

April 30, 2021

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Subject: ARRC Hurricane 2020 Site Characterization Letter Report Rev 1.0
ADEC File No. 2258.26.008

Mr. Grandel:

Restoration Science & Engineering, LLC (RSE) is providing the following letter report for field efforts conducted in 2020 at the Alaska Railroad Corporation (ARRC) Hurricane Siding site located at Milepost 281.4, near Hurricane, Alaska (see Figure 1 in Attachment A). The field-related tasks for the subject property included: the installing five (5) soil borings to be completed as monitoring wells RSE-11, RSE-12, RSE-13, RSE-14, RSE-15 and RSE-16; collecting soil and groundwater samples from the 5 new soil borings/monitoring wells; collecting groundwater samples from the new and existing monitoring wells; and a groundwater elevation survey for the all monitoring wells at the subject property (see Figures 2-3 in Attachment A for new and existing soil boring/monitoring well locations). This site is listed under file 2258.26.008 in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database.

SITE OVERVIEW

In 1990, two (2) underground storage tanks (USTs), one (1) 500-gallon gasoline and one (1) 7,500-gallon diesel were removed from the ARRC Hurricane Siding site. At that time, laboratory analytical data for soil samples indicated elevated concentrations of volatile petroleum hydrocarbons at the gasoline UST excavation area, and elevated concentrations of total petroleum hydrocarbons at the diesel UST excavation area.

In September 2011, RSE provided environmental oversight for the advancement of four (4) soil borings later completed as groundwater monitoring wells (RSE-1, RSE-2, RSE-3, and RSE-4) to define the horizontal and vertical extent of remaining petroleum hydrocarbon impacts. Analytical soil samples analyzed for hydrocarbons confirmed subsurface soil conditions were below ADEC Method 2 Migration to Groundwater (MTG) soil cleanup levels. A groundwater sample from monitoring well RSE-4 measured 1.52 mg/L diesel range organics (DRO), nominally above the ADEC Table C Groundwater cleanup level (GCL) of 1.5 mg/L (see Figures 2-3 in Attachment B).

Monitoring well RSE-4 is downgradient of the former UST location. All other September 2011 groundwater sample results showed DRO below the 1.5 mg/L GCL (RSE, 2011).

Groundwater sampling events were conducted at the four monitoring wells by Fairbanks Environmental Services (FES) in 2012, 2013, 2014 and 2016. 2012 groundwater sample results were either non-detect or below GCLs (FES, 2012). In 2013, DRO and RRO concentrations in RSE-3 were 5.51 mg/L and 1.34 mg/L, respectively. All other 2013 sample results were either non-detect or below GCLs (FES, 2013). In 2014, DRO was detected in RSE-3 at 1.88 mg/L, while all other 2014 groundwater sample results were either non-detect or below GCLs (FES, 2014). All 2016 groundwater sample results were either non-detect or below the GCLs (FES, 2016).

In 2015, FES, along with its subcontractor Pinnacle Construction, removed approximately 100 cy of petroleum, soil and lubricants (POL)-contaminated soil from the subject property. Two excavations were dug at the UST area, one on either side of the buried utilities. Screening and laboratory data indicated that the most POL-contaminated soil was removed from the source area during these excavation efforts. These excavations were backfilled after sampling.

RSE conducted groundwater sampling efforts of the four monitoring wells in 2017 and 2018. In 2017, monitoring well RSE-3 exhibited a DRO concentration of 1.95 mg/L, slightly above the GCL of 1.5 mg/L. During the 2017 assessment, naphthalene was detected in RSE-4 at concentrations exceeding the new (2016) established GCL (RSE, 2017).

RSE sampled RSE-1, RSE-2, RSE-3, and RSE-4 in September of 2018 and completed a groundwater elevation survey of the four wells. Elevation data indicate the groundwater gradient was towards the northwest. Laboratory results from this sampling event indicate that RSE-3 and RSE-4, the downgradient wells, yielded DRO and naphthalene levels exceeding GCLs (RSE, 2019b).

In 2019, RSE conducted site characterization efforts at the ARRC Hurricane site. RSE installed three (3) hand-operated Bosch vibratory drive hammer soil cores (RSE-5, RSE-6, and RSE-7), collected field-screening and analytical soil samples from the core barrel 0.9-inch diameter polyethylene slip liners. RSE collected groundwater samples from all four (4) existing wells (RSE-1, RSE-2, RSE-3, and RSE-4), and also performed a groundwater elevation survey. RSE advanced two (2) more vibratory drive cores (RSE-8 and RSE-9) and collected soil field-screening data. These two cores were in addition to the original scope of work outlined in the September 17, 2019 ADEC-approved work plan.

All 2019 results for the groundwater samples collected from monitoring wells RSE-1, RSE-2, RSE-3 and RSE-4 were either non-detect or below GCLs. RSE was unable to collect groundwater

samples from soil core holes RSE-5, RSE-6, RSE-7, RSE-8 or RSE-9. RSE-8 and RSE-9 were only intended to provide additional soil data for the site. Absence of groundwater in soil core holes RSE-5, RSE-6 and RSE-7 was likely due to a smear effect from the vibratory coring installation. A smear effect appeared to result from silty soil occluding soil pores preventing groundwater intrusion.

Analytical soil sample results indicate that hydrocarbon impacts are present downgradient from the four original monitoring wells. DRO results for soil borings RSE-6 and RSE-7 were 391 mg/Kg and 2,610 mg/Kg, respectively. Additionally, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 1-methylnaphthalene and 2-methylnaphthalene results for soil boring RSE-7 were above MTG cleanup levels. Soil sample results from soil boring RSE-5 were either non-detect or below the MTG cleanup levels.

2020 OBJECTIVES

The objectives of the 2020 field efforts were to provide additional site characterization data to determine the vertical and horizontal extents of the contamination present west and northwest of the tool shed located at the subject property. RSE installed five soil borings (RSE-11, RSE-12, RSE-13, RSE-14 and RSE-15) completed as monitoring wells at the Hurricane site (see Figures 2-3 in Attachment A for soil borings/well locations) RSE sampled the groundwater from the new monitoring wells and the existing monitoring wells (RSE-1, RSE-2, RSE-3, and RSE-4). Additionally, RSE conducted a groundwater elevation survey of all monitoring wells at the subject property to determine the groundwater gradient at the site.

CONTAMINANTS OF POTENTIAL CONCERN

RSE identified the following contaminants of potential concern (COPCs):

Table A. Contaminants of Potential Concern in Soil

COPC	Matrix	COPC Abbreviation	ADEC-Approved Lab Method	ADEC Soil Cleanup Level
Gasoline Range Organics	Soil	GRO	AK 101	300 mg/Kg
Diesel Range Organics	Soil	DRO	AK 102	250 mg/Kg
Residual Range Organics	Soil	RRO	AK 103	11,000 mg/Kg
Petroleum Volatile Organic Compounds	Soil	Petro VOCs	EPA 8260C	Varies
Polycyclic Aromatic Hydrocarbons	Soil	PAH SIMs	EPA 8270D	Varies

Table B. Contaminants of Potential Concern in Groundwater

COPC	Matrix	COPC Abbreviation	ADEC-Approved Lab Method	ADEC Groundwater Cleanup Level¹
Gasoline Range Organics	Water	GRO	AK 101	2.2 mg/L
Diesel Range Organics	Water	DRO	AK 102	1.5 mg/L
Residual Range Organics	Water	RRO	AK 103	1.1 mg/L
Petroleum Volatile Organic Compounds	Water	Petro VOCs	EPA 8260C	Varies
Polycyclic Aromatic Hydrocarbons	Water	PAH SIMs	EPA 8270D	Varies

FIELD EFFORTS

Field efforts outlined in the ADEC-approved work plan were conducted on September 18-20, 2020. On September 18, the subcontractor GeoTek Alaska, Inc (GTA) installed soil borings RSE-11, RSE-12, RSE-13, RSE-14, and RSE-15 using a Geoprobe 6121DT with Direct Push Technology (DPT) and a Macrocore soil sampling system (see Figures 2-3 in Attachment A for locations).

In the 2020 workplan, RSE originally proposed installing three sets of nested monitoring wells at the subject property. RSE-13 and RSE-14 were installed as nested wells; RSE-13 was installed to approximately 8 feet bgs and RSE-14 was installed to approximately 19 feet bgs. During installation, field-screening data suggested that contamination was likely limited to approximately 10 feet bgs. In soil boring RSE-14, RSE observed a dense clay layer at 11 feet bgs. The clay layer was persistent to 20 feet bgs, except for a 1-foot thick lens of coarse-grained sand at approximately 14 feet bgs. At monitoring well RSE-14, RSE installed the well screen from 12-17 feet bgs to intercept that sand lens under the clay layer and to provide a different screened interval than RSE-13 to evaluate the presence of upward vertical groundwater gradients. Monitoring well RSE-13 was installed 3 feet west of RSE-14 and completed at approximately 8 feet bgs to capture the shallow unconfined groundwater as observed at the installation of RSE-14.

At soil boring RSE-12, GTA encountered refusal at a dense clay layer observed at 12 feet bgs. Based upon the lithology observed during the installation of RSE-13 and RSE-14, it was determined that the same dense clay layer was likely present in this soil boring. RSE and ARRC field personnel called Grant Lidren of the ADEC to discuss deviating from the ADEC-approved work plan to account for the presence of this potential confining layer. Mr. Lidren approved installing three more soil borings completed as monitoring wells (RSE-11, RSE-12, and RSE-15)

down to the clay interval rather than installing two more sets of nested monitoring wells and one soil boring at the 2019 RSE-9 location.

GTA installed 2-inch Schedule 40 PVC riser with 10 feet of 0.010-inch slotted screen at monitoring wells RSE-12, RSE-14, and RSE-15. Wells RSE-11 was equipped with a 9 feet of screen and RSE-13 was constructed with a 6 feet of screen. A 10/20 silica sand pack was placed into the annulus from 1.5 feet bgs to the bottom of all RSE-11, RSE-12, RSE-13 and RSE-15. In RSE-14, a bentonite seal was placed into the annulus from 2-12 feet, and a 10/20 silica sand pack was placed from 12-19 feet. Each new monitoring well was completed with a flush-mount style protective 8-inch steel monument encased in concrete Boring logs for RSE-11, RSE-12, RSE-13, RSE-14, and RSE-15 are provided as Attachment D.

RSE sampled monitoring wells RSE-11, RSE-12, RSE-13, RSE-14 and RSE-15 the following day to all the groundwater to stabilize for at least 24 hours. During the installation of each soil boring, RSE collected one (1) field-screening soil sample approximately every two (2) feet as soil recoveries allowed. Field-screening samples were analyzed using a photo-ionization detector (PID) calibrated to 100 parts per million by volume (ppmv) isobutylene. Field-screening samples were directly into a quart-sized Ziploc™ plastic bag, which was warmed to at least 60°F prior to analyzing. RSE collected two (2) analytical soil samples from each soil boring: one (1) from the area yielding the highest PID reading, and one (1) from the soil/groundwater interface.

Field-screening information can be found as Table 1 in Attachment B. All analytical soil samples were analyzed for GRO, DRO, RRO, Petro VOCs and PAH SIMs.

All soil samples were collected using a clean, stainless-steel spoon and clean nitrile gloves. Analytical soil samples were collected in order of volatility with GRO and VOCs collected first, and non-volatiles collected thereafter. Analytical soil samples were placed directly into method-specific sample jars provided by SGS North America, Inc. (SGS), an ADEC-approved laboratory. The soil sample containers were placed into a cooler packed with gel-ice and maintained between 0° and 6°C. RSE field personnel noted the analytical soil sample ID, location, the depth below surface, sample time, and soil type. All analytical soil samples were transported under chain of custody (COC) to SGS for analyses.

RSE measured the depth to the bottom of each well and the depth to groundwater. Groundwater was encountered between 1 foot bgs and 4.5 feet bgs. Following these observations, RSE purged three (3) well volumes from each well using a low-flow submersible pump. Water quality parameters were monitored using a YSI 556 for stabilization when readings collected 3-5 minutes apart were within the following:

- pH \pm 0.1
- Temperature \pm 3% (minimum of \pm 0.2°C)
- Conductivity \pm 3%
- Dissolved Oxygen \pm 10%

Tabulated water quality data can be found as Table 5 in Attachment B.

RSE re-measured the depth to groundwater following purging, and prior to sampling, with a water level indicator. The groundwater levels were found to be slightly below their pre-purging levels during this second measurement.

One (1) primary groundwater sample was collected from monitoring wells RSE-1, RSE-2, RSE-3, RSE-4, RSE-11, RSE-12, RSE-13, RSE-14, and RSE-15. Each groundwater sample was analyzed for DRO, RRO, GRO, Petro VOCs, and PAH SIMs. For quality control purposes, a blind field duplicate sample (RSE-X) was collected while collecting groundwater sample RSE-15.

Groundwater samples were collected using new, dedicated tubing. The water level indicator and any other equipment that is not disposable or dedicated, such as the water level indicator or submersible pump was decontaminated with a distilled water and Alconox wash in the field. As water samples were collected, care was taken to minimize volatile loss by excessive turbulence or air mixing. Field personnel avoided spilling or over-diluting acid sample preservatives. Water samples were placed directly into method specific containers and stored in a clean sample cooler chilled to between 0° and 6° C. Coolers were transported under chain-of-custody to ADEC-approved laboratory, SGS, located in Anchorage, Alaska.

GROUNDWATER ELEVATION SURVEY

RSE conducted the groundwater elevation survey for RSE-1, RSE-3, RSE-4, RSE-11, RSE-12, RSE-13, RSE-14, and RSE-15 on September 19, 2020 using a Leica Rugby 620 and a Leica Rod Eye 160. RSE performed the survey two times to ensure accuracy. There two sets were within 0.02 feet of each other, indicating that the data gathered is adequate for a gradient determination. A temporary benchmark (TBM) was established using the northeast corner of the skid frame for the above ground storage tank (AST) frame. This AST is located north of the Hurricane Section House. The TBM location is shown in Figure 2 of Attachment A. RSE-2 was not included in the survey, as it was covered by a vehicle during the survey effort and RSE was unable to locate the owner of the vehicle to move it.

RSE calculated groundwater elevations from the survey data and then uploaded it into Surfer, a gradient modeling software program. RSE used Surfer to create a groundwater gradient figure

using this data and overlaid it onto the site map (Figure 3 in Attachment A). 2018 and 2019 groundwater elevation survey show a shallow gradient towards the northwest. The 2020 groundwater gradient confirms the trend observed in 2018 and 2019. The 2020 groundwater gradient can be seen in Figure 3 of Attachment A.

RSE compared the groundwater elevations between RSE-13 screened from 1 ft to 6 ft bgs and RSE-14 screened from 12 ft to 19 ft bgs. The groundwater elevation at RSE-14 was measured at a higher elevation than RSE-13 indicating a slight upward vertical gradient.

SAMPLE RESULTS

Soil Sample Results

RSE collected 10 soil samples from the five (5) soil borings, including one blind duplicate, RSE-X of RSE-11A. All soil samples were analyzed for GRO, DRO, RRO, Petro VOCs, and PAH SIMs.

DRO results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C, RSE-14C and RSE-15B ranged from 2,990 mg/Kg to 22,300 mg/Kg, above the MTG cleanup level of 250 mg/Kg. DRO results for all other soil samples were below the MTG cleanup level. Of specific interest were samples RSE-14H and RSE-14J collected at 14.5 ft and 18.5 ft below ground surface respectively and were yielded J-flagged values well below the MTG soil cleanup levels. These data support the at the vertical impacts of are limited to the unconfined shallow groundwater and do not extend below the clay layer encountered at around 10 feet bgs. GRO and RRO results for all soil samples were either non-detect or below the MTG cleanup levels.

1,2,4-trimethylbenzene, results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C, RSE-14C and RSE-15B ranged from 1,460 ug/Kg to 11,400 ug/Kg, above the MTG cleanup level of 610 ug/Kg. 1,3,5-trimethylbenzene results for soil samples RSE-X, RSE-11C, RSE-14C and RSE-15B ranged from 868 ug/Kg to 2,480 ug/Kg, above the MTG cleanup level of 660 ug/Kg. Ethylbenzene results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C and RSE-15B ranged from 282 ug/Kg to 582 ug/Kg, above the MTG cleanup level of 130 ug/Kg. Naphthalene results analyzed by EPA Method 8260 results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C, RSE-14C and RSE-15B ranged from 975 ug/Kg to 3,040 ug/Kg, above the MTG cleanup level of 38 ug/Kg. Total xylene results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C and RSE-15B ranged from 1,630 ug/Kg to 3,450 ug/Kg, above the MTG cleanup level of 1,500 ug/Kg. All other VOC results for all soil samples were either non-detect or below MTG cleanup levels.

1-methylnaphthalene results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C, RSE-14C and RSE-15B ranged from 2,130J ug/Kg to 12,700 ug/Kg, above the MTG cleanup level of 330 ug/Kg. 2-methylnaphthalene results for soil samples RSE-11A and its duplicate RSE-X, RSE-11C,

RSE-14C and RSE-15B ranged from 2,720J ug/Kg to 17,100 ug/Kg, above the MTG cleanup level of 410 ug/Kg. Naphthalene results analyzed by EPA Method 8270 for soil samples RSE-11A and its duplicate RSE-X and RSE-11C ranged from 1,870 J ug/Kg to 3,060 ug/Kg, above the MTG cleanup level of 38 ug/Kg. All other PAH SIM results were either non-detect or below the MTG cleanup levels.

Groundwater Sample Results

RSE collected nine (9) primary groundwater samples, RSE-1, RSE-2, RSE-3, RSE-4, RSE-11, RSE-12, RSE-13, RSE-14, and RSE-15. RSE also collected one blind field duplicate (RSE-X) while collecting groundwater sample RSE-15. DRO results in groundwater samples RSE-3, RSE-4, RSE-11, RSE-12, RSE-13, RSE-15 and its blind duplicate RSE-X ranged from 2.3 mg/L to 39.2 mg/L, above the ADEC GCL I of 1.5 mg/L. DRO results for groundwater samples RSE-1, RSE-2 and RSE-14 were below the GCL. RRO results for groundwater samples RSE-4, RSE-11, RSE-13, RSE-15 and its blind duplicate RSE-X ranged from 1.4 mg/L to 1.81 mg/L, above the GCL of 1.1 mg/L. All other RRO results were below their GCL. GRO results for groundwater samples RSE-15 and its blind duplicate RSE-X were 3.11 mg/L and 2.5 mg/L, respectively, above the GCL. GRO results for all other groundwater samples were non-detect or below their GCL.

1,2,4-trimethylbenzene, ethylbenzene, naphthalene, and total xylenes (analyzed by EPA Method 8260) results for groundwater samples RSE-11, RSE-15 and its blind duplicate RSE-X were above their GCLs. Additionally, naphthalene results analyzed by EPA Method 8260 in groundwater sample RSE-13 are above the GCL. All other Petro VOC results for all groundwater samples were either non-detect or below their GCLs.

1-methylnaphthalene and naphthalene by Method 8270 results for groundwater samples RSE-11, RSE-13, RSE-15 and its blind duplicate RSE-X were above their GCLs. All other PAH SIM results were non-detect or below their GCLs.

Tabulated groundwater data can be found in Tables 6 - 9 of Attachment B. The laboratory report can be found in Attachment E.

INVESTIGATIVE DERIVED WASTE

Consumables such as dedicated tubing, Ziploc™ bags, and nitrile gloves were placed into a trash receptacle for landfill disposal. Non-consumables such water level indicator and submersible pump were decontaminated using Alconox and distilled water between sampling at each well. All decontamination and purge water collected during the September 2020 site investigation efforts that didn't exhibit a sheen was run through a granulated activated carbon (GAC) filter onto a vegetated area approximately 100 feet away from the nearest well. Purge and

decontamination water that exhibited a sheen was stored in 5-gallon buckets pending ADEC approval to transport for disposal. Soil cuttings from soil borings RSE-11, RSE-12, RSE-13, RSE-14 and RSE-15 were placed into a 55-gallon drum and stored on site pending ADEC approval to transport for disposal.

QUALITY ASSURANCE AND QUALITY CONTROL

RSE collected soil and groundwater samples in accordance with applicable ADEC regulation, guidance documents, and the ADEC-approved work plan. RSE collected one blind groundwater sample, RSE-X from RSE-15, and one blind analytical soil sample, RSE-X from RSE-11A.

RSE deviated from the ADEC-approved work plan occurred during the field efforts conducted at the ARRC Hurricane site. RSE proposed to install three sets of nested monitoring wells to characterize the soil and groundwater contamination extents at the site. During the installation of the first set of nested monitoring wells (RSE-13 and RSE-14), a confining clay layer was observed at approximately 10 feet bgs. PID data from this clay layer, as well as PID and lab sample data from the top 10 feet, indicated that contamination was likely confined to the soils and groundwater above this clay layer, in part due to upward vertical gradients. RSE discussed the field observations with Mr. Grant Lidren, prior ADEC PM. Mr. Lidren agreed that further installation of nested pairs of monitoring wells was not necessary, instead to install three soil borings completed as monitoring wells to be terminated above the top of the confining clay layer at each proposed location. RSE did not include RSE-2 in the groundwater elevation survey, as a vehicle was parked on top of it during the survey and RSE could not locate the owner of the vehicle.

All the tabulated laboratory data is usable for its intended purpose of comparison to MTG soil cleanup levels and GCLs. Completed ADEC Laboratory Review Checklists for SGS Laboratory Reports (Attachment E) are found as Attachment F.

CONCLUSIONS AND RECOMMENDATIONS

During the ARRC Hurricane site 2020 field event, RSE installed five (5) soil borings completed as monitoring wells (RSE-11 – RSE-15) to provide site characterization data. RSE also sampled the four (4) existing monitoring wells (RSE-1 – RSE-4). RSE also conducted a groundwater elevation survey of the wells to establish well casing elevations and determine the groundwater flow direction at the site. A nested well pair (RSE-13 and RSE-14) was installed and indicated a slight upward vertical gradient.

Soil and groundwater sample results indicate that hydrocarbon impacts remain at the ARRC Hurricane site. The soil impacts appear to be limited vertically to the top 10 feet. Based on the

measured upward vertical groundwater gradient and the presence of a clay confining layer, it appears that the vertical extent of hydrocarbon impacts may be defined.

Horizontally, the south western limits of soil impacts appear to be defined by RSE-4 and RSE-12 soil samples from both of which were below MTG cleanup levels. However, both of these locations exceeded GCLs for DRO. The southern limit of the soil and groundwater contamination is north of RSE-1 and RSE-2 which have historically been sampled below GCLs.

Sampling results from new boring/monitoring wells RSE-11, RSE-12, RSE-13, RSE-14, and RSE-15 located downgradient of RSE-1, RSE-2, RSE-3 and RSE-4 showed some of the highest soil and groundwater impacts measured at this site indicating separate source of hydrocarbon contamination. Based on DRO in groundwater concentrations located in the immediate vicinity and possibly is associated with historic Tool Shed activities. VOC and PAH analysis from RSE-11 – RSE-15 indicate that this is a different source than previous investigations.

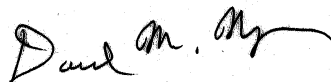
RSE recommends further site investigation efforts be conducted at the site. RSE recommends installing several new wells to complete the horizontal delineation of soil or groundwater impacts. Given a drainageway is located just to the north of the site, this feature could be examined for seepage or sheen or subjected to sampling of emergent groundwater with a hyporheic probe.

RSE recommends sampling monitoring wells RSE-3, RSE-4, RSE-11, RSE-12, RSE-13 and RSE-15 and any additional wells installed in the summer of 2021 to provide further groundwater characterization data for this site. RSE also recommends conducting a groundwater elevation survey of all wells to support gradient modeling. RSE suggests obtaining elevation of drainageway waters to use in plume extent evaluation.

Please contact Lisa Koeneman at (907) 278-1023 ext. 110, if you have any questions or comments. This report was prepared by an ADEC QEP in accordance with 18 AAC 75/78.



Lisa Koeneman, QEP
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David Nyman, PE

Attachments:

- Attachment A – Figures
- Attachment B – Tabulated Laboratory Results
- Attachment C – Select Site Photographs
- Attachment D – Soil Boring Logs
- Attachment E – SGS Laboratory Reports
- Attachment F – Laboratory Data Quality Review Checklists

References:

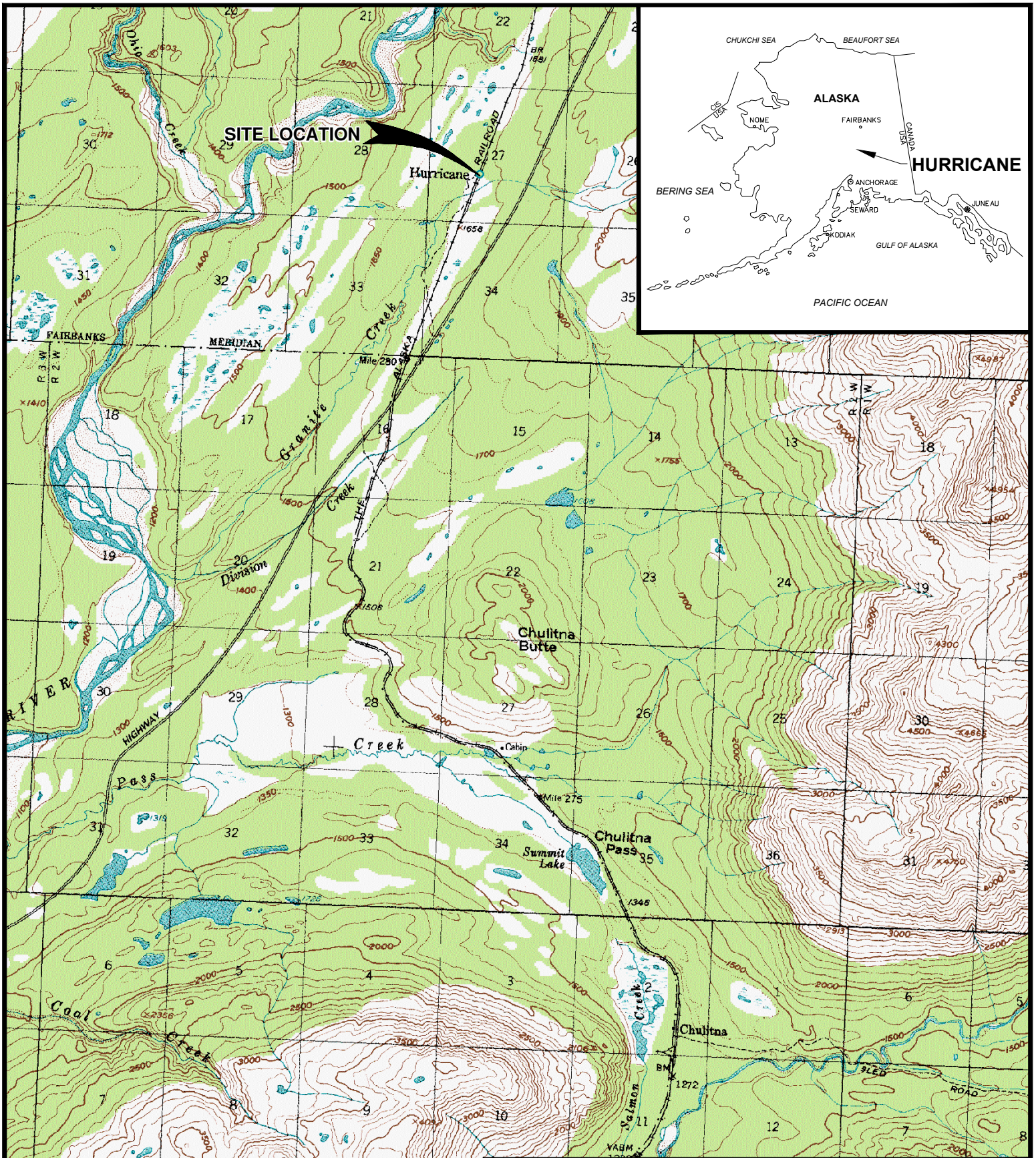
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Attachment A:
Figures





ARRC HURRICANE 2020 SITE CHARACTERIZATION LETTER REPORT

VICINITY MAP

HURRICANE, ALASKA

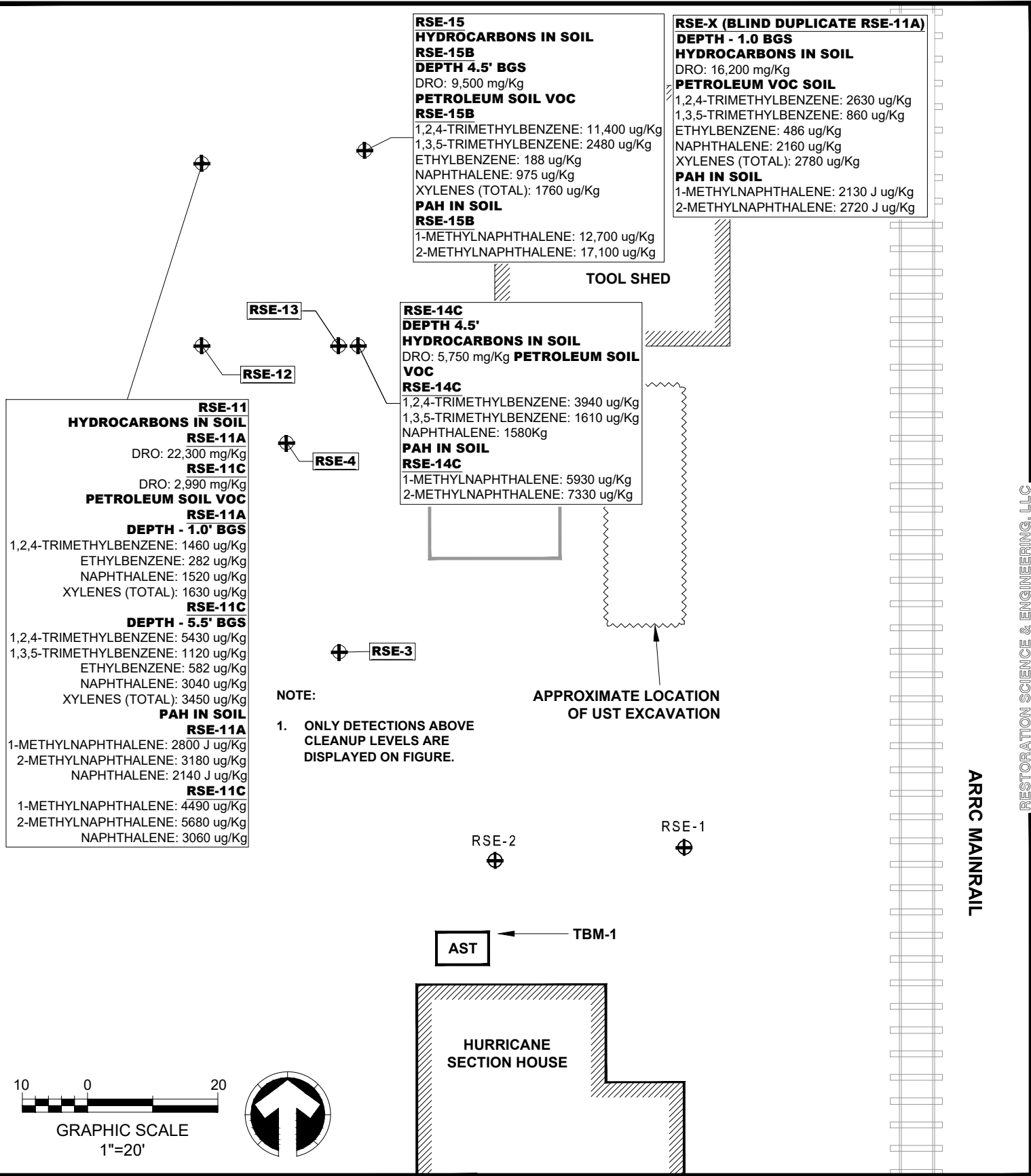
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JOB NO: 20-2218
 DATE: 12.8.2020

DRAWN: MB
 CHECKED: LK

FIGURE 1





RSE-12
GW @ 1.05' BGS
HYDROCARBONS IN GW
 DRO: 5.8 mg/L

RSE-13
GW @ 4.12' BGS
HYDROCARBONS IN GW
 DRO: 21 mg/L
 RRO: 1.4 mg/L
PETROLEUM GW VOC
 NAPHTHALENE: 6.02 ug/L
PAH IN GW
 1-METHYLNAPHTHALENE: 14 ug/L

RSE-14C
DEPTH 4.5'
GW @ 1.65' BGS

RSE-15
GW @ 1.72' BGS
HYDROCARBONS IN GW
 DRO: 39.2 mg/L
 RRO: 1.81 mg/L
 GRO: 3.11 mg/L
PETROLEUM GW VOC
 1,2,4-TRIMETHYLBENZENE: 144 ug/L
 1,3,5-TRIMETHYLBENZENE: 88.2 ug/L
 ETHYLBENZENE: 16 ug/L
 NAPHTHALENE: 89.4 ug/L
 XYLENES (TOTAL): 330 ug/L
PAH IN GW
 1-METHYLNAPHTHALENE: 51.5 ug/L

RSE-X (BLIND DUPLICATE RSE-15)
HYDROCARBONS IN GW
 DRO: 34 mg/L
 RRO: 1.53 mg/L
 GRO: 2.5 mg/L
PETROLEUM GW VOC
 1,2,4-TRIMETHYLBENZENE: 164 ug/L
 1,3,5-TRIMETHYLBENZENE: 82.5 ug/L
 ETHYLBENZENE: 15.2 ug/L
 NAPHTHALENE: 87 ug/L
 XYLENES (TOTAL): 343 ug/L
PAH IN GW
 1-METHYLNAPHTHALENE: 2130 J ug/Kg
 NAPHTHALENE: 2160 ug/Kg

RSE-11
GW @ 1.35' BGS
HYDROCARBONS IN GW
 DRO: 16.2 mg/L
 RRO: 1.81 mg/L
PETROLEUM GW VOC
 1,2,4-TRIMETHYLBENZENE: 141 ug/L
 ETHYLBENZENE: 40.5 ug/L
 NAPHTHALENE: 136 ug/L
 XYLENES (TOTAL): 238 ug/L
PAH IN GW
 1-METHYLNAPHTHALENE: 37.9 ug/L

RSE-4
GW @ 1.47' BGS
HYDROCARBONS IN GW
 DRO: 5.68 mg/L
 RRO: 1.69 mg/L
PETROLEUM GW VOC
 NAPHTHALENE: 1.5 ug/L

RSE-3
HYDROCARBONS IN GW
 DRO: 2.3 mg/L

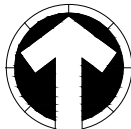
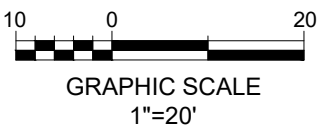
RSE-3
 GWE = 3.13' BGS

APPROXIMATE LOCATION
 OF UST EXCAVATION

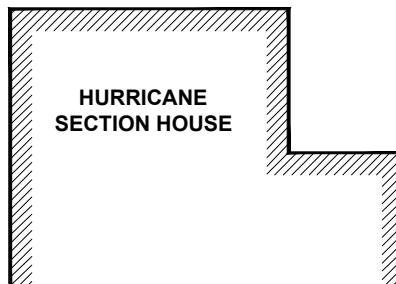
RSE-1
 GWE = 4.0' BGS

NOTE:

1. GROUNDWATER ELEVATIONS ARE BASED ON AN ASSUMED ELEVATION OF 100 FT AT TBM-1. TBM-1 IS THE NORTH EAST CORNER OF THE AST SKID.
2. ONLY DETECTIONS ABOVE CLEANUP LEVELS ARE DISPLAYED ON FIGURE.



AST ← TBM-1





TOOL SHED

ARRC MAINRAIL

RSE-X (BLIND DUPLICATE RSE-11A)
DEPTH - 1.0 BGS
HYDROCARBONS IN SOIL
 DRO: 16,200 mg/Kg
PETROLEUM VOC SOIL
 1,2,4-TRIMETHYLBENZENE: 2630 ug/Kg
 1,3,5-TRIMETHYLBENZENE: 860 ug/Kg
 ETHYLBENZENE: 486 ug/Kg
 NAPHTHALENE: 2160 ug/Kg
 XYLENES (TOTAL): 2780 ug/Kg
PAH IN SOIL
 1-METHYLNAPHTHALENE: 2130 J ug/Kg
 2-METHYLNAPHTHALENE: 2720 J ug/Kg

LEGEND

- RSE-1  APPROXIMATE LOCATION OF MONITORING WELL
- GWE  GROUND WATER ELEVATION

HURRICANE SECTION HOUSE

SITE PLAN

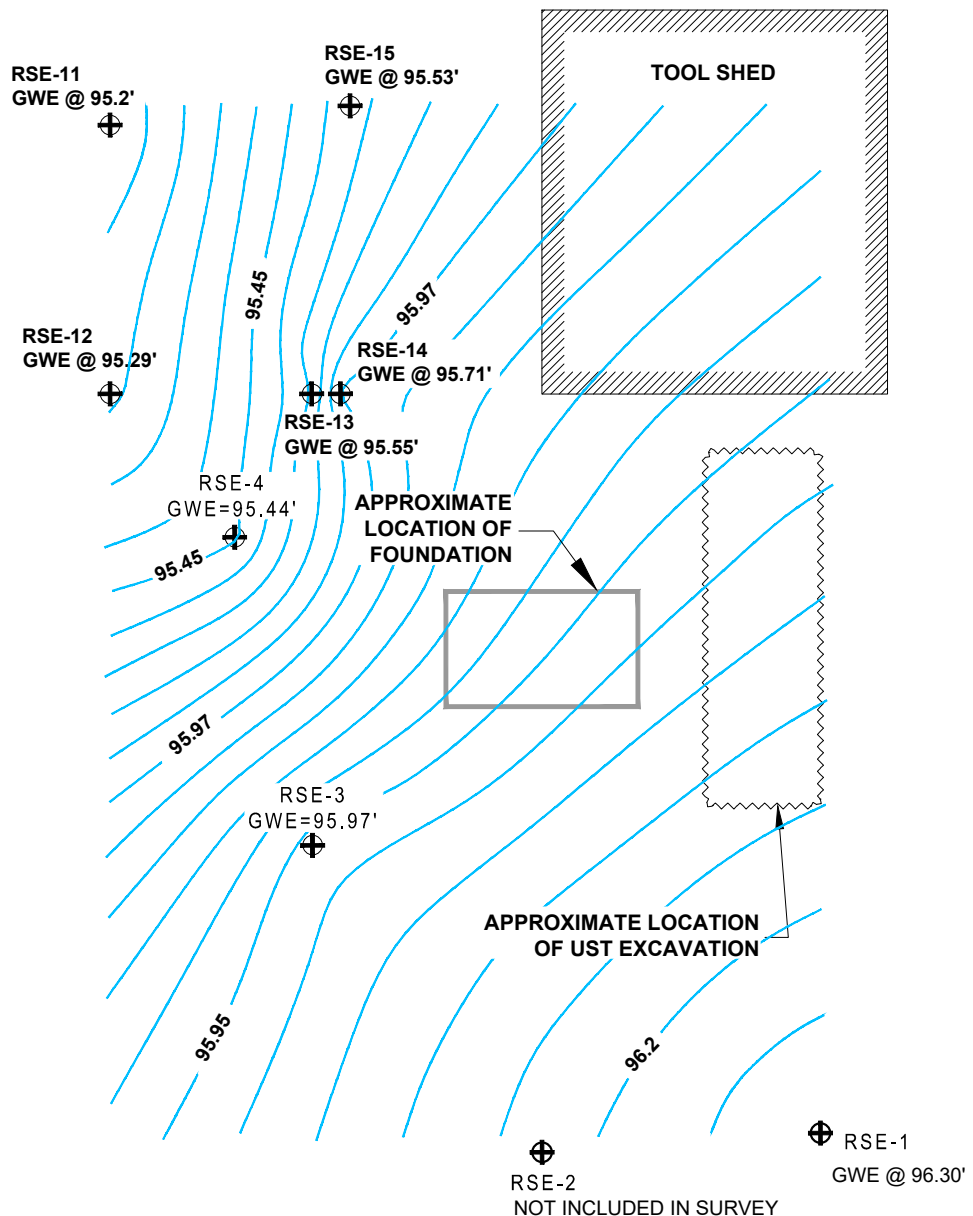
HURRICANE, ALASKA

JOB NO: 20.2218
 DATE: 4.27.2021

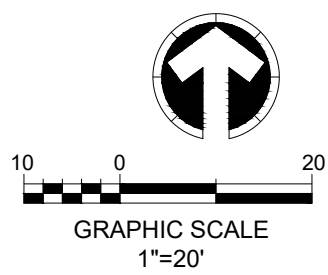
DRAWN: MSB
 CHECKED: LK



FIGURE 2a



NOTE:
 GROUNDWATER ELEVATIONS ARE BASED ON AN ASSUMED ELEVATION OF 100 FT AT TBM-1. TBM-1 IS THE NORTH EAST CORNER OF THE AST SKID.



LEGEND

- RSE-1 APPROXIMATE LOCATION OF MONITORING WELL
- GWE GROUND WATER ELEVATION

HURRICANE SECTION HOUSE	
GROUNDWATER GRADIENT MAP SEPTEMBER 19, 2021	
HURRICANE, ALASKA	
JOB NO: 20.2218	DRAWN: MSB
DATE: 3.10.2021	CHECKED: LK
<p>RESTORATION Science & Engineering, LLC 911 West 8th Avenue, Suite 100 Anchorage, Alaska 99501 PH (907) 278-1023 FAX (907) 277-5718</p>	
FIGURE 3	

Attachment B:
Tabulated Laboratory Results

TABLE 1
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
FIELD SCREENING RESULTS

FIELD SCREENING RESULTS					
SOIL BORING	SAMPLE ID	DATE	SAMPLE DEPTH (FEET)	PID RESULTS (PPMV)	DESCRIPTION
RSE-11	RSE-11A	9/18/2020	1	806.4	wet, light gray, fine- to coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-11B	9/18/2020	3	672.4	wet, light gray, fine- to coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-11C	9/18/2020	5.5	678.4	wet, light gray, fine- to coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-11D	9/18/2020	8	23.2	wet, light gray clay with sand and gravel, strong hydrocarbon odor
RSE-12	RSE-12A	9/18/2020	1	1.8	wet, tan fine- to coarse-grained sand with gravel
	RSE-12B	9/18/2020	3	12.9	wet, light gray, coarse-grained sand with gravel
	RSE-12C	9/18/2020	5.5	74.4	wet, light gray, coarse-grained sand with gravel, slight hydrocarbon odor
	RSE-12D	9/18/2020	7	6.4	wet, tan, coarse-grained sand with gravel, slight hydrocarbon odor
RSE-13	RSE-13A	9/18/2020	1	0.9	wet, tan, coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-13B	9/18/2020	3	397.1	wet, tan, coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-13C	9/18/2020	4.5	557.4	wet, light gray clay with gravel, strong hydrocarbon odor
	RSE-13D	9/18/2020	7	55.8	wet, tan, coarse-grained sand with gravel, slight hydrocarbon odor
RSE-14	RSE-14A	9/18/2020	1	0.4	wet, light brown to light gray, coarse-grained sand with gravel, slight hydrocarbon odor
	RSE-14B	9/18/2020	3	377.8	wet, tan, coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-14C	9/18/2020	4.5	449	wet, light gray silt/clay with coarse-grained sand, strong hydrocarbon odor
	RSE-14D	9/18/2020	6	182.4	wet, light gray coarse-grained sand with gravel, strong hydrocarbon odor
	RSE-14E	9/18/2020	8	58.9	wet, tan, coarse-grained sand with gravel, slight hydrocarbon odor
	RSE-14F	9/18/2020	11	1.1	wet, light gray clay with sand and gravel
	RSE-14G	9/18/2020	13	0.7	wet, light gray clay with sand
	RSE-14H	9/18/2020	14.5	1.9	wet, light gray coarse-grained sand
	RSE-14I	9/18/2020	16	0.8	wet, light gray clay with gravel
	RSE-14J	9/18/2020	18.5	2.4	moist, tan clay with gravel
RSE-15	RSE-15A	9/18/2020	1.5	1675	wet, light gray fine- to coarse-gained sand with gravel, strong hydrocarbon odor
	RSE-15B	9/18/2020	4.5	1682	wet, light gray fine- to coarse-gained sand with gravel, strong hydrocarbon odor
	RSE-15C	9/18/2020	7	1277	wet, light gray fine- to coarse-gained sand with gravel, strong hydrocarbon odor
	RSE-15D	9/18/2020	9	118.1	wet, light gray clay with sand and gravel, hydrocarbon odor

NOTES:

- 1) Field-screening measurements collected with a RAE Systems MiniRAE Lite photo-ionization detector (PID) calibrated with 100 ppmv isobutylene.
- 2) "PPMV" means "parts per million by volume."
- 3) Bold text indicates the sample was submitted for laboratory analyses.

TABLE 2
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
HYDROCARBO CONCENTRATIONS IN SOIL

HYDROCARBON CONCENTRATIONS IN SOIL								
SAMPLE ID	DATE	SAMPLE DEPTH (FEET)	PID RESULTS (PPMV)	TOTAL SOLIDS (%)	DIESEL RANGE ORGANICS	RESIDUAL RANGE ORGANICS	GASOLINE RANGE ORGANICS	SGS WORK ORDER
					(mg/Kg)	(mg/Kg)	(mg/Kg)	
RSE-11A	09/18/20	1	806.4	80.7	22300	506	40.8	1205106
RSE-11C	09/18/20	5.5	678.4	84.4	2990	59.0 U	20.0	
RSE-12B	09/18/20	3	12.9	80.3	49.2	61.0 U	4.47 J	
RSE-12C	09/18/20	5.5	74.4	86.6	168	57.5 U	2.59 J	
RSE-14C	09/18/20	4.5	449	81.9	5750	60.5 U	76.1	
RSE-14H	09/18/20	14.5	1.9	87.2	19.1 J	56.5 U	1.55 J	
RSE-14J	09/18/20	18.5	2.4	88.7	12.9 J	56.0 U	1.48 J	
RSE-15B	09/18/20	4.5	1682	91.6	9500	106 J	59.1	
RSE-15D	09/18/20	9	118.1	85.6	40.6	58.0 U	6.36	
RSE-X	09/18/20	1	806.4	84.8	16200	401	100	
ADEC TABLE B1 METHOD 2 MIGRATION TO GROUNDWATER CLEANUP LEVELS (18 AAC 75)					250	11000	300	

NOTES:

- 1) Diesel Range Organics analyses by Method AK 102 ; Gasoline Range Organics analyses by Method AK 101; Residual Range Organics analyses by Method AK103.
- 2) **Bold** font indicates that concentrations were detected above the detection limit (DL).
- 3) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; value given is the limit of detection.
- 4) J flag indicates that the result is an estimated value .
- 5) "PPMV" = "parts per million by volume;" "mg/Kg" = "miligrams per kilogram."
- 6) Yellow highlighting indicates that the analyte was detected above the ADEC cleanup level.
- 7) RSE-X is a blind duplicate of RSE-11A.

TABLE 3
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL

PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN SOIL											
SAMPLE ID	RSE-11A	RSE-11C	RSE-12B	RSE-12C	RSE-14C	RSE-14H	RSE-14J	RSE-15B	RSE-15D	RSE-X	ADEC METHOD 2 TABLE B1 MIGRATION TO GROUNDWATER SOIL CLEANUP LEVELS (ug/Kg)
DATE	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	
SAMPLE DEPTH (FEET)	1	5.5	3	5.5	4.5	14.5	18.5	4.5	9	1	
SGS WORK ORDER	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	
UNITS	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	
1,2,4-Trimethylbenzene	1460	5430	46.9 U	32.8 U	3940	34.3 U	43.6 U	11400	13.8 U	2630	610
1,2-Dibromoethane	0.945 U	0.685 U	0.940 U	0.655 U	0.970 U	0.685 U	0.870 U	0.498 U	0.875 U	0.975 U	0.24
1,2-Dichloroethane	1.89 U	1.37 U	1.88 U	1.31 U	1.94 U	1.37 U	1.75 U	0.995 U	1.75 U	1.96 U	5.5
1,3,5-Trimethylbenzene	469	1120	23.4 U	16.4 U	1610	17.1 U	21.8 U	2480	21.9 U	868	660
Benzene	11.8 U	8.55 U	11.8 U	8.20 U	12.1 U	8.60 U	10.9 U	6.25 U	10.9 U	12.2 U	22
Ethylbenzene	282	582	23.4 U	16.4 U	87.8	17.1 U	21.8 U	188	21.9 U	486	130
Isopropylbenzene (Cumene)	180	333	23.4 U	16.4 U	323	17.1 U	21.8 U	464	21.9 U	370	5600
Methyl-t-butyl ether	94.5 U	98.5 U	94.0 U	65.5 U	97.0 U	68.5 U	87.0 U	49.8 U	87.5 U	97.5 U	400
Naphthalene	1520	3040	23.4 U	23.4 J	1580	17.1 U	21.8 U	975	21.9 U	2160	38
P & M -Xylene	827	2170	46.9 U	32.8 U	365	34.3 U	43.6 U	1140	43.8 U	1440	See total Xylenes
Toluene	54.7	17.1 U	23.4 U	14.8 J	24.3 U	17.1 U	21.8 U	10.3 J	21.9 U	45.5 J	6700
Xylenes (total)	1630	3450	70.5 U	49.1 U	647	51.5 U	65.5 U	1760	65.5 U	2780	1500
n-Butylbenzene	279	661	23.4 U	16.4 U	2380	17.1 U	21.8 U	7630	15.3 J	559	23000
o-Xylene	807	1280	23.4 U	16.4 U	283	17.1 U	21.8 U	620	21.9 U	1340	See total Xylenes
sec-Butylbenzene	169	428	23.4 U	16.4 U	1160	17.1 U	21.8 U	1340	21.9 U	375	42000
tert-Butylbenzene	29.0 J	35.1	23.4 U	16.4 U	81.5	17.1 U	21.8 U	89.4	21.9 U	417	11000

NOTES:

- 1) Petroleum Volatile Organic Compounds analyses by Method EPA SW8260D.
- 2) Bold font indicates that concentrations were detected above the detection limit (DL).
- 3) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; value given is the limit of detection.
- 4) J flag indicates that the result is an estimated value .
- 5) Blue highlighting indicates that the DL is elevated above the cleanup level.
- 6) Yellow highlighting indicates that the analyte was detected above the ADEC cleanup level.
- 7) "ug/Kg" = "micrograms per kilogram."
- 8) RSE-X is a blind duplicate of RSE-11A.

TABLE 4
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
POLYCYCLIC AROMATIC HYDROCARBONS BY SELECT ION MONITORING CONCENTRATIONS IN SOIL

POLYCYCLIC AROMATIC HYDROCARBONS BY SELECT ION MONITORING CONCENTRATIONS IN SOIL											
SAMPLE NUMBER	RSE-11A	RSE-11C	RSE-12B	RSE-12C	RSE-14C	RSE-14H	RSE-14J	RSE-15B	RSE-15D	RSE-X	ADEC TABLE B1 METHOD 2 MIGRATION TO GROUNDWATER (ug/Kg)
DATE	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	09/18/20	
SAMPLE DEPTH (FEET)	1	5.5	3	5.5	4.5	14.5	18.5	4.5	9	1	
SGS WORK ORDER	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	
UNITS	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	(ug/Kg)	
1-Methylnaphthalene	2800 J	4490	15.4 U	14.3 U	5930	14.1 U	14.1 U	12700	14.4 U	2130 J	330
2-Methylnaphthalene	3180	5680	15.4 U	14.3 U	7330	14.1 U	14.1 U	17100	14.4 U	2720 J	410
Acenaphthene	1540 U	590 U	15.4 U	14.3 U	600 U	14.1 U	14.1 U	847 J	14.4 U	1455 U	37,000
Acenaphthylene	1540 U	590 U	15.4 U	14.3 U	600 U	14.1 U	14.1 U	1345 U	14.4 U	1455 U	18,000
Anthracene	1540 U	590 U	15.4 U	14.3 U	600 U	14.1 U	14.1 U	1345 U	14.4 U	1455 U	390,000
Benzo(a)Anthracene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	700
Benzo[a]pyrene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	1,900
Benzo[b]Fluoranthene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	190,000
Benzo[g,h,i]perylene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	15,000,000
Benzo[k]fluoranthene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	190,000
Chrysene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	600,000
Dibenzo[a,h]anthracene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	6,300
Fluoranthene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	590,000
Fluorene	1540 U	638 J	15.4 U	14.3 U	938 J	14.1 U	14.1 U	2600 J	14.4 U	1455 U	36,000
Indeno[1,2,3-c,d] pyrene	15.4 U	14.7 U	15.4 U	14.3 U	14.9 U	14.1 U	14.1 U	13.4 U	14.4 U	14.6 U	65,000
Naphthalene	2140 J	3060	12.4 U	11.4 U	479 U	11.3 U	11.3 U	1075 U	11.5 U	1870 J	38
Phenanthrene	1540 U	865 J	15.4 U	14.3 U	1140 J	14.1 U	14.1 U	2040 J	14.4 U	1455 U	39,000
Pyrene	15.4 U	15.9 J	15.4 U	14.3 U	14.0 J	14.1 U	14.1 U	28	14.4 U	52.3	87,000

NOTES:

- 1) Polycyclic aromatic hydrocarbons by Select Ion Monitoring analyses by EPA 8270D.
- 2) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL).
- 3) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the limit of detection.
- 4) J flag indicates the result is an estimated value.
- 5) Yellow highlighting indicates that the analyte was detected above the ADEC cleanup level.
- 6) "ug/Kg" means "micrograms per kilogram".
- 7) RSE-X is a blind duplicate of RSE-11A.

**TABLE 5
ALASKA RAILROAD CORPORATION
HURRICANE GW MONITORING 2020
GROUNDWATER QUALITY FIELD PARAMETERS**

GROUNDWATER QUALITY FIELD PARAMETERS										
SAMPLE ID	DATE	DEPTH TO WATER (feet)	DEPTH TO BOTTOM (feet)	VOLUME PURGED (gal)	TEMP (°C)	pH (pH Units)	CONDUCTIVITY (mS/cm)	SPECIFIC CONDUCTANCE (µS/cm)	DISSOLVED OXYGEN %	OBSERVATIONS
RSE-1	9/19/2020	4.0	7.95	2	5.96	5.02	116	74	33.3	turbid, brown, no sheen or odor, cleared up with purging
					5.95	4.97	114	73	30.3	
					5.95	4.95	115	73	30.2	
RSE-2	9/19/2020	4.12	7.32	1.2	6.03	5.54	156	100	51.1	slightly turbid, brown, sheen or odor, cleared up with purging
					6.02	5.55	157	100	50.1	
					9.02	5.56	157	100	50.0	
RSE-3	9/19/2020	3.13	5.95	1.5	6.42	6.15	141	91	66.5	slightly turbid, orange-clear, no sheen or odor, cleared up with purging
					6.42	5.90	163	105	50.5	
					6.42	5.95	155	100	55.5	
RSE-4	9/19/2020	1.47	7.05	3	5.94	5.58	105	67	42.9	turbid, dark gray, no sheen or odor
					5.95	5.59	107	67	40.3	
					5.94	6.00	106	67	41.2	
RSE-11	9/19/2020	1.35	10.9	5	5.85	6.10	168	106	54.2	very turbid, dark gray, sheen and hydrocarbon odor, PVC shavings, cleared up slightly during purging
					5.57	6.01	169	106	36.2	
					6.05	5.72	147	94	45.4	
RSE-12	9/19/2020	1.05	10.7	4.8	5.70	5.77	101	64	44.8	very turbid, dark brown, no sheen or odor, PVC shavings, cleared up with purging
					5.76	5.65	101	64	39.5	
					6.05	5.50	88	56	34.1	
					6.05	5.52	57	57	29.3	
RSE-13	9/19/2020	1.75	7.32	1.2	6.65	6.32	84	54	95.4	very turbid, dark brown, sheen and hydrocarbon odor, PVC shavings, cleared up slightly with purging
					6.80	5.78	84	58	39.5	
					6.82	5.64	84	55	55.1	
RSE-14	9/19/2020	1.65	17.02	8	5.27	6.27	150	94	22.0	slightly turbid, light gray, no sheen or odor, PVC shavings
					5.30	6.49	92	58	24.0	
					5.32	6.67	151	94	32.6	
RSE-15	9/19/2020	1.72	10.84	4.5	5.94	5.62	153	97	24.4	very turbid, dark gray, sheen and strong hydrocarbon odor, PVC shavings, cleared up slightly during purging
					5.95	5.56	154	98	18.8	
					6.26	5.37	134	86	33.2	
					6.46	5.29	84	84	31.4	

NOTES:

- 1) Water quality measurements performed using a YSI Model 556 Water Quality Meter.
- 2) Purging of well was done with a positive pressure submersible pump for RSE-1, RSE-3, and RSE-4, and a peristaltic pump for RSE-2.
- 3) "mS/cm" means "millisiemens per centimeter"; "µS/cm" means "micro Siemens per centimeter"; "ppt" means "parts per thousand"; "mV" means "millivolts"; "mg/L" means "milligram per liter"; "gal" means "gallon"; "°C" means "degrees Celsius".

TABLE 6
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
HYDROCARBON CONCENTRATIONS IN GROUNDWATER

HYDROCARBON CONCENTRATIONS IN GROUNDWATER						
SAMPLE ID	DATE	DIESEL RANGE ORGANICS (mg/L)	RESIDUAL RANGE ORGANICS mg/L	GASOLINE RANGE ORGANICS (mg/L)	SGS WORK ORDER	
RSE-1	9/19/2020	0.345 J	0.564	0.0330 J	1205106	
RSE-2	9/19/2020	0.315 J	0.480 J	0.0500 U		
RSE-3	9/19/2020	2.3	0.768	0.0428 J		
RSE-4	9/19/2020	5.68	1.69	0.0748 J		
RSE-11	9/19/2020	16.2	1.81	0.891		
RSE-12	9/19/2020	5.8	0.769	0.0520 J		
RSE-13	9/19/2020	21	1.4	0.241		
RSE-14	9/19/2020	0.423 J	0.557	0.0320 J		
RSE-15	9/19/2020	39.2	1.81	3.11		
RSE-X	9/19/2020	34	1.53	2.5		
ADEC TABLE C GROUNDWATER CLEANUP LEVELS (18 AAC 75)		1.5	1.1	2.2		

NOTES:

- 1) Diesel Range Organics (DRO) samples analyzed by AK Method 102; Residual Range Organics (RRO) samples analyzed by AK Method 103; Gasoline Range Organics (GRO) samples analyzed by AK Method 101.
- 2) **Bold** font indicates the analyte was detected above the detection limit (DL).
- 3) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; the value presented is the limit of detection.
- 4) J flag indicates the result is an estimated value.
- 5) "mg/L" means "milligrams per liter".
- 6) RSE-X is a blind duplicate of RSE-15.

TABLE 7
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER

PETROLEUM VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER											
SAMPLE ID	RSE-1	RSE-2	RSE-3	RSE-4	RSE-11	RSE-12	RSE-13	RSE-14	RSE-15	RSE-X	ADEC TABLE C
Date	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	GROUNDWATER
SGS Work Order	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	CLEANUP LEVELS
Units	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)
1,2,4-Trimethylbenzene	0.500 U	0.500 U	0.500 U	0.859 J	141	0.500 U	13.2	0.500 U	144	164	56
1,2-Dibromoethane	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.0375 U	0.075
1,2-Dichloroethane	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	0.250 U	1.7
1,3,5-Trimethylbenzene	0.500 U	0.500 U	0.500 U	0.500 U	41.3	0.500 U	5.9	0.500 U	88.2	82.5	60
Benzene	0.200 U	0.200 U	0.200 U	0.200 U	0.143 J	0.200 U	0.200 U	0.200 U	0.150 J	0.139 J	4.6
Ethylbenzene	0.500 U	0.500 U	0.500 U	0.500 U	40.5	0.500 U	0.351 J	0.500 U	16	15.2	15
Isopropylbenzene (Cumene)	0.500 U	0.500 U	0.500 U	0.500 U	16.6	0.500 U	1.43	0.500 U	11.3	10.3	450
Methyl-t-butyl ether	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	5.00 U	140
Naphthalene	0.500 U	0.500 U	0.500 U	1.5	136	0.746 J	6.02	0.500 U	89.4	87	1.7
n-Butylbenzene	0.500 U	0.500 U	0.500 U	0.500 U	4.58	0.500 U	2.36	0.500 U	20.7	15.2	1,000
o-Xylene	0.500 U	0.500 U	0.500 U	0.589 J	132	0.500 U	1.38	0.500 U	222	223	See Total Xylenes
P & M -Xylene	1.00 U	1.00 U	1.00 U	1.00 U	106	1.00 U	0.911 J	1.00 U	108	120	See Total Xylenes
sec-Butylbenzene	0.500 U	0.500 U	0.500 U	0.500 U	6.61	0.500 U	2.4	0.500 U	13.4	11.9	2,000
tert-Butylbenzene	0.500 U	0.500 U	0.500 U	0.500 U	0.872 J	0.500 U	0.500 U	0.500 U	1.54	1.38	690
Toluene	0.500 U	0.500 U	0.500 U	0.500 U	4.89	0.500 U	0.500 U	0.500 U	8.3	7.48	1,100
Xylenes (total)	1.50 U	1.50 U	1.50 U	1.50 U	238	1.50 U	2.29 J	1.50 U	330	343	190

NOTES:

- 1) Volatile organic compounds analyses by Method EPA SW8260C.
- 2) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL).
- 3) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the limit of detection.
- 4) J flag indicates the result is an estimated value.
- 5) "ug/L" means "micrograms per liter".
- 6) RSE-X is a blind duplicate of RSE-15.

**TABLE 8
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
POLYCYCLIC AROMATIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER**

POLYCYCLIC AROMATIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER											
SAMPLE NUMBER	RSE-1	RSE-2	RSE-3	RSE-4	RSE-11	RSE-12	RSE-13	RSE-14	RSE-15	RSE-X	ADEC TABLE C CLEANUP LEVELS (ug/L)
DATE	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	9/19/2020	
SGS WORK ORDER	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	1205106	
UNITS	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	(ug/L)	
1-Methylnaphthalene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	0.0256 U	37.9	<i>0.0240 U</i>	14	<i>0.0232 U</i>	51.5	27.7	11
2-Methylnaphthalene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	0.0256 U	35.8	<i>0.0240 U</i>	13.5	<i>0.0232 U</i>	34.1	9.43	36
Acenaphthene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	1.12	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	530
Acenaphthylene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	260
Anthracene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	1800
Benzo(a)Anthracene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	0.30
Benzo[a]pyrene	<i>0.00960 U</i>	<i>0.00960 U</i>	<i>0.00980 U</i>	<i>0.0103 U</i>	<i>0.00980 U</i>	<i>0.00960 U</i>	<i>0.0100 U</i>	<i>0.00925 U</i>	<i>0.00960 U</i>	<i>0.101 U</i>	0.25
Benzo[b]Fluoranthene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	2.5
Benzo[g,h,i]perylene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	600
Benzo[k]fluoranthene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	25
Chrysene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	250
Dibenzo[a,h]anthracene	<i>0.00960 U</i>	<i>0.00960 U</i>	<i>0.00980 U</i>	<i>0.0103 U</i>	<i>0.00980 U</i>	<i>0.00960 U</i>	<i>0.0100 U</i>	<i>0.00925 U</i>	<i>0.00960 U</i>	<i>0.0101 U</i>	0.25
Fluoranthene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	800
Fluorene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	2.33	0.149	1.52	<i>0.0232 U</i>	7.04	5.83	290
Indeno[1,2,3-c,d] pyrene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232 U</i>	<i>0.0240 U</i>	<i>0.0254 U</i>	2.5
Naphthalene	<i>0.0481 U</i>	<i>0.0481 U</i>	<i>0.0490 U</i>	<i>0.0510 U</i>	84.7	0.387	4.96	0.0463 U	35.9	28	1.7
Phenanthrene	0.0667	0.0679	<i>0.0245 U</i>	<i>0.0256 U</i>	1.71	<i>0.0240 U</i>	1.58	<i>0.0232 U</i>	5.56	3.99	170
Pyrene	<i>0.0240 U</i>	<i>0.0240 U</i>	<i>0.0245 U</i>	<i>0.0256 U</i>	<i>0.0245 U</i>	<i>0.0240 U</i>	<i>0.0250 U</i>	<i>0.0232U</i>	0.251	0.221	120

NOTES:

- 1) Polycyclic aromatic hydrocarbons by Select ion Monitoring analyses by EPA 8270D.
- 2) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL).
- 3) *Italicized* font with a U-qualifier indicates the analyte was not detected above the detection limit; the value presented is the limit of detection.
- 4) J flag indicates the result is an estimated value.
- 5) "ug/L" means "micrograms per liter".
- 6) RSE-X is a blind duplicate of RSE-15.

TABLE 9
ALASKA RAILROAD CORPORATION
HURRICANE SITE ASSESSMENT 2020
HISTORIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER

HISTORIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER						
SAMPLE ID	DATE	SAMPLE TYPE (Primary or Duplicate)	DIESEL RANGE ORGANICS (mg/L)	RESIDUAL RANGE ORGANICS mg/L	GASOLINE RANGE ORGANICS (mg/L)	NAPHTHALENE (ug/L)
RSE-1						
RSE-1	9/9/2011	Primary	<i>ND (0.3)</i>	<i>ND (0.3)</i>	<i>ND (0.06)</i>	--
RSE-1	9/14/2012	Primary/Duplicate	<i>ND (0.34)/ND (0.362)</i>	<i>ND (0.34)/ND (0.434)</i>	<i>ND (0.062)/ ND(0.062)</i>	--
RSE-1	6/12/2013	Primary	0.323 J	0.567	<i>ND (0.062)</i>	--
RSE-1	9/26/2014	Primary	<i>ND (0.310)</i>	<i>ND (0.259)</i>	<i>ND (0.05)</i>	--
RSE-1	7/7/2016	Primary	<i>ND(0.300)</i>	0.255 J	<i>ND(0.05)</i>	--
RSE-1	8/24/2017	Primary	0.351 J	0.539	<i>0.0500 U</i>	--
RSE-1	9/28/2018	Primary	<i>0.288 U</i>	<i>0.240 U</i>	<i>0.500 U</i>	<i>0.500 U</i>
RSE-1	10/1/2019	Primary	0.268 J	0.393 J	<i>0.0500 U</i>	<i>0.500 U</i>
RSE-1	9/19/2020	Primary	0.345 J	0.564	<i>0.0330 J</i>	<i>0.500 U</i>
RSE-2						
RSE-2	9/9/2011	Primary	0.311 J	<i>ND (0.3)</i>	<i>ND (0.06)</i>	--
RSE-2	9/14/2012	Primary	<i>ND (0.36)</i>	<i>ND (0.3)</i>	<i>ND (0.062)</i>	--
RSE-2	6/13/2013	Primary	0.237 J	0.388	<i>ND (0.062)</i>	--
RSE-2	9/26/2014	Primary	<i>ND (0.308)</i>	<i>ND (0.256)</i>	<i>ND (0.05)</i>	--
RSE-2	7/7/2016	Primary	0.200 J	0.277 J	<i>ND(0.05)</i>	--
RSE-2	8/24/2017	Primary	0.692	0.889	<i>0.0500 U</i>	--
RSE-2	9/28/2018	Primary	<i>0.278 U</i>	<i>0.232 U</i>	<i>0.500 U</i>	<i>0.500 U</i>
RSE-2	10/1/2019	Primary	0.288 J	0.194 J	<i>0.0500 U</i>	<i>0.500 U</i>
RSE-2	9/19/2020	Primary	0.315 J	0.480 J	<i>0.0500 U</i>	<i>0.500 U</i>
RSE-3						
RSE-3	9/9/2011	Primary/Duplicate	0.498 J/ 0.431 J	<i>ND (0.3)/ND (0.3)</i>	<i>ND (0.06)/ ND (0.06)</i>	--
RSE-3	9/14/2012	Primary	0.779	<i>ND (0.3)</i>	<i>ND (0.062)</i>	--
RSE-3	6/13/2013	Primary	5.51	1.34	<i>ND (0.062)</i>	--
RSE-3	9/26/2014	Primary/Duplicate	1.88/1.57	0.330 J/0.252 J	<i>ND (0.05)/ ND (0.05)</i>	--
RSE-3	7/7/2016	Primary	0.343 J	0.263 J	0.0541 J	--
RSE-3	8/24/2017	Primary/Duplicate	1.95/ 1.82	0.735/ 0.686	<i>0.0500 / 0.0500 U</i>	--
RSE-3	9/28/2018	Primary/Duplicate	1.42/1.86	0.156 J/0.252 J	0.349/0.050 U	0.870 J/0.620 J
RSE-3	10/1/2019	Primary	1.18	0.375 J	<i>0.0500 U</i>	<i>0.500 U</i>
RSE-3	9/19/2020	Primary	2.3	0.768	<i>0.0428 J</i>	<i>0.500 U</i>
RSE-4						
RSE-4	9/9/2011	Primary	1.52	<i>ND (0.3)</i>	0.0833 J	--
RSE-4	9/14/2012	Primary	0.601 J	<i>ND (0.338)</i>	<i>0.0456 J</i>	--
RSE-4	6/12/2013	Primary/Duplicate	0.425 J/0.385 J	0.252 J/ 0.385 J	0.0341 J/ ND (0.062)	--
RSE-4	9/26/2014	Primary	0.58 J	0.580 J	<i>ND (0.05)</i>	--
RSE-4	7/7/2016	Primary/Duplicate	0.885/0.828	0.268 J/0.215 J	0.0541 J/0.0459 J	--
RSE-4	8/24/2017	Primary	1.36	0.734	--	3.08
RSE-4	9/28/2018	Primary	2.73	0.277 J	0.0701 J	6.63
RSE-4	10/1/2019	Primary	0.515 J/0.534 J	0.278 J/0.397 J	<i>0.0500 U/0.0500 U</i>	0.968 J/0.542 J
RSE-4	9/19/2020	Primary	5.68	1.69	0.0748 J	1.5
ADEC GROUNDWATER CLEANUP LEVELS TABLE C (18 AAC 75)			1.5	1.1	2.2	1.7

NOTES:

- 1) Diesel range organics samples analyzed by AK Method 102; Residual range organics samples analyzed by AK Method 103; Gasoline range organics samples analyzed by AK Method 101; Naphthalene samples analyzed by EPA Method 8260C.
- 2) **Bold** font indicates the analyte was detected above the detection limit (DL).
- 3) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; the value presented is the limit of detection.
- 4) J flag indicates the result is an estimated value.
- 5) "mg/L" means "milligrams per liter".
- 6) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.

Attachment C:
Select Site Photographs



Sampling at RSE-1



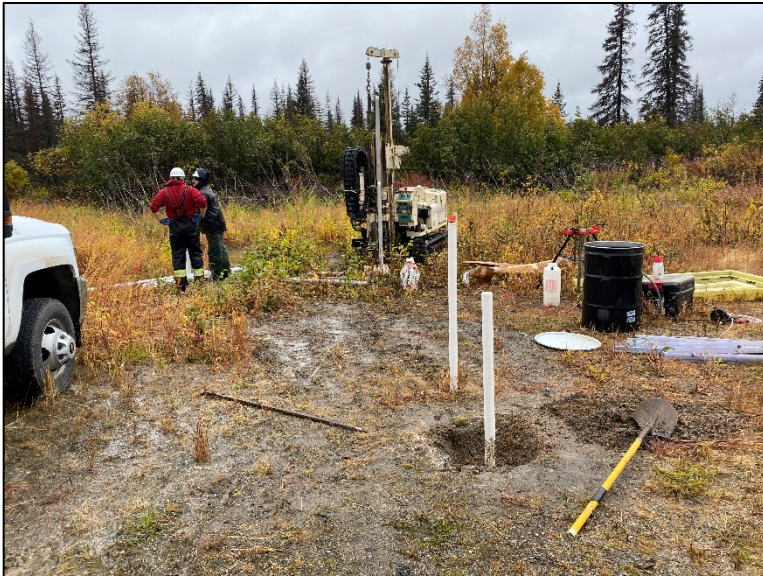
Sampling at RSE-2



Sampling at RSE-3



Sampling at RSE-4; looking southeast



Installing monitoring well RSE-12; RSE-13 and RSE-14 in foreground;
looking west



Sampling at RSE-12; RSE-13 and RSE-14 in the background; looking
northeast



Installing monitoring wells RSE-11, RSE-12, RSE-13, RSE-14 and RSE-15;
looking south



Sampling at RSE-11; looking south



Sampling at RSE-15; looking south



Groundwater from monitoring well RSE-15



IDW stored on-site pending transport; looking northeast

Attachment D:
Boring Logs





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GEOENVIRONMENTAL BOREHOLE LOG

Soil Boring ID: RSE-11
Weather: 42 F - Raining
Total Depth: 10 Feet

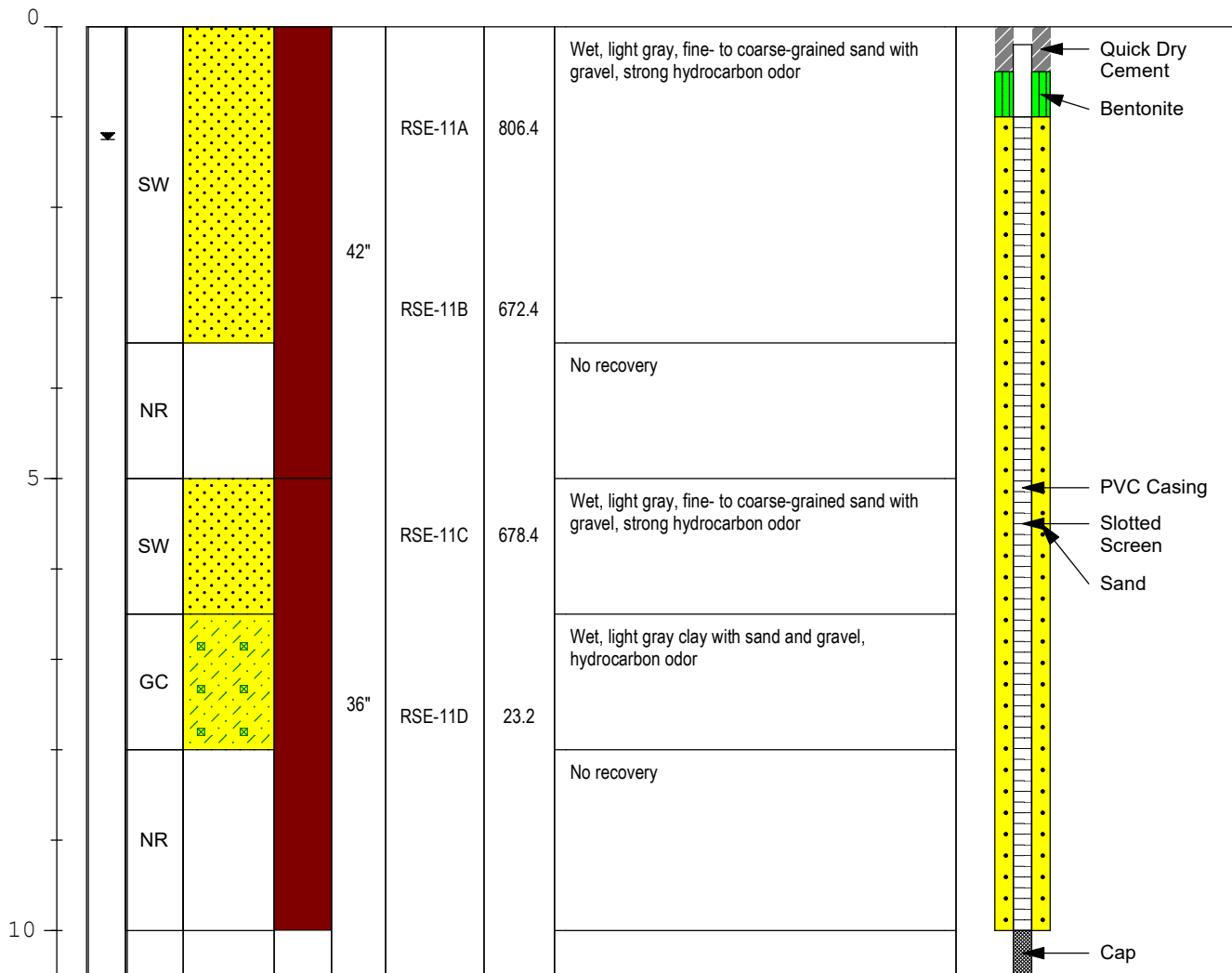
Project: ARRC Hurricane
Site Location: Hurricane, Alaska
Job Number: 20-2218
Project Manager: Lisa Koeneman
Logged By: Logged By:
Dates Drilled: 9/18/2020

Drilling Company: GeoTek Alaska, Inc.
Drill Operator: James/Noah
Drill Rig Type: Geoprobe
Method of Drilling: Direct Push
Sampling Method: MacroCore
Hammer Weight / Drop: N/A

Legend

▼ Water level during sampling

Depth (ft bgs) | Water Level | USCS | Soil Lithology | Sample / Core Interval | Sample Recovery (in) | Sample ID | PID (ppmv) | Soil Description/Notes



1. "N/A" means "Not Applicable"; "NR" means "No Recovery"



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GEOENVIRONMENTAL BOREHOLE LOG

Soil Boring ID: RSE-12
Weather: 42 F - Raining
Total Depth: 12.5 Feet

Project: ARRC Hurricane
Site Location: Hurricane, Alaska
Job Number: 20-2218
Project Manager: Lisa Koeneman
Logged By: Lisa Koeneman
Dates Drilled: 9/18/2020

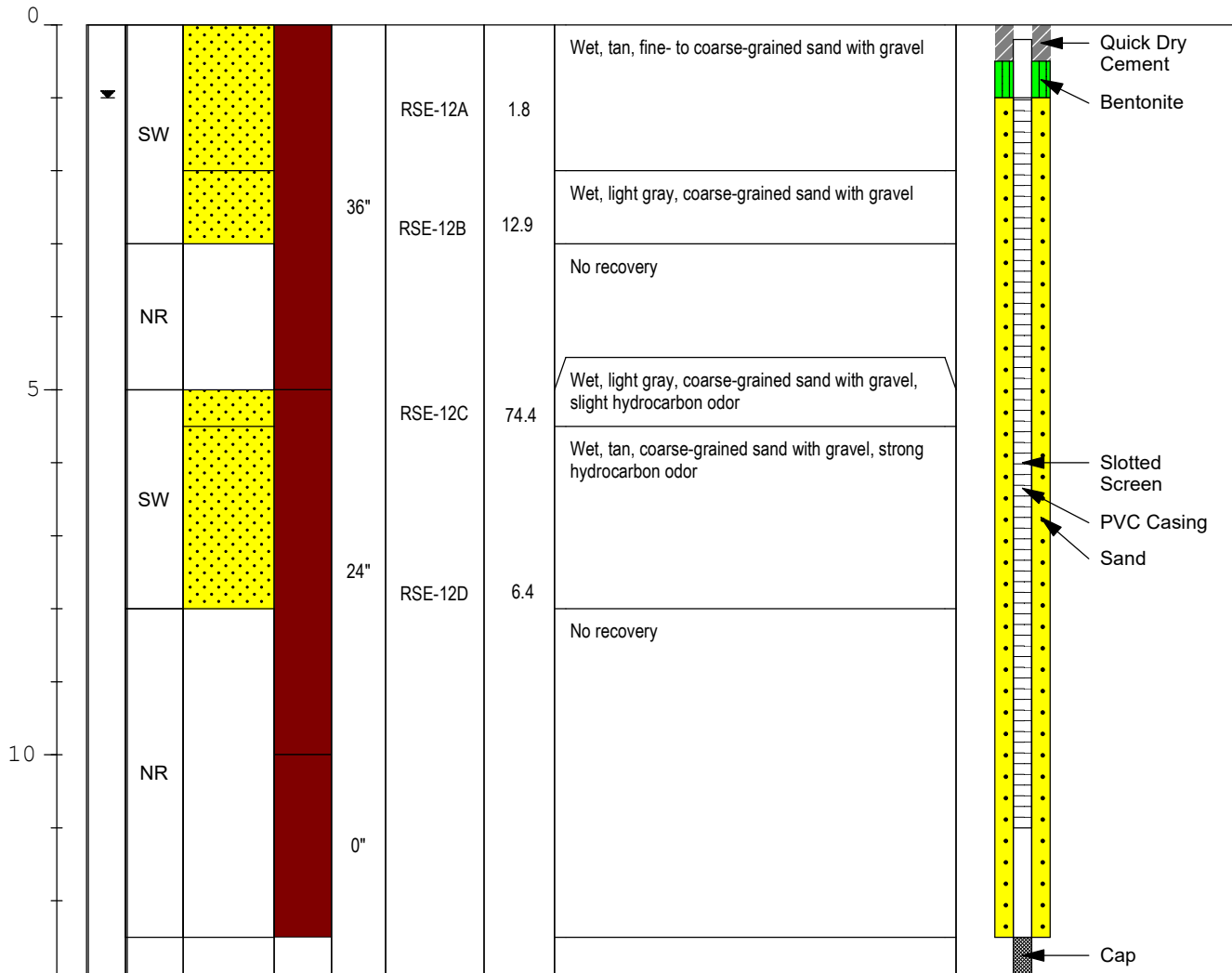
Drilling Company: GeoTek Alaska, Inc.
Drill Operator: James/Noah
Drill Rig Type: Geoprobe
Method of Drilling: Direct Push
Sampling Method: MacroCore
Hammer Weight / Drop: N/A

Legend

▼ Water level during sampling

Depth (ft bgs)
Water Level
USCS
Soil Lithology
Sample / Core Interval
Sample Recovery (in)
Sample ID
PID (ppmv)

Soil Description/Notes



1. "N/A" means "Not Applicable"; "NR" means "No Recovery"



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GEOENVIRONMENTAL BOREHOLE LOG

Soil Boring ID: RSE-13
Weather: 42 F - Raining
Total Depth: 8 Feet

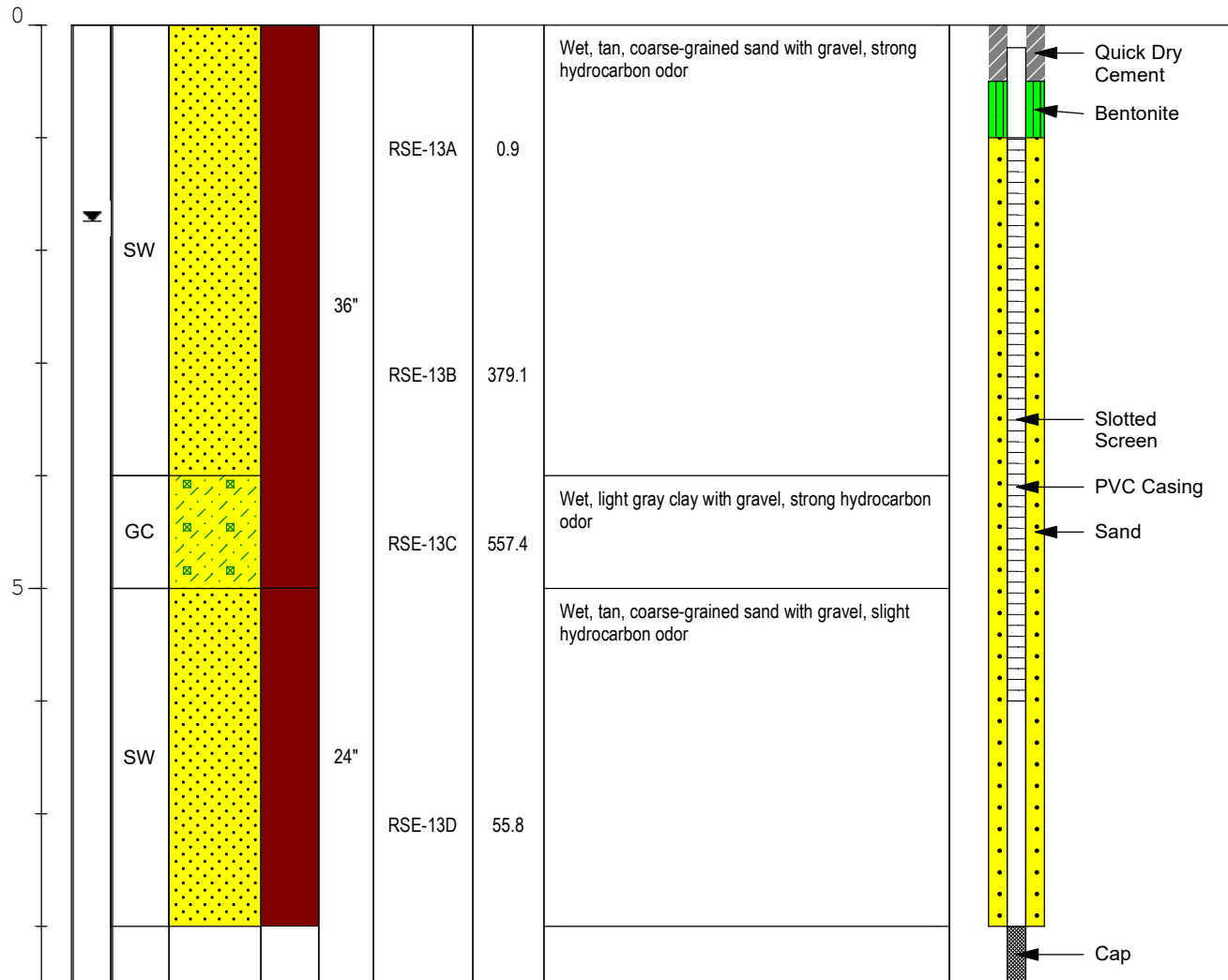
Project: ARRC Hurricane
Site Location: Hurricane, Alaska
Job Number: 20-2218
Project Manager: Lisa Koeneman
Logged By: Lisa Koeneman
Dates Drilled: 9/18/2020

Drilling Company: GeoTek Alaska, Inc.
Drill Operator: James/Noah
Drill Rig Type: Geoprobe
Method of Drilling: Direct Push
Sampling Method: MacroCore
Hammer Weight / Drop: N/A

Legend

▼ Water level during sampling

Depth (ft bgs) | Water Level | USCS | Soil Lithology | Sample / Core Interval | Sample Recovery (in) | Sample ID | PID (ppmv) | Soil Description/Notes



1. "N/A" means "Not Applicable"; "NR" means "No Recovery"



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GEOENVIRONMENTAL BOREHOLE LOG

Soil Boring ID: RSE-14
Weather: 42 F - Raining
Total Depth: 19 Feet

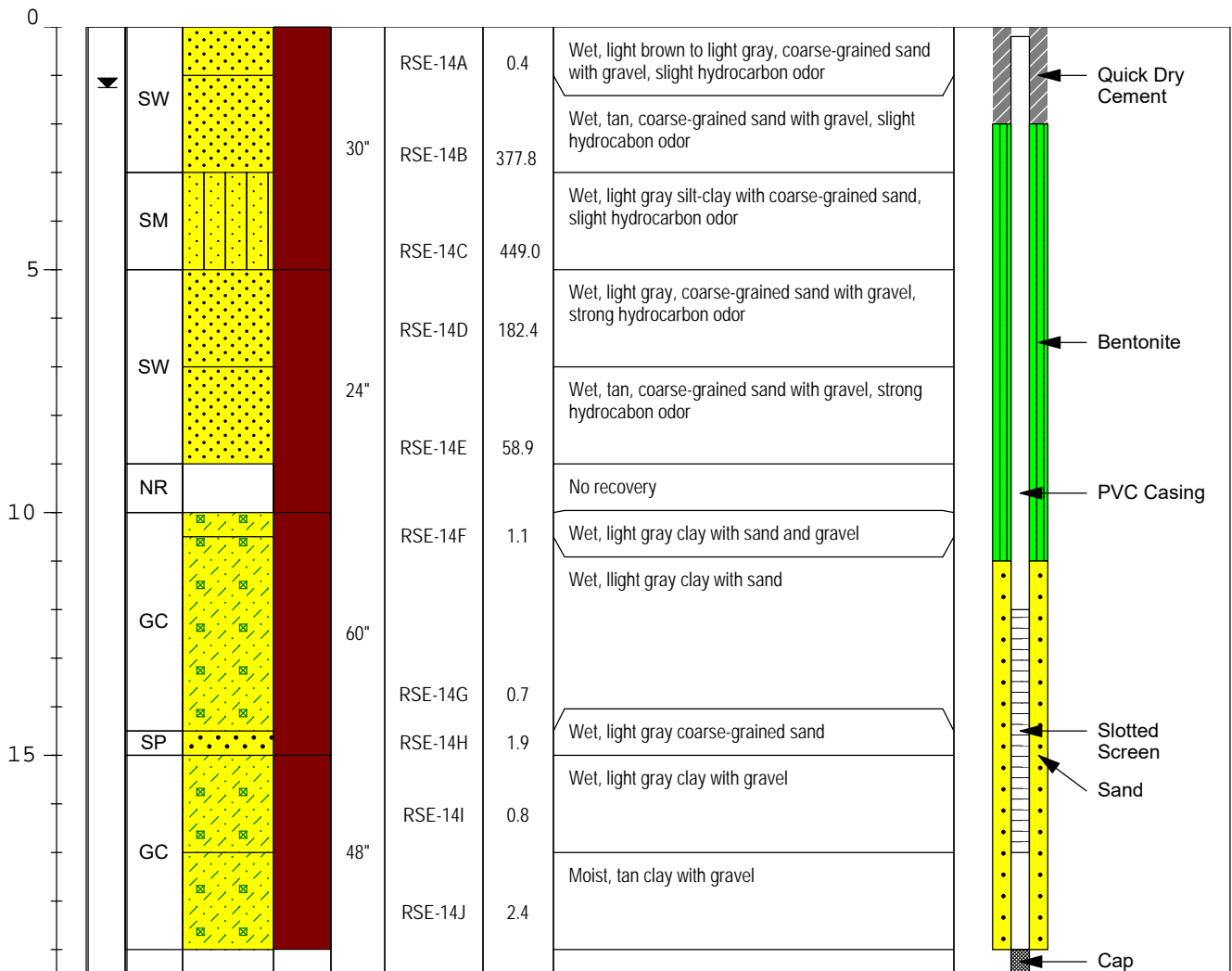
Project: ARRC Hurricane
Site Location: Hurricane, Alaska
Job Number: 20-2218
Project Manager: Lisa Koeneman
Logged By: Lisa Koeneman
Dates Drilled: 9/18/2020

Drilling Company: GeoTek Alaska, Inc.
Drill Operator: James/Noah
Drill Rig Type: Geoprobe
Method of Drilling: Direct Push
Sampling Method: MacroCore
Hammer Weight / Drop: N/A

Legend

▼ Water level during sampling

Depth (ft bgs)
Water Level
USCS
Soil Lithology
Sample / Core Interval
Sample Recovery (in)
Sample ID
PID (ppmv)
Soil Description/Notes



"N/A" means "Not Applicable"; "NR" means "No Recovery"



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GEOENVIRONMENTAL BOREHOLE LOG

Soil Boring ID: RSE-15
Weather: 42 F - Raining
Total Depth: 10 Feet

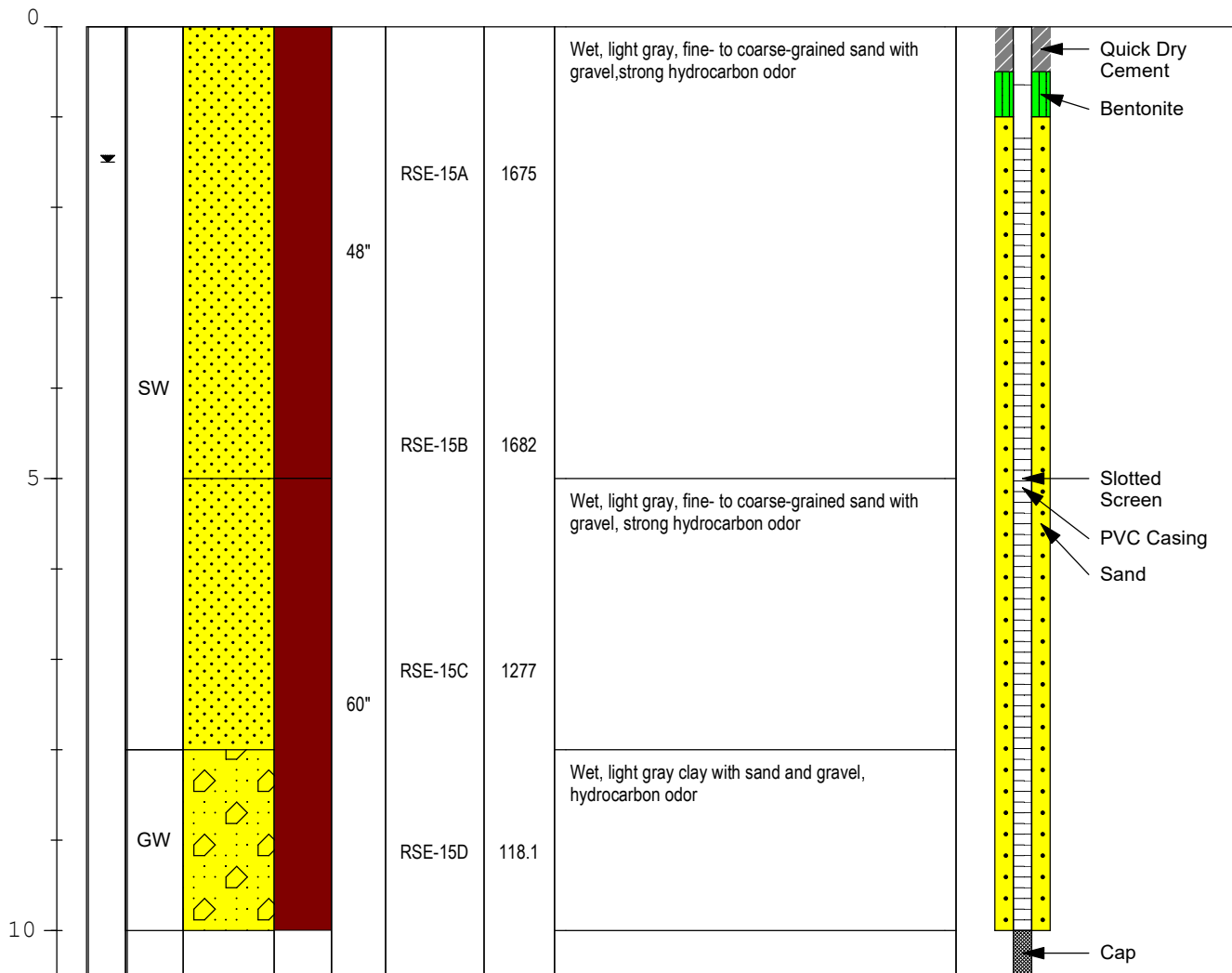
Project: ARRC Hurricane
Site Location: Hurricane, Alaska
Job Number: 20-2218
Project Manager: Lisa Koeneman
Logged By: Lisa Koeneman
Dates Drilled: 9/18/2020

Drilling Company: GeoTek Alaska, Inc.
Drill Operator: James/Noah
Drill Rig Type: Geoprobe
Method of Drilling: Direct Push
Sampling Method: MacroCore
Hammer Weight / Drop: N/A

Legend

▼ Water level during sampling

Depth (ft bgs) | Water Level | USCS | Soil Lithology | Sample / Core Interval | Sample Recovery (in) | Sample ID | PID (ppmv) | Soil Description/Notes



1. "N/A" means "Not Applicable"; "NR" means "No Recovery"

Attachment E:
SGS North America Laboratory Report





Laboratory Report of Analysis

To: Restoration Science & Eng
911 West 8th Ave Suite 100
Anchorage, AK 99501
(907)278-1023

Report Number: **1205106**

Client Project: **20-2218 ARRC Hurricane**

Dear Lisa Koeneman,

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 Chuck 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.

Chuck Homestead
Project Manager
Charles.Homestead@sgs.com

Date

Case Narrative

SGS Client: **Restoration Science & Eng**
SGS Project: **1205106**
Project Name/Site: **20-2218 ARRC Hurricane**
Project Contact: **Lisa Koeneman**

Refer to sample receipt form for information on sample condition.

RSE-11A (1205106001) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria due to sample dilution.

RSE-11C (1205106002) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria due to sample dilution.

RSE-14C (1205106005) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria due to sample dilution.

RSE-15B (1205106008) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria due to sample dilution.

RSE-X (1205106010) PS

AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria due to sample dilution.
8270D SIM - The PAH LOQs are elevated due to sample dilution. The sample was analyzed at a dilution due to matrix interference with internal standards.

RSE-11 (1205106016) PS

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

RSE-12 (1205106017) PS

3535 - Sample decanted from sediment layer prior to extraction.

RSE-13 (1205106018) PS

3535 - Sample decanted from sediment layer prior to extraction.

RSE-14 (1205106019) PS

8270D SIM - PAH surrogate recovery for 2-Methylnaphthalene d10 does not meet QC criteria.

RSE-15 (1205106020) PS

8260D - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

RSE-X (1205106021) PS

8260D - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.
AK101 - Surrogate recovery for 4-bromofluorobenzene does not meet QC criteria due to matrix interference.

MB for HBN 1812401 [XXX/43974] (1584768) MB

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

Report of Manual Integrations

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Analytical Batch</u>	<u>Analyte</u>	<u>Reason</u>
SW8260D				
1205106001	RSE-11A	VMS20360	tert-Butylbenzene	SP
1205106002	RSE-11C	VMS20360	tert-Butylbenzene	SP
1205106004	RSE-12C	VMS20360	Naphthalene	SP
1205106005	RSE-14C	VMS20360	n-Butylbenzene	SP
1205106008	RSE-15B	VMS20360	Naphthalene	SP
1205106008	RSE-15B	VMS20360	tert-Butylbenzene	SP
1205106016	RSE-11	VMS20343	n-Butylbenzene	SP
1205106018	RSE-13	VMS20343	n-Butylbenzene	SP
1205106020	RSE-15	VMS20343	n-Butylbenzene	SP
1205106021	RSE-X	VMS20343	n-Butylbenzene	SP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

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 & 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>
RSE-11A	1205106001	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-11C	1205106002	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-12B	1205106003	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-12C	1205106004	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-14C	1205106005	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-14H	1205106006	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-14J	1205106007	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-15B	1205106008	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-15D	1205106009	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-X	1205106010	09/18/2020	09/21/2020	Soil/Solid (dry weight)
Trip Blank	1205106011	09/18/2020	09/21/2020	Soil/Solid (dry weight)
RSE-1	1205106012	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-2	1205106013	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-3	1205106014	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-4	1205106015	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-11	1205106016	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-12	1205106017	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-13	1205106018	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-14	1205106019	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-15	1205106020	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
RSE-X	1205106021	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)
Trip Blank	1205106022	09/19/2020	09/21/2020	Water (Surface, Eff., Ground)

<u>Method</u>	<u>Method Description</u>
8270D SIM LV (PAH)	8270 PAH SIM GC/MS LV
8270D SIM (PAH)	8270 PAH SIM Semi-Volatiles GC/MS
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (S)
AK101	Gasoline Range Organics (W)
SM21 2540G	Percent Solids SM2540G
SW8260D	VOC 8260 (S) Field Extracted
SW8260D	Volatile Organic Compounds (W) FULL

Print Date: 10/14/2020 1:54:56PM

Detectable Results Summary

Client Sample ID: **RSE-11A**

Lab Sample ID: 1205106001

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	2800J	ug/kg
2-Methylnaphthalene	3180	ug/kg
Naphthalene	2140J	ug/kg

Semivolatile Organic Fuels

Diesel Range Organics	22300	mg/kg
Residual Range Organics	506	mg/kg

Volatile Fuels

Gasoline Range Organics	40.8	mg/kg
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Volatile GC/MS- Petroleum VOC Group

1,2,4-Trimethylbenzene	1460	ug/kg
1,3,5-Trimethylbenzene	469	ug/kg
Ethylbenzene	282	ug/kg
Isopropylbenzene (Cumene)	180	ug/kg
Naphthalene	1520	ug/kg
n-Butylbenzene	279	ug/kg
o-Xylene	807	ug/kg
P & M -Xylene	827	ug/kg
sec-Butylbenzene	169	ug/kg
tert-Butylbenzene	29.0J	ug/kg
Toluene	54.7	ug/kg
Xylenes (total)	1630	ug/kg

Client Sample ID: **RSE-11C**

Lab Sample ID: 1205106002

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	4490	ug/kg
2-Methylnaphthalene	5680	ug/kg
Fluorene	638J	ug/kg
Naphthalene	3060	ug/kg
Phenanthrene	865J	ug/kg
Pyrene	15.9J	ug/kg

Semivolatile Organic Fuels

Diesel Range Organics	2990	mg/kg
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Volatile Fuels

Gasoline Range Organics	20.0	mg/kg
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Volatile GC/MS- Petroleum VOC Group

1,2,4-Trimethylbenzene	5430	ug/kg
1,3,5-Trimethylbenzene	1120	ug/kg
Ethylbenzene	582	ug/kg
Isopropylbenzene (Cumene)	333	ug/kg
Naphthalene	3040	ug/kg
n-Butylbenzene	661	ug/kg
o-Xylene	1280	ug/kg
P & M -Xylene	2170	ug/kg
sec-Butylbenzene	428	ug/kg
tert-Butylbenzene	35.1	ug/kg
Xylenes (total)	3450	ug/kg

Client Sample ID: **RSE-12B**

Lab Sample ID: 1205106003

Semivolatile Organic Fuels

Diesel Range Organics	49.2	mg/kg
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Volatile Fuels

Gasoline Range Organics	4.47J	mg/kg
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Detectable Results Summary

Client Sample ID: **RSE-12C**

Lab Sample ID: 1205106004

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	168	mg/kg
Gasoline Range Organics	2.59J	mg/kg
Naphthalene	23.4J	ug/kg
Toluene	14.8J	ug/kg

Client Sample ID: **RSE-14C**

Lab Sample ID: 1205106005

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	5930	ug/kg
2-Methylnaphthalene	7330	ug/kg
Fluorene	938J	ug/kg
Phenanthrene	1140J	ug/kg
Pyrene	17.0J	ug/kg
Diesel Range Organics	5750	mg/kg
Gasoline Range Organics	76.1	mg/kg
1,2,4-Trimethylbenzene	3940	ug/kg
1,3,5-Trimethylbenzene	1610	ug/kg
Ethylbenzene	87.8	ug/kg
Isopropylbenzene (Cumene)	323	ug/kg
Naphthalene	1580	ug/kg
n-Butylbenzene	2380	ug/kg
o-Xylene	283	ug/kg
P & M -Xylene	365	ug/kg
sec-Butylbenzene	1160	ug/kg
tert-Butylbenzene	81.5	ug/kg
Xylenes (total)	647	ug/kg

Client Sample ID: **RSE-14H**

Lab Sample ID: 1205106006

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	19.1J	mg/kg
Gasoline Range Organics	1.55J	mg/kg

Client Sample ID: **RSE-14J**

Lab Sample ID: 1205106007

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	12.9J	mg/kg
Gasoline Range Organics	1.48J	mg/kg

Detectable Results Summary

Client Sample ID: **RSE-15B**

Lab Sample ID: 1205106008

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	12700	ug/kg
2-Methylnaphthalene	17100	ug/kg
Acenaphthene	847J	ug/kg
Fluorene	2600J	ug/kg
Phenanthrene	2040J	ug/kg
Pyrene	28.0	ug/kg

Semivolatile Organic Fuels

Diesel Range Organics	9500	mg/kg
Residual Range Organics	106J	mg/kg

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

Gasoline Range Organics	59.1	mg/kg
1,2,4-Trimethylbenzene	11400	ug/kg
1,3,5-Trimethylbenzene	2480	ug/kg
Ethylbenzene	188	ug/kg
Isopropylbenzene (Cumene)	464	ug/kg
Naphthalene	975	ug/kg
n-Butylbenzene	7630	ug/kg
o-Xylene	620	ug/kg
P & M -Xylene	1140	ug/kg
sec-Butylbenzene	1340	ug/kg
tert-Butylbenzene	89.4	ug/kg
Toluene	10.3J	ug/kg
Xylenes (total)	1760	ug/kg

Client Sample ID: **RSE-15D**

Lab Sample ID: 1205106009

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	40.6	mg/kg
Gasoline Range Organics	6.36	mg/kg
n-Butylbenzene	15.3J	ug/kg

Detectable Results Summary

Client Sample ID: **RSE-X**
 Lab Sample ID: 1205106010

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	2130J	ug/kg
2-Methylnaphthalene	2720J	ug/kg
Naphthalene	1870J	ug/kg
Pyrene	52.3	ug/kg

Semivolatile Organic Fuels

Diesel Range Organics	16200	mg/kg
Residual Range Organics	401	mg/kg

Volatile Fuels

Gasoline Range Organics	100	mg/kg
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Volatile GC/MS- Petroleum VOC Group

1,2,4-Trimethylbenzene	2630	ug/kg
1,3,5-Trimethylbenzene	868	ug/kg
Ethylbenzene	486	ug/kg
Isopropylbenzene (Cumene)	370	ug/kg
Naphthalene	2160	ug/kg
n-Butylbenzene	559	ug/kg
o-Xylene	1340	ug/kg
P & M -Xylene	1440	ug/kg
sec-Butylbenzene	375	ug/kg
tert-Butylbenzene	417	ug/kg
Toluene	45.5J	ug/kg
Xylenes (total)	2780	ug/kg

Client Sample ID: **Trip Blank**
 Lab Sample ID: 1205106011

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	0.838J	mg/kg

Client Sample ID: **RSE-1**

Lab Sample ID: 1205106012

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0667	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	0.345J	mg/L
Residual Range Organics	0.564	mg/L

Volatile Fuels

Gasoline Range Organics	0.0330J	mg/L
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Client Sample ID: **RSE-2**

Lab Sample ID: 1205106013

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Phenanthrene	0.0679	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	0.315J	mg/L
Residual Range Organics	0.480J	mg/L

Client Sample ID: **RSE-3**

Lab Sample ID: 1205106014

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	2.30	mg/L
Residual Range Organics	0.768	mg/L

Volatile Fuels

Gasoline Range Organics	0.0428J	mg/L
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Detectable Results Summary

Client Sample ID: **RSE-4**
Lab Sample ID: 1205106015

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	5.68	mg/L
Residual Range Organics	1.69	mg/L
Gasoline Range Organics	0.0748J	mg/L
1,2,4-Trimethylbenzene	0.859J	ug/L
Naphthalene	1.50	ug/L
o-Xylene	0.589J	ug/L

Client Sample ID: **RSE-11**
Lab Sample ID: 1205106016

Polynuclear Aromatics GC/MS

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	37.9	ug/L
2-Methylnaphthalene	35.8	ug/L
Acenaphthene	1.12	ug/L
Fluorene	2.33	ug/L
Naphthalene	84.7	ug/L
Phenanthrene	1.71	ug/L
Diesel Range Organics	16.2	mg/L
Residual Range Organics	1.81	mg/L
Gasoline Range Organics	0.891	mg/L
1,2,4-Trimethylbenzene	141	ug/L
1,3,5-Trimethylbenzene	41.3	ug/L
Benzene	0.143J	ug/L
Ethylbenzene	40.5	ug/L
Isopropylbenzene (Cumene)	16.6	ug/L
Naphthalene	136	ug/L
n-Butylbenzene	4.58	ug/L
o-Xylene	132	ug/L
P & M -Xylene	106	ug/L
sec-Butylbenzene	6.61	ug/L
tert-Butylbenzene	0.872J	ug/L
Toluene	4.89	ug/L
Xylenes (total)	238	ug/L

Client Sample ID: **RSE-12**
Lab Sample ID: 1205106017

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	0.149	ug/L
Naphthalene	0.387	ug/L
Diesel Range Organics	5.80	mg/L
Residual Range Organics	0.769	mg/L
Gasoline Range Organics	0.0520J	mg/L
Naphthalene	0.746J	ug/L

Print Date: 10/14/2020 1:54:57PM

Detectable Results Summary

Client Sample ID: **RSE-13**

Lab Sample ID: 1205106018

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	14.0	ug/L
2-Methylnaphthalene	13.5	ug/L
Fluorene	1.52	ug/L
Naphthalene	4.96	ug/L
Phenanthrene	1.58	ug/L
Semivolatile Organic Fuels		
Diesel Range Organics	21.0	mg/L
Residual Range Organics	1.40	mg/L
Volatile Fuels		
Volatile GC/MS- Petroleum VOC Group		
Gasoline Range Organics	0.241	mg/L
1,2,4-Trimethylbenzene	13.2	ug/L
1,3,5-Trimethylbenzene	5.90	ug/L
Ethylbenzene	0.351J	ug/L
Isopropylbenzene (Cumene)	1.43	ug/L
Naphthalene	6.02	ug/L
n-Butylbenzene	2.36	ug/L
o-Xylene	1.38	ug/L
P & M -Xylene	0.911J	ug/L
sec-Butylbenzene	2.40	ug/L
Xylenes (total)	2.29J	ug/L

Client Sample ID: **RSE-14**

Lab Sample ID: 1205106019

Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	0.423J	mg/L
Residual Range Organics	0.557	mg/L
Volatile Fuels		
Gasoline Range Organics	0.0320J	mg/L

Detectable Results Summary

Client Sample ID: **RSE-15**

Lab Sample ID: 1205106020

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	51.5	ug/L
2-Methylnaphthalene	34.1	ug/L
Fluorene	7.04	ug/L
Naphthalene	35.9	ug/L
Phenanthrene	5.56	ug/L
Pyrene	0.251	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	39.2	mg/L
Residual Range Organics	1.81	mg/L

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

Gasoline Range Organics	3.11	mg/L
1,2,4-Trimethylbenzene	144	ug/L
1,3,5-Trimethylbenzene	88.2	ug/L
Benzene	0.150J	ug/L
Ethylbenzene	16.0	ug/L
Isopropylbenzene (Cumene)	11.3	ug/L
Naphthalene	89.4	ug/L
n-Butylbenzene	20.7	ug/L
o-Xylene	222	ug/L
P & M -Xylene	108	ug/L
sec-Butylbenzene	13.4	ug/L
tert-Butylbenzene	1.54	ug/L
Toluene	8.30	ug/L
Xylenes (total)	330	ug/L



Detectable Results Summary

Client Sample ID: **RSE-X**
Lab Sample ID: 1205106021

Polynuclear Aromatics GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
1-Methylnaphthalene	27.7	ug/L
2-Methylnaphthalene	9.43	ug/L
Fluorene	5.83	ug/L
Naphthalene	28.0	ug/L
Phenanthrene	3.99	ug/L
Pyrene	0.221	ug/L

Semivolatile Organic Fuels

Diesel Range Organics	34.0	mg/L
Residual Range Organics	1.53	mg/L

Volatile Fuels

Volatile GC/MS- Petroleum VOC Group

Gasoline Range Organics	2.50	mg/L
1,2,4-Trimethylbenzene	164	ug/L
1,3,5-Trimethylbenzene	82.5	ug/L
Benzene	0.139J	ug/L
Ethylbenzene	15.2	ug/L
Isopropylbenzene (Cumene)	10.3	ug/L
Naphthalene	87.0	ug/L
n-Butylbenzene	15.2	ug/L
o-Xylene	223	ug/L
P & M -Xylene	120	ug/L
sec-Butylbenzene	11.9	ug/L
tert-Butylbenzene	1.38	ug/L
Toluene	7.48	ug/L
Xylenes (total)	343	ug/L

Client Sample ID: **Trip Blank**
Lab Sample ID: 1205106022

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Gasoline Range Organics	0.0366J	mg/L

Print Date: 10/14/2020 1:54:57PM



Results of RSE-11A

Client Sample ID: **RSE-11A**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106001
 Lab Project ID: 1205106

Collection Date: 09/18/20 13:40
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.7
 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	2800 J	3080	769	ug/kg	100		10/12/20 17:40
2-Methylnaphthalene	3180	3080	769	ug/kg	100		10/12/20 17:40
Acenaphthene	1540 U	3080	769	ug/kg	100		10/12/20 17:40
Acenaphthylene	1540 U	3080	769	ug/kg	100		10/12/20 17:40
Anthracene	1540 U	3080	769	ug/kg	100		10/12/20 17:40
Benzo(a)Anthracene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Benzo[a]pyrene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Benzo[b]Fluoranthene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Benzo[g,h,i]perylene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Benzo[k]fluoranthene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Chrysene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Dibenzo[a,h]anthracene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Fluoranthene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Fluorene	1540 U	3080	769	ug/kg	100		10/12/20 17:40
Indeno[1,2,3-c,d] pyrene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Naphthalene	2140 J	2460	615	ug/kg	100		10/12/20 17:40
Phenanthrene	1540 U	3080	769	ug/kg	100		10/12/20 17:40
Pyrene	15.4 U	30.8	7.69	ug/kg	1		10/10/20 15:51
Surrogates							
2-Methylnaphthalene-d10 (surr)	0	*	58-103	%	100		10/12/20 17:40
Fluoranthene-d10 (surr)	69.1		54-113	%	1		10/10/20 15:51

Batch Information

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 15:51
 Container ID: 1205106001-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.644 g
 Prep Extract Vol: 5 mL

Analytical Batch: XMS12336
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/12/20 17:40
 Container ID: 1205106001-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.644 g
 Prep Extract Vol: 5 mL



Results of RSE-11A

Client Sample ID: RSE-11A
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106001
Lab Project ID: 1205106

Collection Date: 09/18/20 13:40
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):80.7
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15762
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/07/20 09:42
Container ID: 1205106001-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.213 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 22:40
Container ID: 1205106001-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.213 g
Prep Extract Vol: 5 mL



Results of RSE-11A

Client Sample ID: **RSE-11A**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106001
Lab Project ID: 1205106

Collection Date: 09/18/20 13:40
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):80.7
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	40.8		4.72	1.42	mg/kg	1		10/02/20 00:48
Surrogates								
4-Bromofluorobenzene (surr)	200	*	50-150		%	1		10/02/20 00:48

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 00:48
Container ID: 1205106001-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 13:40
Prep Initial Wt./Vol.: 43.892 g
Prep Extract Vol: 33.4544 mL



Results of RSE-11A

Client Sample ID: **RSE-11A**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106001
 Lab Project ID: 1205106

Collection Date: 09/18/20 13:40
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.7
 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	1460	94.4	28.3	ug/kg	1		09/27/20 14:29
1,2-Dibromoethane	0.945 U	1.89	0.755	ug/kg	1		09/27/20 14:29
1,2-Dichloroethane	1.89 U	3.78	1.32	ug/kg	1		09/27/20 14:29
1,3,5-Trimethylbenzene	469	47.2	14.7	ug/kg	1		09/27/20 14:29
Benzene	11.8 U	23.6	7.36	ug/kg	1		09/27/20 14:29
Ethylbenzene	282	47.2	14.7	ug/kg	1		09/27/20 14:29
Isopropylbenzene (Cumene)	180	47.2	14.7	ug/kg	1		09/27/20 14:29
Methyl-t-butyl ether	94.5 U	189	58.5	ug/kg	1		09/27/20 14:29
Naphthalene	1520	47.2	14.7	ug/kg	1		09/27/20 14:29
n-Butylbenzene	279	47.2	14.7	ug/kg	1		09/27/20 14:29
o-Xylene	807	47.2	14.7	ug/kg	1		09/27/20 14:29
P & M -Xylene	827	94.4	28.3	ug/kg	1		09/27/20 14:29
sec-Butylbenzene	169	47.2	14.7	ug/kg	1		09/27/20 14:29
tert-Butylbenzene	29.0 J	47.2	14.7	ug/kg	1		09/27/20 14:29
Toluene	54.7	47.2	14.7	ug/kg	1		09/27/20 14:29
Xylenes (total)	1630	142	43.0	ug/kg	1		09/27/20 14:29
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	71-136		%	1		09/27/20 14:29
4-Bromofluorobenzene (surr)	78.7	55-151		%	1		09/27/20 14:29
Toluene-d8 (surr)	100	85-116		%	1		09/27/20 14:29

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 14:29
 Container ID: 1205106001-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 13:40
 Prep Initial Wt./Vol.: 43.892 g
 Prep Extract Vol: 33.4544 mL



Results of RSE-11C

Client Sample ID: **RSE-11C**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106002
 Lab Project ID: 1205106

Collection Date: 09/18/20 13:45
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.4
 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	4490	1180	294	ug/kg	40		10/12/20 18:00
2-Methylnaphthalene	5680	1180	294	ug/kg	40		10/12/20 18:00
Acenaphthene	590 U	1180	294	ug/kg	40		10/12/20 18:00
Acenaphthylene	590 U	1180	294	ug/kg	40		10/12/20 18:00
Anthracene	590 U	1180	294	ug/kg	40		10/12/20 18:00
Benzo(a)Anthracene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Benzo[a]pyrene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Benzo[b]Fluoranthene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Benzo[g,h,i]perylene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Benzo[k]fluoranthene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Chrysene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Dibenzo[a,h]anthracene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Fluoranthene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Fluorene	638 J	1180	294	ug/kg	40		10/12/20 18:00
Indeno[1,2,3-c,d] pyrene	14.7 U	29.4	7.34	ug/kg	1		10/10/20 16:12
Naphthalene	3060	940	235	ug/kg	40		10/12/20 18:00
Phenanthrene	865 J	1180	294	ug/kg	40		10/12/20 18:00
Pyrene	15.9 J	29.4	7.34	ug/kg	1		10/10/20 16:12
Surrogates							
2-Methylnaphthalene-d10 (surr)	132 *	58-103		%	40		10/12/20 18:00
Fluoranthene-d10 (surr)	70.2	54-113		%	1		10/10/20 16:12

Batch Information

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 16:12
 Container ID: 1205106002-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.677 g
 Prep Extract Vol: 5 mL

Analytical Batch: XMS12336
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/12/20 18:00
 Container ID: 1205106002-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.677 g
 Prep Extract Vol: 5 mL



Results of RSE-11C

Client Sample ID: RSE-11C
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106002
Lab Project ID: 1205106

Collection Date: 09/18/20 13:45
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):84.4
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/05/20 22:50
Container ID: 1205106002-A
Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.049 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 22:50
Container ID: 1205106002-A
Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.049 g
Prep Extract Vol: 5 mL



Results of RSE-11C

Client Sample ID: **RSE-11C**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106002
Lab Project ID: 1205106

Collection Date: 09/18/20 13:45
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):84.4
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	20.0		3.43	1.03	mg/kg	1		10/02/20 01:06
Surrogates								
4-Bromofluorobenzene (surr)	244	*	50-150		%	1		10/02/20 01:06

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 01:06
Container ID: 1205106002-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 13:45
Prep Initial Wt./Vol.: 59.049 g
Prep Extract Vol: 34.1937 mL



Results of RSE-11C

Client Sample ID: **RSE-11C**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106002
 Lab Project ID: 1205106

Collection Date: 09/18/20 13:45
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.4
 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	5430	686	206	ug/kg	10		09/29/20 21:17
1,2-Dibromoethane	0.685 U	1.37	0.549	ug/kg	1		09/27/20 14:45
1,2-Dichloroethane	1.37 U	2.74	0.960	ug/kg	1		09/27/20 14:45
1,3,5-Trimethylbenzene	1120	34.3	10.7	ug/kg	1		09/27/20 14:45
Benzene	8.55 U	17.1	5.35	ug/kg	1		09/27/20 14:45
Ethylbenzene	582	34.3	10.7	ug/kg	1		09/27/20 14:45
Isopropylbenzene (Cumene)	333	34.3	10.7	ug/kg	1		09/27/20 14:45
Methyl-t-butyl ether	68.5 U	137	42.5	ug/kg	1		09/27/20 14:45
Naphthalene	3040	34.3	10.7	ug/kg	1		09/27/20 14:45
n-Butylbenzene	661	34.3	10.7	ug/kg	1		09/27/20 14:45
o-Xylene	1280	34.3	10.7	ug/kg	1		09/27/20 14:45
P & M -Xylene	2170	68.6	20.6	ug/kg	1		09/27/20 14:45
sec-Butylbenzene	428	34.3	10.7	ug/kg	1		09/27/20 14:45
tert-Butylbenzene	35.1	34.3	10.7	ug/kg	1		09/27/20 14:45
Toluene	17.1 U	34.3	10.7	ug/kg	1		09/27/20 14:45
Xylenes (total)	3450	103	31.3	ug/kg	1		09/27/20 14:45
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	71-136		%	1		09/27/20 14:45
4-Bromofluorobenzene (surr)	103	55-151		%	1		09/27/20 14:45
Toluene-d8 (surr)	96.2	85-116		%	1		09/27/20 14:45

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 14:45
 Container ID: 1205106002-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 13:45
 Prep Initial Wt./Vol.: 59.049 g
 Prep Extract Vol: 34.1937 mL

Analytical Batch: VMS20365
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/29/20 21:17
 Container ID: 1205106002-B

Prep Batch: VXX36442
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 13:45
 Prep Initial Wt./Vol.: 59.049 g
 Prep Extract Vol: 34.1937 mL

**Results of RSE-12B**

Client Sample ID: **RSE-12B**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106003
 Lab Project ID: 1205106

Collection Date: 09/18/20 12:15
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.3
 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	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
2-Methylnaphthalene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Acenaphthene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Acenaphthylene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Anthracene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Benzo(a)Anthracene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Benzo[a]pyrene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Benzo[b]Fluoranthene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Benzo[g,h,i]perylene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Benzo[k]fluoranthene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Chrysene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Dibenzo[a,h]anthracene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Fluoranthene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Fluorene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Indeno[1,2,3-c,d] pyrene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Naphthalene	12.4 U	24.7	6.17	ug/kg	1		10/10/20 16:34
Phenanthrene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Pyrene	15.4 U	30.8	7.71	ug/kg	1		10/10/20 16:34
Surrogates							
2-Methylnaphthalene-d10 (surr)	74	58-103		%	1		10/10/20 16:34
Fluoranthene-d10 (surr)	78.1	54-113		%	1		10/10/20 16:34

Batch Information

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 16:34
 Container ID: 1205106003-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.704 g
 Prep Extract Vol: 5 mL



Results of RSE-12B

Client Sample ID: RSE-12B
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106003
Lab Project ID: 1205106

Collection Date: 09/18/20 12:15
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):80.3
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/05/20 23:00
Container ID: 1205106003-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.495 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 23:00
Container ID: 1205106003-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.495 g
Prep Extract Vol: 5 mL



Results of RSE-12B

Client Sample ID: **RSE-12B**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106003
Lab Project ID: 1205106

Collection Date: 09/18/20 12:15
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):80.3
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	4.47 J	4.69	1.41	mg/kg	1		10/02/20 01:25
Surrogates							
4-Bromofluorobenzene (surr)	92.6	50-150		%	1		10/02/20 01:25

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 01:25
Container ID: 1205106003-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 12:15
Prep Initial Wt./Vol.: 44.906 g
Prep Extract Vol: 33.8385 mL



Results of RSE-12B

Client Sample ID: **RSE-12B**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106003
 Lab Project ID: 1205106

Collection Date: 09/18/20 12:15
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):80.3
 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	46.9 U	93.8	28.1	ug/kg	1		09/29/20 19:54
1,2-Dibromoethane	0.940 U	1.88	0.751	ug/kg	1		09/27/20 15:00
1,2-Dichloroethane	1.88 U	3.75	1.31	ug/kg	1		09/27/20 15:00
1,3,5-Trimethylbenzene	23.4 U	46.9	14.6	ug/kg	1		09/29/20 19:54
Benzene	11.8 U	23.5	7.32	ug/kg	1		09/27/20 15:00
Ethylbenzene	23.4 U	46.9	14.6	ug/kg	1		09/27/20 15:00
Isopropylbenzene (Cumene)	23.4 U	46.9	14.6	ug/kg	1		09/27/20 15:00
Methyl-t-butyl ether	94.0 U	188	58.2	ug/kg	1		09/27/20 15:00
Naphthalene	23.4 U	46.9	14.6	ug/kg	1		09/29/20 19:54
n-Butylbenzene	23.4 U	46.9	14.6	ug/kg	1		09/29/20 19:54
o-Xylene	23.4 U	46.9	14.6	ug/kg	1		09/29/20 19:54
P & M -Xylene	46.9 U	93.8	28.1	ug/kg	1		09/29/20 19:54
sec-Butylbenzene	23.4 U	46.9	14.6	ug/kg	1		09/27/20 15:00
tert-Butylbenzene	23.4 U	46.9	14.6	ug/kg	1		09/27/20 15:00
Toluene	23.4 U	46.9	14.6	ug/kg	1		09/27/20 15:00
Xylenes (total)	70.5 U	141	42.8	ug/kg	1		09/29/20 19:54
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	71-136		%	1		09/27/20 15:00
4-Bromofluorobenzene (surr)	101	55-151		%	1		09/27/20 15:00
Toluene-d8 (surr)	97.2	85-116		%	1		09/27/20 15:00

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 15:00
 Container ID: 1205106003-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 12:15
 Prep Initial Wt./Vol.: 44.906 g
 Prep Extract Vol: 33.8385 mL

Analytical Batch: VMS20365
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/29/20 19:54
 Container ID: 1205106003-B

Prep Batch: VXX36442
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 12:15
 Prep Initial Wt./Vol.: 44.906 g
 Prep Extract Vol: 33.8385 mL



Results of RSE-12C

Client Sample ID: RSE-12C
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106004
Lab Project ID: 1205106

Collection Date: 09/18/20 12:20
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):86.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their detection results.

Batch Information

Analytical Batch: XMS12331
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 10/10/20 16:54
Container ID: 1205106004-A

Prep Batch: XXX43971
Prep Method: SW3550C
Prep Date/Time: 10/01/20 08:25
Prep Initial Wt./Vol.: 22.722 g
Prep Extract Vol: 5 mL



Results of RSE-12C

Client Sample ID: **RSE-12C**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106004
 Lab Project ID: 1205106

Collection Date: 09/18/20 12:20
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):86.6
 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	168	23.0	7.13	mg/kg	1		10/05/20 23:10

Surrogates

5a Androstane (surr)	97.7	50-150		%	1		10/05/20 23:10
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Batch Information

Analytical Batch: XFC15760
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 10/05/20 23:10
 Container ID: 1205106004-A

Prep Batch: XXX43976
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 11:17
 Prep Initial Wt./Vol.: 30.145 g
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	57.5 U	115	49.4	mg/kg	1		10/05/20 23:10

Surrogates

n-Triacontane-d62 (surr)	96	50-150		%	1		10/05/20 23:10
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Batch Information

Analytical Batch: XFC15760
 Analytical Method: AK103
 Analyst: CDM
 Analytical Date/Time: 10/05/20 23:10
 Container ID: 1205106004-A

Prep Batch: XXX43976
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 11:17
 Prep Initial Wt./Vol.: 30.145 g
 Prep Extract Vol: 5 mL



Results of RSE-12C

Client Sample ID: **RSE-12C**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106004
Lab Project ID: 1205106

Collection Date: 09/18/20 12:20
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):86.6
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	2.59 J	3.28	0.983	mg/kg	1		10/02/20 01:43
Surrogates							
4-Bromofluorobenzene (surr)	99.2	50-150		%	1		10/02/20 01:43

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 01:43
Container ID: 1205106004-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 12:20
Prep Initial Wt./Vol.: 57.735 g
Prep Extract Vol: 32.7506 mL



Results of RSE-12C

Client Sample ID: **RSE-12C**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106004
Lab Project ID: 1205106

Collection Date: 09/18/20 12:20
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):86.6
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	32.8 U	65.5	19.7	ug/kg	1		09/27/20 13:42
1,2-Dibromoethane	0.655 U	1.31	0.524	ug/kg	1		09/27/20 13:42
1,2-Dichloroethane	1.31 U	2.62	0.917	ug/kg	1		09/27/20 13:42
1,3,5-Trimethylbenzene	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
Benzene	8.20 U	16.4	5.11	ug/kg	1		09/27/20 13:42
Ethylbenzene	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
Isopropylbenzene (Cumene)	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
Methyl-t-butyl ether	65.5 U	131	40.6	ug/kg	1		09/27/20 13:42
Naphthalene	23.4 J	32.8	10.2	ug/kg	1		09/27/20 13:42
n-Butylbenzene	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
o-Xylene	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
P & M -Xylene	32.8 U	65.5	19.7	ug/kg	1		09/27/20 13:42
sec-Butylbenzene	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
tert-Butylbenzene	16.4 U	32.8	10.2	ug/kg	1		09/27/20 13:42
Toluene	14.8 J	32.8	10.2	ug/kg	1		09/27/20 13:42
Xylenes (total)	49.1 U	98.3	29.9	ug/kg	1		09/27/20 13:42
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	71-136		%	1		09/27/20 13:42
4-Bromofluorobenzene (surr)	119	55-151		%	1		09/27/20 13:42
Toluene-d8 (surr)	97.1	85-116		%	1		09/27/20 13:42

Batch Information

Analytical Batch: VMS20360
Analytical Method: SW8260D
Analyst: KAJ
Analytical Date/Time: 09/27/20 13:42
Container ID: 1205106004-B

Prep Batch: VXX36434
Prep Method: SW5035A
Prep Date/Time: 09/18/20 12:20
Prep Initial Wt./Vol.: 57.735 g
Prep Extract Vol: 32.7506 mL



Results of RSE-14C

Client Sample ID: **RSE-14C**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106005
 Lab Project ID: 1205106

Collection Date: 09/18/20 09:00
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):81.9
 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	5930	1200	299	ug/kg	40		10/12/20 18:21
2-Methylnaphthalene	7330	1200	299	ug/kg	40		10/12/20 18:21
Acenaphthene	600 U	1200	299	ug/kg	40		10/12/20 18:21
Acenaphthylene	600 U	1200	299	ug/kg	40		10/12/20 18:21
Anthracene	600 U	1200	299	ug/kg	40		10/12/20 18:21
Benzo(a)Anthracene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Benzo[a]pyrene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Benzo[b]Fluoranthene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Benzo[g,h,i]perylene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Benzo[k]fluoranthene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Chrysene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Dibenzo[a,h]anthracene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Fluoranthene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Fluorene	938 J	1200	299	ug/kg	40		10/12/20 18:21
Indeno[1,2,3-c,d] pyrene	14.9 U	29.9	7.49	ug/kg	1		10/10/20 17:15
Naphthalene	479 U	958	240	ug/kg	40		10/12/20 18:21
Phenanthrene	1140 J	1200	299	ug/kg	40		10/12/20 18:21
Pyrene	17.0 J	29.9	7.49	ug/kg	1		10/10/20 17:15
Surrogates							
2-Methylnaphthalene-d10 (surr)	0	*	58-103	%	40		10/12/20 18:21
Fluoranthene-d10 (surr)	72.5		54-113	%	1		10/10/20 17:15

Batch Information

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 17:15
 Container ID: 1205106005-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.933 g
 Prep Extract Vol: 5 mL

Analytical Batch: XMS12336
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/12/20 18:21
 Container ID: 1205106005-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.933 g
 Prep Extract Vol: 5 mL



Results of RSE-14C

Client Sample ID: RSE-14C
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106005
Lab Project ID: 1205106

Collection Date: 09/18/20 09:00
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):81.9
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15762
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/07/20 09:52
Container ID: 1205106005-A
Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.161 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 23:19
Container ID: 1205106005-A
Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.161 g
Prep Extract Vol: 5 mL



Results of RSE-14C

Client Sample ID: **RSE-14C**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106005
Lab Project ID: 1205106

Collection Date: 09/18/20 09:00
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):81.9
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	76.1		4.85	1.45	mg/kg	1		10/02/20 02:01
Surrogates								
4-Bromofluorobenzene (surr)	627	*	50-150		%	1		10/02/20 02:01

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 02:01
Container ID: 1205106005-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 09:00
Prep Initial Wt./Vol.: 40.784 g
Prep Extract Vol: 32.3778 mL



Results of RSE-14C

Client Sample ID: **RSE-14C**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106005
 Lab Project ID: 1205106

Collection Date: 09/18/20 09:00
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):81.9
 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	3940	96.9	29.1	ug/kg	1		09/27/20 15:16
1,2-Dibromoethane	0.970 U	1.94	0.775	ug/kg	1		09/27/20 15:16
1,2-Dichloroethane	1.94 U	3.88	1.36	ug/kg	1		09/27/20 15:16
1,3,5-Trimethylbenzene	1610	48.5	15.1	ug/kg	1		09/27/20 15:16
Benzene	12.1 U	24.2	7.56	ug/kg	1		09/27/20 15:16
Ethylbenzene	87.8	48.5	15.1	ug/kg	1		09/27/20 15:16
Isopropylbenzene (Cumene)	323	48.5	15.1	ug/kg	1		09/27/20 15:16
Methyl-t-butyl ether	97.0 U	194	60.1	ug/kg	1		09/27/20 15:16
Naphthalene	1580	48.5	15.1	ug/kg	1		09/27/20 15:16
n-Butylbenzene	2380	48.5	15.1	ug/kg	1		09/27/20 15:16
o-Xylene	283	48.5	15.1	ug/kg	1		09/27/20 15:16
P & M -Xylene	365	96.9	29.1	ug/kg	1		09/27/20 15:16
sec-Butylbenzene	1160	48.5	15.1	ug/kg	1		09/27/20 15:16
tert-Butylbenzene	81.5	48.5	15.1	ug/kg	1		09/27/20 15:16
Toluene	24.3 U	48.5	15.1	ug/kg	1		09/27/20 15:16
Xylenes (total)	647	145	44.2	ug/kg	1		09/27/20 15:16
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		09/27/20 15:16
4-Bromofluorobenzene (surr)	88.3	55-151		%	1		09/27/20 15:16
Toluene-d8 (surr)	99.7	85-116		%	1		09/27/20 15:16

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 15:16
 Container ID: 1205106005-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 09:00
 Prep Initial Wt./Vol.: 40.784 g
 Prep Extract Vol: 32.3778 mL



Results of RSE-14H

Client Sample ID: **RSE-14H**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106006
 Lab Project ID: 1205106

Collection Date: 09/18/20 09:30
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):87.2
 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	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
2-Methylnaphthalene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Acenaphthene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Acenaphthylene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Anthracene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Benzo(a)Anthracene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Benzo[a]pyrene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Benzo[b]Fluoranthene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Benzo[g,h,i]perylene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Benzo[k]fluoranthene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Chrysene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Dibenzo[a,h]anthracene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Fluoranthene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Fluorene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Indeno[1,2,3-c,d] pyrene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Naphthalene	11.3 U	22.5	5.63	ug/kg	1		10/10/20 17:35
Phenanthrene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Pyrene	14.1 U	28.2	7.04	ug/kg	1		10/10/20 17:35
Surrogates							
2-Methylnaphthalene-d10 (surr)	71.8	58-103		%	1		10/10/20 17:35
Fluoranthene-d10 (surr)	75	54-113		%	1		10/10/20 17:35

Batch Information

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 17:35
 Container ID: 1205106006-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.922 g
 Prep Extract Vol: 5 mL



Results of RSE-14H

Client Sample ID: RSE-14H
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106006
Lab Project ID: 1205106

Collection Date: 09/18/20 09:30
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.2
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 19.1 J, 22.6, 7.02, mg/kg, 1, 10/05/20 23:29

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 98.6, 50-150, %, 1, 10/05/20 23:29

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/05/20 23:29
Container ID: 1205106006-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.415 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 56.5 U, 113, 48.7, mg/kg, 1, 10/05/20 23:29

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 96.8, 50-150, %, 1, 10/05/20 23:29

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 23:29
Container ID: 1205106006-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.415 g
Prep Extract Vol: 5 mL



Results of RSE-14H

Client Sample ID: **RSE-14H**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106006
Lab Project ID: 1205106

Collection Date: 09/18/20 09:30
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.2
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	1.55 J	3.43	1.03	mg/kg	1		10/02/20 02:19
Surrogates							
4-Bromofluorobenzene (surr)	83.8	50-150		%	1		10/02/20 02:19

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 02:19
Container ID: 1205106006-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 09:30
Prep Initial Wt./Vol.: 53.218 g
Prep Extract Vol: 31.8305 mL



Results of RSE-14H

Client Sample ID: **RSE-14H**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106006
Lab Project ID: 1205106

Collection Date: 09/18/20 09:30
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.2
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	34.3 U	68.6	20.6	ug/kg	1		09/29/20 20:10
1,2-Dibromoethane	0.685 U	1.37	0.549	ug/kg	1		09/27/20 15:31
1,2-Dichloroethane	1.37 U	2.74	0.961	ug/kg	1		09/27/20 15:31
1,3,5-Trimethylbenzene	17.1 U	34.3	10.7	ug/kg	1		09/29/20 20:10
Benzene	8.60 U	17.2	5.35	ug/kg	1		09/27/20 15:31
Ethylbenzene	17.1 U	34.3	10.7	ug/kg	1		09/27/20 15:31
Isopropylbenzene (Cumene)	17.1 U	34.3	10.7	ug/kg	1		09/27/20 15:31
Methyl-t-butyl ether	68.5 U	137	42.5	ug/kg	1		09/27/20 15:31
Naphthalene	17.1 U	34.3	10.7	ug/kg	1		09/29/20 20:10
n-Butylbenzene	17.1 U	34.3	10.7	ug/kg	1		09/29/20 20:10
o-Xylene	17.1 U	34.3	10.7	ug/kg	1		09/27/20 15:31
P & M -Xylene	34.3 U	68.6	20.6	ug/kg	1		09/27/20 15:31
sec-Butylbenzene	17.1 U	34.3	10.7	ug/kg	1		09/29/20 20:10
tert-Butylbenzene	17.1 U	34.3	10.7	ug/kg	1		09/27/20 15:31
Toluene	17.1 U	34.3	10.7	ug/kg	1		09/27/20 15:31
Xylenes (total)	51.5 U	103	31.3	ug/kg	1		09/27/20 15:31
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		09/27/20 15:31
4-Bromofluorobenzene (surr)	86.7	55-151		%	1		09/27/20 15:31
Toluene-d8 (surr)	98.8	85-116		%	1		09/27/20 15:31

Batch Information

Analytical Batch: VMS20360
Analytical Method: SW8260D
Analyst: KAJ
Analytical Date/Time: 09/27/20 15:31
Container ID: 1205106006-B

Prep Batch: VXX36434
Prep Method: SW5035A
Prep Date/Time: 09/18/20 09:30
Prep Initial Wt./Vol.: 53.218 g
Prep Extract Vol: 31.8305 mL

Analytical Batch: VMS20365
Analytical Method: SW8260D
Analyst: KAJ
Analytical Date/Time: 09/29/20 20:10
Container ID: 1205106006-B

Prep Batch: VXX36442
Prep Method: SW5035A
Prep Date/Time: 09/18/20 09:30
Prep Initial Wt./Vol.: 53.218 g
Prep Extract Vol: 31.8305 mL



Results of RSE-14J

Client Sample ID: RSE-14J
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106007
Lab Project ID: 1205106

Collection Date: 09/18/20 09:45
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):88.7
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards with associated quality and detection data.

Batch Information

Analytical Batch: XMS12331
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 10/10/20 18:37
Container ID: 1205106007-A

Prep Batch: XXX43971
Prep Method: SW3550C
Prep Date/Time: 10/01/20 08:25
Prep Initial Wt./Vol.: 22.602 g
Prep Extract Vol: 5 mL



Results of RSE-14J

Client Sample ID: RSE-14J
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106007
Lab Project ID: 1205106

Collection Date: 09/18/20 09:45
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):88.7
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/05/20 23:39
Container ID: 1205106007-A
Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.154 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 23:39
Container ID: 1205106007-A
Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.154 g
Prep Extract Vol: 5 mL



Results of RSE-14J

Client Sample ID: **RSE-14J**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106007
Lab Project ID: 1205106

Collection Date: 09/18/20 09:45
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):88.7
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	1.48 J	4.36	1.31	mg/kg	1		10/02/20 02:37
Surrogates							
4-Bromofluorobenzene (surr)	84.3	50-150		%	1		10/02/20 02:37

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 02:37
Container ID: 1205106007-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 09:45
Prep Initial Wt./Vol.: 37.86 g
Prep Extract Vol: 29.2863 mL



Results of RSE-14J

Client Sample ID: **RSE-14J**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106007
 Lab Project ID: 1205106

Collection Date: 09/18/20 09:45
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):88.7
 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	43.6 U	87.2	26.2	ug/kg	1		09/27/20 15:47
1,2-Dibromoethane	0.870 U	1.74	0.698	ug/kg	1		09/27/20 15:47
1,2-Dichloroethane	1.75 U	3.49	1.22	ug/kg	1		09/27/20 15:47
1,3,5-Trimethylbenzene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
Benzene	10.9 U	21.8	6.80	ug/kg	1		09/27/20 15:47
Ethylbenzene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
Isopropylbenzene (Cumene)	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
Methyl-t-butyl ether	87.0 U	174	54.1	ug/kg	1		09/27/20 15:47
Naphthalene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
n-Butylbenzene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
o-Xylene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
P & M -Xylene	43.6 U	87.2	26.2	ug/kg	1		09/27/20 15:47
sec-Butylbenzene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
tert-Butylbenzene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
Toluene	21.8 U	43.6	13.6	ug/kg	1		09/27/20 15:47
Xylenes (total)	65.5 U	131	39.8	ug/kg	1		09/27/20 15:47
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		09/27/20 15:47
4-Bromofluorobenzene (surr)	92.6	55-151		%	1		09/27/20 15:47
Toluene-d8 (surr)	96.4	85-116		%	1		09/27/20 15:47

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 15:47
 Container ID: 1205106007-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 09:45
 Prep Initial Wt./Vol.: 37.86 g
 Prep Extract Vol: 29.2863 mL



Results of RSE-15B

Client Sample ID: **RSE-15B**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106008
 Lab Project ID: 1205106

Collection Date: 09/18/20 15:00
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.6
 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	12700	2690	672	ug/kg	100		10/12/20 18:42
2-Methylnaphthalene	17100	2690	672	ug/kg	100		10/12/20 18:42
Acenaphthene	847 J	2690	672	ug/kg	100		10/12/20 18:42
Acenaphthylene	1345 U	2690	672	ug/kg	100		10/12/20 18:42
Anthracene	1345 U	2690	672	ug/kg	100		10/12/20 18:42
Benzo(a)Anthracene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Benzo[a]pyrene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Benzo[b]Fluoranthene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Benzo[g,h,i]perylene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Benzo[k]fluoranthene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Chrysene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Dibenzo[a,h]anthracene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Fluoranthene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Fluorene	2600 J	2690	672	ug/kg	100		10/12/20 18:42
Indeno[1,2,3-c,d] pyrene	13.4 U	26.9	6.72	ug/kg	1		10/10/20 18:58
Naphthalene	1075 U	2150	538	ug/kg	100		10/12/20 18:42
Phenanthrene	2040 J	2690	672	ug/kg	100		10/12/20 18:42
Pyrene	28.0	26.9	6.72	ug/kg	1		10/10/20 18:58
Surrogates							
2-Methylnaphthalene-d10 (surr)	0	*	58-103	%	100		10/12/20 18:42
Fluoranthene-d10 (surr)	75.5		54-113	%	1		10/10/20 18:58

Batch Information

Analytical Batch: XMS12336
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/12/20 18:42
 Container ID: 1205106008-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.844 g
 Prep Extract Vol: 5 mL

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 18:58
 Container ID: 1205106008-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.844 g
 Prep Extract Vol: 5 mL



Results of RSE-15B

Client Sample ID: RSE-15B
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106008
Lab Project ID: 1205106

Collection Date: 09/18/20 15:00
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):91.6
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 9500, 86.8, 26.9, mg/kg, 4, 10/07/20 10:02

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 112, 50-150, %, 4, 10/07/20 10:02

Batch Information

Analytical Batch: XFC15762
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/07/20 10:02
Container ID: 1205106008-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.177 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 106 J, 109, 46.7, mg/kg, 1, 10/05/20 23:49

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 95.6, 50-150, %, 1, 10/05/20 23:49

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 23:49
Container ID: 1205106008-A

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/01/20 11:17
Prep Initial Wt./Vol.: 30.177 g
Prep Extract Vol: 5 mL



Results of RSE-15B

Client Sample ID: **RSE-15B**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106008
Lab Project ID: 1205106

Collection Date: 09/18/20 15:00
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):91.6
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	59.1		2.49	0.747	mg/kg	1		10/02/20 02:54
Surrogates								
4-Bromofluorobenzene (surr)	985	*	50-150		%	1		10/02/20 02:54

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 02:54
Container ID: 1205106008-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 15:00
Prep Initial Wt./Vol.: 67.196 g
Prep Extract Vol: 30.6521 mL



Results of RSE-15B

Client Sample ID: **RSE-15B**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106008
 Lab Project ID: 1205106

Collection Date: 09/18/20 15:00
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.6
 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	11400	498	149	ug/kg	10		09/29/20 21:33
1,2-Dibromoethane	0.498 U	0.996	0.398	ug/kg	1		09/27/20 16:03
1,2-Dichloroethane	0.995 U	1.99	0.697	ug/kg	1		09/27/20 16:03
1,3,5-Trimethylbenzene	2480	24.9	7.77	ug/kg	1		09/27/20 16:03
Benzene	6.25 U	12.5	3.88	ug/kg	1		09/27/20 16:03
Ethylbenzene	188	24.9	7.77	ug/kg	1		09/27/20 16:03
Isopropylbenzene (Cumene)	464	24.9	7.77	ug/kg	1		09/27/20 16:03
Methyl-t-butyl ether	49.8 U	99.6	30.9	ug/kg	1		09/27/20 16:03
Naphthalene	975	24.9	7.77	ug/kg	1		09/27/20 16:03
n-Butylbenzene	7630	249	77.7	ug/kg	10		09/29/20 21:33
o-Xylene	620	24.9	7.77	ug/kg	1		09/27/20 16:03
P & M -Xylene	1140	49.8	14.9	ug/kg	1		09/27/20 16:03
sec-Butylbenzene	1340	24.9	7.77	ug/kg	1		09/27/20 16:03
tert-Butylbenzene	89.4	24.9	7.77	ug/kg	1		09/27/20 16:03
Toluene	10.3 J	24.9	7.77	ug/kg	1		09/27/20 16:03
Xylenes (total)	1760	74.7	22.7	ug/kg	1		09/27/20 16:03
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	71-136		%	1		09/27/20 16:03
4-Bromofluorobenzene (surr)	94.4	55-151		%	1		09/27/20 16:03
Toluene-d8 (surr)	113	85-116		%	1		09/27/20 16:03

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 16:03
 Container ID: 1205106008-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 15:00
 Prep Initial Wt./Vol.: 67.196 g
 Prep Extract Vol: 30.6521 mL

Analytical Batch: VMS20365
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/29/20 21:33
 Container ID: 1205106008-B

Prep Batch: VXX36442
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 15:00
 Prep Initial Wt./Vol.: 67.196 g
 Prep Extract Vol: 30.6521 mL



Results of RSE-15D

Client Sample ID: RSE-15D
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106009
Lab Project ID: 1205106

Collection Date: 09/18/20 15:15
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12331
Analytical Method: 8270D SIM (PAH)
Analyst: DSD
Analytical Date/Time: 10/10/20 19:18
Container ID: 1205106009-A

Prep Batch: XXX43971
Prep Method: SW3550C
Prep Date/Time: 10/01/20 08:25
Prep Initial Wt./Vol.: 22.845 g
Prep Extract Vol: 5 mL



Results of RSE-15D

Client Sample ID: RSE-15D
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106009
Lab Project ID: 1205106

Collection Date: 09/18/20 15:15
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/05/20 03:49
Container ID: 1205106009-A

Prep Batch: XXX43974
Prep Method: SW3550C
Prep Date/Time: 10/01/20 08:58
Prep Initial Wt./Vol.: 30.12 g
Prep Extract Vol: 5 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/05/20 03:49
Container ID: 1205106009-A

Prep Batch: XXX43974
Prep Method: SW3550C
Prep Date/Time: 10/01/20 08:58
Prep Initial Wt./Vol.: 30.12 g
Prep Extract Vol: 5 mL



Results of RSE-15D

Client Sample ID: **RSE-15D**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106009
Lab Project ID: 1205106

Collection Date: 09/18/20 15:15
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	6.36		4.37	1.31	mg/kg	1		10/02/20 03:12
Surrogates								
4-Bromofluorobenzene (surr)	134		50-150		%	1		10/02/20 03:12

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 03:12
Container ID: 1205106009-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 15:15
Prep Initial Wt./Vol.: 41.365 g
Prep Extract Vol: 30.967 mL



Results of RSE-15D

Client Sample ID: RSE-15D
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106009
Lab Project ID: 1205106

Collection Date: 09/18/20 15:15
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile GC/MS- Petroleum VOC Group

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various VOCs like 1,2,4-Trimethylbenzene, Benzene, and Surrogates.

Batch Information

Analytical Batch: VMS20360
Analytical Method: SW8260D
Analyst: KAJ
Analytical Date/Time: 09/27/20 16:18
Container ID: 1205106009-B

Prep Batch: VXX36434
Prep Method: SW5035A
Prep Date/Time: 09/18/20 15:15
Prep Initial Wt./Vol.: 41.365 g
Prep Extract Vol: 30.967 mL

Analytical Batch: VMS20365
Analytical Method: SW8260D
Analyst: KAJ
Analytical Date/Time: 09/29/20 20:43
Container ID: 1205106009-B

Prep Batch: VXX36442
Prep Method: SW5035A
Prep Date/Time: 09/18/20 15:15
Prep Initial Wt./Vol.: 41.365 g
Prep Extract Vol: 30.967 mL



Results of RSE-X

Client Sample ID: **RSE-X**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106010
 Lab Project ID: 1205106

Collection Date: 09/18/20 10:30
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.8
 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	2130 J	2910	726	ug/kg	100		10/12/20 19:02
2-Methylnaphthalene	2720 J	2910	726	ug/kg	100		10/12/20 19:02
Acenaphthene	1455 U	2910	726	ug/kg	100		10/12/20 19:02
Acenaphthylene	1455 U	2910	726	ug/kg	100		10/12/20 19:02
Anthracene	1455 U	2910	726	ug/kg	100		10/12/20 19:02
Benzo(a)Anthracene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Benzo[a]pyrene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Benzo[b]Fluoranthene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Benzo[g,h,i]perylene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Benzo[k]fluoranthene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Chrysene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Dibenzo[a,h]anthracene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Fluoranthene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Fluorene	1455 U	2910	726	ug/kg	100		10/12/20 19:02
Indeno[1,2,3-c,d] pyrene	14.6 U	29.1	7.26	ug/kg	1		10/10/20 19:39
Naphthalene	1870 J	2320	581	ug/kg	100		10/12/20 19:02
Phenanthrene	1455 U	2910	726	ug/kg	100		10/12/20 19:02
Pyrene	52.3	29.1	7.26	ug/kg	1		10/10/20 19:39
Surrogates							
2-Methylnaphthalene-d10 (surr)	0	*	58-103	%	100		10/12/20 19:02
Fluoranthene-d10 (surr)	71.8		54-113	%	1		10/10/20 19:39

Batch Information

Analytical Batch: XMS12336
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/12/20 19:02
 Container ID: 1205106010-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.846 g
 Prep Extract Vol: 5 mL

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/10/20 19:39
 Container ID: 1205106010-A

Prep Batch: XXX43971
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:25
 Prep Initial Wt./Vol.: 22.846 g
 Prep Extract Vol: 5 mL



Results of RSE-X

Client Sample ID: **RSE-X**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106010
 Lab Project ID: 1205106

Collection Date: 09/18/20 10:30
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.8
 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	16200	235	72.8	mg/kg	10		10/06/20 08:03
Surrogates							
5a Androstane (surr)	117	50-150		%	10		10/06/20 08:03

Batch Information

Analytical Batch: XFC15760
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 10/06/20 08:03
 Container ID: 1205106010-A

Prep Batch: XXX43974
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:58
 Prep Initial Wt./Vol.: 30.163 g
 Prep Extract Vol: 5 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	401	117	50.5	mg/kg	1		10/05/20 03:59
Surrogates							
n-Triacontane-d62 (surr)	92.1	50-150		%	1		10/05/20 03:59

Batch Information

Analytical Batch: XFC15759
 Analytical Method: AK103
 Analyst: CDM
 Analytical Date/Time: 10/05/20 03:59
 Container ID: 1205106010-A

Prep Batch: XXX43974
 Prep Method: SW3550C
 Prep Date/Time: 10/01/20 08:58
 Prep Initial Wt./Vol.: 30.163 g
 Prep Extract Vol: 5 mL



Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106010
Lab Project ID: 1205106

Collection Date: 09/18/20 10:30
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
Solids (%):84.8
Location:

Results by **Volatile Fuels**

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	100		4.88	1.47	mg/kg	1		10/02/20 03:30
Surrogates								
4-Bromofluorobenzene (surr)	406	*	50-150		%	1		10/02/20 03:30

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/02/20 03:30
Container ID: 1205106010-B

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 10:30
Prep Initial Wt./Vol.: 37.02 g
Prep Extract Vol: 30.6451 mL



Results of RSE-X

Client Sample ID: **RSE-X**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106010
 Lab Project ID: 1205106

Collection Date: 09/18/20 10:30
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):84.8
 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	2630	97.7	29.3	ug/kg	1		09/27/20 16:34
1,2-Dibromoethane	0.975 U	1.95	0.781	ug/kg	1		09/27/20 16:34
1,2-Dichloroethane	1.96 U	3.91	1.37	ug/kg	1		09/27/20 16:34
1,3,5-Trimethylbenzene	868	48.8	15.2	ug/kg	1		09/27/20 16:34
Benzene	12.2 U	24.4	7.62	ug/kg	1		09/27/20 16:34
Ethylbenzene	486	48.8	15.2	ug/kg	1		09/27/20 16:34
Isopropylbenzene (Cumene)	370	48.8	15.2	ug/kg	1		09/27/20 16:34
Methyl-t-butyl ether	97.5 U	195	60.6	ug/kg	1		09/27/20 16:34
Naphthalene	2160	48.8	15.2	ug/kg	1		09/27/20 16:34
n-Butylbenzene	559	48.8	15.2	ug/kg	1		09/27/20 16:34
o-Xylene	1340	48.8	15.2	ug/kg	1		09/27/20 16:34
P & M -Xylene	1440	97.7	29.3	ug/kg	1		09/27/20 16:34
sec-Butylbenzene	375	48.8	15.2	ug/kg	1		09/27/20 16:34
tert-Butylbenzene	417	48.8	15.2	ug/kg	1		09/27/20 16:34
Toluene	45.5 J	48.8	15.2	ug/kg	1		09/27/20 16:34
Xylenes (total)	2780	147	44.5	ug/kg	1		09/27/20 16:34
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	71-136		%	1		09/27/20 16:34
4-Bromofluorobenzene (surr)	76.7	55-151		%	1		09/27/20 16:34
Toluene-d8 (surr)	105	85-116		%	1		09/27/20 16:34

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 16:34
 Container ID: 1205106010-B

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 10:30
 Prep Initial Wt./Vol.: 37.02 g
 Prep Extract Vol: 30.6451 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106011
Lab Project ID: 1205106

Collection Date: 09/18/20 09:00
Received Date: 09/21/20 14:30
Matrix: Soil/Solid (dry weight)
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	0.838 J	2.52	0.757	mg/kg	1		10/01/20 23:00
Surrogates							
4-Bromofluorobenzene (surr)	83	50-150		%	1		10/01/20 23:00

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 10/01/20 23:00
Container ID: 1205106011-A

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 09/18/20 09:00
Prep Initial Wt./Vol.: 49.548 g
Prep Extract Vol: 25 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106011
 Lab Project ID: 1205106

Collection Date: 09/18/20 09:00
 Received Date: 09/21/20 14:30
 Matrix: Soil/Solid (dry weight)
 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	25.3 U	50.5	15.1	ug/kg	1		09/27/20 13:11
1,2-Dibromoethane	0.505 U	1.01	0.404	ug/kg	1		09/27/20 13:11
1,2-Dichloroethane	1.01 U	2.02	0.706	ug/kg	1		09/27/20 13:11
1,3,5-Trimethylbenzene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
Benzene	6.30 U	12.6	3.94	ug/kg	1		09/27/20 13:11
Ethylbenzene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
Isopropylbenzene (Cumene)	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
Methyl-t-butyl ether	50.5 U	101	31.3	ug/kg	1		09/27/20 13:11
Naphthalene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
n-Butylbenzene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
o-Xylene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
P & M -Xylene	25.3 U	50.5	15.1	ug/kg	1		09/27/20 13:11
sec-Butylbenzene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
tert-Butylbenzene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
Toluene	12.6 U	25.2	7.87	ug/kg	1		09/27/20 13:11
Xylenes (total)	37.9 U	75.7	23.0	ug/kg	1		09/27/20 13:11
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		09/27/20 13:11
4-Bromofluorobenzene (surr)	96.6	55-151		%	1		09/27/20 13:11
Toluene-d8 (surr)	96.8	85-116		%	1		09/27/20 13:11

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Analyst: KAJ
 Analytical Date/Time: 09/27/20 13:11
 Container ID: 1205106011-A

Prep Batch: VXX36434
 Prep Method: SW5035A
 Prep Date/Time: 09/18/20 09:00
 Prep Initial Wt./Vol.: 49.548 g
 Prep Extract Vol: 25 mL



Results of RSE-1

Client Sample ID: RSE-1
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106012
Lab Project ID: 1205106

Collection Date: 09/19/20 09:00
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS12294
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/24/20 19:33
Container ID: 1205106012-C

Prep Batch: XXX43920
Prep Method: SW3535A
Prep Date/Time: 09/23/20 10:15
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-1

Client Sample ID: RSE-1
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106012
Lab Project ID: 1205106

Collection Date: 09/19/20 09:00
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 20:03
Container ID: 1205106012-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 20:03
Container ID: 1205106012-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-1

Client Sample ID: **RSE-1**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106012
Lab Project ID: 1205106

Collection Date: 09/19/20 09:00
Received Date: 09/21/20 14:30
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	0.0330 J	0.100	0.0310	mg/L	1		09/23/20 17:40
Surrogates							
4-Bromofluorobenzene (surr)	94.8	50-150		%	1		09/23/20 17:40

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 17:40
Container ID: 1205106012-E

Prep Batch: VXX36407
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-1

Client Sample ID: **RSE-1**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106012
Lab Project ID: 1205106

Collection Date: 09/19/20 09:00
Received Date: 09/21/20 14:30
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		09/22/20 17:32
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 17:32
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 17:32
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
Benzene	0.200 U	0.400	0.120	ug/L	1		09/22/20 17:32
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 17:32
Naphthalene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/22/20 17:32
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
Toluene	0.500 U	1.00	0.310	ug/L	1		09/22/20 17:32
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/22/20 17:32
Surrogates							
1,2-Dichloroethane-D4 (surr)	104	81-118		%	1		09/22/20 17:32
4-Bromofluorobenzene (surr)	96.4	85-114		%	1		09/22/20 17:32
Toluene-d8 (surr)	92	89-112		%	1		09/22/20 17:32

Batch Information

Analytical Batch: VMS20343
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/22/20 17:32
Container ID: 1205106012-H

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 09/22/20 13:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-2

Client Sample ID: RSE-2
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106013
Lab Project ID: 1205106

Collection Date: 09/19/20 09:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS12294
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/24/20 19:54
Container ID: 1205106013-C

Prep Batch: XXX43920
Prep Method: SW3535A
Prep Date/Time: 09/23/20 10:15
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-2

Client Sample ID: RSE-2
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106013
Lab Project ID: 1205106

Collection Date: 09/19/20 09:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	0.315 J	0.577	0.173	mg/L	1		10/04/20 20:13

Surrogates

5a Androstane (surr)	90.2	50-150		%	1		10/04/20 20:13
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Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 20:13
Container ID: 1205106013-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.480 J	0.481	0.144	mg/L	1		10/04/20 20:13

Surrogates

n-Triacontane-d62 (surr)	96.9	50-150		%	1		10/04/20 20:13
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Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 20:13
Container ID: 1205106013-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-2

Client Sample ID: **RSE-2**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106013
Lab Project ID: 1205106

Collection Date: 09/19/20 09:30
Received Date: 09/21/20 14:30
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	0.0310	mg/L	1		09/23/20 17:58
Surrogates							
4-Bromofluorobenzene (surr)	97	50-150		%	1		09/23/20 17:58

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 17:58
Container ID: 1205106013-E

Prep Batch: VXX36407
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-2

Client Sample ID: RSE-2
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106013
Lab Project ID: 1205106

Collection Date: 09/19/20 09:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS- Petroleum VOC Group

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various petroleum VOCs like 1,2,4-Trimethylbenzene, Benzene, Toluene, and Surrogates like 1,2-Dichloroethane-D4.

Batch Information

Analytical Batch: VMS20343
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/22/20 17:47
Container ID: 1205106013-H

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 09/22/20 13:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-3

Client Sample ID: RSE-3
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106014
Lab Project ID: 1205106

Collection Date: 09/19/20 10:20
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS12294
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/24/20 20:14
Container ID: 1205106014-C

Prep Batch: XXX43920
Prep Method: SW3535A
Prep Date/Time: 09/23/20 10:15
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of RSE-3

Client Sample ID: RSE-3
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106014
Lab Project ID: 1205106

Collection Date: 09/19/20 10:20
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 2.30, 0.577, 0.173, mg/L, 1, 10/04/20 20:23

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 91.8, 50-150, %, 1, 10/04/20 20:23

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 20:23
Container ID: 1205106014-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 0.768, 0.481, 0.144, mg/L, 1, 10/04/20 20:23

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 96.6, 50-150, %, 1, 10/04/20 20:23

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 20:23
Container ID: 1205106014-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-3

Client Sample ID: **RSE-3**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106014
Lab Project ID: 1205106

Collection Date: 09/19/20 10:20
Received Date: 09/21/20 14:30
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	0.0428 J	0.100	0.0310	mg/L	1		09/23/20 18:52
Surrogates							
4-Bromofluorobenzene (surr)	92.3	50-150		%	1		09/23/20 18:52

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 18:52
Container ID: 1205106014-E

Prep Batch: VXX36407
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-3

Client Sample ID: **RSE-3**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106014
 Lab Project ID: 1205106

Collection Date: 09/19/20 10:20
 Received Date: 09/21/20 14:30
 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		09/22/20 18:02
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 18:02
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 18:02
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
Benzene	0.200 U	0.400	0.120	ug/L	1		09/22/20 18:02
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 18:02
Naphthalene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/22/20 18:02
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
Toluene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:02
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/22/20 18:02
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		09/22/20 18:02
4-Bromofluorobenzene (surr)	95	85-114		%	1		09/22/20 18:02
Toluene-d8 (surr)	93.9	89-112		%	1		09/22/20 18:02

Batch Information

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/22/20 18:02
 Container ID: 1205106014-H

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/20 13:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of RSE-4

Client Sample ID: RSE-4
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106015
Lab Project ID: 1205106

Collection Date: 09/19/20 11:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS12324
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/07/20 15:43
Container ID: 1205106015-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 244 mL
Prep Extract Vol: 1 mL



Results of RSE-4

Client Sample ID: RSE-4
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106015
Lab Project ID: 1205106

Collection Date: 09/19/20 11:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 20:33
Container ID: 1205106015-A
Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 20:33
Container ID: 1205106015-A
Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL



Results of RSE-4

Client Sample ID: **RSE-4**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106015
Lab Project ID: 1205106

Collection Date: 09/19/20 11:30
Received Date: 09/21/20 14:30
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	0.0748 J	0.100	0.0310	mg/L	1		09/23/20 22:10
Surrogates							
4-Bromofluorobenzene (surr)	102	50-150		%	1		09/23/20 22:10

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 22:10
Container ID: 1205106015-E

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-4

Client Sample ID: RSE-4
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106015
Lab Project ID: 1205106

Collection Date: 09/19/20 11:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS- Petroleum VOC Group

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various petroleum VOCs like 1,2,4-Trimethylbenzene, Benzene, and Xylenes, plus Surrogates like 1,2-Dichloroethane-D4.

Batch Information

Analytical Batch: VMS20343
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/22/20 18:17
Container ID: 1205106015-H

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 09/22/20 13:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-11

Client Sample ID: RSE-11
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106016
Lab Project ID: 1205106

Collection Date: 09/19/20 13:50
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Includes rows for various PAHs like 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthene, etc., and a Surrogates section for 2-Methylnaphthalene-d10 and Fluoranthene-d10.

Batch Information

Analytical Batch: XMS12324
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/07/20 16:03
Container ID: 1205106016-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS12326
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/08/20 20:51
Container ID: 1205106016-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL



Results of RSE-11

Client Sample ID: RSE-11
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106016
Lab Project ID: 1205106

Collection Date: 09/19/20 13:50
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Diesel Range Organics and Surrogates (5a Androstane).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 20:43
Container ID: 1205106016-A
Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include Residual Range Organics and Surrogates (n-Triacontane-d62).

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 20:43
Container ID: 1205106016-A
Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 275 mL
Prep Extract Vol: 1 mL



Results of RSE-11

Client Sample ID: **RSE-11**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106016
Lab Project ID: 1205106

Collection Date: 09/19/20 13:50
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.891		0.100	0.0310	mg/L	1		09/23/20 21:52
Surrogates								
4-Bromofluorobenzene (surr)	197	*	50-150		%	1		09/23/20 21:52

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 21:52
Container ID: 1205106016-E

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-11

Client Sample ID: RSE-11
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106016
Lab Project ID: 1205106

Collection Date: 09/19/20 13:50
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile GC/MS- Petroleum VOC Group

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Rows include various VOCs like 1,2,4-Trimethylbenzene, Benzene, Toluene, and Surrogates.

Batch Information

Analytical Batch: VMS20343
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/22/20 18:31
Container ID: 1205106016-H

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 09/22/20 13:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-12

Client Sample ID: RSE-12
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106017
Lab Project ID: 1205106

Collection Date: 09/19/20 12:10
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate standards.

Batch Information

Analytical Batch: XMS12324
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/07/20 16:24
Container ID: 1205106017-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-12

Client Sample ID: RSE-12
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106017
Lab Project ID: 1205106

Collection Date: 09/19/20 12:10
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 5.80, 0.577, 0.173, mg/L, 1, 10/04/20 20:53

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 88.8, 50-150, %, 1, 10/04/20 20:53

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 20:53
Container ID: 1205106017-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 0.769, 0.481, 0.144, mg/L, 1, 10/04/20 20:53

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 91.1, 50-150, %, 1, 10/04/20 20:53

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 20:53
Container ID: 1205106017-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL



Results of RSE-12

Client Sample ID: **RSE-12**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106017
Lab Project ID: 1205106

Collection Date: 09/19/20 12:10
Received Date: 09/21/20 14:30
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	0.0520 J	0.100	0.0310	mg/L	1		09/23/20 21:34
Surrogates							
4-Bromofluorobenzene (surr)	97.8	50-150		%	1		09/23/20 21:34

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 21:34
Container ID: 1205106017-E

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-12

Client Sample ID: **RSE-12**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106017
 Lab Project ID: 1205106

Collection Date: 09/19/20 12:10
 Received Date: 09/21/20 14:30
 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		09/23/20 18:11
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 18:46
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 18:46
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
Benzene	0.200 U	0.400	0.120	ug/L	1		09/22/20 18:46
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 18:46
Naphthalene	0.746 J	1.00	0.310	ug/L	1		09/23/20 18:11
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/22/20 18:46
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
Toluene	0.500 U	1.00	0.310	ug/L	1		09/22/20 18:46
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/22/20 18:46
Surrogates							
1,2-Dichloroethane-D4 (surr)	102	81-118		%	1		09/22/20 18:46
4-Bromofluorobenzene (surr)	103	85-114		%	1		09/22/20 18:46
Toluene-d8 (surr)	94.3	89-112		%	1		09/22/20 18:46

Batch Information

Analytical Batch: VMS20345
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/23/20 18:11
 Container ID: 1205106017-J

Prep Batch: VXX36403
 Prep Method: SW5030B
 Prep Date/Time: 09/23/20 14:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/22/20 18:46
 Container ID: 1205106017-H

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/20 13:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of RSE-13

Client Sample ID: **RSE-13**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106018
 Lab Project ID: 1205106

Collection Date: 09/19/20 13:20
 Received Date: 09/21/20 14:30
 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	14.0	0.200	0.0600	ug/L	4		10/13/20 11:37
2-Methylnaphthalene	13.5	0.200	0.0600	ug/L	4		10/13/20 11:37
Acenaphthene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Acenaphthylene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Benzo(a)Anthracene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Benzo[a]pyrene	0.0100 U	0.0200	0.00620	ug/L	1		10/07/20 16:44
Benzo[b]Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Benzo[g,h,i]perylene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Benzo[k]fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Chrysene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Dibenzo[a,h]anthracene	0.0100 U	0.0200	0.00620	ug/L	1		10/07/20 16:44
Fluoranthene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Fluorene	1.52	0.0500	0.0150	ug/L	1		10/07/20 16:44
Indeno[1,2,3-c,d] pyrene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Naphthalene	4.96	0.100	0.0310	ug/L	1		10/07/20 16:44
Phenanthrene	1.58	0.0500	0.0150	ug/L	1		10/07/20 16:44
Pyrene	0.0250 U	0.0500	0.0150	ug/L	1		10/07/20 16:44
Surrogates							
2-Methylnaphthalene-d10 (surr)	64.6	37-78		%	1		10/07/20 16:44
Fluoranthene-d10 (surr)	66.3	24-116		%	1		10/07/20 16:44

Batch Information

Analytical Batch: XMS12338
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/13/20 11:37
 Container ID: 1205106018-C

Prep Batch: XXX43929
 Prep Method: SW3535A
 Prep Date/Time: 09/24/20 07:47
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS12324
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/07/20 16:44
 Container ID: 1205106018-C

Prep Batch: XXX43929
 Prep Method: SW3535A
 Prep Date/Time: 09/24/20 07:47
 Prep Initial Wt./Vol.: 250 mL
 Prep Extract Vol: 1 mL



Results of RSE-13

Client Sample ID: RSE-13
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106018
Lab Project ID: 1205106

Collection Date: 09/19/20 13:20
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	21.0	0.600	0.180	mg/L	1		10/04/20 21:03
Surrogates							
5a Androstane (surr)	90.6	50-150		%	1		10/04/20 21:03

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 21:03
Container ID: 1205106018-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	1.40	0.500	0.150	mg/L	1		10/04/20 21:03
Surrogates							
n-Triacontane-d62 (surr)	90.2	50-150		%	1		10/04/20 21:03

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 21:03
Container ID: 1205106018-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



Results of RSE-13

Client Sample ID: **RSE-13**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106018
Lab Project ID: 1205106

Collection Date: 09/19/20 13:20
Received Date: 09/21/20 14:30
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	0.241	0.100	0.0310	mg/L	1		09/23/20 21:16
Surrogates							
4-Bromofluorobenzene (surr)	144	50-150		%	1		09/23/20 21:16

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 21:16
Container ID: 1205106018-E

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-13

Client Sample ID: **RSE-13**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106018
 Lab Project ID: 1205106

Collection Date: 09/19/20 13:20
 Received Date: 09/21/20 14:30
 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	13.2	1.00	0.310	ug/L	1		09/22/20 19:01
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 19:01
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 19:01
1,3,5-Trimethylbenzene	5.90	1.00	0.310	ug/L	1		09/22/20 19:01
Benzene	0.200 U	0.400	0.120	ug/L	1		09/22/20 19:01
Ethylbenzene	0.351 J	1.00	0.310	ug/L	1		09/22/20 19:01
Isopropylbenzene (Cumene)	1.43	1.00	0.310	ug/L	1		09/22/20 19:01
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 19:01
Naphthalene	6.02	1.00	0.310	ug/L	1		09/22/20 19:01
n-Butylbenzene	2.36	1.00	0.310	ug/L	1		09/22/20 19:01
o-Xylene	1.38	1.00	0.310	ug/L	1		09/22/20 19:01
P & M -Xylene	0.911 J	2.00	0.620	ug/L	1		09/22/20 19:01
sec-Butylbenzene	2.40	1.00	0.310	ug/L	1		09/22/20 19:01
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:01
Toluene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:01
Xylenes (total)	2.29 J	3.00	1.00	ug/L	1		09/22/20 19:01
Surrogates							
1,2-Dichloroethane-D4 (surr)	105	81-118		%	1		09/22/20 19:01
4-Bromofluorobenzene (surr)	103	85-114		%	1		09/22/20 19:01
Toluene-d8 (surr)	101	89-112		%	1		09/22/20 19:01

Batch Information

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/22/20 19:01
 Container ID: 1205106018-H

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/20 13:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of RSE-14

Client Sample ID: RSE-14
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106019
Lab Project ID: 1205106

Collection Date: 09/19/20 12:50
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate values.

Batch Information

Analytical Batch: XMS12324
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/07/20 17:05
Container ID: 1205106019-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of RSE-14

Client Sample ID: **RSE-14**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106019
 Lab Project ID: 1205106

Collection Date: 09/19/20 12:50
 Received Date: 09/21/20 14:30
 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	0.423 J	0.577	0.173	mg/L	1		10/04/20 21:33

Surrogates

5a Androstane (surr)	95.1	50-150		%	1		10/04/20 21:33
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Batch Information

Analytical Batch: XFC15759
 Analytical Method: AK102
 Analyst: CDM
 Analytical Date/Time: 10/04/20 21:33
 Container ID: 1205106019-A

Prep Batch: XXX43961
 Prep Method: SW3520C
 Prep Date/Time: 09/29/20 16:24
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	0.557	0.481	0.144	mg/L	1		10/04/20 21:33

Surrogates

n-Triacontane-d62 (surr)	97.9	50-150		%	1		10/04/20 21:33
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Batch Information

Analytical Batch: XFC15759
 Analytical Method: AK103
 Analyst: CDM
 Analytical Date/Time: 10/04/20 21:33
 Container ID: 1205106019-A

Prep Batch: XXX43961
 Prep Method: SW3520C
 Prep Date/Time: 09/29/20 16:24
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL



Results of RSE-14

Client Sample ID: **RSE-14**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106019
Lab Project ID: 1205106

Collection Date: 09/19/20 12:50
Received Date: 09/21/20 14:30
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	0.0320 J	0.100	0.0310	mg/L	1		09/23/20 20:58
Surrogates							
4-Bromofluorobenzene (surr)	97.1	50-150		%	1		09/23/20 20:58

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 20:58
Container ID: 1205106019-E

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-14

Client Sample ID: **RSE-14**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106019
Lab Project ID: 1205106

Collection Date: 09/19/20 12:50
Received Date: 09/21/20 14:30
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		09/22/20 19:15
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 19:15
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 19:15
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
Benzene	0.200 U	0.400	0.120	ug/L	1		09/22/20 19:15
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 19:15
Naphthalene	0.500 U	1.00	0.310	ug/L	1		09/23/20 18:26
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/22/20 19:15
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
Toluene	0.500 U	1.00	0.310	ug/L	1		09/22/20 19:15
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/22/20 19:15
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/22/20 19:15
4-Bromofluorobenzene (surr)	96.7	85-114		%	1		09/22/20 19:15
Toluene-d8 (surr)	102	89-112		%	1		09/22/20 19:15

Batch Information

Analytical Batch: VMS20345
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/23/20 18:26
Container ID: 1205106019-I

Prep Batch: VXX36403
Prep Method: SW5030B
Prep Date/Time: 09/23/20 14:30
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS20343
Analytical Method: SW8260D
Analyst: NRB
Analytical Date/Time: 09/22/20 19:15
Container ID: 1205106019-H

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 09/22/20 13:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-15

Client Sample ID: **RSE-15**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106020
 Lab Project ID: 1205106

Collection Date: 09/19/20 14:30
 Received Date: 09/21/20 14:30
 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	51.5	0.481	0.144	ug/L	10		10/13/20 11:58
2-Methylnaphthalene	34.1	0.481	0.144	ug/L	10		10/13/20 11:58
Acenaphthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Acenaphthylene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Benzo(a)Anthracene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Benzo[a]pyrene	0.00960 U	0.0192	0.00596	ug/L	1		10/07/20 17:25
Benzo[b]Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Benzo[g,h,i]perylene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Benzo[k]fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Chrysene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Dibenzo[a,h]anthracene	0.00960 U	0.0192	0.00596	ug/L	1		10/07/20 17:25
Fluoranthene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Fluorene	7.04	0.0481	0.0144	ug/L	1		10/07/20 17:25
Indeno[1,2,3-c,d] pyrene	0.0240 U	0.0481	0.0144	ug/L	1		10/07/20 17:25
Naphthalene	35.9	0.962	0.298	ug/L	10		10/13/20 11:58
Phenanthrene	5.56	0.0481	0.0144	ug/L	1		10/07/20 17:25
Pyrene	0.251	0.0481	0.0144	ug/L	1		10/07/20 17:25
Surrogates							
2-Methylnaphthalene-d10 (surr)	64.8	37-78		%	1		10/07/20 17:25
Fluoranthene-d10 (surr)	53.4	24-116		%	1		10/07/20 17:25

Batch Information

Analytical Batch: XMS12338
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/13/20 11:58
 Container ID: 1205106020-C

Prep Batch: XXX43929
 Prep Method: SW3535A
 Prep Date/Time: 09/24/20 07:47
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL

Analytical Batch: XMS12324
 Analytical Method: 8270D SIM LV (PAH)
 Analyst: DSD
 Analytical Date/Time: 10/07/20 17:25
 Container ID: 1205106020-C

Prep Batch: XXX43929
 Prep Method: SW3535A
 Prep Date/Time: 09/24/20 07:47
 Prep Initial Wt./Vol.: 260 mL
 Prep Extract Vol: 1 mL



Results of RSE-15

Client Sample ID: RSE-15
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106020
Lab Project ID: 1205106

Collection Date: 09/19/20 14:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 39.2, 0.556, 0.167, mg/L, 1, 10/04/20 21:43

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 87.3, 50-150, %, 1, 10/04/20 21:43

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 21:43
Container ID: 1205106020-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 1.81, 0.463, 0.139, mg/L, 1, 10/04/20 21:43

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 86, 50-150, %, 1, 10/04/20 21:43

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 21:43
Container ID: 1205106020-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL



Results of RSE-15

Client Sample ID: **RSE-15**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106020
Lab Project ID: 1205106

Collection Date: 09/19/20 14:30
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	3.11		0.100	0.0310	mg/L	1		09/23/20 20:40
Surrogates								
4-Bromofluorobenzene (surr)	370	*	50-150		%	1		09/23/20 20:40

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 20:40
Container ID: 1205106020-I

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-15

Client Sample ID: **RSE-15**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106020
 Lab Project ID: 1205106

Collection Date: 09/19/20 14:30
 Received Date: 09/21/20 14:30
 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	144	25.0	7.75	ug/L	25		09/23/20 19:25
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 19:30
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 19:30
1,3,5-Trimethylbenzene	88.2	1.00	0.310	ug/L	1		09/22/20 19:30
Benzene	0.150 J	0.400	0.120	ug/L	1		09/22/20 19:30
Ethylbenzene	16.0	1.00	0.310	ug/L	1		09/22/20 19:30
Isopropylbenzene (Cumene)	11.3	1.00	0.310	ug/L	1		09/22/20 19:30
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 19:30
Naphthalene	89.4	1.00	0.310	ug/L	1		09/22/20 19:30
n-Butylbenzene	20.7	1.00	0.310	ug/L	1		09/22/20 19:30
o-Xylene	222	25.0	7.75	ug/L	25		09/23/20 19:25
P & M -Xylene	108	50.0	15.5	ug/L	25		09/23/20 19:25
sec-Butylbenzene	13.4	1.00	0.310	ug/L	1		09/22/20 19:30
tert-Butylbenzene	1.54	1.00	0.310	ug/L	1		09/22/20 19:30
Toluene	8.30	1.00	0.310	ug/L	1		09/22/20 19:30
Xylenes (total)	330	75.0	25.0	ug/L	25		09/23/20 19:25
Surrogates							
1,2-Dichloroethane-D4 (surr)	103	81-118		%	1		09/22/20 19:30
4-Bromofluorobenzene (surr)	116 *	85-114		%	1		09/22/20 19:30
Toluene-d8 (surr)	103	89-112		%	1		09/22/20 19:30

Batch Information

Analytical Batch: VMS20345
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/23/20 19:25
 Container ID: 1205106020-F

Prep Batch: VXX36403
 Prep Method: SW5030B
 Prep Date/Time: 09/23/20 14:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/22/20 19:30
 Container ID: 1205106020-H

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/20 13:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of RSE-X

Client Sample ID: RSE-X
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106021
Lab Project ID: 1205106

Collection Date: 09/19/20 15:00
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Polynuclear Aromatics GC/MS

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Lists various polynuclear aromatic hydrocarbons and their surrogate compounds with associated quality and detection data.

Batch Information

Analytical Batch: XMS12324
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/07/20 17:46
Container ID: 1205106021-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 246 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS12326
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 10/08/20 21:12
Container ID: 1205106021-C

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 09/24/20 07:47
Prep Initial Wt./Vol.: 246 mL
Prep Extract Vol: 1 mL



Results of RSE-X

Client Sample ID: RSE-X
Client Project ID: 20-2218 ARRC Hurricane
Lab Sample ID: 1205106021
Lab Project ID: 1205106

Collection Date: 09/19/20 15:00
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Semivolatile Organic Fuels

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Diesel Range Organics, 34.0, 0.600, 0.180, mg/L, 1, 10/04/20 21:53

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: 5a Androstane (surr), 94.8, 50-150, %, 1, 10/04/20 21:53

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Analyst: CDM
Analytical Date/Time: 10/04/20 21:53
Container ID: 1205106021-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: Residual Range Organics, 1.53, 0.500, 0.150, mg/L, 1, 10/04/20 21:53

Surrogates

Table with 8 columns: Parameter, Result Qual, LOQ/CL, DL, Units, DF, Allowable Limits, Date Analyzed. Row: n-Triacontane-d62 (surr), 92.1, 50-150, %, 1, 10/04/20 21:53

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Analyst: CDM
Analytical Date/Time: 10/04/20 21:53
Container ID: 1205106021-A

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 09/29/20 16:24
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL



Results of RSE-X

Client Sample ID: **RSE-X**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106021
Lab Project ID: 1205106

Collection Date: 09/19/20 15:00
Received Date: 09/21/20 14:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.50		0.100	0.0310	mg/L	1		09/23/20 22:28
Surrogates								
4-Bromofluorobenzene (surr)	301	*	50-150		%	1		09/23/20 22:28

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 22:28
Container ID: 1205106021-E

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of RSE-X

Client Sample ID: **RSE-X**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106021
 Lab Project ID: 1205106

Collection Date: 09/19/20 15:00
 Received Date: 09/21/20 14:30
 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	164	25.0	7.75	ug/L	25		09/23/20 19:40
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 19:45
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 19:45
1,3,5-Trimethylbenzene	82.5	1.00	0.310	ug/L	1		09/22/20 19:45
Benzene	0.139 J	0.400	0.120	ug/L	1		09/22/20 19:45
Ethylbenzene	15.2	1.00	0.310	ug/L	1		09/22/20 19:45
Isopropylbenzene (Cumene)	10.3	1.00	0.310	ug/L	1		09/22/20 19:45
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 19:45
Naphthalene	87.0	1.00	0.310	ug/L	1		09/22/20 19:45
n-Butylbenzene	15.2	1.00	0.310	ug/L	1		09/22/20 19:45
o-Xylene	223	25.0	7.75	ug/L	25		09/23/20 19:40
P & M -Xylene	120	50.0	15.5	ug/L	25		09/23/20 19:40
sec-Butylbenzene	11.9	1.00	0.310	ug/L	1		09/22/20 19:45
tert-Butylbenzene	1.38	1.00	0.310	ug/L	1		09/22/20 19:45
Toluene	7.48	1.00	0.310	ug/L	1		09/22/20 19:45
Xylenes (total)	343	75.0	25.0	ug/L	25		09/23/20 19:40
Surrogates							
1,2-Dichloroethane-D4 (surr)	101	81-118		%	1		09/22/20 19:45
4-Bromofluorobenzene (surr)	119 *	85-114		%	1		09/22/20 19:45
Toluene-d8 (surr)	97.3	89-112		%	1		09/22/20 19:45

Batch Information

Analytical Batch: VMS20345
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/23/20 19:40
 Container ID: 1205106021-F

Prep Batch: VXX36403
 Prep Method: SW5030B
 Prep Date/Time: 09/23/20 14:30
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/22/20 19:45
 Container ID: 1205106021-H

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/20 13:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **20-2218 ARRC Hurricane**
Lab Sample ID: 1205106022
Lab Project ID: 1205106

Collection Date: 09/19/20 09:00
Received Date: 09/21/20 14:30
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	0.0366 J	0.100	0.0310	mg/L	1		09/23/20 12:34
Surrogates							
4-Bromofluorobenzene (surr)	90.3	50-150		%	1		09/23/20 12:34

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Analyst: ALJ
Analytical Date/Time: 09/23/20 12:34
Container ID: 1205106022-A

Prep Batch: VXX36407
Prep Method: SW5030B
Prep Date/Time: 09/23/20 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **20-2218 ARRC Hurricane**
 Lab Sample ID: 1205106022
 Lab Project ID: 1205106

Collection Date: 09/19/20 09:00
 Received Date: 09/21/20 14:30
 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		09/22/20 15:35
1,2-Dibromoethane	0.0375 U	0.0750	0.0180	ug/L	1		09/22/20 15:35
1,2-Dichloroethane	0.250 U	0.500	0.150	ug/L	1		09/22/20 15:35
1,3,5-Trimethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
Benzene	0.200 U	0.400	0.120	ug/L	1		09/22/20 15:35
Ethylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
Isopropylbenzene (Cumene)	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
Methyl-t-butyl ether	5.00 U	10.0	3.10	ug/L	1		09/22/20 15:35
Naphthalene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
n-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
o-Xylene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
P & M -Xylene	1.00 U	2.00	0.620	ug/L	1		09/22/20 15:35
sec-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
tert-Butylbenzene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
Toluene	0.500 U	1.00	0.310	ug/L	1		09/22/20 15:35
Xylenes (total)	1.50 U	3.00	1.00	ug/L	1		09/22/20 15:35
Surrogates							
1,2-Dichloroethane-D4 (surr)	99.3	81-118		%	1		09/22/20 15:35
4-Bromofluorobenzene (surr)	98.4	85-114		%	1		09/22/20 15:35
Toluene-d8 (surr)	100	89-112		%	1		09/22/20 15:35

Batch Information

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Analyst: NRB
 Analytical Date/Time: 09/22/20 15:35
 Container ID: 1205106022-D

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/20 13:00
 Prep Initial Wt./Vol.: 5 mL
 Prep Extract Vol: 5 mL



Method Blank

Blank ID: MB for HBN 1812268 [SPT/11141]
Blank Lab ID: 1584097

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT11141
Analytical Method: SM21 2540G
Instrument:
Analyst: H.M
Analytical Date/Time: 9/28/2020 6:40:00PM

Print Date: 10/14/2020 1:55:04PM



Duplicate Sample Summary

Original Sample ID: 1205101016

Duplicate Sample ID: 1584098

Analysis Date: 09/28/2020 18:40

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	96.0	95.6	%	0.47	(< 15)

Batch Information

Analytical Batch: SPT11141

Analytical Method: SM21 2540G

Instrument:

Analyst: H.M

Print Date: 10/14/2020 1:55:05PM



Duplicate Sample Summary

Original Sample ID: 1205106010

Duplicate Sample ID: 1584099

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010

Analysis Date: 09/28/2020 18:40

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	84.8	84.5	%	0.35	(< 15)

Batch Information

Analytical Batch: SPT11141

Analytical Method: SM21 2540G

Instrument:

Analyst: H.M

Print Date: 10/14/2020 1:55:05PM



Method Blank

Blank ID: MB for HBN 1812053 [VXX/36399]
Blank Lab ID: 1582924

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021, 1205106022

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	106	81-118		%
4-Bromofluorobenzene (surr)	98	85-114		%
Toluene-d8 (surr)	98.5	89-112		%

Batch Information

Analytical Batch: VMS20343
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 9/22/2020 1:04:00PM

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 9/22/2020 1:00:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:10PM



Leaching Blank

Blank ID: LB for HBN 1811989 [TCLP/10833]
Blank Lab ID: 1582605

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021, 1205106022

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2-Dichloroethane	12.5U	25.0	7.50	ug/L
Benzene	10.0U	20.0	6.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	100	81-118		%
4-Bromofluorobenzene (surr)	101	85-114		%
Toluene-d8 (surr)	99.6	89-112		%

Batch Information

Analytical Batch: VMS20343
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 9/22/2020 3:50:00PM

Prep Batch: VXX36399
Prep Method: SW5030B
Prep Date/Time: 9/22/2020 1:00:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:10PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36399]
 Blank Spike Lab ID: 1582925
 Date Analyzed: 09/22/2020 13:19

Spike Duplicate ID: LCSD for HBN 1205106 [VXX36399]
 Spike Duplicate Lab ID: 1582926
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021, 1205106022

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	27.6	92	30	28.5	95	(79-124)	3.40	(< 20)
1,2-Dibromoethane	30	28.0	93	30	29.6	99	(77-121)	5.40	(< 20)
1,2-Dichloroethane	30	29.5	98	30	29.2	97	(73-128)	0.89	(< 20)
1,3,5-Trimethylbenzene	30	28.2	94	30	28.4	95	(75-124)	0.71	(< 20)
Benzene	30	29.8	99	30	29.0	97	(79-120)	2.60	(< 20)
Ethylbenzene	30	31.5	105	30	30.6	102	(79-121)	3.00	(< 20)
Isopropylbenzene (Cumene)	30	31.6	105	30	30.6	102	(72-131)	3.30	(< 20)
Methyl-t-butyl ether	45	45.2	101	45	45.1	100	(71-124)	0.19	(< 20)
Naphthalene	30	25.9	86	30	28.1	94	(61-128)	8.10	(< 20)
n-Butylbenzene	30	31.0	103	30	32.2	107	(75-128)	3.80	(< 20)
o-Xylene	30	32.8	109	30	31.4	105	(78-122)	4.40	(< 20)
P & M -Xylene	60	63.7	106	60	63.1	105	(80-121)	1.00	(< 20)
sec-Butylbenzene	30	31.9	106	30	31.5	105	(77-126)	1.40	(< 20)
tert-Butylbenzene	30	30.2	101	30	30.5	102	(78-124)	1.00	(< 20)
Toluene	30	27.0	90	30	28.1	94	(80-121)	4.00	(< 20)
Xylenes (total)	90	96.5	107	90	94.4	105	(79-121)	2.20	(< 20)

Surrogates

1,2-Dichloroethane-D4 (surr)	30	102	102	30	101	101	(81-118)	0.91	
4-Bromofluorobenzene (surr)	30	97.1	97	30	97.9	98	(85-114)	0.80	
Toluene-d8 (surr)	30	93.3	93	30	98.6	99	(89-112)	5.50	

Batch Information

Analytical Batch: VMS20343
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB

Prep Batch: VXX36399
 Prep Method: SW5030B
 Prep Date/Time: 09/22/2020 13:00
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:12PM



Method Blank

Blank ID: MB for HBN 1812092 [VXX/36403]
Blank Lab ID: 1583197

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1205106017, 1205106019, 1205106020, 1205106021

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
Naphthalene	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
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	96.4	85-114		%
Toluene-d8 (surr)	98.8	89-112		%

Batch Information

Analytical Batch: VMS20345
Analytical Method: SW8260D
Instrument: Agilent 7890-75MS
Analyst: NRB
Analytical Date/Time: 9/23/2020 2:46:00PM

Prep Batch: VXX36403
Prep Method: SW5030B
Prep Date/Time: 9/23/2020 2:30:00PM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:14PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36403]
 Blank Spike Lab ID: 1583198
 Date Analyzed: 09/23/2020 15:01

Spike Duplicate ID: LCSD for HBN 1205106 [VXX36403]
 Spike Duplicate Lab ID: 1583199
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106017, 1205106019, 1205106020, 1205106021

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	27.9	93	30	29.1	97	(79-124)	4.20	(< 20)
Naphthalene	30	25.8	86	30	29.7	99	(61-128)	13.80	(< 20)
o-Xylene	30	31.5	105	30	31.1	104	(78-122)	1.20	(< 20)
P & M -Xylene	60	63.6	106	60	64.1	107	(80-121)	0.84	(< 20)
Xylenes (total)	90	95.1	106	90	95.2	106	(79-121)	0.15	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	101	101	30	100	100	(81-118)	0.94	
4-Bromofluorobenzene (surr)	30	96.4	96	30	95.6	96	(85-114)	0.87	
Toluene-d8 (surr)	30	97.8	98	30	98.7	99	(89-112)	0.93	

Batch Information

Analytical Batch: VMS20345
 Analytical Method: SW8260D
 Instrument: Agilent 7890-75MS
 Analyst: NRB

Prep Batch: VXX36403
 Prep Method: SW5030B
 Prep Date/Time: 09/23/2020 14:30
 Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
 Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:17PM



Method Blank

Blank ID: MB for HBN 1812114 [VXX/36407]
Blank Lab ID: 1583302

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1205106012, 1205106013, 1205106014, 1205106022

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	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	96	50-150		%

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ALJ
Analytical Date/Time: 9/23/2020 10:41:00AM

Prep Batch: VXX36407
Prep Method: SW5030B
Prep Date/Time: 9/23/2020 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:20PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36407]
Blank Spike Lab ID: 1583305
Date Analyzed: 09/23/2020 11:35

Spike Duplicate ID: LCSD for HBN 1205106 [VXX36407]
Spike Duplicate Lab ID: 1583306
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106012, 1205106013, 1205106014, 1205106022

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	1.05	105	1.00	1.08	108	(60-120)	2.80	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	99	99	0.0500	101	101	(50-150)	2.10	
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Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ALJ

Prep Batch: VXX36407
Prep Method: SW5030B
Prep Date/Time: 09/23/2020 06:00
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:22PM



Method Blank

Blank ID: MB for HBN 1812115 [VXX/36408]
Blank Lab ID: 1583307

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.0384J	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	93	50-150		%

Batch Information

Analytical Batch: VFC15362
Analytical Method: AK101
Instrument: Agilent 7890A PID/FID
Analyst: ALJ
Analytical Date/Time: 9/23/2020 8:22:00PM

Prep Batch: VXX36408
Prep Method: SW5030B
Prep Date/Time: 9/23/2020 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:25PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36408]
Blank Spike Lab ID: 1583310
Date Analyzed: 09/23/2020 20:04

Spike Duplicate ID: LCSD for HBN 1205106 [VXX36408]
Spike Duplicate Lab ID: 1583311
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

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	1.07	107	1.00	1.06	106	(60-120)	1.30	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	0.0500	100	100	0.0500	101	101	(50-150)	0.58	
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Batch Information

Analytical Batch: **VFC15362**
Analytical Method: **AK101**
Instrument: **Agilent 7890A PID/FID**
Analyst: **ALJ**

Prep Batch: **VXX36408**
Prep Method: **SW5030B**
Prep Date/Time: **09/23/2020 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

Print Date: 10/14/2020 1:55:28PM



Method Blank

Blank ID: MB for HBN 1812279 [VXX/36434]
Blank Lab ID: 1584170

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010, 1205106011

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/kg
1,2-Dibromoethane	0.500U	1.00	0.400	ug/kg
1,2-Dichloroethane	1.00U	2.00	0.700	ug/kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/kg
Benzene	6.25U	12.5	3.90	ug/kg
Ethylbenzene	12.5U	25.0	7.80	ug/kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/kg
Naphthalene	12.5U	25.0	7.80	ug/kg
n-Butylbenzene	12.5U	25.0	7.80	ug/kg
o-Xylene	12.5U	25.0	7.80	ug/kg
P & M -Xylene	25.0U	50.0	15.0	ug/kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/kg
Toluene	12.5U	25.0	7.80	ug/kg
Xylenes (total)	37.5U	75.0	22.8	ug/kg

Surrogates

1,2-Dichloroethane-D4 (surr)	106	71-136	%
4-Bromofluorobenzene (surr)	101	55-151	%
Toluene-d8 (surr)	96.7	85-116	%

Batch Information

Analytical Batch: VMS20360
Analytical Method: SW8260D
Instrument: VRA Agilent GC/MS 7890B/5977A
Analyst: KAJ
Analytical Date/Time: 9/27/2020 10:34:00AM

Prep Batch: VXX36434
Prep Method: SW5035A
Prep Date/Time: 9/27/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/14/2020 1:55:30PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36434]

Blank Spike Lab ID: 1584171

Date Analyzed: 09/27/2020 10:50

Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010, 1205106011

Results by SW8260D

Blank Spike (ug/kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	809	108	(75-123)
1,2-Dibromoethane	750	811	108	(78-122)
1,2-Dichloroethane	750	810	108	(73-128)
1,3,5-Trimethylbenzene	750	805	107	(73-124)
Benzene	750	765	102	(77-121)
Ethylbenzene	750	761	101	(76-122)
Isopropylbenzene (Cumene)	750	781	104	(68-134)
Methyl-t-butyl ether	1130	1160	104	(73-125)
Naphthalene	750	792	106	(62-129)
n-Butylbenzene	750	853	114	(70-128)
o-Xylene	750	765	102	(77-123)
P & M -Xylene	1500	1520	101	(77-124)
sec-Butylbenzene	750	813	108	(73-126)
tert-Butylbenzene	750	838	112	(73-125)
Toluene	750	724	97	(77-121)
Xylenes (total)	2250	2280	101	(78-124)

Surrogates

1,2-Dichloroethane-D4 (surr)	750	103	103	(71-136)
4-Bromofluorobenzene (surr)	750	100	100	(55-151)
Toluene-d8 (surr)	750	97.5	98	(85-116)

Batch Information

Analytical Batch: VMS20360

Analytical Method: SW8260D

Instrument: VRA Agilent GC/MS 7890B/5977A

Analyst: KAJ

Prep Batch: VXX36434

Prep Method: SW5035A

Prep Date/Time: 09/27/2020 06:00

Spike Init Wt./Vol.: 750 ug/kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1205106004
 MS Sample ID: 1584172 MS
 MSD Sample ID: 1584173 MSD

Analysis Date: 09/27/2020 13:42
 Analysis Date: 09/27/2020 11:37
 Analysis Date: 09/27/2020 11:53
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010, 1205106011

Results by SW8260D

Parameter	Sample	Matrix Spike (ug/kg)			Spike Duplicate (ug/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	32.8U	751	789	105	751	773	103	75-123	2.10	(< 20)
1,2-Dibromoethane	0.655U	751	779	104	751	794	106	78-122	1.80	(< 20)
1,2-Dichloroethane	1.31U	751	788	105	751	791	105	73-128	0.47	(< 20)
1,3,5-Trimethylbenzene	16.4U	751	807	108	751	782	104	73-124	3.20	(< 20)
Benzene	8.20U	751	764	102	751	769	103	77-121	0.56	(< 20)
Ethylbenzene	16.4U	751	733	98	751	739	99	76-122	0.80	(< 20)
Isopropylbenzene (Cumene)	16.4U	751	736	98	751	764	102	68-134	3.90	(< 20)
Methyl-t-butyl ether	65.5U	1125	1118	99	1125	1155	103	73-125	3.60	(< 20)
Naphthalene	23.4J	751	703	94	751	814	108	62-129	14.60	(< 20)
n-Butylbenzene	16.4U	751	948	126	751	933	124	70-128	1.50	(< 20)
o-Xylene	16.4U	751	725	97	751	732	98	77-123	1.00	(< 20)
P & M -Xylene	32.8U	1501	1443	96	1501	1443	96	77-124	0.25	(< 20)
sec-Butylbenzene	16.4U	751	834	111	751	818	109	73-126	2.00	(< 20)
tert-Butylbenzene	16.4U	751	829	111	751	806	107	73-125	2.80	(< 20)
Toluene	14.8J	751	712	95	751	718	96	77-121	0.80	(< 20)
Xylenes (total)	49.1U	2252	2171	97	2252	2171	97	78-124	0.17	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		751	754	101	751	764	102	71-136	1.40	
4-Bromofluorobenzene (surr)		1247	1079	86	1247	1053	84	55-151	2.40	
Toluene-d8 (surr)		751	732	98	751	732	98	85-116	0.15	

Batch Information

Analytical Batch: VMS20360
 Analytical Method: SW8260D
 Instrument: VRA Agilent GC/MS 7890B/5977A
 Analyst: KAJ
 Analytical Date/Time: 9/27/2020 11:37:00AM

Prep Batch: VXX36434
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 9/27/2020 6:00:00AM
 Prep Initial Wt./Vol.: 57.74g
 Prep Extract Vol: 25.00mL

Print Date: 10/14/2020 1:55:35PM



Method Blank

Blank ID: MB for HBN 1812340 [VXX/36442]

Blank Lab ID: 1584468

QC for Samples:

1205106002, 1205106003, 1205106006, 1205106008, 1205106009

Matrix: Soil/Solid (dry weight)

Results by SW8260D

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/kg
Naphthalene	12.5U	25.0	7.80	ug/kg
n-Butylbenzene	12.5U	25.0	7.80	ug/kg
o-Xylene	12.5U	25.0	7.80	ug/kg
P & M -Xylene	25.0U	50.0	15.0	ug/kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/kg
Xylenes (total)	37.5U	75.0	22.8	ug/kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	110	71-136		%
4-Bromofluorobenzene (surr)	97.1	55-151		%
Toluene-d8 (surr)	98.7	85-116		%

Batch Information

Analytical Batch: VMS20365
Analytical Method: SW8260D
Instrument: VQA 7890/5975 GC/MS
Analyst: KAJ
Analytical Date/Time: 9/29/2020 5:42:00PM

Prep Batch: VXX36442
Prep Method: SW5035A
Prep Date/Time: 9/29/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/14/2020 1:55:36PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36442]

Blank Spike Lab ID: 1584469

Date Analyzed: 09/29/2020 17:58

Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106002, 1205106003, 1205106006, 1205106008, 1205106009

Results by SW8260D

Blank Spike (ug/kg)

Parameter	Spike	Result	Rec (%)	CL
1,2,4-Trimethylbenzene	750	798	106	(75-123)
1,3,5-Trimethylbenzene	750	797	106	(73-124)
Naphthalene	750	803	107	(62-129)
n-Butylbenzene	750	890	119	(70-128)
o-Xylene	750	793	106	(77-123)
P & M -Xylene	1500	1580	106	(77-124)
sec-Butylbenzene	750	838	112	(73-126)
Xylenes (total)	2250	2380	106	(78-124)

Surrogates

1,2-Dichloroethane-D4 (surr)	750	93.7	94	(71-136)
4-Bromofluorobenzene (surr)	750	90.3	90	(55-151)
Toluene-d8 (surr)	750	101	101	(85-116)

Batch Information

Analytical Batch: **VMS20365**

Analytical Method: **SW8260D**

Instrument: **VQA 7890/5975 GC/MS**

Analyst: **KAJ**

Prep Batch: **VXX36442**

Prep Method: **SW5035A**

Prep Date/Time: **09/29/2020 06:00**

Spike Init Wt./Vol.: 750 ug/kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1584481
 MS Sample ID: 1584470 MS
 MSD Sample ID: 1584471 MSD

Analysis Date: 09/29/2020 19:54
 Analysis Date: 09/29/2020 18:15
 Analysis Date: 09/29/2020 18:31
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106002, 1205106003, 1205106006, 1205106008, 1205106009

Results by SW8260D

Parameter	Sample	Matrix Spike (ug/kg)			Spike Duplicate (ug/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,2,4-Trimethylbenzene	27.9U	835	873	105	835	875	105	75-123	0.29	(< 20)
1,3,5-Trimethylbenzene	13.9U	835	873	105	835	907	109	73-124	3.90	(< 20)
Naphthalene	13.9U	835	908	109	835	898	108	62-129	1.10	(< 20)
n-Butylbenzene	13.9U	835	942	113	835	946	113	70-128	0.39	(< 20)
o-Xylene	13.9U	835	823	99	835	843	101	77-123	2.40	(< 20)
P & M -Xylene	27.9U	1670	1640	98	1670	1670	100	77-124	1.80	(< 20)
sec-Butylbenzene	13.9U	835	893	107	835	885	106	73-126	0.98	(< 20)
Xylenes (total)	41.8U	2510	2460	98	2510	2510	100	78-124	2.00	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		835	798	96	835	802	96	71-136	0.50	
4-Bromofluorobenzene (surr)		1390	952	68	1390	940	68	55-151	1.30	
Toluene-d8 (surr)		835	840	101	835	849	102	85-116	1.10	

Batch Information

Analytical Batch: VMS20365
 Analytical Method: SW8260D
 Instrument: VQA 7890/5975 GC/MS
 Analyst: KAJ
 Analytical Date/Time: 9/29/2020 6:15:00PM

Prep Batch: VXX36442
 Prep Method: Vol. Extraction SW8260 Field Extracted L
 Prep Date/Time: 9/29/2020 6:00:00AM
 Prep Initial Wt./Vol.: 44.91g
 Prep Extract Vol: 25.00mL

Print Date: 10/14/2020 1:55:40PM



Method Blank

Blank ID: MB for HBN 1812480 [VXX/36467]
Blank Lab ID: 1585111

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010, 1205106011

Results by AK101

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Gasoline Range Organics	0.814J	2.50	0.750	mg/kg
Surrogates				
4-Bromofluorobenzene (surr)	71.6	50-150		%

Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ALJ
Analytical Date/Time: 10/1/2020 10:42:00PM

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 10/1/2020 6:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 10/14/2020 1:55:42PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [VXX36467]
Blank Spike Lab ID: 1585112
Date Analyzed: 10/01/2020 22:05

Spike Duplicate ID: LCSD for HBN 1205106 [VXX36467]
Spike Duplicate Lab ID: 1585113
Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010, 1205106011

Results by AK101

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	13.8	110	12.5	14.3	114	(60-120)	3.40	(< 20)

Surrogates

4-Bromofluorobenzene (surr)	1.25	78.8	79	1.25	75.2	75	(50-150)	4.70	
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Batch Information

Analytical Batch: VFC15375
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ALJ

Prep Batch: VXX36467
Prep Method: SW5035A
Prep Date/Time: 10/01/2020 06:00
Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL
Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Print Date: 10/14/2020 1:55:44PM



Method Blank

Blank ID: MB for HBN 1812038 [XXX/43920]
Blank Lab ID: 1582872

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1205106012, 1205106013, 1205106014

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	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	60.4	37-78		%
Fluoranthene-d10 (surr)	73.5	24-116		%

Batch Information

Analytical Batch: XMS12294
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 9/24/2020 1:24:00PM

Prep Batch: XXX43920
Prep Method: SW3535A
Prep Date/Time: 9/23/2020 10:15:07AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2020 1:55:47PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43920]
 Blank Spike Lab ID: 1582873
 Date Analyzed: 09/24/2020 13:45

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43920]
 Spike Duplicate Lab ID: 1582874
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106012, 1205106013, 1205106014

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	1.24	62	2	1.26	63	(41-115)	1.70	(< 20)
2-Methylnaphthalene	2	1.23	61	2	1.25	62	(39-114)	1.80	(< 20)
Acenaphthene	2	1.40	70	2	1.42	71	(48-114)	1.70	(< 20)
Acenaphthylene	2	1.50	75	2	1.53	76	(35-121)	2.10	(< 20)
Anthracene	2	1.55	78	2	1.50	75	(53-119)	3.30	(< 20)
Benzo(a)Anthracene	2	1.55	77	2	1.46	73	(59-120)	5.30	(< 20)
Benzo[a]pyrene	2	1.82	91	2	1.74	87	(53-120)	4.40	(< 20)
Benzo[b]Fluoranthene	2	1.75	87	2	1.66	83	(53-126)	5.20	(< 20)
Benzo[g,h,i]perylene	2	1.84	92	2	1.78	89	(44-128)	3.70	(< 20)
Benzo[k]fluoranthene	2	1.73	87	2	1.65	83	(54-125)	4.50	(< 20)
Chrysene	2	1.64	82	2	1.58	79	(57-120)	3.90	(< 20)
Dibenzo[a,h]anthracene	2	1.93	96	2	1.86	93	(44-131)	3.40	(< 20)
Fluoranthene	2	1.55	78	2	1.48	74	(58-120)	5.10	(< 20)
Fluorene	2	1.53	77	2	1.52	76	(50-118)	0.62	(< 20)
Indeno[1,2,3-c,d] pyrene	2	2.04	102	2	1.95	97	(48-130)	4.70	(< 20)
Naphthalene	2	1.38	69	2	1.40	70	(43-114)	2.10	(< 20)
Phenanthrene	2	1.63	81	2	1.59	80	(53-115)	2.30	(< 20)
Pyrene	2	1.52	76	2	1.45	72	(53-121)	4.90	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	60.8	61	2	62.5	63	(37-78)	2.70	
Fluoranthene-d10 (surr)	2	73.6	74	2	73.3	73	(24-116)	0.33	

Batch Information

Analytical Batch: XMS12294
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD

Prep Batch: XXX43920
 Prep Method: SW3535A
 Prep Date/Time: 09/23/2020 10:15
 Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

Print Date: 10/14/2020 1:55:49PM



Matrix Spike Summary

Original Sample ID: 1205053012
 MS Sample ID: 1582875 MS
 MSD Sample ID: 1582876 MSD

Analysis Date: 09/24/2020 16:08
 Analysis Date: 09/24/2020 16:28
 Analysis Date: 09/24/2020 16:49
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106012, 1205106013, 1205106014

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Acenaphthene	0.0240U	1.92	1.28	66	1.92	1.38	72	48-114	7.50	(< 20)
Acenaphthylene	0.0240U	1.92	1.36	71	1.92	1.45	76	35-121	6.50	(< 20)
Anthracene	0.0240U	1.92	1.36	71	1.92	1.38	72	53-119	1.20	(< 20)
Benzo(a)Anthracene	0.0240U	1.92	1.37	71	1.92	1.31	68	59-120	4.80	(< 20)
Benzo[a]pyrene	0.00960U	1.92	1.51	79	1.92	1.47	77	53-120	2.50	(< 20)
Benzo[b]Fluoranthene	0.0240U	1.92	1.5	78	1.92	1.46	76	53-126	2.90	(< 20)
Benzo[g,h,i]perylene	0.0240U	1.92	1.38	72	1.92	1.35	70	44-128	2.50	(< 20)
Benzo[k]fluoranthene	0.0240U	1.92	1.42	74	1.92	1.35	71	54-125	5.00	(< 20)
Chrysene	0.0240U	1.92	1.47	76	1.92	1.39	72	57-120	5.50	(< 20)
Dibenzo[a,h]anthracene	0.00960U	1.92	1.47	77	1.92	1.44	75	44-131	2.60	(< 20)
Fluoranthene	0.0674	1.92	1.47	73	1.92	1.39	69	58-120	5.50	(< 20)
Fluorene	0.0240U	1.92	1.36	71	1.92	1.43	75	50-118	5.10	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0240U	1.92	1.54	80	1.92	1.51	79	48-130	2.00	(< 20)
Naphthalene	0.0467J	1.92	1.39	70	1.92	1.45	73	43-114	3.90	(< 20)
Phenanthrene	0.0907	1.92	1.46	71	1.92	1.51	74	53-115	3.50	(< 20)
Pyrene	0.0897	1.92	1.45	71	1.92	1.39	68	53-121	4.40	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.92	1.18	61	1.92	1.29	67	37-78	8.80	
Fluoranthene-d10 (surr)		1.92	1.38	72	1.92	1.34	70	24-116	3.20	

Batch Information

Analytical Batch: XMS12294
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 9/24/2020 4:28:00PM

Prep Batch: XXX43920
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 9/23/2020 10:15:07AM
 Prep Initial Wt./Vol.: 260.00mL
 Prep Extract Vol: 1.00mL

Print Date: 10/14/2020 1:55:51PM



Method Blank

Blank ID: MB for HBN 1812081 [XXX/43929]
Blank Lab ID: 1583121

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

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	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	67.5	37-78		%
Fluoranthene-d10 (surr)	75.7	24-116		%

Batch Information

Analytical Batch: XMS12324
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 10/7/2020 12:59:00PM

Prep Batch: XXX43929
Prep Method: SW3535A
Prep Date/Time: 9/24/2020 7:47:32AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2020 1:55:52PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43929]

Blank Spike Lab ID: 1583122

Date Analyzed: 10/07/2020 13:19

Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by 8270D SIM LV (PAH)

Blank Spike (ug/L)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	2	1.28	64	(41-115)
2-Methylnaphthalene	2	1.32	66	(39-114)
Acenaphthene	2	1.41	70	(48-114)
Acenaphthylene	2	1.56	78	(35-121)
Anthracene	2	1.75	88	(53-119)
Benzo(a)Anthracene	2	1.45	72	(59-120)
Benzo[a]pyrene	2	1.74	87	(53-120)
Benzo[b]Fluoranthene	2	1.75	88	(53-126)
Benzo[g,h,i]perylene	2	1.72	86	(44-128)
Benzo[k]fluoranthene	2	1.64	82	(54-125)
Chrysene	2	1.60	80	(57-120)
Dibenzo[a,h]anthracene	2	1.74	87	(44-131)
Fluoranthene	2	1.62	81	(58-120)
Fluorene	2	1.62	81	(50-118)
Indeno[1,2,3-c,d] pyrene	2	1.84	92	(48-130)
Naphthalene	2	1.35	67	(43-114)
Phenanthrene	2	1.64	82	(53-115)
Pyrene	2	1.55	77	(53-121)

Surrogates

2-Methylnaphthalene-d10 (surr)	2	60.7	61	(37-78)
Fluoranthene-d10 (surr)	2	73.8	74	(24-116)

Batch Information

Analytical Batch: XMS12324

Analytical Method: 8270D SIM LV (PAH)

Instrument: SVA Agilent 780/5975 GC/MS

Analyst: DSD

Prep Batch: XXX43929

Prep Method: SW3535A

Prep Date/Time: 09/24/2020 07:47

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

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 10/14/2020 1:55:54PM



Matrix Spike Summary

Original Sample ID: 1205095028
 MS Sample ID: 1583123 MS
 MSD Sample ID: 1583124 MSD

Analysis Date: 10/07/2020 13:40
 Analysis Date: 10/07/2020 14:00
 Analysis Date: 10/07/2020 14:21
 Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by 8270D SIM LV (PAH)

Parameter	Sample	Matrix Spike (ug/L)			Spike Duplicate (ug/L)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	0.0259U	1.92	1.46	76	1.96	1.39	71	41-115	5.50	(< 20)
2-Methylnaphthalene	0.0259U	1.92	1.54	80	1.96	1.48	76	39-114	4.10	(< 20)
Acenaphthene	0.0259U	1.92	1.52	79	1.96	1.45	74	48-114	5.10	(< 20)
Acenaphthylene	0.0259U	1.92	1.65	86	1.96	1.61	82	35-121	2.30	(< 20)
Anthracene	0.0259U	1.92	1.7	89	1.96	1.64	84	53-119	3.80	(< 20)
Benzo(a)Anthracene	0.0259U	1.92	1.24	64	1.96	1.30	66	59-120	5.10	(< 20)
Benzo[a]pyrene	0.0104U	1.92	1.2	62	1.96	1.40	72	53-120	15.70	(< 20)
Benzo[b]Fluoranthene	0.0259U	1.92	1.21	63	1.96	1.37	70	53-126	12.20	(< 20)
Benzo[g,h,i]perylene	0.0259U	1.92	1.09	57	1.96	1.35	69	44-128	21.70	* (< 20)
Benzo[k]fluoranthene	0.0259U	1.92	1.18	62	1.96	1.33	68	54-125	11.70	(< 20)
Chrysene	0.0259U	1.92	1.38	72	1.96	1.47	75	57-120	6.40	(< 20)
Dibenzo[a,h]anthracene	0.0104U	1.92	1.21	63	1.96	1.39	71	44-131	13.90	(< 20)
Fluoranthene	0.0259U	1.92	1.51	78	1.96	1.53	78	58-120	1.50	(< 20)
Fluorene	0.0259U	1.92	1.62	84	1.96	1.60	82	50-118	0.98	(< 20)
Indeno[1,2,3-c,d] pyrene	0.0259U	1.92	.969	50	1.96	1.28	65	48-130	27.70	* (< 20)
Naphthalene	0.0515U	1.92	1.61	84	1.96	1.49	76	43-114	7.40	(< 20)
Phenanthrene	0.0259U	1.92	1.63	85	1.96	1.59	81	53-115	2.80	(< 20)
Pyrene	0.0259U	1.92	1.45	76	1.96	1.47	75	53-121	0.82	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		1.92	1.42	74	1.96	1.37	70	37-78	3.70	
Fluoranthene-d10 (surr)		1.92	1.38	72	1.96	1.42	73	24-116	3.30	

Batch Information

Analytical Batch: XMS12324
 Analytical Method: 8270D SIM LV (PAH)
 Instrument: SVA Agilent 780/5975 GC/MS
 Analyst: DSD
 Analytical Date/Time: 10/7/2020 2:00:00PM

Prep Batch: XXX43929
 Prep Method: 3535 Solid Phase Ext for 8270 PAH SIM LV
 Prep Date/Time: 9/24/2020 7:47:32AM
 Prep Initial Wt./Vol.: 260.00mL
 Prep Extract Vol: 1.00mL

Print Date: 10/14/2020 1:55:56PM



Method Blank

Blank ID: MB for HBN 1812312 [XXX/43961]
Blank Lab ID: 1584240

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	0.222J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	98.4	60-120		%

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 10/4/2020 7:34:00PM

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 9/29/2020 4:24:47PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2020 1:55:58PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43961]
Blank Spike Lab ID: 1584241
Date Analyzed: 10/04/2020 19:44

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43961]
Spike Duplicate Lab ID: 1584242
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by AK102

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	20	21.0	105	20	20.7	104	(75-125)	1.30	(< 20)

Surrogates

5a Androstane (surr)	0.4	109	109	0.4	110	110	(60-120)	1.30	
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Batch Information

Analytical Batch: **XFC15759**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43961**
Prep Method: **SW3520C**
Prep Date/Time: **09/29/2020 16:24**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 10/14/2020 1:56:00PM



Method Blank

Blank ID: MB for HBN 1812312 [XXX/43961]
Blank Lab ID: 1584240

Matrix: Water (Surface, Eff., Ground)

QC for Samples:

1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	0.212J	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	104	60-120		%

Batch Information

Analytical Batch: XFC15759
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 10/4/2020 7:34:00PM

Prep Batch: XXX43961
Prep Method: SW3520C
Prep Date/Time: 9/29/2020 4:24:47PM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2020 1:56:03PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43961]
Blank Spike Lab ID: 1584241
Date Analyzed: 10/04/2020 19:44

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43961]
Spike Duplicate Lab ID: 1584242
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1205106012, 1205106013, 1205106014, 1205106015, 1205106016, 1205106017, 1205106018, 1205106019, 1205106020, 1205106021

Results by AK103

Parameter	Blank Spike (mg/L)			Spike Duplicate (mg/L)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	20	21.1	106	20	20.9	105	(60-120)	1.00	(< 20)

Surrogates

n-Triacontane-d62 (surr)	0.4	104	104	0.4	109	109	(60-120)	5.30	
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Batch Information

Analytical Batch: **XFC15759**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43961**
Prep Method: **SW3520C**
Prep Date/Time: **09/29/2020 16:24**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

Print Date: 10/14/2020 1:56:05PM



Method Blank

Blank ID: MB for HBN 1812397 [XXX/43971]
Blank Lab ID: 1584758

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010

Results by 8270D SIM (PAH)

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
1-Methylnaphthalene	12.5U	25.0	6.25	ug/kg
2-Methylnaphthalene	12.5U	25.0	6.25	ug/kg
Acenaphthene	12.5U	25.0	6.25	ug/kg
Acenaphthylene	12.5U	25.0	6.25	ug/kg
Anthracene	12.5U	25.0	6.25	ug/kg
Benzo(a)Anthracene	12.5U	25.0	6.25	ug/kg
Benzo[a]pyrene	12.5U	25.0	6.25	ug/kg
Benzo[b]Fluoranthene	12.5U	25.0	6.25	ug/kg
Benzo[g,h,i]perylene	12.5U	25.0	6.25	ug/kg
Benzo[k]fluoranthene	12.5U	25.0	6.25	ug/kg
Chrysene	12.5U	25.0	6.25	ug/kg
Dibenzo[a,h]anthracene	12.5U	25.0	6.25	ug/kg
Fluoranthene	12.5U	25.0	6.25	ug/kg
Fluorene	12.5U	25.0	6.25	ug/kg
Indeno[1,2,3-c,d] pyrene	12.5U	25.0	6.25	ug/kg
Naphthalene	10.0U	20.0	5.00	ug/kg
Phenanthrene	12.5U	25.0	6.25	ug/kg
Pyrene	12.5U	25.0	6.25	ug/kg
Surrogates				
2-Methylnaphthalene-d10 (surr)	71.7	58-103		%
Fluoranthene-d10 (surr)	79.4	54-113		%

Batch Information

Analytical Batch: XMS12331
Analytical Method: 8270D SIM (PAH)
Instrument: Agilent GC 7890B/5977A SWA
Analyst: DSD
Analytical Date/Time: 10/10/2020 3:10:00PM

Prep Batch: XXX43971
Prep Method: SW3550C
Prep Date/Time: 10/1/2020 8:25:37AM
Prep Initial Wt./Vol.: 22.5 g
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:08PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43971]

Blank Spike Lab ID: 1584759

Date Analyzed: 10/10/2020 15:31

Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010

Results by 8270D SIM (PAH)

Blank Spike (ug/kg)

Parameter	Spike	Result	Rec (%)	CL
1-Methylnaphthalene	111	91.0	82	(43-111)
2-Methylnaphthalene	111	89.5	81	(39-114)
Acenaphthene	111	87.7	79	(44-111)
Acenaphthylene	111	89.8	81	(39-116)
Anthracene	111	89.8	81	(50-114)
Benzo(a)Anthracene	111	84.7	76	(54-122)
Benzo[a]pyrene	111	89.4	80	(50-125)
Benzo[b]Fluoranthene	111	92.9	84	(53-128)
Benzo[g,h,i]perylene	111	87.3	79	(49-127)
Benzo[k]fluoranthene	111	91.2	82	(56-123)
Chrysene	111	91.7	83	(57-118)
Dibenzo[a,h]anthracene	111	87.6	79	(50-129)
Fluoranthene	111	93.6	84	(55-119)
Fluorene	111	87.7	79	(47-114)
Indeno[1,2,3-c,d] pyrene	111	94.7	85	(49-130)
Naphthalene	111	89.7	81	(38-111)
Phenanthrene	111	87.2	79	(49-113)
Pyrene	111	90.8	82	(55-117)

Surrogates

2-Methylnaphthalene-d10 (surr)	111	75.6	76	(58-103)
Fluoranthene-d10 (surr)	111	79.7	80	(54-113)

Batch Information

Analytical Batch: XMS12331

Analytical Method: 8270D SIM (PAH)

Instrument: Agilent GC 7890B/5977A SWA

Analyst: DSD

Prep Batch: XXX43971

Prep Method: SW3550C

Prep Date/Time: 10/01/2020 08:25

Spike Init Wt./Vol.: 111 ug/kg Extract Vol: 5 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1205106006
 MS Sample ID: 1584760 MS
 MSD Sample ID: 1584761 MSD

Analysis Date: 10/10/2020 17:35
 Analysis Date: 10/10/2020 17:56
 Analysis Date: 10/10/2020 18:17
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008, 1205106009, 1205106010

Results by 8270D SIM (PAH)

Parameter	Sample	Matrix Spike (ug/kg)			Spike Duplicate (ug/kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1-Methylnaphthalene	14.1U	126	95.0	75	125	94.3	75	43-111	0.80	(< 20)
2-Methylnaphthalene	14.1U	126	94.0	74	125	92.8	74	39-114	1.30	(< 20)
Acenaphthene	14.1U	126	91.4	72	125	89.8	72	44-111	1.70	(< 20)
Acenaphthylene	14.1U	126	95.6	76	125	94.5	75	39-116	1.30	(< 20)
Anthracene	14.1U	126	95.0	75	125	93.3	75	50-114	1.70	(< 20)
Benzo(a)Anthracene	14.1U	126	87.4	69	125	87.0	70	54-122	0.31	(< 20)
Benzo(a)pyrene	14.1U	126	92.0	73	125	90.9	73	50-125	1.10	(< 20)
Benzo(b)Fluoranthene	14.1U	126	91.7	73	125	90.3	72	53-128	1.70	(< 20)
Benzo(g,h,i)perylene	14.1U	126	85.1	67	125	84.7	68	49-127	0.32	(< 20)
Benzo(k)fluoranthene	14.1U	126	95.8	76	125	95.6	76	56-123	0.06	(< 20)
Chrysene	14.1U	126	94.8	75	125	93.9	75	57-118	0.94	(< 20)
Dibenzo(a,h)anthracene	14.1U	126	87.7	69	125	86.5	69	50-129	1.50	(< 20)
Fluoranthene	14.1U	126	96.4	76	125	94.2	75	55-119	2.40	(< 20)
Fluorene	14.1U	126	93.0	73	125	93.1	74	47-114	0.11	(< 20)
Indeno[1,2,3-c,d] pyrene	14.1U	126	92.4	73	125	91.1	73	49-130	1.50	(< 20)
Naphthalene	11.3U	126	92.2	73	125	91.7	73	38-111	0.57	(< 20)
Phenanthrene	14.1U	126	90.9	72	125	91.1	73	49-113	0.09	(< 20)
Pyrene	14.1U	126	93.6	74	125	92.1	74	55-117	1.50	(< 20)
Surrogates										
2-Methylnaphthalene-d10 (surr)		126	86.5	68	125	85.7	68	58-103	0.94	
Fluoranthene-d10 (surr)		126	92.2	73	125	90.7	72	54-113	1.60	

Batch Information

Analytical Batch: XMS12331
 Analytical Method: 8270D SIM (PAH)
 Instrument: Agilent GC 7890B/5977A SWA
 Analyst: DSD
 Analytical Date/Time: 10/10/2020 5:56:00PM

Prep Batch: XXX43971
 Prep Method: Sonication Extr Soil 8270 PAH SIM 5ml
 Prep Date/Time: 10/1/2020 8:25:37AM
 Prep Initial Wt./Vol.: 22.64g
 Prep Extract Vol: 5.00mL

Print Date: 10/14/2020 1:56:12PM



Method Blank

Blank ID: MB for HBN 1812401 [XXX/43974]

Blank Lab ID: 1584768

QC for Samples:

1205106009, 1205106010

Matrix: Soil/Solid (dry weight)

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	13.2J	20.0	6.20	mg/kg
Surrogates				
5a Androstane (surr)	99.8	60-120		%

Batch Information

Analytical Batch: XFC15759

Analytical Method: AK102

Instrument: Agilent 7890B F

Analyst: CDM

Analytical Date/Time: 10/5/2020 12:22:00AM

Prep Batch: XXX43974

Prep Method: SW3550C

Prep Date/Time: 10/1/2020 8:58:12AM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:14PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43974]
Blank Spike Lab ID: 1584769
Date Analyzed: 10/05/2020 00:32

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43974]
Spike Duplicate Lab ID: 1584770
Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106009, 1205106010

Results by AK102

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	833	735	88	833	737	88	(75-125)	0.23	(< 20)

Surrogates

5a Androstane (surr)	16.7	110	110	16.7	110	110	(60-120)	0.41	
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Batch Information

Analytical Batch: **XFC15759**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43974**
Prep Method: **SW3550C**
Prep Date/Time: **10/01/2020 08:58**
Spike Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:16PM



Method Blank

Blank ID: MB for HBN 1812401 [XXX/43974]

Blank Lab ID: 1584768

QC for Samples:

1205106009, 1205106010

Matrix: Soil/Solid (dry weight)

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	50.0U	100	43.0	mg/kg
Surrogates				
n-Triacontane-d62 (surr)	95.4	60-120		%

Batch Information

Analytical Batch: XFC15759

Analytical Method: AK103

Instrument: Agilent 7890B F

Analyst: CDM

Analytical Date/Time: 10/5/2020 12:22:00AM

Prep Batch: XXX43974

Prep Method: SW3550C

Prep Date/Time: 10/1/2020 8:58:12AM

Prep Initial Wt./Vol.: 30 g

Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:19PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43974]
Blank Spike Lab ID: 1584769
Date Analyzed: 10/05/2020 00:32

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43974]
Spike Duplicate Lab ID: 1584770
Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106009, 1205106010

Results by AK103

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	833	729	88	833	719	86	(60-120)	1.40	(< 20)

Surrogates

n-Triacontane-d62 (surr)	16.7	103	103	16.7	102	102	(60-120)	0.97	
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Batch Information

Analytical Batch: **XFC15759**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43974**
Prep Method: **SW3550C**
Prep Date/Time: **10/01/2020 08:58**
Spike Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:21PM



Method Blank

Blank ID: MB for HBN 1812422 [XXX/43976]
Blank Lab ID: 1584864

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	8.51J	20.0	6.20	mg/kg
Surrogates				
5a Androstane (surr)	96.8	60-120		%

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK102
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 10/5/2020 7:52:00PM

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/1/2020 11:17:52AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:24PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43976]
Blank Spike Lab ID: 1584865
Date Analyzed: 10/05/2020 20:02

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43976]
Spike Duplicate Lab ID: 1584866
Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008

Results by AK102

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	833	723	87	833	711	85	(75-125)	1.70	(< 20)

Surrogates

5a Androstane (surr)	16.7	107	107	16.7	104	104	(60-120)	2.30	
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Batch Information

Analytical Batch: **XFC15760**
Analytical Method: **AK102**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43976**
Prep Method: **SW3550C**
Prep Date/Time: **10/01/2020 11:17**
Spike Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:26PM



Method Blank

Blank ID: MB for HBN 1812422 [XXX/43976]
Blank Lab ID: 1584864

Matrix: Soil/Solid (dry weight)

QC for Samples:

1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008

Results by AK103

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Residual Range Organics	50.0U	100	43.0	mg/kg
Surrogates				
n-Triacontane-d62 (surr)	97.8	60-120		%

Batch Information

Analytical Batch: XFC15760
Analytical Method: AK103
Instrument: Agilent 7890B F
Analyst: CDM
Analytical Date/Time: 10/5/2020 7:52:00PM

Prep Batch: XXX43976
Prep Method: SW3550C
Prep Date/Time: 10/1/2020 11:17:52AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:29PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1205106 [XXX43976]
Blank Spike Lab ID: 1584865
Date Analyzed: 10/05/2020 20:02

Spike Duplicate ID: LCSD for HBN 1205106 [XXX43976]
Spike Duplicate Lab ID: 1584866
Matrix: Soil/Solid (dry weight)

QC for Samples: 1205106001, 1205106002, 1205106003, 1205106004, 1205106005, 1205106006, 1205106007, 1205106008

Results by AK103

Parameter	Blank Spike (mg/kg)			Spike Duplicate (mg/kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	833	705	85	833	692	83	(60-120)	1.80	(< 20)

Surrogates

n-Triacontane-d62 (surr)	16.7	110	110	16.7	104	104	(60-120)	6.00	
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Batch Information

Analytical Batch: **XFC15760**
Analytical Method: **AK103**
Instrument: **Agilent 7890B F**
Analyst: **CDM**

Prep Batch: **XXX43976**
Prep Method: **SW3550C**
Prep Date/Time: **10/01/2020 11:17**
Spike Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL
Dupe Init Wt./Vol.: 833 mg/kg Extract Vol: 5 mL

Print Date: 10/14/2020 1:56:32PM



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362 788 XAD

CLIENT: RSE
CONTACT: Lisa Keeneman
PHONE #: 907-278-1023
PROJECT NAME: Hurricane
PWSID/PERMIT#: 20-2218
REPORTS TO: RSE
E-MAIL: lkeeneman@rehabsci.com
PROFILE #:
QUOTE #:
P.O. #:

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

Page 1 of 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX CODE	Section 3				NOTE: *The following analyses require specific method and/or compound list: BTEX, Metals, PFAS	REMARKS/LOC ID
					Comp Grab	MI (Multi-Incremental)	Analysis*	Preservative		
(1AB)	RSE-11A	9/18/2020	13:40	SOIL	X	X	X	X		
(2AB)	RSE-11C	9/18/2020	13:45	SOIL	X	X	X	X		
(3AB)	RSE-12B	9/18/2020	12:15	SOIL	X	X	X	X		
(4AB)	RSE-12C	9/18/2020	12:20	SOIL	X	X	X	X		
(5AB)	RSE-14C	9/18/2020	9:00	SOIL	X	X	X	X		
(6AB)	RSE-14H	9/18/2020	9:30	SOIL	X	X	X	X		
(7AB)	RSE-14J	9/18/2020	9:45	SOIL	X	X	X	X		
(8AB)	RSE-15B	9/18/2020	15:00	SOIL	X	X	X	X		
(9AB)	RSE-15D	9/18/2020	15:15	SOIL	X	X	X	X		
(10AB)	RSE-X	9/18/2020	10:30	SOIL	X	X	X	X		

CONTAINER # 1 2 3 4 5 6 7 8 9 10

Section 4 Section 4 DOD Project? Yes No

Section 5 Cooler ID: Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: 1) 21.0 0.23
2) 15.0 0.53
3) 3.0 0.30
or Ambient []

Chain of Custody Seal: (Circle) INTACT **BROKEN** **ARSENIC**

Delivery Method: Hand Delivery Commercial Delivery []

Received By: [Signature] **Date:** 9/21/20

Relinquished By: [Signature] **Date:** 9/21/20

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



e-Sample Receipt Form

SGS Workorder #:

1205106



1 2 0 5 1 0 6

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements	<input checked="" type="checkbox"/> Yes	Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	absent
COC accompanied samples?	<input checked="" type="checkbox"/> Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
<input checked="" type="checkbox"/> N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	<input checked="" type="checkbox"/> Yes	Cooler ID: 1 @ 2.1 °C Therm. ID: D23
	<input checked="" type="checkbox"/> Yes	Cooler ID: 2 @ 1.5 °C Therm. ID: D53
	<input checked="" type="checkbox"/> Yes	Cooler ID: 3 @ 3.1 °C Therm. ID: D30
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	<input checked="" type="checkbox"/> Yes	
Do samples match COC** (i.e., sample IDs, dates/times collected)?	<input checked="" type="checkbox"/> Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	<input checked="" type="checkbox"/> Yes	
Were proper containers (type/mass/volume/preservative***) used?	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> N/A ***Exemption permitted for metals (e.g, 200.8/6020A).
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	<input checked="" type="checkbox"/> Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	<input checked="" type="checkbox"/> Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	
Note to Client: Any "No", answer above indicates non-compliance with standard procedures and may impact data quality.		
Additional notes (if applicable):		



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1205106001-A	No Preservative Required	OK	1205106014-J	HCL to pH < 2	OK
1205106001-B	Methanol field pres. 4 C	OK	1205106015-A	HCL to pH < 2	OK
1205106002-A	No Preservative Required	OK	1205106015-B	HCL to pH < 2	OK
1205106002-B	Methanol field pres. 4 C	OK	1205106015-C	No Preservative Required	OK
1205106003-A	No Preservative Required	OK	1205106015-D	No Preservative Required	OK
1205106003-B	Methanol field pres. 4 C	OK	1205106015-E	HCL to pH < 2	OK
1205106004-A	No Preservative Required	OK	1205106015-F	HCL to pH < 2	OK
1205106004-B	Methanol field pres. 4 C	OK	1205106015-G	HCL to pH < 2	OK
1205106005-A	No Preservative Required	OK	1205106015-H	HCL to pH < 2	OK
1205106005-B	Methanol field pres. 4 C	OK	1205106015-I	HCL to pH < 2	OK
1205106006-A	No Preservative Required	OK	1205106015-J	HCL to pH < 2	OK
1205106006-B	Methanol field pres. 4 C	OK	1205106016-A	HCL to pH < 2	OK
1205106007-A	No Preservative Required	OK	1205106016-B	HCL to pH < 2	OK
1205106007-B	Methanol field pres. 4 C	OK	1205106016-C	No Preservative Required	OK
1205106008-A	No Preservative Required	OK	1205106016-D	No Preservative Required	OK
1205106008-B	Methanol field pres. 4 C	OK	1205106016-E	HCL to pH < 2	OK
1205106009-A	No Preservative Required	OK	1205106016-F	HCL to pH < 2	OK
1205106009-B	Methanol field pres. 4 C	OK	1205106016-G	HCL to pH < 2	OK
1205106010-A	No Preservative Required	OK	1205106016-H	HCL to pH < 2	OK
1205106010-B	Methanol field pres. 4 C	OK	1205106016-I	HCL to pH < 2	OK
1205106011-A	Methanol field pres. 4 C	OK	1205106016-J	HCL to pH < 2	OK
1205106012-A	HCL to pH < 2	OK	1205106017-A	HCL to pH < 2	OK
1205106012-B	HCL to pH < 2	OK	1205106017-B	HCL to pH < 2	OK
1205106012-C	No Preservative Required	OK	1205106017-C	No Preservative Required	OK
1205106012-D	No Preservative Required	OK	1205106017-D	No Preservative Required	OK
1205106012-E	HCL to pH < 2	OK	1205106017-E	HCL to pH < 2	OK
1205106012-F	HCL to pH < 2	OK	1205106017-F	HCL to pH < 2	OK
1205106012-G	HCL to pH < 2	OK	1205106017-G	HCL to pH < 2	OK
1205106012-H	HCL to pH < 2	OK	1205106017-H	HCL to pH < 2	OK
1205106012-I	HCL to pH < 2	OK	1205106017-I	HCL to pH < 2	OK
1205106012-J	HCL to pH < 2	OK	1205106017-J	HCL to pH < 2	OK
1205106013-A	HCL to pH < 2	OK	1205106018-A	HCL to pH < 2	OK
1205106013-B	HCL to pH < 2	OK	1205106018-B	HCL to pH < 2	OK
1205106013-C	No Preservative Required	OK	1205106018-C	No Preservative Required	OK
1205106013-D	No Preservative Required	OK	1205106018-D	No Preservative Required	OK
1205106013-E	HCL to pH < 2	OK	1205106018-E	HCL to pH < 2	OK
1205106013-F	HCL to pH < 2	OK	1205106018-F	HCL to pH < 2	OK
1205106013-G	HCL to pH < 2	OK	1205106018-G	HCL to pH < 2	OK
1205106013-H	HCL to pH < 2	OK	1205106018-H	HCL to pH < 2	OK
1205106013-I	HCL to pH < 2	OK	1205106018-I	HCL to pH < 2	OK
1205106013-J	HCL to pH < 2	OK	1205106018-J	HCL to pH < 2	OK
1205106014-A	HCL to pH < 2	OK	1205106019-A	HCL to pH < 2	OK
1205106014-B	HCL to pH < 2	OK	1205106019-B	HCL to pH < 2	OK
1205106014-C	No Preservative Required	OK	1205106019-C	No Preservative Required	OK
1205106014-D	No Preservative Required	OK	1205106019-D	No Preservative Required	OK
1205106014-E	HCL to pH < 2	OK	1205106019-E	HCL to pH < 2	OK
1205106014-F	HCL to pH < 2	OK	1205106019-F	HCL to pH < 2	OK
1205106014-G	HCL to pH < 2	OK	1205106019-G	HCL to pH < 2	OK
1205106014-H	HCL to pH < 2	OK	1205106019-H	HCL to pH < 2	OK
1205106014-I	HCL to pH < 2	OK	1205106019-I	HCL to pH < 2	OK

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1205106019-J	HCL to pH < 2	OK			
1205106020-A	HCL to pH < 2	OK			
1205106020-B	HCL to pH < 2	OK			
1205106020-C	No Preservative Required	OK			
1205106020-D	No Preservative Required	OK			
1205106020-E	HCL to pH < 2	OK			
1205106020-F	HCL to pH < 2	OK			
1205106020-G	HCL to pH < 2	OK			
1205106020-H	HCL to pH < 2	OK			
1205106020-I	HCL to pH < 2	OK			
1205106020-J	HCL to pH < 2	OK			
1205106021-A	HCL to pH < 2	OK			
1205106021-B	HCL to pH < 2	OK			
1205106021-C	No Preservative Required	OK			
1205106021-D	No Preservative Required	OK			
1205106021-E	HCL to pH < 2	OK			
1205106021-F	HCL to pH < 2	OK			
1205106021-G	HCL to pH < 2	OK			
1205106021-H	HCL to pH < 2	OK			
1205106021-I	HCL to pH < 2	OK			
1205106021-J	HCL to pH < 2	OK			
1205106022-A	HCL to pH < 2	OK			
1205106022-B	HCL to pH < 2	OK			
1205106022-C	HCL to pH < 2	OK			
1205106022-D	HCL to pH < 2	OK			
1205106022-E	HCL to pH < 2	OK			
1205106022-F	HCL to pH < 2	OK			

Container Condition Glossary

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

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

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

DM - The container was received damaged.

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

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

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

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

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

QN - Insufficient sample quantity provided.

**Attachment F:
ADEC Laboratory Data Quality Review Checklist**



Laboratory Data Review Checklist

Completed By:

Lisa Koeneman

Title:

Qualified Environmental Professional

Date:

12/7/2020

Consultant Firm:

Restoration Science & Engineering, LLC

Laboratory Name:

SGS North America, Inc.

Laboratory Report Number:

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

ADEC File Number:

2258.26.008

Hazard Identification Number:

23545

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

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

1. Laboratory

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

Yes No N/A Comments:

SGS received all the samples and conducted all the analyses.

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

Yes No N/A Comments:

The samples were not transferred.

2. Chain of Custody (CoC)

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

Yes No N/A Comments:

The completed COC is submitted in the lab report.

b. Correct analyses requested?

Yes No N/A Comments:

The correct analyses were requested.

3. Laboratory Sample Receipt Documentation

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

Yes No N/A Comments:

All three sample coolers were delivered within the acceptable range.

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

Yes No N/A Comments:

All sample preservation methods were acceptable.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

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

Yes No N/A Comments:

All samples were delivered in good condition.

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

Yes No N/A Comments:

No discrepancies were reported.

e. Data quality or usability affected?

Comments:

The Sample Receipt Form does not indicate that the data quality and usability are affected.

4. Case Narrative

a. Present and understandable?

Yes No N/A Comments:

The Case Narrative is present and understandable.

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

Yes No N/A Comments:

Several errors or QC failures were identified.

c. Were all corrective actions documented?

Yes No N/A Comments:

All corrective actions conducted are listed in the Case Narrative.

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

Comments:

The Case Narrative results do not indicate that the data quality and usability are affected.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

5. Samples Results

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

Yes No N/A Comments:

The requested analyses were performed.

b. All applicable holding times met?

Yes No N/A Comments:

All samples were delivered and extracted within the applicable holding times.

c. All soils reported on a dry weight basis?

Yes No N/A Comments:

All soils were reported on a dry weight basis.

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

Yes No N/A Comments:

Several non-target analyte LOQs are above their associated cleanup levels.

e. Data quality or usability affected?

The non-target analytes with LOQs above the ADEC cleanup levels are generally found to be non-detect. Additionally, these are not COPCs. Therefore, the data quality and usability are not affected. (The non-target analytes with LOQs above the ADEC cleanup levels are highlighted light blue in the data tables.)

6. QC Samples

a. Method Blank

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

Yes No N/A Comments:

One Method Blank is reported per matrix and analysis for every 20 samples.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

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

Yes No N/A Comments:

All Method Blank results are less than their LOQs.

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

Comments:

No samples are affected.

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

Yes No N/A Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The Method Blank results do not indicate that the data quality and usability are affected.

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

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

Yes No N/A Comments:

One LCS and LCSD are reported per matrix and analyses for every 20 samples.

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

Yes No N/A Comments:

No metals or inorganics were analyzed.

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:

All LCS and LCSD %Rs are within lab limits.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

- 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:

All LCS and LCSD %Rs are within lab limits.

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

Comments:

No samples are affected.

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

Yes No N/A Comments:

No samples are affected.

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

Comments:

The LCS and LCSD results do not indicate that the data quality and usability are affected.

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

Note: Leave blank if not required for project

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

Yes No N/A Comments:

One MS and MSD are reported per matrix and analysis for every 20 samples.

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

Yes No N/A Comments:

No metals or inorganics were analyzed.

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

Yes No N/A Comments:

All MS and MSD %Rs are within lab limits.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

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

Yes No N/A Comments:

A couple analyte RPDs for the water PAH analysis are above the lab limits.

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

Comments:

All water samples are affected.

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

Yes No N/A Comments:

The affected samples are listed at the top of the page.

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

Comments:

The failed RPDs that failed are above the lab limits, indicating that the results will be biased high, if at all. The failed RPDs are for non-target analytes. Therefore, the MS and MSD results do not indicate that the data quality and usability are affected.

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

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

Yes No N/A Comments:

Surrogate recoveries are reported for the organic analyses.

- 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:

Several surrogate %Rs are outside of lab limits.

- 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:

The affected samples are listed at the top of the page.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

iv. Data quality or usability affected?

Comments:

Several surrogate %Rs are outside of lab limits. Most of the failed %Rs are above the lab limits, indicating that the associated data will be biased high, if at all. A surrogate for the PAH analyses was 0, well below the acceptable range. However, the associated sample results are well above the ADEC cleanup levels, indicating that the data can be used regardless of these failed surrogates.

e. Trip Blanks

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

Yes No N/A Comments:

One Trip Blank is reported per matrix and analysis for each volatile sample cooler.

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

Yes No N/A Comments:

The coolers are clearly indicated.

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

Yes No N/A Comments:

All Trip Blank results are less than the LOQs.

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

Comments:

No samples are affected.

v. Data quality or usability affected?

Comments:

The Trip Blank results do not indicate that the data quality and usability are affected.

f. Field Duplicate

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

Yes No N/A Comments:

RSE-X (soil) is a blind duplicate of RSE-11A and RSE-X (water) is a blind duplicate of RSE-15.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

ii. Submitted blind to lab?

Yes No N/A Comments:

RSE-X (soil) and RSE-X (water) were submitted to the lab for quality control purposes.

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

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

Where R₁ = Sample Concentration
R₂ = Field Duplicate Concentration

Yes No N/A Comments:

The blind duplicate RPDs are within lab limits.

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

Comments:

The Field Duplicate results do not indicate that the data quality and usability are affected.

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

Yes No N/A Comments:

No Decontamination or Equipment Blank was submitted.

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

Yes No N/A Comments:

No Decontamination or Equipment Blank was submitted.

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

Comments:

No Decontamination or Equipment Blank was submitted.

1205106

Laboratory Report Date:

10/14/2020

CS Site Name:

ARRC Hurricane former UST site

iii. Data quality or usability affected?

Comments:

RSE uses new dedicated equipment when possible for collecting each sample. Non-dedicated equipment is decontaminated in between uses. No Decontamination or Equipment Blank was submitted.

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

a. Defined and appropriate?

Yes No N/A Comments:

No other data flags were defined or reported by the lab.