DF)
FG14-072921	FG-14	29-Jul-21	0815	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(5AC)
FG14-072921	FG-14	29-Jul-21	0815	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(5DF)
FG21-072921	FG-21	29-Jul-21	0815	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(6AC)
FG21-072921	FG-21	29-Jul-21	0815	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(6DF)
FG3-072921	FG-3	29-Jul-21	0926	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(7AC)
FG3-072921	FG-3	29-Jul-21	0926	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(7DF)
FG10-072921	FG-10	29-Jul-21	0931	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(8AC)
FG10-072921	FG-10	29-Jul-21	0931	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(8DF)
FG23-072921	FG-23	29-Jul-21	1043	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(9AC)
FG23-072921	FG-23	29-Jul-21	1043	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(9DF)
HOS5-072921	HOS-5	29-Jul-21	1052	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(10AC)
HOS5-072921	HOS-5	29-Jul-21	1052	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(10DF)
HOS6-072921	HOS-6	29-Jul-21	1045	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(11AC)
HOS6-072921	HOS-6	29-Jul-21	1045	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(11DF)
ATF10-072921	ATF-10	29-Jul-21	1318	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(12AC)
ATF10-072921	ATF-10	29-Jul-21	1318	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(12DF)
ATF3-072921	ATF-3	29-Jul-21	1320	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO		STANDARD	(13AC)
ATF3-072921	ATF-3	29-Jul-21	1320	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only		STANDARD	(13DF)

Special Instructions:

Relinquish By:  7/30/21 1245 Signature/Printed Name Date/Time	Received By:  Signature/Pr Date/Time	1214733		 Date/Time
Relinquish By: _____ Signature/Printed Name Date/Time	Received By: _____ Signature/Pr Date/Time			
Relinquish By: _____ Signature/Printed Name Date/Time	Received By:  CR Signature/Printed Name Date/Time			07/30/21 1245 Date/Time

Chain-of-Custody Report

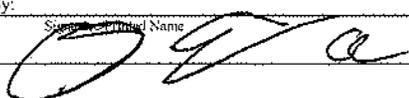
Collection Organization: Susitna Environmental LLC
 Bill to Hilcorp WBS #215-01984
 Chain-of-Custody: Laboratory:
 Cooler ID: BELUGA
 Bill To: Susitna Environmental
 NPDL Number:
 Report To: Susitna Environmental

COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Preservative	Matrix	Analyses Requested Group	OC	TAT	Notes
ATF8-072921	ATF-8	29-Jul-21	1431	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO	(14AC)	STANDARD	
ATF8-072921	ATF-8	29-Jul-21	1431	ML/RB	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 BTEX Only	(14DF)	STANDARD	
224132-072921	224-13-2	29-Jul-21	1450	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO	(15AC)	STANDARD	
224132-072921	224-13-2	29-Jul-21	1450	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 PETRO VOC	(15DF)	STANDARD	
224133-072921	224-13-3	29-Jul-21	1550	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO	(16AC)	STANDARD	
224133-072921	224-13-3	29-Jul-21	1550	MS/BL	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 PETRO VOC	(16DF)	STANDARD	
TRIP BLANK	--	28-Jul-21	0800	--	3	40 ml -VOA	4°C +/- 2°	GW	AK101 GRO	TB	STANDARD	(17AC)
TRIP BLANK	--	28-Jul-21	0800	--	3	40 ml -VOA	4°C +/- 2°	GW	SW8260 PETRO VOC	TB	STANDARD	(17DF)

Special Instructions:

Relinquish By:  7/30/21 1245
 Signature/Printed Name Date/Time
 Received By: _____
 Signature/Printed Name Date/Time

Relinquish By: _____
 Signature/Printed Name Date/Time
 Received By: _____
 Signature/Printed Name Date/Time

Relinquish By: _____
 Signature/Printed Name Date/Time
 Received By:  07/30/21 1245
 Signature/Printed Name Date/Time

Chain-of-Custody Report

Collection Organization: Susitna Environmental LLC
 Bill to Hilcorp
 Chain-of-Custody: Laboratory:
 Cooler ID: RIVER
 Bill To: Susitna Environmental
 NPDL Number:
 Report To: Susitna Environmental

COC Sample ID	Loc ID	Collection Date	Collection Time	Sampler	Quantity	Container Type	Preservative	Matrix	Analyses Requested Group	QC	TAT	Notes:
FG20-072821	FG-20	28-Jul-21	1545	ML/RB	6	250 ml	HCL	GW	AK102 DRO	MS/D	STANDARD	(13GH)
FG24-072821	FG-24	28-Jul-21	1547	MS/BL	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(14GH)
FG14-072921	FG-14	29-Jul-21	0815	ML/RB	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(15GH)
FG21-072921	FG-21	29-Jul-21	0815	MS/BL	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(16GH)
FG3-072921	FG-3	29-Jul-21	0926	MS/BL	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(17GH)
FG10-072921	FG-10	29-Jul-21	0931	ML/RB	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(18GH)
FG23-072921	FG-23	29-Jul-21	1043	MS/BL	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(19GH)
HOS5-072921	HOS-5	29-Jul-21	1052	ML/RB	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(20GH)
HOS6-072921	HOS-6	29-Jul-21	1045	ML/RB	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(21GH)
ATF10-072921	ATF-10	29-Jul-21	1318	ML/RB	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(22GH)
ATF10-072921	ATF-10	29-Jul-21	1318	ML/RB	2	250 ml	4°C +/- 2°	GW	SW8270 PAH		STANDARD	(23GH) (23J)
ATF3-072921	ATF-3	29-Jul-21	1320	MS/BL	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(24GH) (24J)
ATF3-072921	ATF-3	29-Jul-21	1320	MS/BL	2	250 ml	4°C +/- 2°	GW	SW8270 PAH		STANDARD	(25GH) (25J)
ATF8-072921	ATF-8	29-Jul-21	1431	ML/RB	2	250 ml	HCL	GW	AK102 DRO		STANDARD	(26GH) (26J)
ATF8-072921	ATF-8	29-Jul-21	1431	ML/RB	2	250 ml	4°C +/- 2°	GW	SW8270 PAH		STANDARD	(27GH) (27J) (27K)
224132-072921	224-13-2	29-Jul-21	1450	MS/BL	2	250 ml	HCL	GW	AK102/103 DRO/RRO		STANDARD	(28GH) (28J) (28K)
224132-072921	224-13-2	29-Jul-21	1450	MS/BL	2	250 ml	4°C +/- 2°	GW	SW8270 PAH		STANDARD	(29GH) (29J)
224133-072921	224-13-3	29-Jul-21	1550	MS/BL	2	250 ml	HCL	GW	AK102/103 DRO/RRO		STANDARD	(30GH) (30J)
224133-072921	224-13-3	29-Jul-21	1550	MS/BL	2	250 ml	4°C +/- 2°	GW	SW8270 PAH		STANDARD	(31J)

Special Instructions:

Relinquish By: *[Signature]* 7/30/21 1245
 Signature/Printed Name: _____ Date/Time: _____
 Received By: _____ Signature/Printed Name: _____ Date/Time: _____

Relinquish By: _____ Signature/Printed Name: _____ Date/Time: _____
 Received By: _____ Signature/Printed Name: _____ Date/Time: _____

Relinquish By: _____ Signature/Printed Name: _____ Date/Time: _____
 Received By: *Michelle Alban* Michelle Alban 7/30/21 1245
 Signature/Printed Name: _____ Date/Time: _____
 Absent, HD 1) 2.4 No3

83 of 87
 7-30-21



SGS Workorder #:

1214733

1214733

Review Criteria		Condition (Yes, No, N/A)	Exceptions Noted below	
Chain of Custody / Temperature Requirements			Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	absent		
COC accompanied samples?	Yes			
DOD: Were samples received in COC corresponding coolers?	N/A			
<div style="border: 1px solid black; padding: 2px;"> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required </div>				
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID:	Beluga	@ 2.8 °C Therm. ID: D57
	Yes	Cooler ID:	River	@ 2.4 °C Therm. ID: D63
		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		
<p>Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.</p>				
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			
<p>**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</p>				
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes			
Were proper containers (type/mass/volume/preservative***) used?	Yes	N/A	***Exemption permitted for metals (e.g.200.8/6020A).	
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

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1214733001-A	HCL to pH < 2	OK	1214733007-B	HCL to pH < 2	OK
1214733001-B	HCL to pH < 2	OK	1214733007-C	HCL to pH < 2	OK
1214733001-C	HCL to pH < 2	OK	1214733007-D	HCL to pH < 2	OK
1214733001-D	HCL to pH < 2	OK	1214733007-E	HCL to pH < 2	OK
1214733001-E	HCL to pH < 2	OK	1214733007-F	HCL to pH < 2	OK
1214733001-F	HCL to pH < 2	OK	1214733007-G	HCL to pH < 2	OK
1214733001-G	HCL to pH < 2	OK	1214733007-H	HCL to pH < 2	OK
1214733001-H	HCL to pH < 2	OK	1214733008-A	HCL to pH < 2	OK
1214733002-A	HCL to pH < 2	OK	1214733008-B	HCL to pH < 2	OK
1214733002-B	HCL to pH < 2	OK	1214733008-C	HCL to pH < 2	OK
1214733002-C	HCL to pH < 2	OK	1214733008-D	HCL to pH < 2	OK
1214733002-D	HCL to pH < 2	OK	1214733008-E	HCL to pH < 2	OK
1214733002-E	HCL to pH < 2	OK	1214733008-F	HCL to pH < 2	OK
1214733002-F	HCL to pH < 2	OK	1214733008-G	HCL to pH < 2	OK
1214733002-G	HCL to pH < 2	OK	1214733008-H	HCL to pH < 2	OK
1214733002-H	HCL to pH < 2	OK	1214733009-A	HCL to pH < 2	OK
1214733003-A	HCL to pH < 2	OK	1214733009-B	HCL to pH < 2	OK
1214733003-B	HCL to pH < 2	OK	1214733009-C	HCL to pH < 2	OK
1214733003-C	HCL to pH < 2	OK	1214733009-D	HCL to pH < 2	OK
1214733003-D	HCL to pH < 2	OK	1214733009-E	HCL to pH < 2	OK
1214733003-E	HCL to pH < 2	OK	1214733009-F	HCL to pH < 2	OK
1214733003-F	HCL to pH < 2	OK	1214733009-G	HCL to pH < 2	OK
1214733003-G	HCL to pH < 2	OK	1214733009-H	HCL to pH < 2	OK
1214733003-H	HCL to pH < 2	OK	1214733010-A	HCL to pH < 2	OK
1214733004-A	HCL to pH < 2	OK	1214733010-B	HCL to pH < 2	OK
1214733004-B	HCL to pH < 2	OK	1214733010-C	HCL to pH < 2	OK
1214733004-C	HCL to pH < 2	OK	1214733010-D	HCL to pH < 2	OK
1214733004-D	HCL to pH < 2	OK	1214733010-E	HCL to pH < 2	OK
1214733004-E	HCL to pH < 2	OK	1214733010-F	HCL to pH < 2	OK
1214733004-F	HCL to pH < 2	OK	1214733010-G	HCL to pH < 2	OK
1214733004-G	HCL to pH < 2	OK	1214733010-H	HCL to pH < 2	OK
1214733004-H	HCL to pH < 2	OK	1214733011-A	HCL to pH < 2	OK
1214733005-A	HCL to pH < 2	OK	1214733011-B	HCL to pH < 2	OK
1214733005-B	HCL to pH < 2	OK	1214733011-C	HCL to pH < 2	OK
1214733005-C	HCL to pH < 2	OK	1214733011-D	HCL to pH < 2	OK
1214733005-D	HCL to pH < 2	OK	1214733011-E	HCL to pH < 2	OK
1214733005-E	HCL to pH < 2	OK	1214733011-F	HCL to pH < 2	OK
1214733005-F	HCL to pH < 2	OK	1214733011-G	HCL to pH < 2	OK
1214733005-G	HCL to pH < 2	OK	1214733011-H	HCL to pH < 2	OK
1214733005-H	HCL to pH < 2	OK	1214733012-A	HCL to pH < 2	OK
1214733006-A	HCL to pH < 2	OK	1214733012-B	HCL to pH < 2	OK
1214733006-B	HCL to pH < 2	OK	1214733012-C	HCL to pH < 2	OK
1214733006-C	HCL to pH < 2	OK	1214733012-D	HCL to pH < 2	OK
1214733006-D	HCL to pH < 2	OK	1214733012-E	HCL to pH < 2	OK
1214733006-E	HCL to pH < 2	OK	1214733012-F	HCL to pH < 2	OK
1214733006-F	HCL to pH < 2	OK	1214733012-G	HCL to pH < 2	OK
1214733006-G	HCL to pH < 2	OK	1214733012-H	HCL to pH < 2	OK
1214733006-H	HCL to pH < 2	OK	1214733012-I	No Preservative Required	OK
1214733007-A	HCL to pH < 2	OK	1214733012-J	No Preservative Required	OK

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1214733013-A	HCL to pH < 2	OK			
1214733013-B	HCL to pH < 2	OK			
1214733013-C	HCL to pH < 2	OK			
1214733013-D	HCL to pH < 2	OK			
1214733013-E	HCL to pH < 2	OK			
1214733013-F	HCL to pH < 2	OK			
1214733013-G	HCL to pH < 2	OK			
1214733013-H	HCL to pH < 2	OK			
1214733013-I	No Preservative Required	OK			
1214733013-J	No Preservative Required	OK			
1214733014-A	HCL to pH < 2	OK			
1214733014-B	HCL to pH < 2	OK			
1214733014-C	HCL to pH < 2	OK			
1214733014-D	HCL to pH < 2	OK			
1214733014-E	HCL to pH < 2	OK			
1214733014-F	HCL to pH < 2	OK			
1214733014-G	HCL to pH < 2	OK			
1214733014-H	HCL to pH < 2	OK			
1214733014-I	No Preservative Required	OK			
1214733014-J	No Preservative Required	OK			
1214733015-A	HCL to pH < 2	OK			
1214733015-B	HCL to pH < 2	OK			
1214733015-C	HCL to pH < 2	OK			
1214733015-D	HCL to pH < 2	OK			
1214733015-E	HCL to pH < 2	OK			
1214733015-F	HCL to pH < 2	OK			
1214733015-G	HCL to pH < 2	OK			
1214733015-H	HCL to pH < 2	OK			
1214733015-I	No Preservative Required	OK			
1214733015-J	No Preservative Required	OK			
1214733016-A	HCL to pH < 2	OK			
1214733016-B	HCL to pH < 2	OK			
1214733016-C	HCL to pH < 2	OK			
1214733016-D	HCL to pH < 2	OK			
1214733016-E	HCL to pH < 2	OK			
1214733016-F	HCL to pH < 2	OK			
1214733016-G	HCL to pH < 2	OK			
1214733016-H	HCL to pH < 2	OK			
1214733016-I	No Preservative Required	OK			
1214733016-J	No Preservative Required	OK			
1214733017-A	HCL to pH < 2	OK			
1214733017-B	HCL to pH < 2	OK			
1214733017-C	HCL to pH < 2	OK			
1214733017-D	HCL to pH < 2	OK			
1214733017-E	HCL to pH < 2	OK			
1214733017-F	HCL to pH < 2	OK			

Container Condition Glossary

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

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

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

DM - The container was received damaged.

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

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

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

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

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

QN - Insufficient sample quantity provided.

Attachment D ADEC Laboratory Data Review Checklist and Data Quality Memo

Date: 10/4/2021
Project name: Hilcorp Beluga River Unit - 2021
Laboratory: SGS North America, Inc. – Anchorage, AK (SGSA)
Sample Delivery Groups: 1214733
Reviewed by: Alex Thompson
Title: Chemist
Approved by: Rodney Guritz
Title: Principal Chemist

To: Ms. Melissa Mayer
Susitna Environmental, LLC
2419 McKenzie Drive
Anchorage, AK 99517

Data Quality Assessment

This letter summarizes the findings of a data quality assessment (DQA) conducted by Arctic Data Services, LLC (ADS) on behalf of Susitna Environmental, LLC (Susitna) for the above-referenced project data. Precision, accuracy, sensitivity, representativeness, comparability, and completeness of the data were evaluated by reviewing laboratory-supplied quality assurance/quality control (QA/QC) information as well as conducting independent QC checks on the data. A Stage 2A validation was conducted in general accordance with the US Environmental Protection Agency (USEPA) *National Functional Guidelines for Organic Superfund Methods Data Review* (2017). Stage 2A validation includes reviewing sample handling, custody, and sample-batch level QC information and applying data qualifiers to sample results affected by anomalies and QC failures and summarizing the impacts to data quality. Instrument-level QC information was not reviewed. This validation meets the requirements of the Alaska Department of Environmental Conservation (ADEC) *Technical Memorandum on Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling* (March 2017). In the absence of project-specific control limits or measurement quality objectives (MQOs), QC-sample recoveries and relative percent differences (RPDs) were compared to laboratory control limits. Field-duplicate RPDs were compared to ADEC-recommended MQOs. To evaluate analytical sensitivity, limits of quantitation (LOQs) and limits of detection (LODs) were compared to the following project action limits (PALs): 18 Alaska Administrative Code (AAC) 75.345 Table C groundwater cleanup levels (GCLs) for water samples.

An ADEC laboratory data review checklist was completed for the single sample delivery group (SDG) and is attached to this DQA. Also attached is a tabular summary of data qualified during the course of this review (Table 1). The following sections provide a summary of the findings for each QA/QC element reviewed; anomalies that had no impact to data quality are discussed in the checklist and are not further described herein.

Sample Analysis Summary

Analytical results for 14 groundwater samples (including QC field duplicates) were reviewed. The samples were submitted in a single SDG to SGSA for analysis of one or more of the following:

- Gasoline range organics (GRO) by Alaska Method AK101;
- Diesel range organics (DRO) by Alaska Method AK102;
- Polycyclic aromatics hydrocarbons (PAHs) by EPA SW846 Method 8270D with selected ion monitoring (SIM);
- Benzene, ethylbenzene, toluene, and xylenes (BTEX) by EPA SW846 Method 8260D;
- Petroleum related volatile organic compounds (VOCs) by EPA SW846 Method 8260D.

Please note that petroleum VOC results were not included in the original laboratory report. The laboratory issued a revised report on September 30, 2021 which included petroleum VOC results for samples 224132-072921 and 224133-072921.

Sample Preservation, Handling, Custody, and Holding Times

Sample receipt forms (SRFs) were reviewed to check that samples were received in good condition, properly preserved, and within the required temperature range. Chain of custody (COC) forms were reviewed to confirm that custody was not breached during sample handling. Dates of sample collection, preparation, and analysis were compared to check that method holding times were not exceeded.

There were no sample preservation, handling, custody, or holding time failures affecting project-sample data quality.

Analytical Sensitivity

Analytical sensitivity was evaluated by checking that LOQs and LODs were below relevant PALs where target analytes were not detected.

There were no non-detect results with LODs or LOQs exceeding relevant PALs.

Method Blanks

The laboratory analyzed and reported a method blank (MB) for each preparatory batch, to check for laboratory-based sample contamination. Associated project-sample results were considered affected where the analyte was detected within 10 times the MB concentration. Results affected by blank contamination are qualified as estimated and flagged 'B', indicating a high bias and potential false-positive detection.

The following MB detections were determined to affect project-sample data quality:

- **1214733.** Phenanthrene was detected below the LOQ in the MB sample associated with 8270DSIM prep batch XXX45308. Four phenanthrene results were considered affected and qualified, following the procedure outlined above. The impact to data usability was minimal, as all affected results are below relevant cleanup levels, despite the potential high bias. Refer to table 1 for a full list of affected results.

Trip Blanks

Trip blank samples (TBs) were submitted alongside volatile organic analysis samples and analyzed for GRO and VOCs, to check for cross-contamination of samples during sampling, shipment, or storage. Associated project-sample results would be considered affected where the analyte was detected within 10 times the TB concentration.

The following trip blank detections were determined to affect project sample data quality:

- **1214733.** GRO was detected below the LOQ in the trip blank sample. Two GRO results were considered affected and qualified, following the procedure outlined above. The impact to data usability was minimal, as all affected results are below relevant cleanup levels, despite the potential high bias. Refer to Table 1 for a full list of affected results.

Laboratory Control Samples

The laboratory analyzed and reported laboratory control samples (LCSs) for each preparatory batch, to assess laboratory extraction efficiency and analytical accuracy. In some cases, LCS duplicates (LCSDs) were used to assess analytical precision. LCS and LCSD recovery information and LCS/LCSD RPD information (where available) were reviewed.

There were no LCS/LCSD recovery or RPD failures affecting project-sample data quality.

Matrix Spike Samples

Matrix spikes (MS) and MS duplicates (MSD) were analyzed for organic batches, to evaluate potential matrix interference affecting accuracy and/or precision. MS/MSD recovery and RPDs were evaluated only if the parent sample (the sample spiked for the MS/MSD) was in the project-sample set. MS/MSD recovery was only evaluated if the spiking concentration was greater than the native analyte concentration.

There were no MS/MSD recovery failures affecting project-sample data quality. Refer to the checklist for further discussion.

Surrogate Recovery

Samples submitted for analysis of organic compounds were spiked with analyte surrogates to evaluate extraction efficiency and to check for matrix interference. Surrogate recoveries were reviewed for each project sample and analysis. Surrogate recovery failures are only considered to affect project results for samples that are not heavily diluted (dilution factor < 10).

The following surrogate recovery failures were determined to affect project-sample data quality:

- **1214733.** The AK101 surrogate, 4-bromofluorobenzene (4-BFB), was recovered above laboratory control limits in two samples. Affected results are qualified as estimated and flagged 'J+', indicating a high bias. The impact to data usability for GRO results is minimal as the affected GRO results are below the cleanup level, despite the potential high bias. Refer to Table 1 for a full list of affected results.

Field Duplicates

Two field duplicate sample pairs were collected and submitted, meeting the 10% minimum required frequency. RPDs between field-duplicate results were calculated where at least one of the results was quantitatively detected (above the LOQ). In the case that one result was not detected, RPDs were calculated using the LOD for the non-detect result.

There were no field duplicate sample pair RPD failures affecting project-sample data quality.

Resolution of Multiple Flags

In the instance a result was affected by multiple QC anomalies, imparting differing qualifiers, professional judgement was used to determine the most appropriate and conservative qualifier retained for final reporting. The GRO results for samples HOS5-072921 and HOS6-072921 were affected by a high surrogate recovery failures ('J+'-flag) and sample cross contamination, identified in a trip blank sample ('B'-flag). As both results were detected above the LOQ, and were only marginally within the ten times blank contamination concentration threshold, the results retain the 'J+' flag as the final qualifiers.

Summary of Data Quality Indicators

The following sections summarize the findings of the above review with respect to the six data quality indicators: sensitivity, precision, accuracy, representativeness, comparability, and completeness. Note that this evaluation of representativeness, comparability, and completeness is limited to consideration of analytical data quality only. Assessment of data usability in the context of the project must be conducted by the project team as a whole, taking into account the data quality issues summarized herein, as well as overall project objectives.

Sensitivity

Sensitivity describes the ability of the sampling and analytical methodology to meet detection and/or quantitation limit objectives. There were no non-detect results with LODs or LOQs exceeding relevant PALs. Overall sensitivity was deemed acceptable for the purposes of this project.

Precision

Precision is a measure of the reproducibility of repetitive measurements. Precision was evaluated based on laboratory QC-sample and field-duplicate sample RPDs. There were no laboratory QC sample duplicate or field sample duplicate pair RPD failures affecting project-sample data quality. Overall precision was deemed acceptable.

Accuracy

Accuracy is a measure of the correctness, or the closeness, between the true value and the quantity detected. Accuracy was evaluated based on analyte recoveries for laboratory QC samples and recovery of surrogate spikes for project samples. Sample handling and preservation anomalies that may have impacted data accuracy are also taken into consideration.

No sample handling and preservation anomalies affected project data for the submitted SDG. Laboratory QC-sample recovery indicated generally adequate analytical accuracy. However, two GRO results were affected by surrogate recovery failures, and four phenanthrene results and two GRO results were affected by contamination, as identified by detections in a corresponding blank sample. These results are qualified as estimated, and a direction of bias given, where discernible. Results affected by contamination and qualified 'B', may be potential false-positive detections. The impact to data usability for these results was minimal in all cases, and overall accuracy is deemed acceptable.

Representativeness

Representativeness describes the degree to which data accurately and precisely represent site characteristics. Representativeness is affected by factors such as sample frequency and matrix or contaminant heterogeneity, as well as analytical performance (including sensitivity, accuracy, and precision) and sample cross-contamination.

Samples were collected in accordance with an approved work plan. Six results were qualified due to laboratory-based or sample cross contamination. These results are qualified as estimated, biased high, and may be false-positive detections. Additionally, two results were affected by high surrogate recovery failures. Results affected by QC anomalies affecting accuracy should not be considered as wholly representative of site conditions. However, impact to data usability was generally minor as the affected results were below cleanup levels despite

the potential high bias. Overall representativeness is deemed acceptable for the purposes of this project, with the exceptions described above taken into account.

Comparability

Comparability describes whether two data sets can be considered equivalent with respect to project goals. Comparability is affected by factors such as sampling methodology and analytical performance (including sensitivity, accuracy, and precision). Comparability was evaluated by checking that standard analytical methods were employed, and analytical performance was acceptable. Data review findings generally support that the dataset is comparable; however, comparability should be evaluated by the project team considering sample collection methodology and historic results alongside data quality and analytical methodology.

Completeness

Completeness describes the amount of valid data obtained from the sampling event. It is calculated as the percentage of usable measurements compared to the total number of measurements. The groundwater data are 100% complete, with no results rejected in the course of this review.

Conclusions and Limitations

Sensitivity, precision, accuracy, representativeness, comparability, and completeness were deemed acceptable, and the data are usable for the purposes of this project. Project sample results affected by the QC anomalies described above have been flagged accordingly (Table 1).

This review was based solely on information provided by the analytical laboratory in the laboratory reports for the SDG reviewed. ADS did not review instrument-level QC elements, such as calibration verification or internal standard response, except to the extent that the laboratory identified instrument-level anomalies in the case narrative. ADS did not conduct independent validation of the data (e.g. recalculating results based on instrument responses) or review any raw chemical data (e.g. chromatograms). A data quality assessment helps reduce the risk of reliance on data of compromised quality, however, it does not eliminate that risk.

Attachments:

Table 1	Summary of Qualified Data
ADEC Laboratory Data Review Checklists:	1214733

Table 1
Summary of Qualified Data
Hilcorp Beluga River Unit - 2021
Data Quality Assessment

Client Sample ID	Lab Sample ID	Matrix	Method	Analyte	CAS	Units	DL	LOD	LOQ	Result	Lab Flags	QC Flags	Note	Final Qualified Result
FG24-072821	1214733004	Ground_Water	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	0.0450	0.0500	0.100	0.0453	J	B	TB	0.0453 J B
HOS5-072921	1214733010	Ground_Water	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	0.0450	0.0500	0.100	0.401		J+, B	SUR_%R, TB	0.401 J+
HOS6-072921	1214733011	Ground_Water	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	0.0450	0.0500	0.100	0.383		J+, B	TB, SUR_%R	0.383 J+
ATF3-072921	1214733013	Ground_Water	8270DSIM	Phenanthrene	85-01-8	µg/L	0.0153	0.0255	0.0510	0.0264	J	B	MB	0.0264 J B
ATF8-072921	1214733014	Ground_Water	8270DSIM	Phenanthrene	85-01-8	ug/L	0.0144	0.0240	0.0481	0.0241	J	B	MB	0.0241 J B
ATF8-072921	1214733014	Ground_Water	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	0.0450	0.0500	0.100	0.101		B	TB	0.101 B
224132-072921	1214733015	Ground_Water	8270DSIM	Phenanthrene	85-01-8	µg/L	0.0150	0.0250	0.0500	0.0285	J	B	MB	0.0285 J B
224133-072921	1214733016	Ground_Water	8270DSIM	Phenanthrene	85-01-8	µg/L	0.0150	0.0250	0.0500	0.0446	J	B	MB	0.0446 J B

Notes

- TB Trip blank detection
- SUR_%R Surrogate recovery failure
- MB Method Blank Detection

Data Qualifiers

- J+ The quantitation is considered estimated, biased high, due to a QC anomaly.
- B The result is considered estimated, biased high, and a potential false-positive detection, due to contamination.
- J The result is considered estimated, with an unknown direction of bias, either due to a QC anomaly (*validator-applied*) or detection below the LOQ (*laboratory-applied*).

Definitions

- CAS Chemical Abstract Service registry number
- DL detection limit
- LOD limit of detection
- LOQ limit of quantitation
- QC quality control
- NA not applicable

Laboratory Data Review Checklist

Completed By:

Alexander Thompson

Title:

Chemist

Date:

October 1st, 2021

Consultant Firm:

Arctic Data Services, LLC for Susitna Environmental, LLC

Laboratory Name:

SGS North America, Inc. – Anchorage, AK

Laboratory Report Number:

1214733

Laboratory Report Date:

August 20th, 2021
Rev1 Date: September 30, 2021

CS Site Name:

Hilcorp Beluga River Unit

ADEC File Number:

NA

Hazard Identification Number:

NA

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:

All samples were received and analyzed by SGS North America, Inc. in Anchorage, AK, which is ADEC CS approved for the analyses performed.

- 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 samples were transferred to another laboratory

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:

Samples were hand delivered in a two coolers directly to the SGS Anchorage laboratory; both were received within the acceptable temperature range.

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

Yes No N/A Comments:

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

Yes No N/A Comments:

Samples were received in good condition.

- d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

Yes No N/A Comments:

There were no sample receiving discrepancies.

e. Data quality or usability affected?

Comments:

Data quality and usability were not affected.

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:

The laboratory report case narrative documented a number of QC anomalies which are addressed in the following relevant sections of this checklist.

The case narrative also mentions a benzene detection in a leaching blank sample, however no TCLP analyses were request, nor were TCLP results reported. Correspondence with laboratory confirmed that the statement was left in error and a revised report can be issued upon request.

c. Were all corrective actions documented?

Yes No N/A Comments:

No corrective actions were documented or performed.

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

Comments:

The laboratory does not make any conclusions regarding data quality or usability in the provided case narrative.

5. Samples Results

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

Yes No N/A Comments:

Petroleum-VOCs and RRO analysis were requested for samples 224132-072921, 224133-072921 and the trip blank sample, but results were not included in the original laboratory report. The laboratory provided a revised report with the missing results for samples 224132-072921 and 224133-072921 included.

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:

No soil samples were submitted for this work order.

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

Yes No N/A Comments:

LOQs and LODs were compared to the 18 AAC 75.345 Table C Groundwater Cleanup Levels (GCLs). No results had LODs or LOQs exceeding applicable GCLs.

- e. Data quality or usability affected?

Data quality and usability were not affected.

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:

Phenanthrene was detected below the LOQ in the MB sample associated with 8270DSIM prep batch XXX45308. Refer to the table below for further details.

Method	Batch	Analyte	Units	MB Conc.	LOQ
8270DSIM	XXX45308	Phenanthrene	ug/L	0.03	0.05

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

Comments:

Project-sample results are considered affected if the analyte in question is detected within ten times (10x) the associated method blank sample concentration. A number of phenanthrene results were detected within the 10x threshold. Refer to the table below for a full list of affected results.

Sample ID	Method	Analyte	Units	Result	LOQ	QC Flag
224132-072921	8270DSIM	Phenanthrene	ug/L	0.0285	0.05	B
224133-072921	8270DSIM	Phenanthrene	ug/L	0.0446	0.05	B
ATF3-072921	8270DSIM	Phenanthrene	ug/L	0.0264	0.051	B
ATF8-072921	8270DSIM	Phenanthrene	ug/L	0.0241	0.0481	B

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

Yes No N/A Comments:

The affected phenanthrene results are qualified as estimated and flagged 'B', indicating a high bias and potential false-positive detection due to laboratory-based contamination.

v. Data quality or usability affected?

Comments:

Data quality is affected as described above. The impact to data usability is minimal, as the affected results are below the cleanup level, despite the potential high bias.

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:

No inorganic analyses were performed in this work order.

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:

There were no LCS/LCSD recovery failures identified.

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:

There were no LCS/LCSD RPD failures identified.

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

Comments:

There were no LCS/LCSD recovery or RPD failures identified.

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

Yes No N/A Comments:

NA; see above.

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

Comments:

Data quality and usability were not affected.

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:

Additional volume was submitted with sample FG20-072821 for organic analysis matrix spiking.

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

Yes No N/A Comments:

No inorganic analyses were performed in this work order.

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

Yes No N/A Comments:

There were a number of MS/MSD recovery and RPD failures in the MS/MSD for 8270DSIM preparatory batch XXX45308; however, the spiked parent sample is not associated with the project, so these failures have no effect to data quality or usability for the samples submitted in this work order. Recoveries were within control limits for all analytes for the spiked project sample (FG20-072821).

- 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:

See above.

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

Comments:

There were no MS/MSD recovery or RPD failures affecting project-sample data quality.

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

Yes No N/A Comments:

No project-sample results were qualified; see above.

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

Comments:

Data quality and usability were not affected.

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

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

Yes No N/A Comments:

- 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:

The AK101 surrogate, 4-bromofluorobenzene, was recovered above laboratory control limits in two samples. Refer to the table below for further details.

Client Sample ID	Method	Surrogate	DF	PercentRecovery	UCL	recovery
HOS5-072921	AK101	4-Bromofluorobenzene	1.0	169.0	150.0	high
HOS6-072921	AK101	4-Bromofluorobenzene	1.0	165.0	150.0	high

- 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:

GRO results for these samples are considered affected and are qualified as estimated and flagged 'J+', indicating the quantitation is biased high. Refer to the table below for further details.

Client Sample ID	Method	Analyte	CAS	Result (mg/L)	QC Flag
HOS5-072921	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	0.401	J+
HOS6-072921	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	0.383	J+

- iv. Data quality or usability affected?

Comments:

Data quality is affected as described above. The impact to data usability is minimal, as the affected results are below the cleanup level, despite the high bias.

- 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:

Sample 'Trip Blank' was submitted alongside project samples and analyzed for BTEX by 8260D and GRO by AK101. Petroleum VOC analysis was requested for the trip blank sample, however only BTEX analyte results were included in the revised laboratory report. No additional petroleum analytes were detected in samples 224132-072921 and 224133-072921 (where petroleum VOC analysis was requested) thus no results are considered affected by this omission.

- 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:

The COC form is split into multiple pages by cooler, and cooler IDs are clearly defined. VOA sample containers and the trip blank sample were submitted in cooler 'Beluga'.

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

Yes No N/A Comments:

GRO was detected below the LOQ in the trip blank sample. Refer to the table below for further details.

Client Sample ID	QC Type	Method	Analyte	CAS	TB Result	LOQ
Trip Blank	Trip_Blank	AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	0.0591 J	0.1

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

Comments:

Project sample results were considered affected if the analyte in question is detected within 10x the associated trip blank concentration. Four GRO results were considered affected. Refer to the table below for further details.

Client Sample ID	Method	Analyte	Result	LOQ	QC Flag
HOS6-072921	AK101	Gasoline Range Organics (C6-C10)	0.383	0.1	B
HOS5-072921	AK101	Gasoline Range Organics (C6-C10)	0.401	0.1	B
FG24-072821	AK101	Gasoline Range Organics (C6-C10)	0.0453 J	0.1	B
ATF8-072921	AK101	Gasoline Range Organics (C6-C10)	0.101	0.1	B

v. Data quality or usability affected?

Comments:

Data quality is affected as described above. The impact to data usability is minimal, as the affected results are below the cleanup level, despite the potential high bias.

f. Field Duplicate

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

Yes No N/A Comments:

Sample HOS6-072921 was submitted as a field duplicate of sample HOS5-072921.
Sample 224133-072921 was submitted as a field duplicate of 224132-072921.

ii. Submitted blind to lab?

Yes No N/A Comments:

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

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

Where R_1 = Sample Concentration
 R_2 = Field Duplicate Concentration

Yes No N/A Comments:

RPDs were calculated and compared to the ADEC recommended measurement quality objective (MQO) of 30% for water sample duplicate pairs, where an analyte was quantitatively detected (above the LOQ) in at least one sample. There were no field duplicate sample pair RPD failures affecting project-sample data quality.

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

Comments:

Data quality and usability were not affected.

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

Yes No N/A Comments:

No equipment blank was submitted.

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

Yes No N/A Comments:

NA; see above.

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

Comments:

No samples were affected; see above.

- iii. Data quality or usability affected?

Comments:

Data quality and usability were not affected. Low-level detected results (below the LOQ) should be used with a degree of caution; due to the absence of analysis of an appropriate equipment blank, it cannot be ruled out that these results may be biased high or potential false-positives due to sampling-equipment cross contamination.

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

- a. Defined and appropriate?

Yes No N/A Comments:

There were no additional laboratory-specific qualifiers applied.