

April 28, 2023

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## **FINAL Groundwater Investigation Report, University Park Condos, 656 Fairbanks Street, Fairbanks, Alaska**

This report describes the groundwater investigation activities for the University Park Condominiums (U-Park Condos) site at 656 Fairbanks Street in Fairbanks, Alaska. Arctic Data Services, LLC (ADS) has been contracted by the University Park Condo Association to perform this groundwater investigation. The site is managed by the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites Program (CSP) under file number 100.38.162, hazard ID 3806.

### **Site Description**

U-Park Condos is located at 656 Fairbanks Street, near the Fairbanks Street-Geist Road intersection south of the University of Alaska-Fairbanks campus, in Fairbanks, Alaska (see Figure 1 for site location and vicinity). The property consists of three multi-unit condo buildings, a central laundry building, and an administrative office. The condos and laundry are heated with oil-fired boilers; the boiler room is at the rear of the building facing Fairbanks Street. The condos are served by College Utilities for water and wastewater; there are no on-site wells for irrigation or other purposes.

Immediately north of the property is the former College Inn, which burned down in September 2019, and has yet to be demolished and cleaned up. Further to the north is a Holiday gas station, which is the University Car Care Center - Williams #5026 contaminated site (hazard ID 23798). To the northeast is the Geist Road post office, which is also a contaminated site (hazard ID 27192). These sites are roughly 500 to 750 feet away from the subject property, with the Geist Road post office likely up-gradient and the University Car Care Center likely cross-gradient in terms of groundwater flow (see below). To the east is a residential development, and to the west is largely undeveloped land. There is one residence, associated with the Light of the World Lutheran Church at 4155 Geist Road, that is approximately 200 feet to the northwest across a seasonal slough channel. The site is located roughly 150 feet from Deadman Slough, and roughly 2000 feet from the Chena River.

## Project Background

On April 17, 2001, an unknown volume of heating oil (estimated at 500 to 1,000 gallons per the ADEC CSP database summary) was released from a day-tank vent to the exterior of the boiler room. An unknown portion of the released heating oil also may have been released inside the boiler room, which would have flowed into the floor drains that lead to the municipal sewer system. A small amount of heating oil (estimated at less than 5 gallons by ADEC response staff per the ADEC CSP database summary) reportedly entered the nearby seasonal slough. According to the ADEC CSP and Preparedness, Prevention, and Response (PPR) databases, a cleanup was performed following the release, which included excavation and off-site thermal remediation of an estimated 100 cubic yards (cy) of contaminated soil. However, there is no report in the ADEC file documenting this cleanup, and the consultant who oversaw the cleanup has since deceased.

In 2021, ADS advanced and sampled soil borings to characterize the extent of soil contamination and determine if contamination had reached the groundwater interface. Analytical soil sample results from the source-area soil boring were above the ADEC migration to groundwater soil cleanup levels (MTG SCLs) for project contaminants of concern, including diesel range organics (DRO), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, ethylbenzene, naphthalene, total xylenes, 1-methylnaphthalene, and 2-methylnaphthalene. Historic photographs showed fuel flowing to the north-northwest from the release point. Analytical soil sample results from a second soil boring in this direction, and field screening from four shallow soil along the edge of the dry slough channel, confirmed that contamination did not extend in this direction. It was concluded that the only soil contamination remaining following the undocumented 2001 cleanup is immediately adjacent to, and possibly underneath, the boiler room foundation. Presumably, excavation of contaminated soil at this location was not feasible due to risk of undermining the building foundation.

Soil borings in 2021 encountered the presence of groundwater, with water level at the time of sampling between 10 to 13 feet below ground surface (bgs). Based on visual/olfactory observations, photoionization detector readings, and analytical sample results from near the groundwater interface in the source-area soil boring, groundwater is likely to have been impacted. Refer to the 2021 Soil Investigation Report for details. The direction of groundwater flow at the site is suspected to be roughly southwest. The nearby gas station site (hazard ID: 23798) located just north of the University Park Condos reported a groundwater flow direction of southwest with a gradient of 0.0006 feet per foot in a 2021 groundwater report prepared by Arcadis.

## Objective and Scope of Work

The primary objective of the groundwater investigation was to determine if contamination is present in groundwater at the point of release, if groundwater contamination is migrating off the property downgradient from the source release point (if contamination is present in groundwater), and to calculate the groundwater gradient and flow direction at the site. To complete this objective the scope included the following activities to characterize groundwater:

- install and sample a monitoring well at the source area/release point to determine whether groundwater contamination exists;
- install and sample three monitoring wells in the presumed downgradient direction, near the property boundary toward the seasonal slough channel, to determine if groundwater contamination may be migrating toward the property boundary; and
- survey wells and measure groundwater elevations to calculate an accurate groundwater gradient and flow direction for the site, at the time of sampling.

### **Contaminants of Potential Concern**

Contaminants of potential concern (COPCs) include DRO, gasoline range organics (GRO), polycyclic aromatic hydrocarbons (PAHs), and petroleum-related volatile organic compounds (VOCs). Applicable cleanup levels are derived from 18 AAC 75.345 (2023) Table C Groundwater Cleanup Levels (GCLs). Analytical results from groundwater samples collected during fieldwork are listed in Table 1 (attached), for comparison with applicable individual GCLs.

### **Field Activities and Observations**

Field activities were completed in accordance with the ADEC approved Groundwater Investigation Work Plan (ADS 2022). Site photographs and detailed field notes are provided in Attachment A and Attachment B respectively.

### **Well Installation**

Four monitoring wells were installed on April 19, 2022, by GeoTek Alaska, Inc. (GeoTek) using a Geoprobe 6620DT direct push drill rig with oversight from ADS. One monitoring well (MW-1) was installed directly adjacent to the boiler room, near the original point of release, and three monitoring wells (MW-2, MW-3, and MW-4) were installed at presumed downgradient locations. Monitoring well locations are shown in Figure 2.

Immediately upon opening a soil core, field-screening samples were collected from 2.5-foot intervals and immediately placed in Ziploc bags, which were sealed and allowed to warm for at least 10 minutes, then read with a photoionization detector.

Soil borings were collected during the drilling process and soil lithology and PID field screenings were recorded at various depth intervals. Depth to water at the site was initially gauged at 13.5 feet bgs at MW-4 using a water level indicator. Monitoring wells consisted of 2-inch PVC with prepacked 0.010-inch slotted well screens. The 10-foot screened intervals were set to approximately 9 to 19 feet bgs for all except MW-4, which was set from approximately 8 to 18 feet bgs. Depth to water after installation ranged from 13 to 14 feet bgs for all wells. Refer to monitoring well installation field logs (Attachment B) for well construction diagrams, soil lithology, and PID readings.

## Well Development and Sampling

Monitoring wells were developed and sampled by ADS on June 17, 2022. Well-development took place immediately before sampling. Wells were developed by first using Waterra tubing with a foot valve to remove the bulk sediment and then completed using a submersible pump. Turbidity was measured periodically throughout the well development process. Groundwater samples were collected following well development using low-flow sampling procedures in accordance with ADEC's Field Sampling Guidance (ADEC, 2022). Monitoring wells were purged and sampled using a low-flow technique with submersible pump and dedicated 3/8-inch tubing. Field parameters were monitored during purging activities with a YSI multiparameter water quality meter with a flow-through cell. Samples were collected after sufficient stabilization of field parameters or at least three well volumes were purged. See groundwater development logs and groundwater sample data sheets (Attachment B) for additional details. A reusable submersible pump was used to collect the samples and was decontaminated between sampling locations. The pump was decontaminated by running it in an Alconox® solution, then tap water, followed by three distilled-water rinses. Wells were sampled in the order of least likely to be contaminated to most likely, and no equipment blank was collected, in accordance with the ADEC approved work plan.

Samples were submitted to the ADEC approved laboratory SGS North America, Inc. in Anchorage, Alaska (SGS Anchorage) for analysis of the following:

- GRO by Alaska Method 101 (AK101);
- DRO by Alaska Method 102 (AK102);
- petroleum-related VOCs by EPA Method 8260D; and
- PAHs by EPA Method 8270D-SIM.

## Well Elevation Survey

A well elevation survey was conducted on August 1, 2022, by Windy Creek Surveys, LLC, a licensed professional surveyor in the State of Alaska. The survey report is provided in Attachment C.

## Work Plan Deviations

Water quality field parameters were not taken during sampling at MW-1 due to the presence of sheen. Three well volumes were purged prior to sampling.

## Investigation Derived Waste Management

Investigation derived waste (IDW) consisted of disposable gloves, tubing, and other disposable resources from the groundwater sampling; these were disposed of in the Fairbanks North Star Borough (FNSB) landfill. Purge water from well development and sampling was contained in two 55-gallon drums staged on-site pending receipt of sample results. One drum containing purge water from MW-1 and MW-2 is being disposed of as non-hazardous

waste via U.S. Ecology. The certificate of disposal will be included with the final report or sent as an addendum once disposal is complete. The remaining drum containing uncontaminated purge water (MW-3 and MW-4) froze before it could be disposed of. Purge water from this drum will be discharged to the ground surface at the site, at least 100 feet away from the seasonal slough channel, during the field season of 2023.

No soil IDW was planned, however the drillers did not have the correct tooling to advance the wells without sampling. Since sampling occurred, the soil cores did generate some soil IDW. The volume of soil generated during well installation was minimal and was used to backfill the boreholes around the well above the seal, consistent with prior soil IDW management from the 2021 soil investigation. At MW-1, where field screening readings exceeded 20 ppm, care was taken to ensure the soil was placed below 2 ft. bgs, then the remainder of the borehole filled with pea gravel to the surface.

## Results & Discussion

Analytical results with comparison to applicable GCLs are listed in Table 1. For detailed analytical results and data validation findings, refer to the SGS Laboratory Report 1223225 and the completed ADEC laboratory data review checklist (Attachment D).

### Analytical Results

The analytical results of the sample and field duplicate taken from MW-1 confirm groundwater contamination is present at the point of release. DRO, 1,2,4-trimethylbenzene, and naphthalene were detected above GCLs (highlighted in Table 1). The results of samples collected from the downgradient wells (MW-2, MW-3, and MW-4) were below GCLs when detected.

### Quality Assurance / Quality Control

Data quality was generally acceptable with two results qualified as estimates ('J') due to field-duplicate relative percent differences and 28 results qualified as low-biased estimates ('J-') due to low surrogate recovery; see Summary of Qualified Results Table in Attachment C for details. Qualified results are still considered usable for the purposes of this project.

Naphthalene was reported by both 8260D and 8270D-SIM for all samples. The 8260D results for naphthalene in MW-1 were significantly higher than those for 8270D-SIM. Potentially due to field preservation and reduced volatilization prior to analysis provided by the 8260D method. In all cases, the higher of the two analytical results should be used.

Overall precision, accuracy, representativeness, comparability, completeness, and sensitivity of the data were adequate for the purposes of this project.

## Groundwater Gradient

Survey results and depth to water measurements recorded during the June 2022 sampling event were used to determine groundwater elevations. Gradient and flow direction were calculated using the EPA On-line Tools for Site Assessment Calculation (EPA, 2021). The hydraulic gradient was calculated to be 0.00065 feet per foot with flow to the west-southwest (275.5° from north; see Figure 2).

## Conclusions

This investigation confirms that contamination is present in the groundwater at the point of release. Based on the calculated groundwater flow and analytical results for the downgradient wells, contamination is not migrating outside of the source area. Based on this investigation and the previous soil investigation, contamination is still present in the soil and groundwater despite former removal actions. A conceptual site model is included in Attachment E, that visually presents the potential current and future exposure pathways described below.

The previous soil investigation determined that there is minimal risk of exposure to contaminated soil via direct contact pathways. The building, while close to the release location, is in the upgradient direction of the original point of release and risk of exposure via vapor intrusion is minimal, due to the separation between the source area and inhabited building spaces. The only interior space that is within 30 feet of the source area, and thus potentially impacted, is the boiler room. The only significant open exposure pathway is ingestion of contaminated groundwater. The groundwater at the site is not a current source of drinking water, so all exposure routes are currently controlled.

## Recommendations

ADS recommends the following actions at this site:

- quarterly groundwater monitoring of DRO and petroleum-related VOCs in MW-1 to evaluate seasonal highs and lows of source-area groundwater concentrations (for one year, in March, June, September, and December of 2023);
- quarterly measurement of groundwater elevations in all wells and recalculation of groundwater gradient and flow direction to determine if there are seasonal variations (concurrent with the above monitoring);
- annual groundwater monitoring of DRO and petroleum-related VOCs in all monitoring wells (starting in June 2023); and
- well casing elevation surveys in accordance with the ADEC Monitoring Well Guidance (2013) on an annual basis if frostjacking of well casings is observed.

Since the impacts to groundwater are isolated to the source area, natural attenuation with long-term monitoring of the site is the proposed remedial action. Annual groundwater monitoring results will be used to calculate trends in groundwater contaminant concentrations after a minimum of 4 annual monitoring events.

# Arctic Data Services

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Sincerely,  
Arctic Data Services, LLC

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## Attachments:

Table 1	Groundwater Sample Results
Figure 1	Site Location and Vicinity
Figure 2	Site Plan with Monitoring Well Locations
Attachment A	Site Photograph Log
Attachment B	Scanned Field Notes
Attachment C	Survey Report
Attachment D	Laboratory Report and ADEC Laboratory Data Review Checklist
Attachment E	Conceptual Site Model
Attachment F	ADEC comments

cc:

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## References

ADEC. Monitoring Well Guidance (September, 2013).

ADEC. Field Sampling Guidance (January, 2022).

ADS. Site Characterization Work Plan, University Park Condos, 656 Fairbanks St, Fairbanks, Alaska. (August, 2021).

ADS. Soil Investigation Report, Heating Oil Tank Release, University Park Condos, 656 Fairbanks St, Fairbanks AK. (November, 2021).

ADS. Groundwater Investigation Work Plan, University Park Condos, 656 Fairbanks St, Fairbanks, Alaska. (March, 2022).

EPA. EPA On-line Tools for Site Assessment Calculation. <https://www3.epa.gov/ceampubl/learn2model/part-two/onsite/gradient4plus-ns.html>. (August, 2021).



# TABLE 1

## GROUNDWATER SAMPLE RESULTS

<b>TABLE 1</b> <b>University Park Condominiums</b> <b>Groundwater Results Table</b>				Client Sample ID	UPC-MW1	UPC-MW2	UPC-MW3	UPC-MW4	UPC-MW11	Trip Blank 1
				SDG	1223225	1223225	1223225	1223225	1223225	1223225
				Lab Sample ID	1223225001	1223225002	1223225003	1223225004	1223225005	1223225006
				Matrix	Ground_Water	Ground_Water	Ground_Water	Ground_Water	Ground_Water	Ground_Water
				QC Type	Field_Sample	Field_Sample	Field_Sample	Field_Sample	Field Duplicate of 1223225001	Trip_Blank
Collected Date	06/17/2022 14:15:00	06/17/2022 12:48:00	06/17/2022 11:30:00	06/17/2022 10:30:00	06/17/2022 15:15:00	06/17/2022 08:00:00				
Method	Analyte	CAS	Units	PAL	Result					
8260D	1,2,4-Trimethylbenzene	95-63-6	µg/L	56	<b>71.0</b>	0.500 U	<b>0.352 J</b>	<b>2.65</b>	<b>70.5</b>	0.500 U
	1,2-Dibromoethane	106-93-4	µg/L	0.075	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U
	1,2-Dichloroethane	107-06-2	µg/L	1.7	0.250 U	<b>0.231 J</b>	<b>0.281 J</b>	<b>0.252 J</b>	<b>0.267 J</b>	0.250 U
	1,3,5-Trimethylbenzene	108-67-8	µg/L	60	<b>33.8</b>	0.500 U	0.500 U	0.500 U	<b>33.0</b>	0.500 U
	Benzene	71-43-2	µg/L	4.6	<b>3.51</b>	0.200 U	<b>0.225 J</b>	<b>1.37</b>	<b>3.60</b>	0.200 U
	Ethylbenzene	100-41-4	µg/L	15	<b>9.17</b>	0.500 U	0.500 U	<b>1.40</b>	<b>8.58</b>	0.500 U
	Isopropylbenzene	98-82-8	µg/L	450	<b>3.20</b>	0.500 U	<b>0.904 J</b>	<b>1.17</b>	<b>3.21</b>	0.500 U
	Methyl-tert-butyl ether (MTBE)	1634-04-4	µg/L	140	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U
	Naphthalene	91-20-3	µg/L	1.7	<b>69.6</b>	0.500 U	0.500 U	0.500 U	<b>65.5</b>	0.500 U
	Toluene	108-88-3	µg/L	1100	<b>11.4</b>	0.500 U	0.500 U	<b>0.644 J</b>	<b>10.6</b>	0.500 U
	Xylene, Isomers m & p	179601-23-1	µg/L	NA	<b>100</b>	1.00 U	1.00 U	<b>2.13</b>	<b>88.3</b>	1.00 U
	Xylenes	1330-20-7	µg/L	190	<b>170</b>	1.50 U	1.50 U	<b>6.24</b>	<b>151</b>	1.50 U
	n-Butylbenzene	104-51-8	µg/L	1000	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U	0.500 U
	o-Xylene	95-47-6	µg/L	NA	<b>69.6</b>	0.500 U	0.500 U	<b>4.11</b>	<b>62.9</b>	0.500 U
sec-Butylbenzene	135-98-8	µg/L	2000	0.500 U	0.500 U	<b>0.452 J</b>	0.500 U	<b>2.08</b>	0.500 U	
tert-Butylbenzene	98-06-6	µg/L	690	0.500 U	0.500 U	<b>0.333 J</b>	0.500 U	<b>0.375 J</b>	0.500 U	
8270DSIM	1-Methylnaphthalene	90-12-0	µg/L	11	<b>1.48 J</b>	0.0250 U	0.0250 U	<b>0.183</b>	<b>0.710 J</b>	NA
	2-Methylnaphthalene	91-57-6	µg/L	36	0.0250 UJ	0.0250 U	0.0250 U	0.0245 U	0.0250 U	NA
	Acenaphthene	83-32-9	µg/L	530	<b>0.0783 J-</b>	0.0250 U	<b>0.0838</b>	0.0245 U	<b>0.0785</b>	NA
	Acenaphthylene	208-96-8	µg/L	260	0.0250 UJ	0.0250 U	0.0250 U	0.0245 U	0.0250 U	NA
	Anthracene	120-12-7	µg/L	43	0.0250 UJ	0.0250 U	0.0250 U	0.0245 U	0.0250 U	NA
	Benzo(a)anthracene	56-55-3	µg/L	0.3	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Benzo(a)pyrene	50-32-8	µg/L	0.25	0.0100 UJ	0.0100 UJ	0.0100 U	0.00980 U	0.0100 U	NA
	Benzo(b)fluoranthene	205-99-2	µg/L	2.5	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Benzo(g,h,i)perylene	191-24-2	µg/L	0.26	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Benzo(k)fluoranthene	207-08-9	µg/L	0.8	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Chrysene	218-01-9	µg/L	2	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Dibenzo(a,h)anthracene	53-70-3	µg/L	0.25	0.0100 UJ	0.0100 UJ	0.0100 U	0.00980 U	0.0100 U	NA
	Fluoranthene	206-44-0	µg/L	260	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Fluorene	86-73-7	µg/L	290	<b>0.0340 J-</b>	<b>0.0272 J</b>	<b>0.378</b>	<b>0.0738</b>	0.0250 U	NA
	Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	0.19	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA
	Naphthalene	91-20-3	µg/L	1.7	<b>0.168 J-</b>	0.0500 U	0.0500 U	<b>0.102</b>	0.0500 U	NA
	Phenanthrene	85-01-8	µg/L	170	0.0500 UJ	0.0500 U	<b>0.102</b>	0.0490 U	0.0500 U	NA
Pyrene	129-00-0	µg/L	120	0.0250 UJ	0.0250 UJ	0.0250 U	0.0245 U	0.0250 U	NA	
AK101	Gasoline Range Organics (C6-C10)	GRO-C6-C10	mg/L	2.2	<b>0.483</b>	<b>0.0467 J</b>	0.0500 U	0.0500 U	<b>0.478</b>	0.0500 U
AK102	Diesel Range Organics (C10-C25)	DRO-C10-C25	mg/L	1.5	<b>11.7</b>	<b>0.530 J</b>	<b>1.28</b>	<b>1.01</b>	<b>13.4</b>	NA

**Notes:**

**Bold** Analyte was detected.

**Red Highlight** Analyte was detected above PALs.

**Definitions:**

µg/L micrograms per liter  
mg/L milligrams per liter  
SDG sample delivery group  
CAS Chemical Abstract Service registry number  
QC quality control  
NA not applicable

**Flags:**

J The quantitation is considered estimated, with an indeterminate direction of bias.  
UJ The analyte was not detected, however there is uncertainty in the presence or absence of the analyte due to a QC anomaly.  
J- The quantitation is considered estimated, biased low, due to a QC anomaly.  
U The analyte was not detected.

**PAL Sources:**

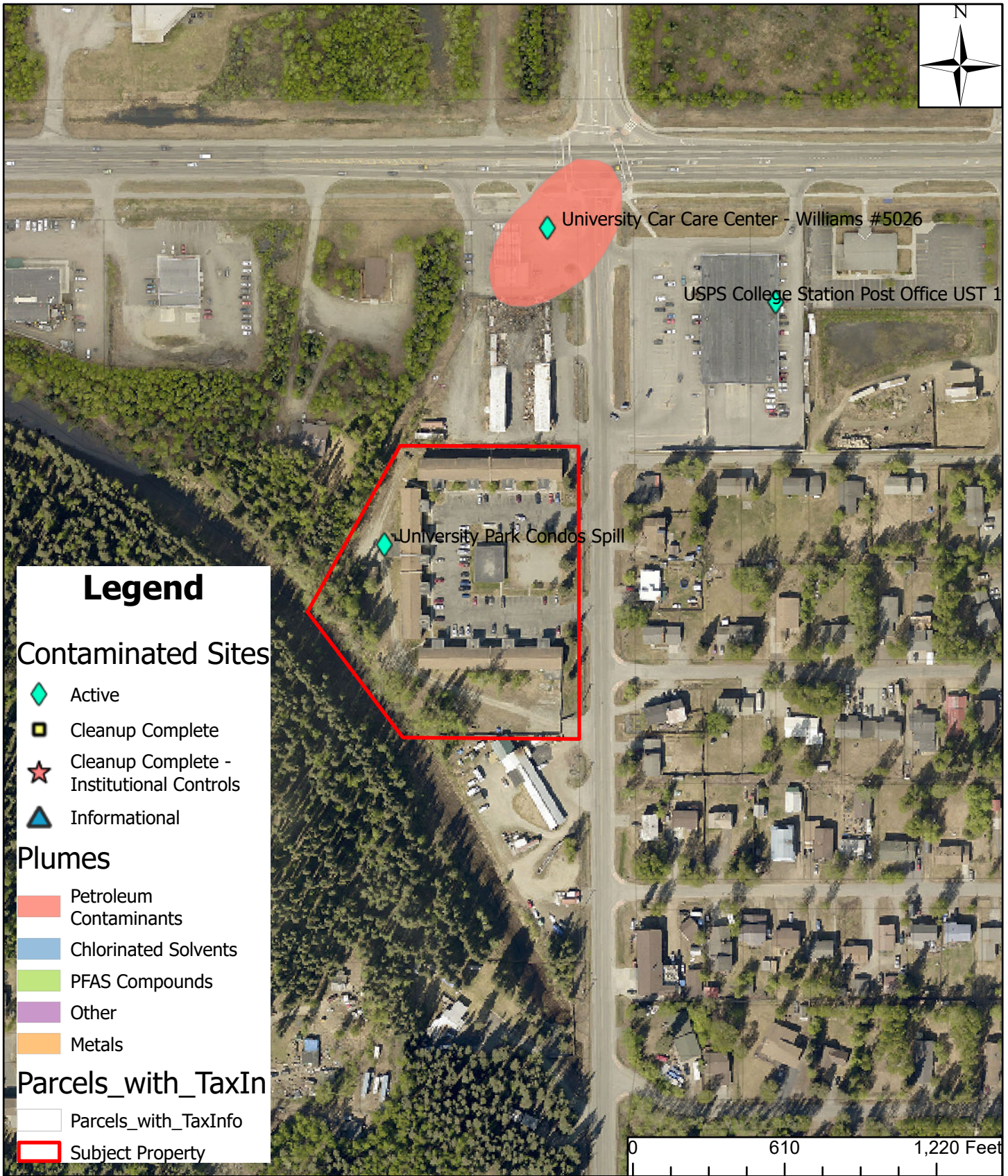
ADEC Table C GCL ADEC 18 AAC 75.345 Table C Groundwater Cleanup Levels

## FIGURES

**FIGURE 1**      **SITE LOCATION AND VICINITY**

**FIGURE 2**      **SITE PLAN WITH MONITORING WELL  
LOCATIONS**





### Legend

**Contaminated Sites**

- ◆ Active
- Cleanup Complete
- ★ Cleanup Complete - Institutional Controls
- ▲ Informational

**Plumes**

- Petroleum Contaminants
- Chlorinated Solvents
- PFAS Compounds
- Other
- Metals

**Parcels\_with\_TaxIn**

- Parcels\_with\_TaxInfo
- Subject Property

Figure 1 - Site Location and Vicinity  
656 Fairbanks St, Fairbanks, Alaska



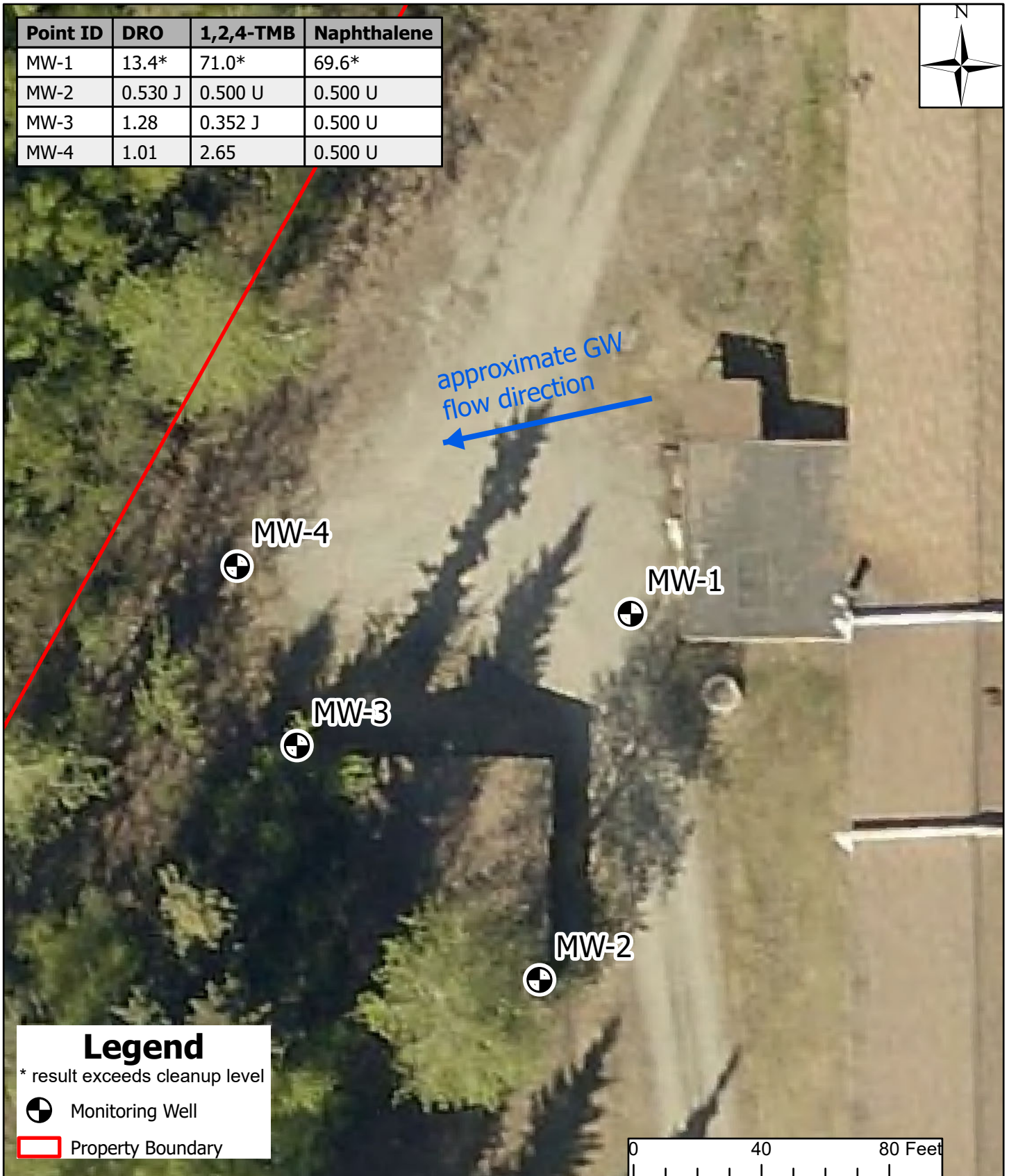
Project Number: E22003	Figure Number: <b>1</b>
Date: 2023-01-17	
Drafted By: R. Guritz	



Point ID	DRO	1,2,4-TMB	Naphthalene
MW-1	13.4*	71.0*	69.6*
MW-2	0.530 J	0.500 U	0.500 U
MW-3	1.28	0.352 J	0.500 U
MW-4	1.01	2.65	0.500 U



approximate GW  
flow direction



### Legend

\* result exceeds cleanup level

Monitoring Well

Property Boundary

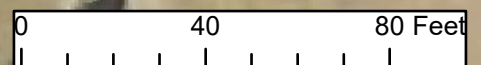


Figure 2 - Site Plan with Monitoring Well Locations  
656 Fairbanks St, Fairbanks, Alaska



Project Number: E22003	Figure Number: <b>2</b>
Date: 2023-01-18	
Drafted By: R. Guritz	

# ATTACHMENT A

## SITE PHOTOGRAPH LOG

2022 Monitoring well installation and sampling at U-Park Condos



Photo 1. Monitoring well installation. April 19, 2022



Photo 2. Sampling at MW-4 facing west. June 16, 2022





**Photo 3. Well development at MW-3 facing south. June 16, 2022**



**Photo 4. Waste containers at MW-3 facing south. June 16, 2022**

# ATTACHMENT B

SCANNED FIELD NOTES



U-PARK CONDOS 04/19/22

07:45 - S. SOYCE START MD

07:55 - ON SITE

CONDITIONS: SUNNY, 28°, 8 MPH WIND

08:00 - DRILLERS ON SITE, PERFORMED  
SITE WALKTHROUGH08:15 - UNLOADING DRILL RIG, <sup>VERIFIED</sup> MW <sup>LOCATION</sup> w/VIEW

08:30 TAILGATE SAFETY MEETING

08:35 - DRILLING FOR WATER DEPTH

AT MW-4 w/ MACROCORE

SEE INSULATION LOG FOR DETAILS

09:00 - BEGN INSTALLING MW-4 (SDD MW  
INSTALL LOG)

WATER AT 13'6" w/ VLI

09:50 Set stickup monument

10:00 Installing MW-3 (SEE MW INSTALL  
LOG FOR DETAILS)

11:00 SET STICKUP MONUMENT

11:15 INSTALLING MW-2 (SEE MW INSTALL  
LOG FOR DETAILS)

12:10 SET STICKUP MONUMENT

12:30 INSTALLING MW-1 (SEE MW INSTALL  
LOG FOR DETAILS)

13:15 SET STICKUP MONUMENT

13:20 CLEANING SITE, LOADING DRILL RIG

14:00 S. SOYCE OFF SITE, BEGN DEMO

15:00 RETURNED TO SITE, PAINTED <sup>MW MONUMENT</sup> YELLOW

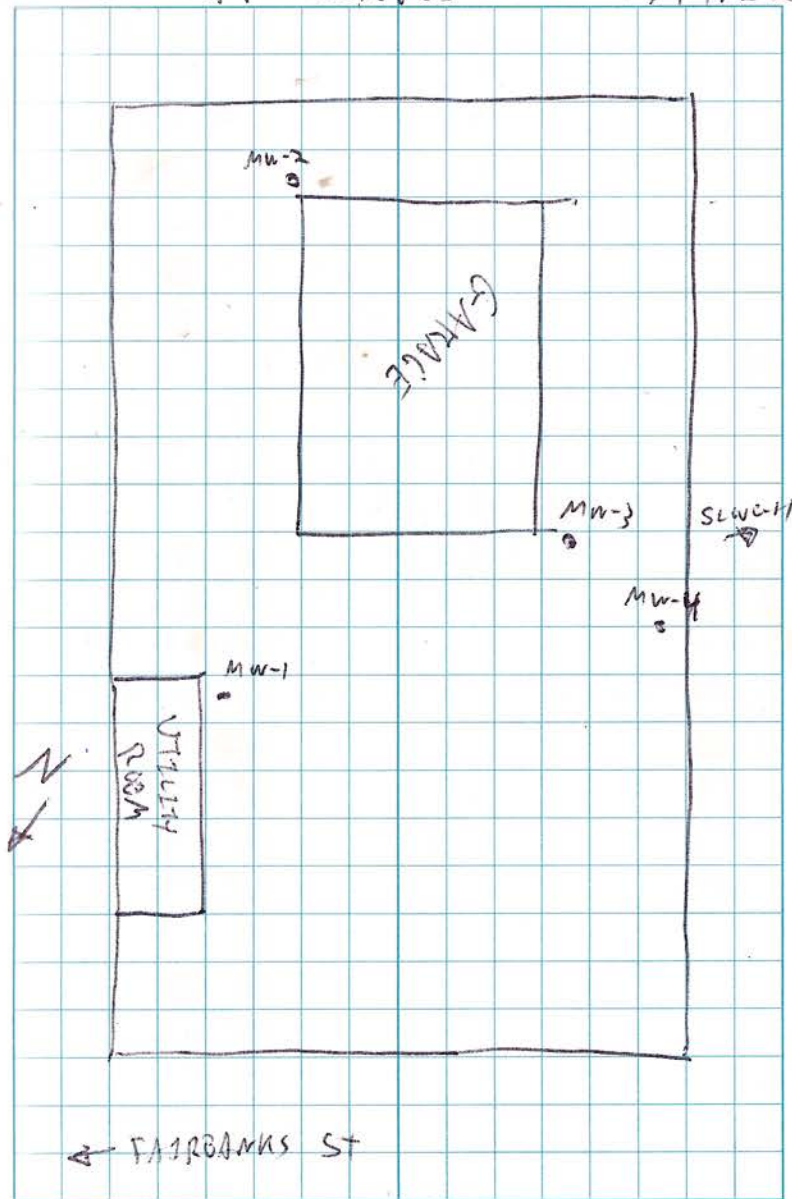
15:30 MARKED NORTH ON MW CASING FOR SURVEYOR

15:45 GEOTEK ADDED MESSING P&A GRAVEL TO OF MW-1 <sup>MONUMENT</sup>

16:00 S. SOYCE OFF SITE, STOP TIME

U-PARK CONDOS

04/19/22



<b>Monitoring Well Installation Diagram</b>		<b>Boring/Monitoring Well ID:</b> MW-1	
<b>Project Name:</b> U-PARK CONDOS		<b>Driller:</b> GEOTEK	
<b>Project Number:</b> E22009		<b>Drilling Method:</b> DIRECT PUSH	
<b>Client:</b> U-PARK CONDO ASSOC.		<b>Monitoring Well Details</b>	
<b>Field Scientist:</b> SCOTT SOYLE		Casing Diameter (in): 2	
<b>Site Address:</b> 565 FAIRBANKS ST		Total Well Depth (ft BTOC): 16.6	
<b>Date of Construction:</b> 04/19/12		Top of Casing Elevation:	
		Stickup?	<input checked="" type="checkbox"/>
		Flush Mount?	<input type="checkbox"/>

Well Construction Details	Depth (ft bgs)	Lithologic Description and Remarks	PID Reading (PPM)	Sample ID	
	0-2.5	BROWN SILT w/ GRAVEL	3.9	0-2.5	
	2.5-5	BROWN SILTY SAND w/ GRAVEL	7.9	2.5-5	
	5-7.5	BROWN SILTY SAND	36.7	5-7.5	
	7.5-10	BROWN SILTY SAND w/ GRAVEL	32.8	7.5-10	
	10-12.5	SAT. GRAY SILTY SAND w/ GRAVEL	48.5	10-12.5	
	12.5-15	SAT. GRAY SILTY SAND	69.1	12.5-15	
	15-17.5	SAT. GRAY SILTY SAND w/ GRAVEL	64.1	15-17.5	
	17.5-20	SAT. GRAY SILTY SAND	79.2	17.5-20	

**Comments:**

SLIGHT H.C. ODOR BETWEEN 7.5-10 FT

H.C. ODOR BETWEEN 10-20 FT

VTSLE ~~STILLING~~ INSIDE 16-18 FT

16:00 - STOP TIME

15:45 - GEOTEK ADDS PEAS TO MOUNTAIN

15:30 - MARKED HOLE ON CASING FOR SURVEYOR

15:00 - RETURNED TO SITE

13:45 - LEAVING RLG

14:00 - OFF SITE

12:30 - BEGIN INSTALLING MW-1

13:20 - CLEARING SITE

16.6' = BTOC

WATER = 14.1'

13:15 - MW-1 INSTALL COMPLETE

3.5' - 0' = PEA GRAVEL

7' - 3.5' = BENTONITE

19' - 7' = SAND



**Monitoring Well Installation Diagram**

Boring/Monitoring Well ID: MW-2

Project Name: V-PARK CONDO

Driller: GEOTEK

Project Number: E22009

Drilling Method: DIRECT PUSH

Client: V-PARK CONDO ASSOC.

Field Scientist: SCOTT JOYCE

Site Address: 565 FAIRBANKS ST

Date of Construction: 04/19/22

**Monitoring Well Details**

Casing Diameter (in): 2

Total Well Depth (ft BTOC): 17.2'

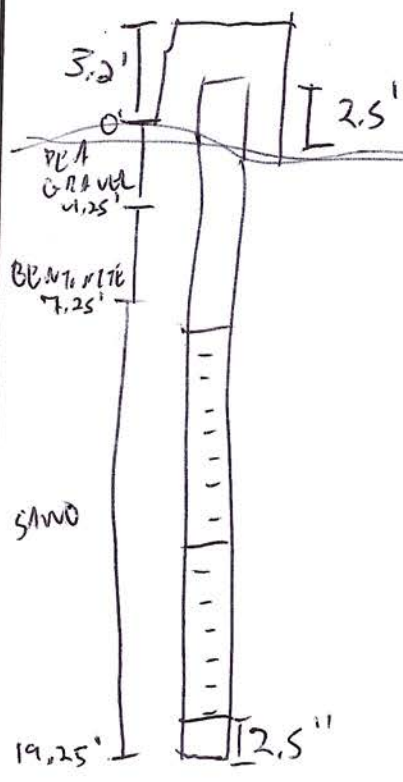
Top of Casing Elevation:

Stickup?

Flush Mount?

**Well Construction Details**

Depth (ft bgs)	Lithologic Description and Remarks	PID Reading (PPM)	Sample ID
0-5	SAT. BROWN SANDY SILT	0.8	0-2.5
		0.9	2.5-5
5-10	SAT. BROWN SANDY SILT	0.3	5-7.5
		0.8	7.5-10
10-15	SAT. BROWN SANDY SILT	1.2	10-12.5
		1.0	12.5-15
15-20	SAT. BROWN SANDY SILT W/ GRAVEL	1.2	15-17.5
		1.7	17.5-20



**Comments:**

OS - ADDING  
~~PEA~~  
 SAND  
 - INSURE  
 MONUMENT

4.25' - 0 = PEA GRAVEL  
 7.75' - 4.25' = BENTONITE  
 19.25' - 7.75' = SAND

WATER = 14'  
 BTL = 17.2'

**Monitoring Well Installation Diagram** Boring/Monitoring Well ID: MW-3

Project Name: U Park Condos  
 Project Number: E22008  
 Client: U Park Condos  
 Field Scientist: RDG/SJ  
 Site Address: 565 FAIRBANKS ST  
 Date of Construction: 04/19/22

Driller: GEOTEK  
 Drilling Method: DIRECT PUSH

Monitoring Well Details	
Casing Diameter (in):	<u>2</u>
Total Well Depth (ft BTOC):	<u>16.1'</u>
Top of Casing Elevation:	
Stickup?	<input checked="" type="checkbox"/>
Flush Mount?	

Well Construction Details	Depth (ft bgs)	Lithologic Description and Remarks	PID Reading (PPM)	Sample ID	FT BGS
	0-1	? cut w/ water	1.0		0-2.5
	1-2	brn. sandy gravel			
	2-3.5	brn. sandy silt fine grav.	0.8		2.5-5
	3.5-5	brn. silty sandy gravel			
	5-10	brn. silty sandy gravel	1.1		5-7.5
			0.7		7.5-10
	10-13	brn. sand/silt layered	0.9		10-12.5
	13-14.5	fine grey sand/silt, sat.			
	14.5-15	brn. coarse gravel	1.0		12.5-15
	15-17	grey sandy fine gravel	2.0		15-17.5
17-20	grey med-coarse sand, sat.	1.5		17.5-20	

**Comments:**  
 KALM H.C. OOR @ 15-17.5

9-19' ~~20.8'~~ WATER 13' 6"  
 MW-3 =  
 MW-4 = 20.8' BTOC



WELL 9-19 FT

<b>Monitoring Well Installation Diagram</b>		<b>Boring/Monitoring Well ID:</b> MW-4	
<b>Project Name:</b> U-PARK CONDO		<b>Driller:</b> GEOTEK	
<b>Project Number:</b> E22003		<b>Drilling Method:</b> DIRECT PUSH	
<b>Client:</b> U-PARK CONDO ASSOCIATES		<b>Monitoring Well Details</b>	
<b>Field Scientist:</b> SCOTT JOYCE	<b>Casing Diameter (in):</b>	2	
<b>Site Address:</b> 656 FAIRBANKS ST	<b>Total Well Depth (ft BTOC):</b>	<del>20.8</del> 15.3	
<b>Date of Construction:</b> 04/19/2022	<b>Top of Casing Elevation:</b>		
	<b>Stickup?</b> <input checked="" type="checkbox"/>	<b>Flush Mount?</b>	

Well Construction Details	Depth (ft bgs)	Lithologic Description and Remarks	PID Reading (PPM)	Sample ID	F1 BGS	
	0-1	FROZEN SILTY GRAVEL	1.5	4	0-2.5	
	0-2.5	GRAY SILT 5% RECOVERY				
	0-1.4	GRAY SANDY COARSE GRIND				
	2.5-5	CHUNKS OF WHITE CLAY AT 4.5 FT	0.5	2	2.5-5	
	5-10	BROWN SANDY 70% GRAVEL RECOVERY	0.6	3	5-7.5	
			0.2		17.5-10	
	10-12	BROWN SILT	0.4		10-12.5	
	12-12.5	BROWN SANDY GRAVEL	0.9		10-13	
	12.5-14	BROWN SAND			12.5-15	
	14-15	FINE SAND + BROWN 3-4 GRAVEL WATER BETWEEN	0.7			
	15-17	WET BROWN SAND	0.2		13-16	
	17-19	BROWN SANDY SILT	0.4		16-19	

**Comments:** Water at 13-14 and likely low, setting well 9-19' After install water stabilized at 15.3 ft BTOC ~13.3 ft. bgs  
 WATER AT 13'6" WITH WLI

~~HOLE COLLAPSED~~  
 SAND HEAVE, WELL DEPTH NOW ~18'  
 18'-8' = SAND  
 8'-3' = ODONTOMITE  
 3'-0' = YEA GRAVEL



6/17/22 RG/SS

## U. Park Condos - GW Sampling

- 0845 Arrived on site.  
 weather clear, sunny,  
 ~65°F, still  
 starting w/ MW-4  
 YSI dead, going to get  
 batteries + tubing  
 Calibrated DO @ 400%  
 reading = 98.3 %  
 All other sensors calibrated  
 by TTT in accordance w/  
 manufacturer instructions
- ~~1000~~<sup>1006</sup> MW-4 developed, switching  
 to sampling ~~at~~ UPC-MW4 @ 1030
- 1030 Scott developing MW-3 w/  
 water
- 1100 Start sampling at MW-~~4~~<sup>3</sup>  
 sample UPC-MW3 @ 1130
- 1140 lunch break
- 1120 Scott started developing MW2  
 w/water
- 1200 Switched to sub pump  
 sample UPC-MW2 @ 1248
- 1230 Scott developing MW-1  
 near ysheen

1340 Purging MW-1 w/sub. pump  
 sheen on purge water  
 not using YSI to avoid  
 damaging membranes/contamin  
 flow-through cell  
 see sampling logs for  
 details re: all wells  
 Collected UPC-MW1 @ 1415  
 and dup. UPC-MW1 @ 1515



**Groundwater Development Log**

Project Number: E22003 Sample Location (ie. MW1): MW-1  
 Project Name: U-PARK CONDOS Sample ID: N/A  
 Client: U-PARK CONDO ASSC. Date Sample Collected: 6/17/22  
 Sampler: RG/SS Time sampled: N/A

**Well Information**

Groundwater: Yes Casing Diameter (in): 2 a) Well Depth (ft): 21.44  
 Other: \_\_\_\_\_ b) Water Depth (ft): 12.29  
 c) Water Column (ft): \_\_\_\_\_  
 d) Pump Depth (ft): \_\_\_\_\_

**FIELD MEASUREMENTS**

Time	Volume (gallons)	DTW	Turbidity	Temperature (C)	Color	Notes
<u>1230</u>						<u>Scott using watterra to remove sediment</u>
<u>1300</u>	<u>12</u>					<u>switched to sub. pump - having problems w/pump</u>
<u>1310</u>	<u>15</u>					<u>pumped 2-3 gal along length of screen, turned down</u>
<u>1345</u>	<u>16</u>		<u>464.2</u>			
<u>1350</u>	<u>17</u>		<u>357.8</u>			
<u>1355</u>	<u>18</u>		<u>118.8</u>			
						<u>see sample log</u>

Total Volume Purged: \_\_\_\_\_ Free Product (y/n): \_\_\_\_\_  
 Odor: \_\_\_\_\_ Sheen (y/n): \_\_\_\_\_  
 Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.) \_\_\_\_\_

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.) \_\_\_\_\_

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.) \_\_\_\_\_

Remarks (well recovery, unusual conditions/observations): \_\_\_\_\_

Duplicate Sample ID: \_\_\_\_\_  
 Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22

Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

SEE SAMPLE LOG

**GROUNDWATER SAMPLE DATA SHEET**

Project Number: E22003 Sample Location (ie. MW1): MW-1  
 Project Name: U Park Condos Sample ID: UPC-MW1  
 Client: U-PARK CONDO ASSC. Date Sample Collected: 6/17/22  
 Sampler: RG/SJ Time sampled: 14:15

**Well Information**

Groundwater: Yes Casing Diameter (in): 2 a) Well Depth (ft): 21.44  
 Other: \_\_\_\_\_ b) Water Depth (ft): 12.79  
 c) Water Column (ft): 9.15  
 d) Pump Depth (ft): ~13

**FIELD MEASUREMENTS**

Time	Volume (gallons)	pH	Conductivity (mS)	Temperature (C)	Color	Turbidity	Redox	Dissolved O <sub>2</sub>	DTW
Due to sheen, not collecting parameters Purging till water clear, > 3x well volumes									
14:05	<del>21</del>					46.02			15.35
14:05						30.53			↓
14:10						21.91			
14:15						16.23			

Total Volume Purged: \_\_\_\_\_ Free Product (y/n): N  
 Odor: Diesel odor (acid) Sheen (y/n): Y

Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
Sub. pump (Geosub 2)

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
same

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)  
Good condition stickup

Remarks (well recovery, unusual conditions/observations):  
Good recovery. slow to clear up

Duplicate Sample ID: UPC-MW1 @ 15:15  
 Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22

Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_



**Groundwater Development Log**

Project Number: E22003 Sample Location (ie. MW1): MW-2  
 Project Name: V-PARK CARDOO Sample ID: JRC-MW2  
 Client: V-PARK CARDOO ASSC. Date Sample Collected: 06/17/22  
 Sampler: RG/SS Time sampled: 12:48

**Well Information**

Groundwater: Yes Casing Diameter (in): 2 a) Well Depth (ft): 21.86  
 Other: \_\_\_\_\_ b) Water Depth (ft): 12.83  
 c) Water Column (ft): 9.06  
 d) Pump Depth (ft): ~10.00

**FIELD MEASUREMENTS**

Time	Volume (gallons)	DTW	Turbidity	Temperature (C)	Color	Notes
~1140	~10					pumped w/ wattera to remove bulk sediment
~1200	~15					pumped 5 gal @ high flow w/sub pump along full length of screen
1215	~17		315		light grey	
1218	17.5	12.84	304		↓	
1221	18	12.87	208			
1225	19		114			clear
1230	20					switched to sampling w/IST

Total Volume Purged: \_\_\_\_\_ Free Product (y/n): \_\_\_\_\_  
 Odor: \_\_\_\_\_ Sheen (y/n): \_\_\_\_\_  
 Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.) \_\_\_\_\_  
 Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.) \_\_\_\_\_  
 Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.) \_\_\_\_\_  
 Remarks (well recovery, unusual conditions/observations): \_\_\_\_\_  
 Duplicate Sample ID: \_\_\_\_\_  
 Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22  
 Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

SEE SAMPLE LOG

**GROUNDWATER SAMPLE DATA SHEET**

Project Number: EJ2003 Sample Location (ie. MW1): MW-2  
 Project Name: U Park Condos Sample ID: UPC-MW2  
 Client: U Park Condo Assoc Date Sample Collected: 6/17/22  
 Sampler: AG/SJ Time sampled: 1248

**Well Information**

Groundwater: Yes Casing Diameter (in): 2 a) Well Depth (ft): 21.86  
 b) Water Depth (ft): 12.86  
 Other: \_\_\_\_\_ c) Water Column (ft): 9.06  
 d) Pump Depth (ft): 11.8

**FIELD MEASUREMENTS**

Time	Volume (gallons)	pH	Conductivity (mS/cm)	Temperature (C)	Color	Turbidity	Redox	Dissolved O <sub>2</sub> (mg/L)	DTW
1236	20.5	5.38	533	7.61	clear	64.3	397.4	5.68	12.85
1233	21	5.25	517	7.37	"	47.6	388.2	1.89	-
1236	21.5	5.29	516	7.26	"	39.14	392.0	1.48	12.88
1239	22	5.47	518	7.39	"	27.24	395.2	1.51	-
1243	22.5	5.76	516✓	7.25	"	24.62	397.5✓	1.28	12.86
1246	23	5.90	513✓	7.18	"		397.3✓	1.24✓	-

Total Volume Purged: \_\_\_\_\_ Free Product (y/n): N  
 Odor: None Sheen (y/n): N

Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.)

Sub. Pump (Geo sub 2)

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.)

same

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)

Good condition stickup

Remarks (well recovery, unusual conditions/observations):

Good recharge clear water

Duplicate Sample ID: \_\_\_\_\_

Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22

Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_



**Groundwater Development Log**

Project Number: E22003 Sample Location (ie. MW1): MW-3  
 Project Name: V-PARK CONDO Sample ID: UPC-MW3  
 Client: V-PARK CONDO ASSC. Date Sample Collected: 06/17/22  
 Sampler: SCOTT SOYCE/RG Time sampled: 11:30

**Well Information**

Groundwater: Yes Casing Diameter (in): 2" a) Well Depth (ft): 21.78  
 Other: \_\_\_\_\_ b) Water Depth (ft): 11.85  
 c) Water Column (ft): 9.93  
 d) Pump Depth (ft): ~12.8

**FIELD MEASUREMENTS**

Time	Volume (gallons)	DTW	Turbidity	Temperature (C)	Color	Notes
10:15	7.1		OR		DARK, CLOUDY	EMPTY H.C. ODOOR
10:55	8		191.9		SILTY	CLOUDY
11:00	9.5		101.0		CLEAR	
11:05	~11		46.8		clear	
11:10	~13		83.8		CLEAR	
11:15	~15		32.7		"	
switching to sampling log, connecting YSI						

Total Volume Purged: ~20 Free Product  Odor: NONE Sheen

Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
WATERBURY TUBING W/ FOOT VALVE, SUBMERSIBLE PUMP

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
SUBMERSIBLE PUMP

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)  
GOOD

Remarks (well recovery, unusual conditions/observations):  
GOOD RECHARGE CLEAR WATER

Duplicate Sample ID: \_\_\_\_\_  
 Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22

Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

**GROUNDWATER SAMPLE DATA SHEET**

Project Number: U Park Condos Sample Location (ie. MW1): MW-3  
 Project Name: U Sample ID: UPC-MW3  
 Client: " " Date Sample Collected: 6/17/22  
 Sampler: RG/SS Time sampled: 11:00

**Well Information**

Groundwater: Yes Casing Diameter (in): 2 a) Well Depth (ft): 21.78  
 b) Water Depth (ft): 11.85  
 Other: \_\_\_\_\_ c) Water Column (ft): 9.93  
 d) Pump Depth (ft): avg 12.5

**FIELD MEASUREMENTS**

Time	Volume (gallons)	pH	Conductivity (µS/cm)	Temperature (C)	Color	Turbidity NTU	Redox	Dissolved O <sub>2</sub>	DTW
11:15	<del>15.20</del>	5.52	504	4.90	clear	25.8	373.1	3.80	11.87
11:18		5.83	505	4.57		22.71	376.8	1.38	
11:21	22	4.86	504 ✓	4.44		18.47	377.3	0.70	11.89
11:24		4.78	506 ✓	4.57		17.96	377.8	0.45	11.89
11:27	20	4.80 ✓	507 ✓	4.64	↓	18.11 ✓	377.4 ✓	0.31	11.87

Total Volume Purged: ~20 Free Product (y/n): N  
 Odor: Faint hydrogen/anaerobic odor Sheen (y/n): N

Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
Sub. pump (GeoSub 2)

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
same

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)  
Good cond. stickup

Remarks (well recovery, unusual conditions/observations):  
Good recharge clear water

Duplicate Sample ID: \_\_\_\_\_  
 Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22

Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_



**Groundwater Development Log**

Project Number: E22003 Sample Location (ie. MW1): MW-4  
 Project Name: U-PARK CONDO Sample ID: N/A  
 Client: U-PARK CONDO ASSC. Date Sample Collected: \_\_\_\_\_  
 Sampler: SCOTT SOYLE Time sampled: \_\_\_\_\_

**Well Information**

Groundwater: Yes Casing Diameter (in): 2" a) Well Depth (ft): 20.69  
 b) Water Depth (ft): 11.11  
 Other: \_\_\_\_\_ c) Water Column (ft): 9.58  
 d) Pump Depth (ft): N/A

**FIELD MEASUREMENTS**

Time	Volume (gallons)	DTW	Turbidity	Temperature (C)	Color	Notes
09:30	~1		OR		Pink, (low)	
09:35	~2				dark grey	
09:40	~3		492		dark grey	
09:56	~10		58.93		clear	Switched to sub pump
10:06	~17		31.61			
10:08	~18		24.33			
10:09	~19		24.88			
10:10	20		16.40			

Total Volume Purged: \_\_\_\_\_ Free Product (y/n) \_\_\_\_\_  
 Odor: \_\_\_\_\_ Sheen (y/n) \_\_\_\_\_

Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
WATER A tubing + fast valve, followed by sub. pump (600 sub)

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.)  
cleared up quick after switching to sub pump

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)  
Good

Remarks (well recovery, unusual conditions/observations):  
OR = over range

Duplicate Sample ID: \_\_\_\_\_  
 Split Sample ID: \_\_\_\_\_

Signed: [Signature] Date: 06/17/22

Signed/reviewer: \_\_\_\_\_ Date: \_\_\_\_\_

**GROUNDWATER SAMPLE DATA SHEET**

Project Number: \_\_\_\_\_ Sample Location (ie. MW1): MW-4  
 Project Name: U Park Condos Sample ID: UFC-MW4  
 Client: " " Date Sample Collected: 6/7/22  
 Sampler: RDG/SJ Time sampled: 1830

**Well Information**

Groundwater: Yes Casing Diameter (in): 2 a) Well Depth (ft): 28.69 BTAC  
 b) Water Depth (ft): 11.11  
 Other: \_\_\_\_\_ c) Water Column (ft): 9.58  
 d) Pump Depth (ft): ~12 Fe.

**FIELD MEASUREMENTS**

Time	Volume (gallons)	pH	Conductivity (µS/cm)	Temperature (C)	Color	Turbidity	mV Redox	mg/L Dissolved O <sub>2</sub>	DTW
1015	20	5.21	464	5.50	clear	N/A			
1818	20.5	4.58	449	4.73	"		395.1	4.0.55	11.13
1821	21	4.41	447	4.53	"		394.9	0.34	11.13
1825	21.5	4.28	450	4.81	"		386.1	0.24	11.13
1828	22	4.28	428	5.53	"		387.3	0.92	11.13
<u>&gt;3x well volume purged, sampling</u>									

Total Volume Purged: 22.5 Free Product (y/n): N  
 Odor: \_\_\_\_\_ Sheen (y/n): N

Purge Method (disposable bailer, peristaltic pump, submersible pump, etc.)

Sub. pump (60 sub 2)

Sample Method (disposable bailer, peristaltic pump, submersible pump, etc.)

same

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.)

Good condition stickup

Remarks (well recovery, unusual conditions/observations):

Developed great, clear water

Duplicate Sample ID: \_\_\_\_\_

Split Sample ID: \_\_\_\_\_

Signed: [Signature]

Date: 06/17/22

Signed/reviewer: \_\_\_\_\_

Date: \_\_\_\_\_



# ATTACHMENT C

## SURVEY REPORT



August 27, 2022

Mr. Rodney Guritz  
Arctic Data Services  
250 Cushman Street, Suite 3D  
Fairbanks, AK 99701

Dear Mr. Guritz,

This letter is to serve as our Survey Report for the University Park Condominiums Site monitor well survey.

The Horizontal Datum utilized to establish the coordinates for this project is NAD\_83(2011) Epoch 2010.0000, and the Vertical Datum is NAVD88 computed using Geoid12B. The Basis of Coordinates for this work is the 2022 OPUS solution for August 1, 2022 data on Point 600 (see attached NGS OPUS solution).

The monitor well locations static GNSS field survey was conducted on August 1, 2022 utilizing 5 JAVAD Triumph GNSS receivers. A least squares adjustment was performed in JAVAD's Justin software on the post-processed static GNSS data for all environmental points positioned, and the Root Mean Square Error (RMSE) did not exceed 0.006 feet on the northing, easting and/or ground elevation determinations. This is well within the Alaska Department of Environmental Conservation's - Monitoring Well Guidance (2013) Survey Quality Specifications of 1 foot for horizontal positioning.

The Basis of Elevations is the August 1<sup>st</sup> OPUS Solution on Point 600 with its NAVD88 orthometric height (computed using Geoid12B) listing of 132.489 meters (refer to attached NGS OPUS solution). Elevations were established on the top of PVC of each well. A Leica DNA03 level and a fiberglass Leica rod were utilized on August 1, 2022 to complete the level loops that established these elevations.

**Windy Creek Surveys - Monitor Well Survey Data**

**Arctic Data Services - University Park Condominiums**

Point ID	NAD83(2011) Alaska State Plane, Zone 3		NAVD88 Elevation	
	Northing	Easting	Ground	Top of PVC
MW-1	3968297.0523	1355317.4278	435.51	436.43
MW-2	3968248.6985	1355303.8694	435.71	436.94
MW-3	3968280.7952	1355272.4472	434.53	435.94
MW-4	3968304.8907	1355265.1562	433.80	435.24

Survey Data deliverables include a comma delimited file including all of the monitor wells positions, along with a .pdf copy of the OPUS solution.

Sincerely,

Eric J. Cousino, PLS

# **ATTACHMENT D**

## **LABORATORY REPORT AND ADEC LABORATORY DATA REVIEW CHECKLIST**



## Laboratory Report of Analysis

To: Arctic Data Services LLC  
250 Cushman Street, Suite 3D  
Fairbanks, AK 99701  
(907)457-3147

Report Number: **1223225**

Client Project: **2022-U-Park GW Investigation**

Dear Rodney Guritz,

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

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

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

Sincerely,  
SGS North America Inc.

Stephen C. Ede

2022.07.26

09:10:42 -08'00'

Jennifer Dawkins  
Project Manager  
Jennifer.Dawkins@sgs.com

Date

### Case Narrative

SGS Client: **Arctic Data Services LLC**  
SGS Project: **1223225**  
Project Name/Site: **2022-U-Park GW Investigation**  
Project Contact: **Rodney Guritz**

Refer to sample receipt form for information on sample condition.

**UPC-MW1 (1223225001) PS**

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 and Fluoranthene-d10 do not meet QC criteria. Sample was re-extracted outside of hold time and results confirm. The in-hold data is reported.

**UPC-MW2 (1223225002) PS**

8270D SIM - PAH surrogate recovery for Fluoranthene-d10 does not meet QC criteria. Sample was re-extracted outside of hold time and results confirm. The in-hold data is reported.

**LCS for HBN 1839011 [VXX/38769 (1670660) LCS**

8260D - LCS recoveries for bromomethane and methyl iodide do not meet QC criteria.

**LCSD for HBN 1839011 [VXX/3876 (1670661) LCSD**

8260D - LCSD recoveries for bromomethane and methyl iodide do not meet QC criteria.  
8260D - LCSD RPD for methyl iodide does not meet QC criteria.

\*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: 07/25/2022 12:22:38PM

### Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
<b>8270D SIM LV (PAH)</b>				
1669578	MB for HBN 1838638 [XXX/46478]	XMS13235	Phenanthrene	BLC
1673614	CVC for HBN 1839956 [XMS/13235]	XMS13235	Benzo[k]fluoranthene	RP

#### Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

### Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 DW Chemistry (Provisionally Certified as of 05/31/2022 for Nitrate as N by SM 4500NO3-F) & Microbiology & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020B, 7470A, 7471B, 8015C, 8021B, 8082A, 8260D, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). SGS is only certified for the analytes listed on our Drinking Water Certification (DW methods: 200.8, 2130B, 2320B, 2510B, 300.0, 4500-CN-C,E, 4500-H-B, 4500-NO3-F, 4500-P-E and 524.2) and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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

### Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
UPC-MW1	1223225001	06/17/2022	06/21/2022	Water (Surface, Eff., Ground)
UPC-MW2	1223225002	06/17/2022	06/21/2022	Water (Surface, Eff., Ground)
UPC-MW3	1223225003	06/17/2022	06/21/2022	Water (Surface, Eff., Ground)
UPC-MW4	1223225004	06/17/2022	06/21/2022	Water (Surface, Eff., Ground)
UPC-MW11	1223225005	06/17/2022	06/21/2022	Water (Surface, Eff., Ground)
Trip Blank 1	1223225006	06/17/2022	06/21/2022	Water (Surface, Eff., Ground)

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

Print Date: 07/25/2022 12:22:42PM



### Detectable Results Summary

Client Sample ID: **UPC-MW1**

Lab Sample ID: 1223225001

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	1.48	ug/L
Acenaphthene	0.0783	ug/L
Fluorene	0.0340J	ug/L
Naphthalene	0.168	ug/L
<b>Semivolatile Organic Fuels</b>	Diesel Range Organics	11.7 mg/L
<b>Volatile Fuels</b>	Gasoline Range Organics	0.483 mg/L
<b>Volatile GC/MS- Petroleum VOC Group</b>	1,2,4-Trimethylbenzene	71.0 ug/L
	1,3,5-Trimethylbenzene	33.8 ug/L
	Benzene	3.51 ug/L
	Ethylbenzene	9.17 ug/L
	Isopropylbenzene (Cumene)	3.20 ug/L
	Naphthalene	69.6 ug/L
	o-Xylene	69.6 ug/L
	P & M -Xylene	100 ug/L
	Toluene	11.4 ug/L
	Xylenes (total)	170 ug/L

Client Sample ID: **UPC-MW2**

Lab Sample ID: 1223225002

**Polynuclear Aromatics GC/MS**

**Semivolatile Organic Fuels**

**Volatile Fuels**

**Volatile GC/MS- Petroleum VOC Group**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Fluorene	0.0272J	ug/L
Diesel Range Organics	0.530J	mg/L
Gasoline Range Organics	0.0467J	mg/L
1,2-Dichloroethane	0.231J	ug/L

Client Sample ID: **UPC-MW3**

Lab Sample ID: 1223225003

**Polynuclear Aromatics GC/MS**

**Semivolatile Organic Fuels**

**Volatile GC/MS- Petroleum VOC Group**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Acenaphthene	0.0838	ug/L
Fluorene	0.378	ug/L
Phenanthrene	0.102	ug/L
<b>Semivolatile Organic Fuels</b>	Diesel Range Organics	1.28 mg/L
<b>Volatile GC/MS- Petroleum VOC Group</b>	1,2,4-Trimethylbenzene	0.352J ug/L
	1,2-Dichloroethane	0.281J ug/L
	Benzene	0.225J ug/L
	Isopropylbenzene (Cumene)	0.904J ug/L
	sec-Butylbenzene	0.452J ug/L
	tert-Butylbenzene	0.333J ug/L

### Detectable Results Summary

Client Sample ID: **UPC-MW4**

Lab Sample ID: 1223225004

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.183	ug/L
Fluorene	0.0738	ug/L
Naphthalene	0.102	ug/L
Diesel Range Organics	1.01	mg/L

**Semivolatile Organic Fuels**

**Volatile GC/MS- Petroleum VOC Group**

1,2,4-Trimethylbenzene	2.65	ug/L
1,2-Dichloroethane	0.252J	ug/L
Benzene	1.37	ug/L
Ethylbenzene	1.40	ug/L
Isopropylbenzene (Cumene)	1.17	ug/L
o-Xylene	4.11	ug/L
P & M -Xylene	2.13	ug/L
Toluene	0.644J	ug/L
Xylenes (total)	6.24	ug/L

Client Sample ID: **UPC-MW11**

Lab Sample ID: 1223225005

**Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	0.710	ug/L
Acenaphthene	0.0785	ug/L
Diesel Range Organics	13.4	mg/L
Gasoline Range Organics	0.478	mg/L

**Semivolatile Organic Fuels**

**Volatile Fuels**

**Volatile GC/MS- Petroleum VOC Group**

1,2,4-Trimethylbenzene	70.5	ug/L
1,2-Dichloroethane	0.267J	ug/L
1,3,5-Trimethylbenzene	33.0	ug/L
Benzene	3.60	ug/L
Ethylbenzene	8.58	ug/L
Isopropylbenzene (Cumene)	3.21	ug/L
Naphthalene	65.5	ug/L
o-Xylene	62.9	ug/L
P & M -Xylene	88.3	ug/L
sec-Butylbenzene	2.08	ug/L
tert-Butylbenzene	0.375J	ug/L
Toluene	10.6	ug/L
Xylenes (total)	151	ug/L



### Results of UPC-MW1

Client Sample ID: **UPC-MW1**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225001  
 Lab Project ID: 1223225

Collection Date: 06/17/22 14:15  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	1.48	0.0500	0.0150	ug/L	1		07/14/22 19:15
2-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Acenaphthene	0.0783	0.0500	0.0150	ug/L	1		07/14/22 19:15
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		07/14/22 19:15
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		07/14/22 19:15
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Fluorene	0.0340 J	0.0500	0.0150	ug/L	1		07/14/22 19:15
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
Naphthalene	0.168	0.100	0.0310	ug/L	1		07/14/22 19:15
Phenanthrene	0.0500 U	0.100	0.0310	ug/L	1		07/14/22 19:15
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:15
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	28.7	*	42-86	%	1		07/14/22 19:15
Fluoranthene-d10 (surr)	38.7	*	50-97	%	1		07/14/22 19:15

### Batch Information

Analytical Batch: XMS13235  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: DSD  
 Analytical Date/Time: 07/14/22 19:15  
 Container ID: 1223225001-I

Prep Batch: XXX46478  
 Prep Method: SW3535A  
 Prep Date/Time: 06/23/22 20:48  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

## Results of UPC-MW1

Client Sample ID: **UPC-MW1**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225001  
 Lab Project ID: 1223225

Collection Date: 06/17/22 14:15  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	11.7	0.588	0.196	mg/L	1		06/29/22 23:28
<b>Surrogates</b>							
5a Androstane (surr)	89.3	50-150		%	1		06/29/22 23:28

## Batch Information

Analytical Batch: XFC16272  
 Analytical Method: AK102  
 Analyst: MDT  
 Analytical Date/Time: 06/29/22 23:28  
 Container ID: 1223225001-G

Prep Batch: XXX46498  
 Prep Method: SW3520C  
 Prep Date/Time: 06/27/22 16:30  
 Prep Initial Wt./Vol.: 255 mL  
 Prep Extract Vol: 1 mL





Results of **UPC-MW1**

Client Sample ID: **UPC-MW1**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225001  
Lab Project ID: 1223225

Collection Date: 06/17/22 14:15  
Received Date: 06/21/22 09:30  
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	0.483	0.100	0.0450	mg/L	1		06/29/22 07:36
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	106	50-150		%	1		06/29/22 07:36

**Batch Information**

Analytical Batch: VFC16144  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 06/29/22 07:36  
Container ID: 1223225001-A

Prep Batch: VXX38779  
Prep Method: SW5030B  
Prep Date/Time: 06/28/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **UPC-MW1**

Client Sample ID: **UPC-MW1**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225001  
Lab Project ID: 1223225

Collection Date: 06/17/22 14:15  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

<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	71.0	1.00	0.310	ug/L	1		06/23/22 17:26
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		06/23/22 17:26
1,2-Dichloroethane	0.250 U	0.500	0.200	ug/L	1		06/23/22 17:26
1,3,5-Trimethylbenzene	33.8	1.00	0.310	ug/L	1		06/23/22 17:26
Benzene	3.51	0.400	0.120	ug/L	1		06/23/22 17:26
Ethylbenzene	9.17	1.00	0.310	ug/L	1		06/23/22 17:26
Isopropylbenzene (Cumene)	3.20	1.00	0.310	ug/L	1		06/23/22 17:26
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		06/23/22 17:26
Naphthalene	69.6	1.00	0.310	ug/L	1		06/23/22 17:26
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 17:26
o-Xylene	69.6	1.00	0.310	ug/L	1		06/23/22 17:26
P & M -Xylene	100	2.00	0.620	ug/L	1		06/23/22 17:26
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 17:26
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 17:26
Toluene	11.4	1.00	0.310	ug/L	1		06/23/22 17:26
Xylenes (total)	170	3.00	1.00	ug/L	1		06/23/22 17:26
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	115	81-118		%	1		06/23/22 17:26
4-Bromofluorobenzene (surr)	99.2	85-114		%	1		06/23/22 17:26
Toluene-d8 (surr)	101	89-112		%	1		06/23/22 17:26

**Batch Information**

Analytical Batch: VMS21721  
Analytical Method: SW8260D  
Analyst: JMG  
Analytical Date/Time: 06/23/22 17:26  
Container ID: 1223225001-D

Prep Batch: VXX38736  
Prep Method: SW5030B  
Prep Date/Time: 06/23/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **UPC-MW2**

Client Sample ID: **UPC-MW2**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225002  
Lab Project ID: 1223225

Collection Date: 06/17/22 12:48  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
2-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Acenaphthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		07/14/22 19:36
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		07/14/22 19:36
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Fluorene	0.0272 J	0.0500	0.0150	ug/L	1		07/14/22 19:36
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
Naphthalene	0.0500 U	0.100	0.0310	ug/L	1		07/14/22 19:36
Phenanthrene	0.0500 U	0.100	0.0310	ug/L	1		07/14/22 19:36
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		07/14/22 19:36
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	47.4	42-86		%	1		07/14/22 19:36
Fluoranthene-d10 (surr)	46.7 *	50-97		%	1		07/14/22 19:36

**Batch Information**

Analytical Batch: XMS13235  
Analytical Method: 8270D SIM LV (PAH)  
Analyst: DSD  
Analytical Date/Time: 07/14/22 19:36  
Container ID: 1223225002-I

Prep Batch: XXX46478  
Prep Method: SW3535A  
Prep Date/Time: 06/23/22 20:48  
Prep Initial Wt./Vol.: 250 mL  
Prep Extract Vol: 1 mL

## Results of UPC-MW2

Client Sample ID: **UPC-MW2**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225002  
 Lab Project ID: 1223225

Collection Date: 06/17/22 12:48  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	0.530 J	0.577	0.192	mg/L	1		06/29/22 23:38
<b>Surrogates</b>							
5a Androstane (surr)	94.1	50-150		%	1		06/29/22 23:38

## Batch Information

Analytical Batch: XFC16272  
 Analytical Method: AK102  
 Analyst: MDT  
 Analytical Date/Time: 06/29/22 23:38  
 Container ID: 1223225002-G

Prep Batch: XXX46498  
 Prep Method: SW3520C  
 Prep Date/Time: 06/27/22 16:30  
 Prep Initial Wt./Vol.: 260 mL  
 Prep Extract Vol: 1 mL



## Results of UPC-MW2

Client Sample ID: **UPC-MW2**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225002  
 Lab Project ID: 1223225

Collection Date: 06/17/22 12:48  
 Received Date: 06/21/22 09:30  
 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	0.0467 J	0.100	0.0450	mg/L	1		06/29/22 07:54
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	84.5	50-150		%	1		06/29/22 07:54

## Batch Information

Analytical Batch: VFC16144  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 06/29/22 07:54  
 Container ID: 1223225002-A

Prep Batch: VXX38779  
 Prep Method: SW5030B  
 Prep Date/Time: 06/28/22 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



### Results of UPC-MW2

Client Sample ID: **UPC-MW2**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225002  
 Lab Project ID: 1223225

Collection Date: 06/17/22 12:48  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Volatile GC/MS- Petroleum VOC Group

<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		06/29/22 20:50
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		06/29/22 20:50
1,2-Dichloroethane	0.231 J	0.500	0.200	ug/L	1		06/29/22 20:50
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
Benzene	0.200 U	0.400	0.120	ug/L	1		06/29/22 20:50
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		06/29/22 20:50
Naphthalene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/29/22 20:50
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
Toluene	0.500 U	1.00	0.310	ug/L	1		06/29/22 20:50
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		06/29/22 20:50
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		06/29/22 20:50
4-Bromofluorobenzene (surr)	102	85-114		%	1		06/29/22 20:50
Toluene-d8 (surr)	99.3	89-112		%	1		06/29/22 20:50

### Batch Information

Analytical Batch: VMS21738  
 Analytical Method: SW8260D  
 Analyst: JMG  
 Analytical Date/Time: 06/29/22 20:50  
 Container ID: 1223225002-B

Prep Batch: VXX38769  
 Prep Method: SW5030B  
 Prep Date/Time: 06/29/22 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Results of UPC-MW3

Client Sample ID: **UPC-MW3**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225003  
 Lab Project ID: 1223225

Collection Date: 06/17/22 11:30  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
2-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Acenaphthene	0.0838	0.0500	0.0150	ug/L	1		06/29/22 11:37
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		06/29/22 11:37
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		06/29/22 11:37
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Fluorene	0.378	0.0500	0.0150	ug/L	1		06/29/22 11:37
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
Naphthalene	0.0500 U	0.100	0.0310	ug/L	1		06/29/22 11:37
Phenanthrene	0.102	0.100	0.0310	ug/L	1		06/29/22 11:37
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 11:37
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	60.1	42-86		%	1		06/29/22 11:37
Fluoranthene-d10 (surr)	61.4	50-97		%	1		06/29/22 11:37

## Batch Information

Analytical Batch: XMS13204  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: DSD  
 Analytical Date/Time: 06/29/22 11:37  
 Container ID: 1223225003-I

Prep Batch: XXX46481  
 Prep Method: SW3535A  
 Prep Date/Time: 06/24/22 10:53  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL



**Results of UPC-MW3**

Client Sample ID: **UPC-MW3**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225003  
Lab Project ID: 1223225

Collection Date: 06/17/22 11:30  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.28		0.577	0.192	mg/L	1		06/29/22 23:48
<b>Surrogates</b>								
5a Androstane (surr)	84.2		50-150		%	1		06/29/22 23:48

**Batch Information**

Analytical Batch: XFC16272  
Analytical Method: AK102  
Analyst: MDT  
Analytical Date/Time: 06/29/22 23:48  
Container ID: 1223225003-G

Prep Batch: XXX46498  
Prep Method: SW3520C  
Prep Date/Time: 06/27/22 16:30  
Prep Initial Wt./Vol.: 260 mL  
Prep Extract Vol: 1 mL



## Results of UPC-MW3

Client Sample ID: **UPC-MW3**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225003  
 Lab Project ID: 1223225

Collection Date: 06/17/22 11:30  
 Received Date: 06/21/22 09:30  
 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	0.0500 U	0.100	0.0450	mg/L	1		06/29/22 08:12
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	88.4	50-150		%	1		06/29/22 08:12

## Batch Information

Analytical Batch: VFC16144  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 06/29/22 08:12  
 Container ID: 1223225003-A

Prep Batch: VXX38779  
 Prep Method: SW5030B  
 Prep Date/Time: 06/28/22 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of UPC-MW3**

Client Sample ID: **UPC-MW3**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225003  
Lab Project ID: 1223225

Collection Date: 06/17/22 11:30  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile GC/MS- Petroleum VOC Group**

<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	0.352 J	1.00	0.310	ug/L	1		06/29/22 21:05
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		06/29/22 21:05
1,2-Dichloroethane	0.281 J	0.500	0.200	ug/L	1		06/29/22 21:05
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:05
Benzene	0.225 J	0.400	0.120	ug/L	1		06/29/22 21:05
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:05
Isopropylbenzene (Cumene)	0.904 J	1.00	0.310	ug/L	1		06/29/22 21:05
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		06/29/22 21:05
Naphthalene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:05
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:05
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:05
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/29/22 21:05
sec-Butylbenzene	0.452 J	1.00	0.310	ug/L	1		06/29/22 21:05
tert-Butylbenzene	0.333 J	1.00	0.310	ug/L	1		06/29/22 21:05
Toluene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:05
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		06/29/22 21:05
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		06/29/22 21:05
4-Bromofluorobenzene (surr)	100	85-114		%	1		06/29/22 21:05
Toluene-d8 (surr)	97.9	89-112		%	1		06/29/22 21:05

**Batch Information**

Analytical Batch: VMS21738  
Analytical Method: SW8260D  
Analyst: JMG  
Analytical Date/Time: 06/29/22 21:05  
Container ID: 1223225003-B

Prep Batch: VXX38769  
Prep Method: SW5030B  
Prep Date/Time: 06/29/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **UPC-MW4**

Client Sample ID: **UPC-MW4**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225004  
Lab Project ID: 1223225

Collection Date: 06/17/22 10:30  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Polynuclear Aromatics GC/MS**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.183	0.0490	0.0147	ug/L	1		06/29/22 11:57
2-Methylnaphthalene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Acenaphthene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Acenaphthylene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Benzo(a)Anthracene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Benzo[a]pyrene	0.00980 U	0.0196	0.00608	ug/L	1		06/29/22 11:57
Benzo[b]Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Benzo[g,h,i]perylene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Benzo[k]fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Chrysene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Dibenzo[a,h]anthracene	0.00980 U	0.0196	0.00608	ug/L	1		06/29/22 11:57
Fluoranthene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Fluorene	0.0738	0.0490	0.0147	ug/L	1		06/29/22 11:57
Indeno[1,2,3-c,d] pyrene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
Naphthalene	0.102	0.0980	0.0304	ug/L	1		06/29/22 11:57
Phenanthrene	0.0490 U	0.0980	0.0304	ug/L	1		06/29/22 11:57
Pyrene	0.0245 U	0.0490	0.0147	ug/L	1		06/29/22 11:57
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	60.9	42-86		%	1		06/29/22 11:57
Fluoranthene-d10 (surr)	62.5	50-97		%	1		06/29/22 11:57

**Batch Information**

Analytical Batch: XMS13204  
Analytical Method: 8270D SIM LV (PAH)  
Analyst: DSD  
Analytical Date/Time: 06/29/22 11:57  
Container ID: 1223225004-I

Prep Batch: XXX46481  
Prep Method: SW3535A  
Prep Date/Time: 06/24/22 10:53  
Prep Initial Wt./Vol.: 255 mL  
Prep Extract Vol: 1 mL



**Results of UPC-MW4**

Client Sample ID: **UPC-MW4**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225004  
Lab Project ID: 1223225

Collection Date: 06/17/22 10:30  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Semivolatile Organic Fuels**

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	1.01	0.577	0.192	mg/L	1		06/29/22 23:58
<b>Surrogates</b>							
5a Androstane (surr)	90.8	50-150		%	1		06/29/22 23:58

**Batch Information**

Analytical Batch: XFC16272  
Analytical Method: AK102  
Analyst: MDT  
Analytical Date/Time: 06/29/22 23:58  
Container ID: 1223225004-G

Prep Batch: XXX46498  
Prep Method: SW3520C  
Prep Date/Time: 06/27/22 16:30  
Prep Initial Wt./Vol.: 260 mL  
Prep Extract Vol: 1 mL





**Results of UPC-MW4**

Client Sample ID: **UPC-MW4**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225004  
Lab Project ID: 1223225

Collection Date: 06/17/22 10:30  
Received Date: 06/21/22 09:30  
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	0.0500 U	0.100	0.0450	mg/L	1		06/29/22 08:30
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	88.8	50-150		%	1		06/29/22 08:30

**Batch Information**

Analytical Batch: VFC16144  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 06/29/22 08:30  
Container ID: 1223225004-A

Prep Batch: VXX38779  
Prep Method: SW5030B  
Prep Date/Time: 06/28/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **UPC-MW4**

Client Sample ID: **UPC-MW4**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225004  
Lab Project ID: 1223225

Collection Date: 06/17/22 10:30  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

<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	2.65	1.00	0.310	ug/L	1		06/29/22 21:20
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		06/29/22 21:20
1,2-Dichloroethane	0.252 J	0.500	0.200	ug/L	1		06/29/22 21:20
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:20
Benzene	1.37	0.400	0.120	ug/L	1		06/29/22 21:20
Ethylbenzene	1.40	1.00	0.310	ug/L	1		06/29/22 21:20
Isopropylbenzene (Cumene)	1.17	1.00	0.310	ug/L	1		06/29/22 21:20
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		06/29/22 21:20
Naphthalene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:20
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:20
o-Xylene	4.11	1.00	0.310	ug/L	1		06/29/22 21:20
P & M -Xylene	2.13	2.00	0.620	ug/L	1		06/29/22 21:20
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:20
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:20
Toluene	0.644 J	1.00	0.310	ug/L	1		06/29/22 21:20
Xylenes (total)	6.24	3.00	1.00	ug/L	1		06/29/22 21:20
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		06/29/22 21:20
4-Bromofluorobenzene (surr)	101	85-114		%	1		06/29/22 21:20
Toluene-d8 (surr)	99.3	89-112		%	1		06/29/22 21:20

**Batch Information**

Analytical Batch: VMS21738  
Analytical Method: SW8260D  
Analyst: JMG  
Analytical Date/Time: 06/29/22 21:20  
Container ID: 1223225004-B

Prep Batch: VXX38769  
Prep Method: SW5030B  
Prep Date/Time: 06/29/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



### Results of UPC-MW11

Client Sample ID: **UPC-MW11**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225005  
 Lab Project ID: 1223225

Collection Date: 06/17/22 15:15  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

### Results by Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1-Methylnaphthalene	0.710	0.0500	0.0150	ug/L	1		06/29/22 12:18
2-Methylnaphthalene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Acenaphthene	0.0785	0.0500	0.0150	ug/L	1		06/29/22 12:18
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		06/29/22 12:18
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		06/29/22 12:18
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Fluorene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
Naphthalene	0.0500 U	0.100	0.0310	ug/L	1		06/29/22 12:18
Phenanthrene	0.0500 U	0.100	0.0310	ug/L	1		06/29/22 12:18
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		06/29/22 12:18
<b>Surrogates</b>							
2-Methylnaphthalene-d10 (surr)	45.5	42-86		%	1		06/29/22 12:18
Fluoranthene-d10 (surr)	52.3	50-97		%	1		06/29/22 12:18

### Batch Information

Analytical Batch: XMS13204  
 Analytical Method: 8270D SIM LV (PAH)  
 Analyst: DSD  
 Analytical Date/Time: 06/29/22 12:18  
 Container ID: 1223225005-I

Prep Batch: XXX46481  
 Prep Method: SW3535A  
 Prep Date/Time: 06/24/22 10:53  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

## Results of UPC-MW11

Client Sample ID: **UPC-MW11**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225005  
 Lab Project ID: 1223225

Collection Date: 06/17/22 15:15  
 Received Date: 06/21/22 09:30  
 Matrix: Water (Surface, Eff., Ground)  
 Solids (%):  
 Location:

## Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	13.4	0.612	0.204	mg/L	1		06/30/22 00:08
<b>Surrogates</b>							
5a Androstane (surr)	102	50-150		%	1		06/30/22 00:08

## Batch Information

Analytical Batch: XFC16272  
 Analytical Method: AK102  
 Analyst: MDT  
 Analytical Date/Time: 06/30/22 00:08  
 Container ID: 1223225005-G

Prep Batch: XXX46498  
 Prep Method: SW3520C  
 Prep Date/Time: 06/27/22 16:30  
 Prep Initial Wt./Vol.: 245 mL  
 Prep Extract Vol: 1 mL





Results of **UPC-MW11**

Client Sample ID: **UPC-MW11**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225005  
Lab Project ID: 1223225

Collection Date: 06/17/22 15:15  
Received Date: 06/21/22 09:30  
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	0.478	0.100	0.0450	mg/L	1		06/29/22 08:48
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	107	50-150		%	1		06/29/22 08:48

**Batch Information**

Analytical Batch: VFC16144  
Analytical Method: AK101  
Analyst: PHK  
Analytical Date/Time: 06/29/22 08:48  
Container ID: 1223225005-A

Prep Batch: VXX38779  
Prep Method: SW5030B  
Prep Date/Time: 06/28/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



Results of **UPC-MW11**

Client Sample ID: **UPC-MW11**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225005  
Lab Project ID: 1223225

Collection Date: 06/17/22 15:15  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

Results by **Volatile GC/MS- Petroleum VOC Group**

<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	70.5	1.00	0.310	ug/L	1		06/29/22 21:35
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		06/29/22 21:35
1,2-Dichloroethane	0.267 J	0.500	0.200	ug/L	1		06/29/22 21:35
1,3,5-Trimethylbenzene	33.0	1.00	0.310	ug/L	1		06/29/22 21:35
Benzene	3.60	0.400	0.120	ug/L	1		06/29/22 21:35
Ethylbenzene	8.58	1.00	0.310	ug/L	1		06/29/22 21:35
Isopropylbenzene (Cumene)	3.21	1.00	0.310	ug/L	1		06/29/22 21:35
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		06/29/22 21:35
Naphthalene	65.5	1.00	0.310	ug/L	1		06/29/22 21:35
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/29/22 21:35
o-Xylene	62.9	1.00	0.310	ug/L	1		06/29/22 21:35
P & M -Xylene	88.3	2.00	0.620	ug/L	1		06/29/22 21:35
sec-Butylbenzene	2.08	1.00	0.310	ug/L	1		06/29/22 21:35
tert-Butylbenzene	0.375 J	1.00	0.310	ug/L	1		06/29/22 21:35
Toluene	10.6	1.00	0.310	ug/L	1		06/29/22 21:35
Xylenes (total)	151	3.00	1.00	ug/L	1		06/29/22 21:35
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		06/29/22 21:35
4-Bromofluorobenzene (surr)	105	85-114		%	1		06/29/22 21:35
Toluene-d8 (surr)	100	89-112		%	1		06/29/22 21:35

**Batch Information**

Analytical Batch: VMS21738  
Analytical Method: SW8260D  
Analyst: JMG  
Analytical Date/Time: 06/29/22 21:35  
Container ID: 1223225005-B

Prep Batch: VXX38769  
Prep Method: SW5030B  
Prep Date/Time: 06/29/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

## Results of Trip Blank 1

Client Sample ID: **Trip Blank 1**  
 Client Project ID: **2022-U-Park GW Investigation**  
 Lab Sample ID: 1223225006  
 Lab Project ID: 1223225

Collection Date: 06/17/22 08:00  
 Received Date: 06/21/22 09:30  
 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	0.0500 U	0.100	0.0450	mg/L	1		06/28/22 20:40
<b>Surrogates</b>							
4-Bromofluorobenzene (surr)	87.8	50-150		%	1		06/28/22 20:40

## Batch Information

Analytical Batch: VFC16144  
 Analytical Method: AK101  
 Analyst: PHK  
 Analytical Date/Time: 06/28/22 20:40  
 Container ID: 1223225006-A

Prep Batch: VXX38778  
 Prep Method: SW5030B  
 Prep Date/Time: 06/28/22 06:00  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL



**Results of Trip Blank 1**

Client Sample ID: **Trip Blank 1**  
Client Project ID: **2022-U-Park GW Investigation**  
Lab Sample ID: 1223225006  
Lab Project ID: 1223225

Collection Date: 06/17/22 08:00  
Received Date: 06/21/22 09:30  
Matrix: Water (Surface, Eff., Ground)  
Solids (%):  
Location:

**Results by Volatile GC/MS- Petroleum VOC Group**

<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		06/23/22 16:11
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		06/23/22 16:11
1,2-Dichloroethane	0.250 U	0.500	0.200	ug/L	1		06/23/22 16:11
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
Benzene	0.200 U	0.400	0.120	ug/L	1		06/23/22 16:11
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		06/23/22 16:11
Naphthalene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
o-Xylene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		06/23/22 16:11
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
Toluene	0.500 U	1.00	0.310	ug/L	1		06/23/22 16:11
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		06/23/22 16:11
<b>Surrogates</b>							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		06/23/22 16:11
4-Bromofluorobenzene (surr)	100	85-114		%	1		06/23/22 16:11
Toluene-d8 (surr)	101	89-112		%	1		06/23/22 16:11

**Batch Information**

Analytical Batch: VMS21721  
Analytical Method: SW8260D  
Analyst: JMG  
Analytical Date/Time: 06/23/22 16:11  
Container ID: 1223225006-B

Prep Batch: VXX38736  
Prep Method: SW5030B  
Prep Date/Time: 06/23/22 06:00  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL



## Method Blank

Blank ID: MB for HBN 1838556 [VXX/38736]

Blank Lab ID: 1669551

QC for Samples:

1223225001, 1223225006

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	0.200	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
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	102	81-118		%
4-Bromofluorobenzene (surr)	100	85-114		%
Toluene-d8 (surr)	99.4	89-112		%

## Batch Information

Analytical Batch: VMS21721  
 Analytical Method: SW8260D  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: JMG  
 Analytical Date/Time: 6/23/2022 12:40:00PM

Prep Batch: VXX38736  
 Prep Method: SW5030B  
 Prep Date/Time: 6/23/2022 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [VXX38736]  
 Blank Spike Lab ID: 1669552  
 Date Analyzed: 06/23/2022 12:55

Spike Duplicate ID: LCSD for HBN 1223225 [VXX38736]  
 Spike Duplicate Lab ID: 1669553  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225001, 1223225006

## 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	27.7	92	30	27.9	93	( 79-124 )	0.88	(< 20 )
1,2-Dibromoethane	30	28.6	95	30	29.7	99	( 77-121 )	3.90	(< 20 )
1,2-Dichloroethane	30	30.7	102	30	31.7	106	( 73-128 )	3.40	(< 20 )
1,3,5-Trimethylbenzene	30	29.0	97	30	29.7	99	( 75-124 )	2.30	(< 20 )
Benzene	30	30.2	101	30	30.9	103	( 79-120 )	2.60	(< 20 )
Ethylbenzene	30	30.0	100	30	30.1	100	( 79-121 )	0.39	(< 20 )
Isopropylbenzene (Cumene)	30	28.9	96	30	29.4	98	( 72-131 )	1.50	(< 20 )
Methyl-t-butyl ether	45	45.2	101	45	47.1	105	( 71-124 )	4.10	(< 20 )
Naphthalene	30	27.5	92	30	28.6	95	( 61-128 )	3.80	(< 20 )
n-Butylbenzene	30	26.8	90	30	27.6	92	( 75-128 )	2.80	(< 20 )
o-Xylene	30	30.3	101	30	30.9	103	( 78-122 )	2.00	(< 20 )
P & M -Xylene	60	61.2	102	60	62.4	104	( 80-121 )	1.90	(< 20 )
sec-Butylbenzene	30	27.0	90	30	27.5	92	( 77-126 )	1.80	(< 20 )
tert-Butylbenzene	30	28.1	94	30	28.9	96	( 78-124 )	2.80	(< 20 )
Toluene	30	30.4	101	30	31.3	104	( 80-121 )	2.60	(< 20 )
Xylenes (total)	90	91.5	102	90	93.3	104	( 79-121 )	2.00	(< 20 )
<b>Surrogates</b>									
1,2-Dichloroethane-D4 (surr)	30		101	30		102	( 81-118 )	1.40	
4-Bromofluorobenzene (surr)	30		97	30		97	( 85-114 )	0.86	
Toluene-d8 (surr)	30		101	30		102	( 89-112 )	0.70	

## Batch Information

Analytical Batch: VMS21721  
 Analytical Method: SW8260D  
 Instrument: VPA 780/5975 GC/MS  
 Analyst: JMG

Prep Batch: VXX38736  
 Prep Method: SW5030B  
 Prep Date/Time: 06/23/2022 06:00  
 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 1839011 [VXX/38769]  
Blank Lab ID: 1670659

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
1223225002, 1223225003, 1223225004, 1223225005

### 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	0.200	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
<b>Surrogates</b>				
1,2-Dichloroethane-D4 (surr)	103	81-118		%
4-Bromofluorobenzene (surr)	103	85-114		%
Toluene-d8 (surr)	99.3	89-112		%

### Batch Information

Analytical Batch: VMS21738  
Analytical Method: SW8260D  
Instrument: Agilent 7890-75MS  
Analyst: JMG  
Analytical Date/Time: 6/29/2022 2:08:00PM

Prep Batch: VXX38769  
Prep Method: SW5030B  
Prep Date/Time: 6/29/2022 6:00:00AM  
Prep Initial Wt./Vol.: 5 mL  
Prep Extract Vol: 5 mL

Print Date: 07/25/2022 12:22:51PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [VXX38769]  
 Blank Spike Lab ID: 1670660  
 Date Analyzed: 06/29/2022 14:23

Spike Duplicate ID: LCSD for HBN 1223225 [VXX38769]  
 Spike Duplicate Lab ID: 1670661  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225002, 1223225003, 1223225004, 1223225005

## 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	30.5	102	30	30.5	102	( 79-124 )	0.03	(< 20 )
1,2-Dibromoethane	30	29.6	99	30	29.6	99	( 77-121 )	0.12	(< 20 )
1,2-Dichloroethane	30	27.7	92	30	28.1	94	( 73-128 )	1.60	(< 20 )
1,3,5-Trimethylbenzene	30	30.8	103	30	30.8	103	( 75-124 )	0.17	(< 20 )
Benzene	30	29.3	98	30	29.3	98	( 79-120 )	0.22	(< 20 )
Ethylbenzene	30	30.0	100	30	29.8	99	( 79-121 )	0.59	(< 20 )
Isopropylbenzene (Cumene)	30	30.6	102	30	30.3	101	( 72-131 )	1.10	(< 20 )
Methyl-t-butyl ether	45	43.1	96	45	43.9	98	( 71-124 )	1.80	(< 20 )
Naphthalene	30	29.0	97	30	32.6	109	( 61-128 )	11.60	(< 20 )
n-Butylbenzene	30	32.2	107	30	32.0	107	( 75-128 )	0.53	(< 20 )
o-Xylene	30	29.8	99	30	29.7	99	( 78-122 )	0.25	(< 20 )
P & M -Xylene	60	60.9	102	60	60.8	101	( 80-121 )	0.14	(< 20 )
sec-Butylbenzene	30	31.8	106	30	31.7	106	( 77-126 )	0.32	(< 20 )
tert-Butylbenzene	30	31.2	104	30	31.0	103	( 78-124 )	0.50	(< 20 )
Toluene	30	29.0	97	30	28.5	95	( 80-121 )	2.00	(< 20 )
Xylenes (total)	90	90.7	101	90	90.5	101	( 79-121 )	0.18	(< 20 )

## Surrogates

1,2-Dichloroethane-D4 (surr)	30		98	30		99	( 81-118 )	1.10	
4-Bromofluorobenzene (surr)	30		102	30		102	( 85-114 )	0.44	
Toluene-d8 (surr)	30		101	30		100	( 89-112 )	1.20	

## Batch Information

Analytical Batch: VMS21738  
 Analytical Method: SW8260D  
 Instrument: Agilent 7890-75MS  
 Analyst: JMG

Prep Batch: VXX38769  
 Prep Method: SW5030B  
 Prep Date/Time: 06/29/2022 06:00  
 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 1839076 [VXX/38778]  
 Blank Lab ID: 1671018

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1223225006

## 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
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	92.7	50-150		%

## Batch Information

Analytical Batch: VFC16144  
 Analytical Method: AK101  
 Instrument: Agilent 7890 PID/FID  
 Analyst: PHK  
 Analytical Date/Time: 6/28/2022 3:29:00PM

Prep Batch: VXX38778  
 Prep Method: SW5030B  
 Prep Date/Time: 6/28/2022 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

Print Date: 07/25/2022 12:22:56PM



## Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [VXX38778]  
 Blank Spike Lab ID: 1671021  
 Date Analyzed: 06/28/2022 16:24

Spike Duplicate ID: LCSD for HBN 1223225 [VXX38778]  
 Spike Duplicate Lab ID: 1671022  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225006

## 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	1.03	103	1.00	0.953	95	( 60-120 )	8.20	(< 20 )
<b>Surrogates</b>									
4-Bromofluorobenzene (surr)	0.0500		99	0.0500		88	( 50-150 )	12.20	

## Batch Information

Analytical Batch: **VFC16144**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890 PID/FID**  
 Analyst: **PHK**

Prep Batch: **VXX38778**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **06/28/2022 06:00**  
 Spike Init Wt./Vol.: 0.0500 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 0.0500 mg/L Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1839077 [VXX/38779]  
 Blank Lab ID: 1671023

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1223225001, 1223225002, 1223225003, 1223225004, 1223225005

## 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
<b>Surrogates</b>				
4-Bromofluorobenzene (surr)	81.1	50-150		%

## Batch Information

Analytical Batch: VFC16144  
 Analytical Method: AK101  
 Instrument: Agilent 7890 PID/FID  
 Analyst: PHK  
 Analytical Date/Time: 6/29/2022 3:40:00AM

Prep Batch: VXX38779  
 Prep Method: SW5030B  
 Prep Date/Time: 6/28/2022 6:00:00AM  
 Prep Initial Wt./Vol.: 5 mL  
 Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [VXX38779]  
 Blank Spike Lab ID: 1671024  
 Date Analyzed: 06/29/2022 03:21

Spike Duplicate ID: LCSD for HBN 1223225 [VXX38779]  
 Spike Duplicate Lab ID: 1671025  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225001, 1223225002, 1223225003, 1223225004, 1223225005

## 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	0.954	95	1.00	0.918	92	( 60-120 )	3.80	(< 20 )
<b>Surrogates</b>									
4-Bromofluorobenzene (surr)	0.0500		88	0.0500		90	( 50-150 )	2.80	

## Batch Information

Analytical Batch: **VFC16144**  
 Analytical Method: **AK101**  
 Instrument: **Agilent 7890 PID/FID**  
 Analyst: **PHK**

Prep Batch: **VXX38779**  
 Prep Method: **SW5030B**  
 Prep Date/Time: **06/28/2022 06:00**  
 Spike Init Wt./Vol.: 0.0500 mg/L Extract Vol: 5 mL  
 Dupe Init Wt./Vol.: 0.0500 mg/L Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1838638 [XXX/46478]

Blank Lab ID: 1669578

QC for Samples:

1223225001, 1223225002

Matrix: Water (Surface, Eff., Ground)

## 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	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	43.2	42-86		%
Fluoranthene-d10 (surr)	56.1	50-97		%

## Batch Information

Analytical Batch: XMS13235  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: DSD  
 Analytical Date/Time: 7/14/2022 12:04:00PM

Prep Batch: XXX46478  
 Prep Method: SW3535A  
 Prep Date/Time: 6/23/2022 8:48:15PM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

Print Date: 07/25/2022 12:23:05PM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [XXX46478]  
 Blank Spike Lab ID: 1669579  
 Date Analyzed: 07/14/2022 12:25

Spike Duplicate ID: LCSD for HBN 1223225 [XXX46478]  
 Spike Duplicate Lab ID: 1669580  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225001, 1223225002

## Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.27	63	2	1.25	63	( 41-115 )	1.30	(< 20 )
2-Methylnaphthalene	2	1.23	61	2	1.22	61	( 39-114 )	0.63	(< 20 )
Acenaphthene	2	1.47	73	2	1.50	75	( 48-114 )	2.10	(< 20 )
Acenaphthylene	2	1.41	71	2	1.44	72	( 35-121 )	2.40	(< 20 )
Anthracene	2	1.55	77	2	1.61	80	( 53-119 )	3.80	(< 20 )
Benzo(a)Anthracene	2	1.41	70	2	1.41	70	( 59-120 )	0.08	(< 20 )
Benzo[a]pyrene	2	1.51	76	2	1.50	75	( 53-120 )	0.66	(< 20 )
Benzo[b]Fluoranthene	2	1.47	73	2	1.46	73	( 53-126 )	0.68	(< 20 )
Benzo[g,h,i]perylene	2	1.71	85	2	1.73	87	( 44-128 )	1.50	(< 20 )
Benzo[k]fluoranthene	2	1.73	87	2	1.77	88	( 54-125 )	2.00	(< 20 )
Chrysene	2	1.62	81	2	1.63	81	( 57-120 )	0.25	(< 20 )
Dibenzo[a,h]anthracene	2	1.70	85	2	1.71	86	( 44-131 )	0.55	(< 20 )
Fluoranthene	2	1.40	70	2	1.44	72	( 58-120 )	2.70	(< 20 )
Fluorene	2	1.49	75	2	1.56	78	( 50-118 )	4.10	(< 20 )
Indeno[1,2,3-c,d] pyrene	2	1.65	83	2	1.68	84	( 48-130 )	1.50	(< 20 )
Naphthalene	2	1.34	67	2	1.33	66	( 43-114 )	0.52	(< 20 )
Phenanthrene	2	1.50	75	2	1.57	78	( 53-115 )	4.40	(< 20 )
Pyrene	2	1.42	71	2	1.45	73	( 53-121 )	2.10	(< 20 )

## Surrogates

2-Methylnaphthalene-d10 (surr)	2		50	2		51	( 42-86 )	0.82	
Fluoranthene-d10 (surr)	2		56	2		59	( 50-97 )	5.30	

## Batch Information

Analytical Batch: XMS13235  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: DSD

Prep Batch: XXX46478  
 Prep Method: SW3535A  
 Prep Date/Time: 06/23/2022 20:48  
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL



## Method Blank

Blank ID: MB for HBN 1838656 [XXX/46481]  
 Blank Lab ID: 1669652

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1223225003, 1223225004, 1223225005

## 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	0.0500U	0.100	0.0310	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
<b>Surrogates</b>				
2-Methylnaphthalene-d10 (surr)	58.3	42-86		%
Fluoranthene-d10 (surr)	70.5	50-97		%

## Batch Information

Analytical Batch: XMS13204  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: DSD  
 Analytical Date/Time: 6/29/2022 10:35:00AM

Prep Batch: XXX46481  
 Prep Method: SW3535A  
 Prep Date/Time: 6/24/2022 10:53:07AM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [XXX46481]  
 Blank Spike Lab ID: 1669653  
 Date Analyzed: 06/29/2022 10:55

Spike Duplicate ID: LCSD for HBN 1223225 [XXX46481]  
 Spike Duplicate Lab ID: 1669654  
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225003, 1223225004, 1223225005

## Results by 8270D SIM LV (PAH)

Parameter	Blank Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	2	1.37	68	2	1.38	69	( 41-115 )	1.40	(< 20 )
2-Methylnaphthalene	2	1.34	67	2	1.36	68	( 39-114 )	1.90	(< 20 )
Acenaphthene	2	1.55	78	2	1.53	77	( 48-114 )	1.40	(< 20 )
Acenaphthylene	2	1.56	78	2	1.60	80	( 35-121 )	2.50	(< 20 )
Anthracene	2	1.67	83	2	1.63	82	( 53-119 )	2.30	(< 20 )
Benzo(a)Anthracene	2	1.58	79	2	1.56	78	( 59-120 )	1.10	(< 20 )
Benzo[a]pyrene	2	1.70	85	2	1.71	85	( 53-120 )	0.12	(< 20 )
Benzo[b]Fluoranthene	2	1.69	84	2	1.63	81	( 53-126 )	3.70	(< 20 )
Benzo[g,h,i]perylene	2	1.86	93	2	1.89	95	( 44-128 )	1.70	(< 20 )
Benzo[k]fluoranthene	2	1.77	89	2	1.84	92	( 54-125 )	3.80	(< 20 )
Chrysene	2	1.70	85	2	1.73	87	( 57-120 )	1.80	(< 20 )
Dibenzo[a,h]anthracene	2	1.87	93	2	1.90	95	( 44-131 )	2.00	(< 20 )
Fluoranthene	2	1.59	80	2	1.57	78	( 58-120 )	1.70	(< 20 )
Fluorene	2	1.64	82	2	1.62	81	( 50-118 )	1.10	(< 20 )
Indeno[1,2,3-c,d] pyrene	2	1.84	92	2	1.87	93	( 48-130 )	1.50	(< 20 )
Naphthalene	2	1.36	68	2	1.41	70	( 43-114 )	3.30	(< 20 )
Phenanthrene	2	1.74	87	2	1.71	86	( 53-115 )	1.80	(< 20 )
Pyrene	2	1.62	81	2	1.60	80	( 53-121 )	1.10	(< 20 )

## Surrogates

2-Methylnaphthalene-d10 (surr)	2		55	2		56	( 42-86 )	2.00	
Fluoranthene-d10 (surr)	2		65	2		64	( 50-97 )	1.30	

## Batch Information

Analytical Batch: XMS13204  
 Analytical Method: 8270D SIM LV (PAH)  
 Instrument: Agilent GC 7890B/5977A SWA  
 Analyst: DSD

Prep Batch: XXX46481  
 Prep Method: SW3535A  
 Prep Date/Time: 06/24/2022 10:53  
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL  
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

## Method Blank

Blank ID: MB for HBN 1838879 [XXX/46498]  
 Blank Lab ID: 1670115

Matrix: Water (Surface, Eff., Ground)

QC for Samples:  
 1223225001, 1223225002, 1223225003, 1223225004, 1223225005

## 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	0.200	mg/L
<b>Surrogates</b>				
5a Androstane (surr)	81.7	60-120		%

## Batch Information

Analytical Batch: XFC16272  
 Analytical Method: AK102  
 Instrument: Agilent 7890B R  
 Analyst: MDT  
 Analytical Date/Time: 6/29/2022 10:17:00PM

Prep Batch: XXX46498  
 Prep Method: SW3520C  
 Prep Date/Time: 6/27/2022 4:30:40PM  
 Prep Initial Wt./Vol.: 250 mL  
 Prep Extract Vol: 1 mL



### Blank Spike Summary

Blank Spike ID: LCS for HBN 1223225 [XXX46498]  
Blank Spike Lab ID: 1670116  
Date Analyzed: 06/29/2022 22:27

Spike Duplicate ID: LCSD for HBN 1223225 [XXX46498]  
Spike Duplicate Lab ID: 1670117  
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1223225001, 1223225002, 1223225003, 1223225004, 1223225005

### 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	18.8	94	20	19.2	96	( 75-125 )	1.90	(< 20 )
<b>Surrogates</b>									
5a Androstane (surr)	0.4		89	0.4		97	( 60-120 )	9.00	

### Batch Information

Analytical Batch: XFC16272  
Analytical Method: AK102  
Instrument: Agilent 7890B R  
Analyst: MDT

Prep Batch: XXX46498  
Prep Method: SW3520C  
Prep Date/Time: 06/27/2022 16:30  
Spike Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL  
Dupe Init Wt./Vol.: 0.4 mg/L Extract Vol: 1 mL

Print Date: 07/25/2022 12:23:15PM



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Profile #: \_\_\_\_\_ Int.: \_\_\_\_\_

Section 1	CLIENT: <u>U-Park Condominium Association</u> <b>ARCTIC DATA SERVICES, LLC</b>					Instructions: Sections 1 - 5 must be filled out. Omissions may delay the onset of analysis.										Page 1 of 1																																	
	CONTACT: Rodney Guritz			PHONE #: 907-451-3147		Section 3		Preservative																																									
	PROJECT NAME: 2022 U-Park GW Investigation					Project/Permit Number:		<table border="1"> <tr> <td>#</td> <td colspan="4">CONTAINERS</td> <td colspan="10">Analysis*</td> </tr> <tr> <td></td> <td>HCl</td> <td>HCl</td> <td>HCl</td> <td>None</td> <td colspan="10"></td> </tr> </table>										#	CONTAINERS				Analysis*											HCl	HCl	HCl	None											NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS	
	#	CONTAINERS				Analysis*																																											
	HCl	HCl	HCl	None																																													
REPORTS TO: Rodney Guritz			E-MAIL: rodney@arcticdataservices.com		Sample Type																																												
INVOICE TO: Arctic Data Services, LLC			QUOTE #: _____		P.O. #: _____		Comp																																										
Section 2	RESERVED for lab use	SAMPLE IDENTIFICATION			DATE mm/dd/yy	TIME HH:MM	MATRIX/MATRIX CODE	CONTAINERS	Grab MI	GRO (AK 101)	DRO (AK102)	Petroleum VOC (8260D)	PAH (8270D-SIM)											REMARKS/LOC ID																									
	① DAJ	UPC-MW1			6/17/2022	14:15	GW							10	Grab	X	X	X	X																														
	② DAJ	UPC-MW2			6/17/2022	12:48	GW							10	Grab	X	X	X	X																														
	③ DAJ	UPC-MW3			6/17/2022	11:30	GW							10	Grab	X	X	X	X																														
	④ DAJ	UPC-MW4			6/17/2022	10:30	GW							10	Grab	X	X	X	X																														
	⑤ DAJ	UPC-MW11			6/17/2022	15:15	GW							10	Grab	X	X	X	X																														
	⑥ WAE	Trip Blank 1			6/17/2022	8:00	GW							3	TB	X		X																															

Comments:

Section 4	DOD Project? YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		Turnaround Time Requested				SGS Sample Receipt (Lab Use Only)						
	Data Deliverables Requested		Standard Rush				Delivery Method: Client <input checked="" type="checkbox"/> Commercial <input type="checkbox"/>		Chain of Custody Seal Condition: <input checked="" type="checkbox"/> INTACT <input type="checkbox"/> BROKEN <input type="checkbox"/> ABSENT <input type="checkbox"/>				
DataView Level 2 <input checked="" type="checkbox"/> Level 4 <input type="checkbox"/>		EQUIS Other: <u>SGS LML</u>		Requested Rush Report Date: _____				Did each cooler have a corresponding COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		COC Seal Location(s): <u>1F13</u>			

Section 5	RELINQUISHED BY:		DATE:	TIME:	RECEIVED BY:		Cooler ID	Temperature (°C)	Therm. ID	If more than three coolers are received, or for documentation of non-compliant coolers, use form FS-0029.  Intials: _____	
			06/20/22	11:31			AMARAN14	4.0	D52		
			06/20/22	12:50				3.4	D62		
		6/21/22	9:30						Note: If temp. is outside 0-6° and samples were not taken <8 hours ago OR are waste samples, Client or PM should initial here or attach an email change order to proceed with analysis. If ice is present, note on form F102B.		

Laboratory Use Only

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





e-Sample Receipt Form FBK

SGS Workorder #:

Arctic Data

Arctic Data

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
<b>Chain of Custody / Temperature Requirements</b>		Yes   Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
<input type="checkbox"/> **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: Amaranth @ 4.0 °C Therm. ID: D52
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?		
If <0°C, were sample containers ice free?		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
<b>Holding Time / Documentation / Sample Condition Requirements</b>		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Do samples match COC** (i.e., sample IDs, dates/times collected)?	N/C	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were samples in good condition (no leaks/cracks/breakage)?	Yes	
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	N/C	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
For Rush/Short Hold Time, was RUSH/Short HT email sent?	N/A	
<b>Note to Client:</b> Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		
<b>SGS Profile #</b>	<b>349350</b>	349350



SGS Workorder #:

1223225

1223225

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

**Chain of Custody / Temperature Requirements**

*Note: Temperature and COC seal information is found on the chain of custody form*

DOD only: Did all sample coolers have a corresponding COC?

If <0°C, were sample containers ice free?

Note containers received with ice:

Identify any containers received at non-compliant temperature:

*(Use form FS-0029 if more space is needed)*

**Holding Time / Documentation / Sample Condition Requirement**

*Note: Refer to form F-083 "Sample Guide" for specific holding times and sample containers.*

Were samples received within analytical holding time?

Do sample labels match COC? Record discrepancies.

**Note:** If information on containers differs from COC, default to COC information for login. If times differ <1hr, record details & login per COC.

Were analytical requests clear?

*(i.e. method is specified for analyses with multiple option for method (Eg, BTEX 8021 vs 8260, Metals 6020 vs 200.8)*

Were proper containers (type/mass/volume/preservative)used?

Note: Exemption for metals analysis by 200.8/6020 in water.

**Volatile Analysis Requirements (VOC, GRO, LL-Hg, etc.)**

Were all soil VOAs received with a corresponding % solids container?

Were Trip Blanks (e.g., VOAs, LL-Hg) in cooler with samples?

Were all water VOA vials free of headspace (e.g., bubbles ≤ 6mm)?

Were all soil VOAs field extracted with Methanol+BFB?

**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>
1223225001-A	HCL to pH < 2	OK	1223225005-J	No Preservative Required	OK
1223225001-B	HCL to pH < 2	OK	1223225006-A	HCL to pH < 2	OK
1223225001-C	HCL to pH < 2	OK	1223225006-B	HCL to pH < 2	OK
1223225001-D	HCL to pH < 2	OK	1223225006-C	HCL to pH < 2	OK
1223225001-E	HCL to pH < 2	OK			
1223225001-F	HCL to pH < 2	OK			
1223225001-G	HCL to pH < 2	OK			
1223225001-H	HCL to pH < 2	OK			
1223225001-I	No Preservative Required	OK			
1223225001-J	No Preservative Required	OK			
1223225002-A	HCL to pH < 2	OK			
1223225002-B	HCL to pH < 2	OK			
1223225002-C	HCL to pH < 2	OK			
1223225002-D	HCL to pH < 2	OK			
1223225002-E	HCL to pH < 2	OK			
1223225002-F	HCL to pH < 2	OK			
1223225002-G	HCL to pH < 2	OK			
1223225002-H	HCL to pH < 2	OK			
1223225002-I	No Preservative Required	OK			
1223225002-J	No Preservative Required	OK			
1223225003-A	HCL to pH < 2	OK			
1223225003-B	HCL to pH < 2	OK			
1223225003-C	HCL to pH < 2	OK			
1223225003-D	HCL to pH < 2	OK			
1223225003-E	HCL to pH < 2	OK			
1223225003-F	HCL to pH < 2	OK			
1223225003-G	HCL to pH < 2	OK			
1223225003-H	HCL to pH < 2	OK			
1223225003-I	No Preservative Required	OK			
1223225003-J	No Preservative Required	OK			
1223225004-A	HCL to pH < 2	OK			
1223225004-B	HCL to pH < 2	OK			
1223225004-C	HCL to pH < 2	OK			
1223225004-D	HCL to pH < 2	OK			
1223225004-E	HCL to pH < 2	OK			
1223225004-F	HCL to pH < 2	OK			
1223225004-G	HCL to pH < 2	OK			
1223225004-H	HCL to pH < 2	OK			
1223225004-I	No Preservative Required	OK			
1223225004-J	No Preservative Required	OK			
1223225005-A	HCL to pH < 2	OK			
1223225005-B	HCL to pH < 2	OK			
1223225005-C	HCL to pH < 2	OK			
1223225005-D	HCL to pH < 2	OK			
1223225005-E	HCL to pH < 2	OK			
1223225005-F	HCL to pH < 2	OK			
1223225005-G	HCL to pH < 2	OK			
1223225005-H	HCL to pH < 2	OK			
1223225005-I	No Preservative Required	OK			

Container Id

Preservative

Container  
Condition

Container Id

Preservative

Container  
Condition

#### Container Condition Glossary

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

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

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

DM - The container was received damaged.

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

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

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

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

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

QN - Insufficient sample quantity provided.

# Laboratory Data Review Checklist

**Completed By:**

Enigma Swan Adams

**Title:**

Data Scientist

**Date:**

August 19, 2022

**Consultant Firm:**

Arctic Data Services, LLC

**Laboratory Name:**

SGS North America, Inc. - Anchorage, AK

**Laboratory Report Number:**

1223225

**Laboratory Report Date:**

July 26, 2022

**CS Site Name:**

University Park Condos Spill

**ADEC File Number:**

100.38.162

**Hazard Identification Number:**

3806

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## 1.) Laboratory

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1.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. - Anchorage, AK (SGS Anchorage). The laboratory is ADEC CS approved for the analyses performed, where required.

1.b) If 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 or analyzed by another laboratory.

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## 2.) Chain of Custody

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

- Yes       No       N/A

Comments:

2.b) Correct analyses requested?

- Yes       No       N/A

Comments:

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## 3.) Laboratory Sample Receipt Documentation

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

Yes       No       N/A

**Comments:**

Samples were received within the acceptable temperature range.

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

Yes       No       N/A

**Comments:****3.c) Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?**

Yes       No       N/A

**Comments:**

Samples were received in good condition.

**3.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.

**3.e) Data quality or usability affected?**

Data quality and usability were not affected.

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## **4.) Case Narrative**

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**4.a) Present and understandable?**

Yes       No       N/A

**Comments:****4.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.

**4.c) Were all corrective actions documented?**

Yes       No       N/A

**Comments:**

The laboratory report case narrative documented the following corrective actions:  
UPC-MW1 "8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene-d10 and Fluoranthene-d10 do not meet QC criteria. Sample was re-extracted outside of hold time and results confirm. The in-hold data is reported.", and  
UPC-MW2 " 8270D SIM - PAH surrogate recovery for Fluoranthene-d10 does not meet QC criteria. Sample was re-extracted outside of hold time and results confirm. The in-hold data is reported."

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

The laboratory makes no conclusions regarding data quality or usability.

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## 5.) Sample Results

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

Yes       No       N/A

**Comments:****5.b) All applicable holding times met?**

Yes       No       N/A

**Comments:**

**5.c) All soils reported on a dry weight basis?**

Yes       No       N/A

**Comments:**

No soil samples were analyzed in this work order.

**5.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 for non-detect results were compared to the following project action limits (PALs):  
ADEC 18 AAC 75.345 Table C Groundwater Cleanup Levels for groundwater samples.

LOQs and LODs were below PALs for all non-detect results.

**5.e) Data quality or usability affected?**

Data quality and usability were not affected.

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## 6.) QC Samples

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## Method/Lab Blank

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

Yes       No       N/A

Comments:

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

Yes       No       N/A

Comments:

There were no method blank detections identified.

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

No results were affected by method blank contamination

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

Yes       No       N/A

Comments:

No results were affected. See above.

6.a.v) Data quality or usability affected?

Data quality and usability were not affected.

## Laboratory Control Sample/Duplicate (LCS/LCSD)

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6.b.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:

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

Yes       No       N/A

**Comments:**

There were no inorganic analyses performed in this work order.

**6.b.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:****6.b.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:****6.b.v) If %R or RPD is outside of acceptable limits, what samples are affected?**

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

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

Yes       No       N/A

**Comments:**

No results were affected by LCS/LCSD recovery or RPD failures.

**6.b.vii) Data quality or usability affected?**

Data quality and usability were not affected.

## Matrix Spike/Duplicate (MS/MSD)

Note: Select N/A if MS/MSDs are not required for the project.

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

Yes  No  N/A

#### Comments:

Project-specific MS/MSD analysis was not required for the organic methods performed in this work order.

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

Yes  No  N/A

#### Comments:

There were no inorganic analyses performed in this work order.

### 6.c.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:

N/A; see above

### 6.c.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. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

Yes  No  N/A

#### Comments:

N/A; see above.

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



N/A; see above.

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

Yes  No  N/A

**Comments:**

N/A; see above.

**6.c.vii) Data quality or usability affected?**

Data quality and usability were not affected.

## Surrogates

Note: Surrogates for organic analyses only or Isotope Dilution Analytes (IDA) for isotope dilution methods

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

Yes  No  N/A

**Comments:**

**6.d.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:**

There were three surrogate recovery failures identified in project samples. Refer to the table below for details.

lab_id	Method	Sample ID	Surrogate	DF	%R	LCL	UCL	Recovery
SGSA	8270DSIM	UPC-MW1	2-Methylnaphthalene-d10	1	29	42	86	Low
SGSA	8270DSIM	UPC-MW1	Fluoranthene-d10	1	39	50	97	Low
SGSA	8270DSIM	UPC-MW2	Fluoranthene-d10	1	47	50	97	Low

6.d.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:**

There were 28 results affected by surrogate recovery failures. Project-sample results are not considered affected if the associated surrogate was recovered high and the associated analyte was non-detect.

Detected results affected by low surrogate recovery failures (Recovery < LCL) are qualified 'J-' as estimated with a low bias.

Non-detect results affected by low surrogate recovery failures (Recovery < LCL) are qualified 'UJ', indicating there is uncertainty in the presence or absence of the analyte at the listed reporting limit, due to potential low bias.

Method	Sample ID	Analyte	Units	Result	QC Flag
8270DSIM	UPC-MW1	1-Methylnaphthalene	ug/L	1.48	J-
8270DSIM	UPC-MW1	2-Methylnaphthalene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Acenaphthene	ug/L	0.0783	J-
8270DSIM	UPC-MW1	Acenaphthylene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Anthracene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Benzo(a)anthracene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Benzo(a)pyrene	ug/L	0.0100 U	UJ
8270DSIM	UPC-MW1	Benzo(b)fluoranthene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Benzo(g,h,i)perylene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Benzo(k)fluoranthene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Chrysene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Dibenzo(a,h)anthracene	ug/L	0.0100 U	UJ
8270DSIM	UPC-MW1	Fluoranthene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Fluorene	ug/L	0.0340 J	J-
8270DSIM	UPC-MW1	Indeno(1,2,3-cd)pyrene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW1	Naphthalene	ug/L	0.168	J-
8270DSIM	UPC-MW1	Phenanthrene	ug/L	0.0500 U	UJ
8270DSIM	UPC-MW1	Pyrene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Benzo(a)anthracene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Benzo(a)pyrene	ug/L	0.0100 U	UJ
8270DSIM	UPC-MW2	Benzo(b)fluoranthene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Benzo(g,h,i)perylene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Benzo(k)fluoranthene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Chrysene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Dibenzo(a,h)anthracene	ug/L	0.0100 U	UJ
8270DSIM	UPC-MW2	Fluoranthene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Indeno(1,2,3-cd)pyrene	ug/L	0.0250 U	UJ
8270DSIM	UPC-MW2	Pyrene	ug/L	0.0250 U	UJ

**6.d.iv) Data quality or usability affected?**

Data quality is affected as described above. Refer to the data quality assessment for discussion of potential impacts to data usability.

## Trip Blanks

Note: Only required for volatile analyses

**6.e.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:**

One trip blank was submitted alongside field samples for the following volatile organic analyses: 8260D, AK101.

**6.e.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:****6.e.iii) All results less than LOQ and project specified objectives?**

Yes  No  N/A

**Comments:****6.e.iv) If above LOQ or project specified objectives, what samples are affected?**

No analytes were detected in any trip blank sample. No sample results were affected.

**6.e.v) Data quality or usability affected?**

Data quality and usability were not affected.

## Field Duplicate(s) or Replicates

### 6.f.i) One field duplicate submitted per matrix, analysis and 10 project samples?

Yes  No  N/A

#### Comments:

One field replicate was collected and submitted, compared to four primary samples (25% collection frequency), meeting or exceeding the minimum required collection frequency. Refer to the table below for a full list of primary samples and associated replicates.

Sample	Association Type	Associated Samples
UPC-MW11	Field_Duplicate	UPC-MW1

### 6.f.ii) Submitted blind to lab?

Yes  No  N/A

#### Comments:

### 6.f.iii) Precision – All relative percent differences (RPD) less than specified project objectives? (Recommended: 30% Water/Air, 50% Soil)

Yes  No  N/A

#### Comments:

RPDs for each field duplicate sample pair were calculated and compared to the ADEC recommended measurement quality objectives (MQO) for the sample medium (30%), where an analyte was quantitatively detected (above the LOQ) in at least one sample. There were one field duplicate sample pair RPD failures identified. Refer to the table below for details.

Method	Analyte	Sample	Sample Result	Associated Sample	Associated Result	RPD	Sample QC Flag	Associated QC Flag
8270DSIM	1-Methylnaphthalene	UPC-MW11	0.71	UPC-MW1	1.48	70.3	J	J

### 6.f.iv) Data quality or usability affected?

Affected results are qualified 'J' (for detections) or 'UJ' (for non-detects), indicating the result is estimated with an indeterminate direction of bias. The higher of duplicate results should be used as the estimated concentration of the analyte at the sampled location for project decision-making purposes.

## Decontamination/Rinsate or Equipment Blanks

**6.g.i) Decontamination or Equipment Blank submitted and analyzed (If not applicable, a comment stating why must be entered below)?**

Yes  No  N/A

**Comments:**

An equipment/decontamination blank was not required nor submitted for the matrix and methods performed for this work order.

**6.g.ii) All results less than LOQ and project specified objectives?**

Yes  No  N/A

**Comments:**

N/A; No equipment/decontamination blank samples were submitted.

**6.g.iii) If above LOQ or project specified objectives, what samples are affected?**

N/A; see above.

**6.g.iv) Data quality or usability affected?**

Data quality and usability were not affected.

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

**7.a) Defined and Appropriate?**

Yes  No  N/A

**Comments:**

The laboratory qualified estimated results detected between the DL and the LOQ with "J" qualifiers. There were no additional data qualifiers applied by the laboratory.

**Summary of Qualified Data**  
2022 Groundwater Investigation  
Data Quality Assessment

Table 1 - Summary of Qualified Data																	
Lab	SDG	Client_Sample_ID	Matrix	Method	Analyte	CAS	Units	DL	LOD	LOQ	Result	Lab Flag	QC Flags	Note	Final QC Flag	Final Qualified Result	PAL
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	1-Methylnaphthalene	90-12-0	µg/L	0.0150	0.0250	0.0500	1.48	NA	J,J-	FD_RPD,SURR_%R	J	1.48 J	11.0
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	2-Methylnaphthalene	91-57-6	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	36.0
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Acenaphthene	83-32-9	µg/L	0.0150	0.0250	0.0500	0.0783	NA	J-	SURR_%R	J-	0.0783 J-	530
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Acenaphthylene	208-96-8	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	260
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Anthracene	120-12-7	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	43.0
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Benzo(a)anthracene	56-55-3	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.300
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Benzo(a)pyrene	50-32-8	µg/L	0.00620	0.0100	0.0200	ND	NA	UJ	SURR_%R	UJ	0.0100 UJ	0.250
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Benzo(b)fluoranthene	205-99-2	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	2.50
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Benzo(g,h,i)perylene	191-24-2	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.260
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Benzo(k)fluoranthene	207-08-9	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.800
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Chrysene	218-01-9	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	2.00
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Dibenzo(a,h)anthracene	53-70-3	µg/L	0.00620	0.0100	0.0200	ND	NA	UJ	SURR_%R	UJ	0.0100 UJ	0.250
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Fluoranthene	206-44-0	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	260
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Fluorene	86-73-7	µg/L	0.0150	0.0250	0.0500	0.0340	J	J-	SURR_%R	J-	0.0340 J-	290
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	Indeno(1,2,3-cd)pyrene	193-39-5	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.190

**Summary of Qualified Data**

<p><b>Notes:</b></p> <p><b>FD_RPD:</b> Field duplicate relative percent difference failure  <b>SURR_%R:</b> Surrogate spike percent recovery failure</p> <p><b>QC Flags:</b></p> <p><b>J:</b> The quantitation is considered estimated, with an indeterminate direction of bias.  <b>UJ:</b> The analyte was not detected, however there is uncertainty in the presence or absence of the analyte due to a QC anomaly  <b>J-:</b> The quantitation is considered estimated, biased low, due to a QC anomaly.</p>	<p><b>Definitions:</b></p> <p><i>Yellow highlight indicates a result should be used with caution</i>  <i>Light red highlight indicates a result was flagged for rejection</i></p> <p><b>µg/L:</b> micrograms per liter  <b>SDG:</b> sample delivery group  <b>CAS:</b> Chemical Abstract Service registry number  <b>DL:</b> detection limit  <b>LOD:</b> limit of detection  <b>LOQ:</b> limit of quantitation  <b>QC:</b> quality control  <b>ND/JU:</b> non-detect  <b>NA:</b> not applicable</p>	<p><b>PAL Sources:</b></p> <p><b>Ground_Water ADEC Table C GCL:</b> ADEC 18 AAC 75.345 Table C Groundwater Cleanup Levels</p>
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Table 1 - Summary of Qualified Data

Lab	SDG	Client_Sample_ID	Matrix	Method	Analyte	CAS	Units	DL	LOD	LOQ	Result	Lab Flag	QC Flags	Note	Final QC Flag	Final Qualified Result	PAL
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	<i>Naphthalene</i>	91-20-3	µg/L	0.0310	0.0500	0.100	0.168	NA	J-	SURR_%R	J-	0.168 J-	1.70
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	<i>Phenanthrene</i>	85-01-8	µg/L	0.0310	0.0500	0.100	ND	NA	UJ	SURR_%R	UJ	0.0500 UJ	170
SGSA	1223225	UPC-MW1	Ground_Water	8270DSIM	<i>Pyrene</i>	129-00-0	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	120
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Benzo(a)anthracene</i>	56-55-3	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.300
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Benzo(a)pyrene</i>	50-32-8	µg/L	0.00620	0.0100	0.0200	ND	NA	UJ	SURR_%R	UJ	0.0100 UJ	0.250
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Benzo(b)fluoranthene</i>	205-99-2	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	2.50
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Benzo(g,h,i)perylene</i>	191-24-2	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.260
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Benzo(k)fluoranthene</i>	207-08-9	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.800
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Chrysene</i>	218-01-9	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	2.00
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Dibenzo(a,h)anthracene</i>	53-70-3	µg/L	0.00620	0.0100	0.0200	ND	NA	UJ	SURR_%R	UJ	0.0100 UJ	0.250
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Fluoranthene</i>	206-44-0	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	260
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Indeno(1,2,3-cd)pyrene</i>	193-39-5	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	0.190
SGSA	1223225	UPC-MW2	Ground_Water	8270DSIM	<i>Pyrene</i>	129-00-0	µg/L	0.0150	0.0250	0.0500	ND	NA	UJ	SURR_%R	UJ	0.0250 UJ	120
SGSA	1223225	UPC-MW11	Ground_Water	8270DSIM	<i>1-Methylnaphthalene</i>	90-12-0	µg/L	0.0150	0.0250	0.0500	0.710	NA	J	FD_RPD	J	0.710 J	11.0

# ATTACHMENT E

## CONCEPTUAL SITE MODEL

# HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: University Park Condos, 656 Fairbanks, Alaska 99709  
ADEC File Number 100.38.162

Completed By: Leslie Brooks, Arctic Data Services, LLC  
 Date Completed: 01/06/2023

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

(1) Media	(2) Transport Mechanisms
<input checked="" type="checkbox"/> Surface Soil (0-2 ft bgs)	<input checked="" type="checkbox"/> Direct release to surface soil <i>check soil</i>
	<input checked="" type="checkbox"/> Migration to subsurface <i>check soil</i>
	<input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i>
	<input checked="" type="checkbox"/> Volatilization <i>check air</i>
	<input type="checkbox"/> Runoff or erosion <i>check surface water</i>
	<input type="checkbox"/> Uptake by plants or animals <i>check biota</i>
<input type="checkbox"/> Subsurface Soil (2-15 ft bgs)	<input checked="" type="checkbox"/> Direct release to subsurface soil <i>check soil</i>
	<input checked="" type="checkbox"/> Migration to groundwater <i>check groundwater</i>
	<input checked="" type="checkbox"/> Volatilization <i>check air</i>
	<input type="checkbox"/> Uptake by plants or animals <i>check biota</i>
<input type="checkbox"/> Ground-water	<input type="checkbox"/> Direct release to groundwater <i>check groundwater</i>
	<input type="checkbox"/> Volatilization <i>check air</i>
	<input type="checkbox"/> Flow to surface water body <i>check surface water</i>
	<input type="checkbox"/> Flow to sediment <i>check sediment</i>
	<input type="checkbox"/> Uptake by plants or animals <i>check biota</i>
<input type="checkbox"/> Surface Water	<input type="checkbox"/> Direct release to surface water <i>check surface water</i>
	<input type="checkbox"/> Volatilization <i>check air</i>
	<input type="checkbox"/> Sedimentation <i>check sediment</i>
	<input type="checkbox"/> Uptake by plants or animals <i>check biota</i>
<input type="checkbox"/> Sediment	<input type="checkbox"/> Direct release to sediment <i>check sediment</i>
	<input type="checkbox"/> Resuspension, runoff, or erosion <i>check surface water</i>
	<input type="checkbox"/> Uptake by plants or animals <i>check biota</i>
	<input type="checkbox"/> Other (list): _____

(3) Exposure Media	(4) Exposure Pathway/Route	(5) Current & Future Receptors						
		Residents (adults or children)	Commercial or Industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
<input checked="" type="checkbox"/> soil	<input checked="" type="checkbox"/> Incidental Soil Ingestion							
	<input checked="" type="checkbox"/> Dermal Absorption of Contaminants from Soil							
	<input type="checkbox"/> Inhalation of Fugitive Dust							
<input checked="" type="checkbox"/> groundwater	<input checked="" type="checkbox"/> Ingestion of Groundwater	F	F	F				
	<input checked="" type="checkbox"/> Dermal Absorption of Contaminants in Groundwater	F	F	F				
	<input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input checked="" type="checkbox"/> air	<input checked="" type="checkbox"/> Inhalation of Outdoor Air							
	<input checked="" type="checkbox"/> Inhalation of Indoor Air							
	<input type="checkbox"/> Inhalation of Fugitive Dust							
<input type="checkbox"/> surface water	<input type="checkbox"/> Ingestion of Surface Water							
	<input type="checkbox"/> Dermal Absorption of Contaminants in Surface Water							
	<input type="checkbox"/> Inhalation of Volatile Compounds in Tap Water							
<input type="checkbox"/> sediment	<input type="checkbox"/> Direct Contact with Sediment							
<input type="checkbox"/> biota	<input type="checkbox"/> Ingestion of Wild or Farmed Foods							

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

**Site Name:**

**File Number:**

**Completed by:**

### Introduction

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

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

### 1. General Information:

**Sources** *(check potential sources at the site)*

- |  |  |
|--|--|
| <input type="checkbox"/> USTs                          | <input type="checkbox"/> Vehicles                    |
| <input checked="" type="checkbox"/> ASTs               | <input type="checkbox"/> Landfills                   |
| <input type="checkbox"/> Dispensers/fuel loading racks | <input type="checkbox"/> Transformers                |
| <input type="checkbox"/> Drums                         | <input type="checkbox"/> Other: <input type="text"/> |

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

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Spills | <input type="checkbox"/> Direct discharge            |
| <input type="checkbox"/> Leaks             | <input type="checkbox"/> Burning                     |
|  | <input type="checkbox"/> Other: <input type="text"/> |

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

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Surface soil (0-2 feet bgs*)  | <input checked="" type="checkbox"/> Groundwater      |
| <input checked="" type="checkbox"/> Subsurface soil (>2 feet bgs) | <input type="checkbox"/> Surface water               |
| <input type="checkbox"/> Air                                      | <input type="checkbox"/> Biota                       |
| <input type="checkbox"/> Sediment                                 | <input type="checkbox"/> Other: <input type="text"/> |

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

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Residents (adult or child)           | <input checked="" type="checkbox"/> Site visitor     |
| <input type="checkbox"/> Commercial or industrial worker                 | <input checked="" type="checkbox"/> Trespasser       |
| <input checked="" type="checkbox"/> Construction worker                  | <input type="checkbox"/> Recreational user           |
| <input type="checkbox"/> Subsistence harvester (i.e. gathers wild foods) | <input type="checkbox"/> Farmer                      |
| <input type="checkbox"/> Subsistence consumer (i.e. eats wild foods)     | <input type="checkbox"/> Other: <input type="text"/> |

\* bgs - below ground surface

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

a) Direct Contact -

1. Incidental Soil Ingestion

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

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

Complete

Comments:

Based on the results of analytical sampling, the incidental soil ingestion pathway is deemed insignificant, as contaminant levels are below human health soil cleanup levels.

2. Dermal Absorption of Contaminants from Soil

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

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

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

Complete

Comments:

Based on the results of analytical sampling, the dermal absorption of contaminants from soil pathway is deemed insignificant, as contaminant levels are below human health soil cleanup levels.

b) Ingestion -

1. Ingestion of Groundwater

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

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

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

Complete

Comments:

Bases on the results of analytical sampling, GW contaminants are above the groundwater cleanup levels at the source area. Contaminated GW on the site is not a current source of drinking water, but may be in the future.

## 2. Ingestion of Surface Water

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

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

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

Incomplete

Comments:

The nearest body of surface water is Deadman Slough, 150 feet to the west. Currently, contaminants are not migrating to Deadman Slough. Analytical results and field screening confirmed absence of groundwater and surface contamination adjacent the closer seasonal channel.

## 3. Ingestion of Wild and Farmed Foods

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

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

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

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

Incomplete

Comments:

### c) Inhalation-

#### 1. Inhalation of Outdoor Air

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

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

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

Complete

Comments:

Based on the results of analytical sampling, the inhalation of outdoor air exposure pathway is deemed insignificant.

## 2. Inhalation of Indoor Air

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



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



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

Complete

Comments:

The inhalation of indoor air (vapor intrusion) pathway is deemed insignificant due to the results of analytical sampling, and the separation of the boiler room where the release occurred from the rest of the building.



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

**Dermal Exposure to Contaminants in Groundwater and Surface Water**

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

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

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

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

Comments:

**Inhalation of Volatile Compounds in Tap Water**

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

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

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

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

Comments:

## Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

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

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

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

Comments:

## Direct Contact with Sediment

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

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

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

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

Comments:

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

# ATTACHMENT F

## ADEC COMMENTS

# ADEC Comments to *Groundwater Investigation Report* for University Park Condos Spill

Reviewer: Rebekah Reams, Alaska Department of Environmental Conservation, Contaminated Sites Program

Comment No.	Pg. #	Section	Comment / Recommendations	Response (4/24/2023, Arctic Data Services)
1.	5	Well Sampling	Was disposable sampling equipment used during this monitoring event? If not, was equipment decontamination between sample locations?	No disposable equipment was used. A reusable submersible pump was used to collect the samples and was decontaminated between sampling locations. The pump was decontaminated by running it in an Alconox solution, then tap water, followed by three distilled-water rinses. Wells were sampled in the order of least likely to be contaminated to most likely, and no equipment blank was collected, in accordance with the ADEC approved work plan. The report will be revised to note the decontamination procedure.
2.	3	Well Installation	Please provide a brief description of the field screening methods that were implemented during monitoring well installation.	Immediately upon opening a soil core, field-screening samples were collected from 2.5-foot intervals and immediately placed in Ziploc bags, which were sealed and allowed to warm for at least 10 minutes, then read with a photoionization detector. The report will be revised to note the field screening procedure.
3.	4	Investigation Derived Waste Management	Was soil investigative derived waste generated during this site characterization work? If so, please describe how soil waste was managed.	No soil IDW was planned, however the drillers did not have the correct tooling to advance the wells without sampling. Since sampling occurred, we field screened the soil cores and did generate some soil IDW. The volume of soil generated

				during well installation was minimal and was used to backfill the boreholes around the well above the seal, consistent with prior soil IDW management from the 2021 soil investigation. At MW-1, where field screening readings exceeded 20 ppm, care was taken to ensure the soil was placed below 2 ft. bgs, then the remainder of the borehole filled with pea gravel to the surface.
4.	6	Recommendations	ADEC concurs with the recommendations outlined in this section of the report. Please submit a work plan that details how these recommendations will be implemented at this site.	Acknowledged.
5.	6	Recommendations	<p>This section of the report notes that natural attenuation with long-term monitoring is the proposed remedial action.</p> <p>Please note that ADEC considers the long-term groundwater monitoring proposed in this section of the report to be the next step in the site characterization process under 18 AAC 75.335, rather than the selection of a remedial action under 18 AAC 75.360. Evaluating seasonal variations in groundwater depth and flow direction and establishing contaminant trends over time is an integral step in the site characterization process. When selecting natural attenuation as a site cleanup technique, monitoring activities should include elements outlined in 18 AAC 75.360 (11)(E) in order to evaluate the viability of the selected remedy and ensure this approach is expected to achieve site cleanup goals.</p> <p>The data collected during upcoming groundwater monitoring can be used to support the selection of remedial techniques at the site.</p>	Acknowledged, thank you for clarifying the process.

6.		Figure 2	Please note what the asterisks applied to MW-1 results in the data table on Figure 2 represent.	Asterisks indicate the PAL was exceeded. A note will be added to the legend defining this.
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