April 10, 2019

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Subject: Letter Report for Groundwater Sampling and Elevation Survey at ARRC MP 284.2 Hurricane Section, Alaska ADEC File # 2258.26.008 Rev. 3.0

Mr. Grandel:

Restoration Science & Engineering, LLC (RSE) is providing the following letter report for groundwater sampling and elevation survey of four (4) monitoring wells located at the Alaska Railroad Corporation (ARRC) Hurricane Siding, located at Milepost 284.2 near Hurricane, Alaska (See Figure 1 in Attachment A). 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) were removed from the ARRC Hurricane Siding site. After the diesel UST removal, hydrocarbons remained in the southern end of the diesel UST excavation. In 2009, Clarus advanced additional borings to help delineate the extent and concentration of the hydrocarbons of the former diesel UST location (Clarus, 1990).

In September 2011, RSE provided environmental oversight for the advancement of four (4) soil borings later completed as groundwater monitoring wells to define the horizontal and vertical extent of remaining petroleum hydrocarbon impacts. Laboratory soil samples analyzed for hydrocarbons confirmed subsurface soil conditions were below ADEC Table B1 Method 2 Migration to Groundwater cleanup levels, meeting the requirements in 18 AAC 75. A groundwater sample from monitoring well RSE-4 measured 1.52 milligrams per liter (mg/L) for diesel range organics (DRO), above the DRO ADEC Table C cleanup level of 1.5 mg/L. Monitoring well RSE-4 is downgradient of the former UST location.

Site remediation by excavation was conducted in fall of 2015 by Fairbanks Environmental Services (FES). Impacted soils around the former diesel UST location were excavated to the maximum extent possible by FES. Some impacted soils were left in place due to site conditions. Contaminated soil was temporarily stockpiled onsite and later transported to Anchorage for thermal treatment (FES, 2016).

Multiple groundwater sampling events have occurred at the four (4) wells installed onsite since 2011. Data indicates that groundwater is typically encountered between 1.5 feet and 4.5 feet below ground surface (bgs), and flows to the north-northwest. Data from October 2016 indicated that all groundwater samples were below applicable ADEC Table C cleanup levels. However, purge water from RSE-3 emitted a hydrocarbon odor. Historically, RSE-3 has yielded the highest results for DRO (See Table 5 in Attachment B).

Results for the 2017 sampling effort indicated concentrations of DRO in RSE-3 and naphthalene in RSE-4 were elevated above ADEC Table C cleanup levels. All other samples were below ADEC Table C cleanup levels (RSE, 2018).

OBJECTIVES

The 2018 field effort sought to provide additional groundwater data for the wells located at the Hurricane Siding site to either support observed trends of natural attenuation, or indicate whether additional monitoring actions are required. Additionally, RSE performed a groundwater elevation survey of the four (4) monitoring wells to determine the groundwater gradient.

GROUNDWATER SAMPLING

Based upon the results of previous investigations, RSE identified the following contaminants of potential concern (COPCs):

Table A. Contaminants of Potential Concern

COPC	Matrix	COPC Abbreviation	ADEC-Approved Lab Method	ADEC Table C Groundwater Cleanup
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
Volatile Organic Compounds	Water	VOCs	EPA 8260C	Varies
Semi-Volatile Organic Compounds	Water	SVOCs	EPA 8270D	Varies

RSE qualified environmental personnel mobilized to the subject area on September 28, 2018. RSE first examined the condition of each well. The polyvinyl chloride (PVC) well casing rose up upon removal of the well lid on RSE-2. RSE personnel cut the PVC down to the appropriate level using a down-hole cutter. All other wells were found to be in good condition. RSE measured the depth to the bottom of each well, and the depth to groundwater with a water-level indicator. Groundwater was encountered between 1 and 5 feet below ground surface (bgs).

RSE purged three (3) well volumes from each well using a low-flow submersible pump. Water quality parameters were monitored using a YSI 556 meter for stabilization when readings were within the following parameters:

- pH ± 0.1
- Temperature ± 3% (minimum of 0.2ºC)
- Conductivity ± 3%
- Dissolved Oxygen ± 10%.

RSE re-measured the depth to groundwater following purging and prior to sampling using a water level indicator. Water samples were collected using a positive-pressure submersible pump set to a low flow rate during sampling. The target flow rate during low-flow purging and sampling was less than 0.5 L/min (8 gallons per hour). No sheen or odor was observed during purging. RSE-4 presented as slightly turbid.

One (1) sample was collected from wells RSE-1, RSE-2, and RSE-4. Two (2) samples were collected from RSE-3, one (1) being a blind duplicate (RSE-X). Monitoring wells RSE-1, RSE-2, RSE-3, and RSE-4 were sampled for GRO, DRO, RRO, VOCs, and SVOCs. RSE-X was submitted to the laboratory for quality control purposes.

The water samples were collected using new, dedicated tubing. The water level indicator, submersible pump, and other equipment that was not disposable or dedicated 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. Water samples were placed directly into method specific containers and stored in a clean sample cooler transported under chain-of-custody to SGS North America (SGS) located in Anchorage, Alaska. Table B, on the next page, shows the containers, preservation, and holding times for the groundwater samples:

Table B. Containers, Preservation, and Holding Times for Groundwater Samples

COPC	Matrix	Lab Method	Sample Container	Preservation	Holding Time
DRO	Water	AK 102	1x 250 mL glass Teflon-lined cap	HCl 0 – 6° C	14 Days
GRO	Water	AK 101	3x40 ml Volatile organic analysis (VOA) vials, minimize headspace	HCl 0 – 6° C	14 days
RRO	Water	AK 103	1 x 250 mL Teflon-lined cap	HCl 0 – 6° C	14 Days
VOCs	Water	EPA 8260C	3x40 mL Volatile organic analysis vials, minimize headspace	HCl 0 – 6° C	14 Days
SVOCs	Water	EPA 8270D	1L amber jar with Teflon lined cap	0 – 6° C	7 Days

The submersible pump was decontaminated using Alconox and distilled water between sampling at each well. The Investigative Derived Waste section, below, describes treatment of the decontamination and purge water.

GROUNDWATER ELEVATION SURVEY

During the 2018 field event, RSE conducted the groundwater elevation survey for RSE-1, RSE-2, RSE-3, and RSE-4 on September 28, 2018 using a Leica Rugby 620 and a Leica Rod Eye 160. RSE performed the survey two times to ensure accuracy. The results from the first and second sets were within 0.05 feet of each other, indicating that the data gathered is accurate.

RSE reduced the groundwater elevation 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 2 in Attachment A). Groundwater flow direction was found to be to the northwest. Downgradient wells, RSE-3 and RSE-4 were generally found to have the highest contamination levels during the 2018 field efforts.

RESULTS

A review of the laboratory results shows that the DRO in RSE-3 and RSE-4 are above ADEC Table C cleanup levels. Tabulated data can be found in Attachment B. The laboratory report can be found in Attachment D. Historic hydrocarbon data can be found in Table 5 in Attachment B.

Diesel Range Organics (DRO)

Samples RSE-3 and RSE-4 yielded DRO results below the ADEC Table C cleanup level of 1.5 mg/L. These results are consistent with historical data since 2011 for these two wells.

RSE-3 yielded a result of 1.42 mg/L, below the clean level, however RSE-X yielded a result of 1.86 mg/L, above the ADEC Table C cleanup level of 1.5 mg/L. As RSE-X is a duplicate of RSE-

3, the result from RSE-X represents the contamination level in RSE-3. Historically, RSE-3 yields the highest DRO results, and has consistently been above ADEC Table C cleanup levels since 2013, ranging from 1.95 mg/L to 5.51 mg/L.

RSE-4 yielded a DRO result of 2.73 mg/L, above the ADEC Table C cleanup level. In 2011, DRO results in RSE-4 were 1.52 mg/L, above the ADEC Table C cleanup level. From 2012 to 2017, the results for RSE were below ADEC Table C cleanup levels, ranging from 0.425 J mg/L to 1.36 mg/L.

Gasoline Range Organics (GRO)

Laboratory results for all samples were below the ADEC Table C cleanup level of 2.2 mg/L, ranging from non-detect to 0.0349 mg/L.

Residual Range Organics (RRO)

Laboratory results for all samples were under the ADEC Table C cleanup level of 1.1 mg/L, ranging from non-detect to 0.277 J mg/L. These results are consistent with historic RRO data, as results generally range from non-detect to 0.889 mg/L. In 2013, RSE-3 yielded a RRO result of 1.34 mg/L, but results have been consistently been under ADEC Table C cleanup levels otherwise.

Volatile Organic Compounds (VOCs)

All VOC results for RSE-1, RSE-2, and RSE-3 were below ADEC Table C cleanup levels. Naphthalene was found to be 6.63 ug/L, above the ADEC Table C cleanup level of 1.7 ug/L. All other analytes for RSE-4 were found to be below ADEC Table C cleanup levels. 1,2,3-Trichloroproapane results for all samples were non-detect, however the detection limit for this analyte is elevated above the ADEC Table C cleanup level of 0.0075 micrograms per liter (ug/L).

Semi-Volatile Organic Compounds (SVOCs)

All SVOC laboratory results for all four (4) wells were non-detect and below cleanup levels. N-Nitrosodimethylamine results for all samples were non-detect, however the detection limit for this analyte is elevated above the ADEC Table C cleanup level of 0.0011 ug/L.

INVESTIGATIVE DERIVED WASTE

Consumables such as tubing and gloves were placed into a trash receptacle for disposal. Non-consumables such water level indicator and submersible pump were decontaminated using Alconox and hot water between sampling at each well. Tubing for water samples was dedicated to each well and disposed of following use.

Purge water and water used in decontamination of the sampling equipment was passed through a granular activated carbon filter and discharged into a vegetated area onsite.

QUALITY ASSURANCE AND QUALITY CONTROL

RSE collected each groundwater sample in general accordance with applicable ADEC regulation

and guidance documents and the ADEC-approved work plan dated August 21, 2018. A single blind duplicate (RSE-X, duplicate of RSE-3) was submitted to the laboratory for quality control for primary analytes.

A completed ADEC Laboratory Review checklist for SGS laboratory report 1189808 (Attachment D) is provided in Attachment D. Laboratory detection limits exceeded ADEC Table C cleanup levels for a few chlorinated non-target analytes. There are no deviations to typical field sampling protocol that affect the data objectives for this project. All the data is usable for its intended purpose of comparison to ADEC Table C cleanup levels.

CONCLUSION

Results for the September 2018 sampling event indicate that DRO results in RSE-3 and RSE-4 are above ADEC Table C cleanup levels. Additionally, naphthalene by Method EPA SW8260C was found to be 6.63 mg/l, above the ADEC Table C cleanup level of 1.7 mg/L. However, naphthalene for RSE-4 analyzed by Method EPA SW8270D was found to be non-detect.

All other results were found to be either non-detect, below ADEC Table C cleanup levels, or above the ADEC Table C cleanup level because the detection limit was elevated above the ADEC Table C cleanup level. Based upon the DRO exceedances in RSE-3 and RSE-4 and the naphthalene inconsistency in RSE-4, RSE recommends sampling all four (4) wells in 2019 to further characterize hydrocarbon levels.

RSE completed a groundwater survey during the 2018 field event, in accordance with the ADEC approved work plan dated August 21, 2018.

Please contact Lisa Koeneman at ext. 110, if you have any questions or comments. It is our pleasure to work with the ADEC on this project.

This report was prepared by an ADEC-Qualified Sampler (QS) and overseen by a Qualified Environmental Professional (QEP) in accordance with 18 AAC 75/78.

Lisa Koeneman, QS Lucus Gamble, QEP

RESTORATION SCIENCE & ENGINEERING, LLC

Attachments:

Attachment A- Figures
Attachment B- Tabulated Laboratory Results
Attachment C- Select Site Photographs
Attachment D- SGS Laboratory Report and Laboratory Data Review Checklist
Attachment E- Scanned Field Notes

References:

Clarus Technologies, LLC (Clarus). 2009. Work Plan for Soil Borings and Sampling, Hurricane Siding, Hurricane, Alaska. May 2009

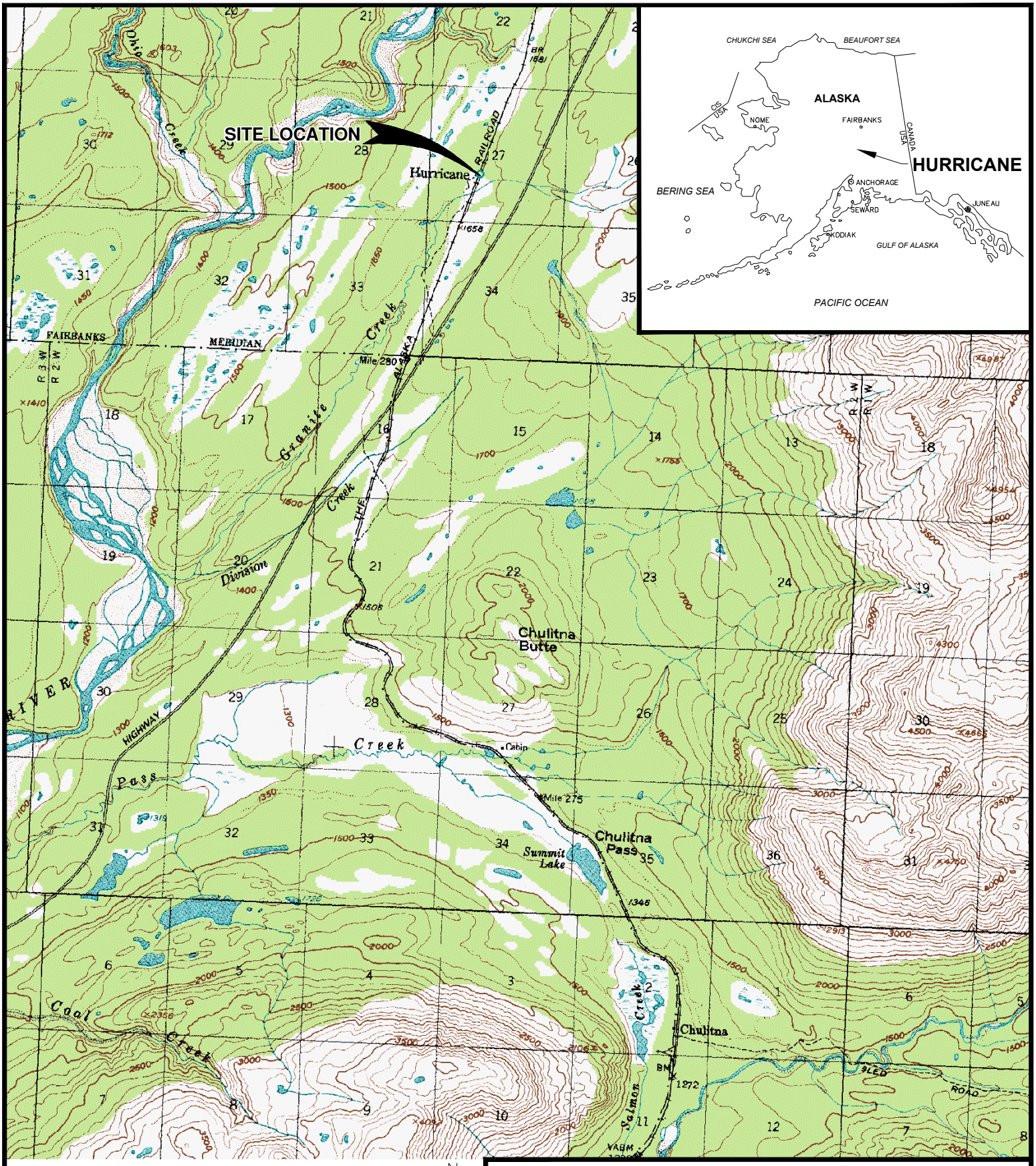
Clarus Technologies, LLC (Clarus). 2010. Phase II Investigation Report, Hurricane Siding, Hurricane, Alaska. April 2010.

Fairbanks Environmental Services (FES). 2016. Hurricane Siding, Hurricane, Alaska, Groundwater Monitoring Report.

Restoration Science & Engineering, LLC (RSE). 2018. Groundwater Monitoring Report Hurricane Siding. January 2018

Restoration Science & Engineering, LLC (RSE). 2018. Work Plan for ARRC Hurricane Groundwater Assessment at ARRC MP 284.2 Talkeetna, Alaska ADEC File # 2258.26.008. August 2018

Attachment A: Figures



0 2500 5000 10000

SCALE IN FEET

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HURRICANE SECTION HOUSE

VICINITY MAP

HURRICANE, ALASKA

JOB NO: 18-1851	DRAWN: MB
DATE: 12.17.2018	CHECKED: LK

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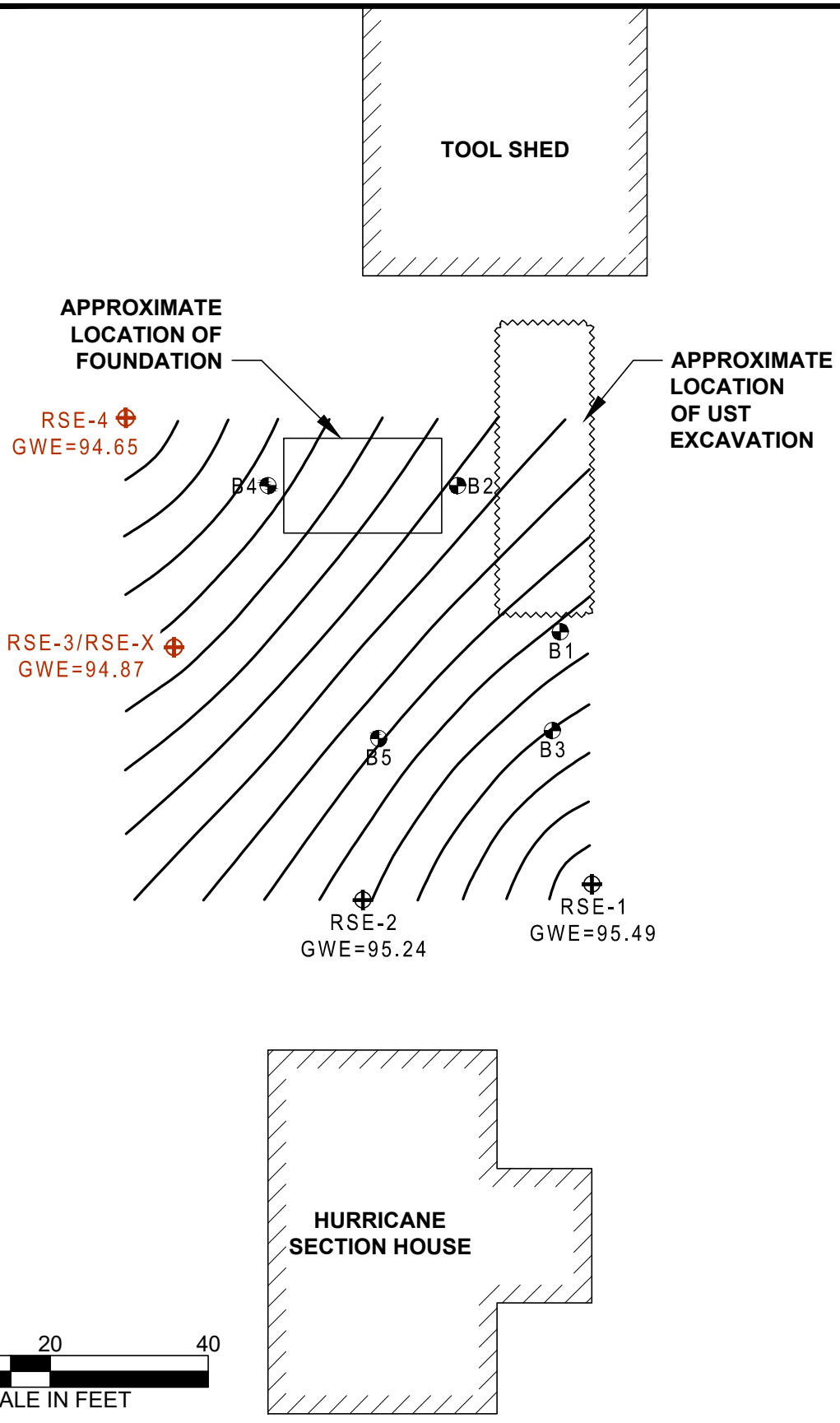
FIGURE 1



LEGEND

RSE-1	APPROXIMATE LOCATION OF MONITORING WELL
RSE-4	GROUNDWATER SAMPLE EXCEEDS ADEC CLEANUP CRITERIA
B1	CLARUS SOIL BORING LOCATION
GWE	GROUND WATER ELEVATION

HURRICANE SECTION HOUSE

SITE PLAN

HURRICANE, ALASKA

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JOB NO: 18.1851	DRAWN: MB
DATE: 12.17.2018	CHECKED: LK

FIGURE 2

Attachment B: Tabulated Laboratory Results

TABLE 1
ALASKA RAILROAD CORPORATION
HURRICANE - MILEPOST 284.2
GROUNDWATER QUALITY FIELD PARAMETERS

GROUNDWATER QUALITY FIELD PARAMETERS										
SAMPLE LOCATION	**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	9/28/2018	4.16	7.71	3	7.96 7.55 7.52 7.46	5.39 5.55 5.52 2.39	0.073 0.046 0.046 0.050	47 31 31 34	21.6 46.1 50.6 21.6	NO SHEEN OR ODOR
RSE-2	9/28/2018	4.26	7.58	3	7.13 7.14 7.13	6.04 5.92 5.91	0.138 0.115 0.112	90 76 74	54.9 55.3 57.4	PVC VISIBLE, ROSE UP AFTER PULLING LID - CUT USING DOWNHOLE CUTTER
RSE-3	9/28/2018	1.56	7.66	4	8.39 7.94 7.52 7.22	6.38 6.21 6.16 6.17	0.128 0.142 0.142 0.139	88 96 94 92	69.1 68.4 28.5 13.8	NO SHEEN OR ODOR
RSE-4	9/28/2018	3.39	6.72	4	7.43 7.08 6.92 6.93	6.06 6.18 6.23 6.24	0.059 0.005 0.067 0.069	39 43 44 45	58.5 38.6 93.7 91.0	NO ODOR OR SHEEN, SLIGHTLY TURBID

NOTES:

1) Water quality measurements performed using a YSI Model 556 Water Quality Meter.

2) Purging of well was done with a bailer.

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 2
ALASKA RAILROAD CORPORATION
HURRICANE - MILEPOST 284.2
HYDROCARBONS IN GROUNDWATER

HYDROCARBONS 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	9/28/2018	*0.288 U*	*0.240 U*	*0.500 U*	
RSE-2	9/28/2018	*0.278 U*	*0.232 U*	*0.500 U*	
RSE-3	9/28/2018	**1.42**	**0.156 J**	**0.0349**	1185585
RSE-4	9/28/2018	**2.73**	**0.277 J**	**0.0701 J**	
RSE-X	9/28/2018	**1.86**	**0.252 J**	*0.0500 U*	
ADEC GROUNDWATER CLEANUP LEVELS TABLE C (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) "mg/L" means "milligrams per liter".
3) **Bold** font indicates the analyte was detected above the detection limit (DL).
4) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; the value presented is the limit of detection.
5) J flag indicates the result is an estimated value.
6) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.
7) RSE-X is a blind duplicate of RSE-3

TABLE 3
ALASKA RAILROAD CORPORATION
HURRICANE - MILEPOST 284.2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

VOLATILE ORGANIC COMPOUND CONCENTRATIONS IN GROUNDWATER						
SAMPLE ID	**RSE-1**	**RSE-2**	**RSE-3**	**RSE-4**	**RSE-X**	**ADEC TABLE C GROUNDWATER CLEANUP LEVELS (ug/L)**
Date	09/28/18	09/28/18	09/28/18	09/28/18	9/28/2018	
SGS Work Order	1185585	1185585	1185585	1185585	1185585	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	
1,1,1,2-Tetrachloroethane	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	5.7
1,1,1-Trichloroethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	8,000
1,1,2,2-Tetrachloroethane	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	0.76
1,1,2-Trichloroethane	*0.200 U*	*0.200 U*	*0.200 U*	*0.200 U*	*0.200 U*	0.41
1,1-Dichloroethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	28
1,1-Dichloroethene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	280
1,1-Dichloropropene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	--
1,2,3-Trichlorobenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	7.0
1,2,3-Trichloropropane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	0.0075
1,2,4-Trichlorobenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	4.0
1,2,4-Trimethylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	**7.09**	*0.500 U*	56
1,2-Dibromo-3-chloropropane	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	--
1,2-Dibromoethane	*0.0357 U*	*0.0375 U*	*0.0375 U*	*0.0375 U*	*0.0375 U*	0.075
1,2-Dichlorobenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	300
1,2-Dichloroethane	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	1.7
1,2-Dichloropropane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	8.2
1,3,5-Trimethylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	60
1,3-Dichlorobenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	300
1,3-Dichloropropane	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	4.4
1,4-Dichlorobenzene	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	4.8
2,2-Dichloropropane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	--
2-Butanone (MEK)	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	5,600
2-Chlorotoluene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	--
2-Hexanone	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	38
4-Chlorotoluene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	--
4-Isopropyltoluene	*0.500 U*	*0.500 U*	*0.500 U*	**0.480 J**	**0.340 J**	--
4-Methyl-2-pentanone (MIBK)	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	6,300
Benzene	*0.200 U*	*0.200 U*	*0.200 U*	*0.200 U*	*0.200 U*	4.6
Bromobenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	62
Bromochloromethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.250 U*	--
Bromodichloromethane	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	1.3
Bromoform	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	33
Bromomethane	*2.50 U*	*2.50 U*	*2.50 U*	*2.50 U*	*2.50 U*	7.5
Carbon disulfide	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	810
Carbon tetrachloride	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	4.6
Chlorobenzene	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	78
Chloroethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	--
Chloroform	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	2.2
Chloromethane	*0.500 U*	**0.340 J**	*0.500 U*	**0.320 J**	*0.500 U*	190
cis-1,2-Dichloroethene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	36
cis-1,3-Dichloropropene	*0.500 U*	*0.250 U*	*0.250 U*	*0.250 U*	*0.250 U*	--
Dibromochloromethane	*0.500 U*	*0.500 U*	*0.250 U*	*0.250 U*	*0.250 U*	8.7
Dibromomethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	8.3
Dichlorodifluoromethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	200
Ethylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	**0.720 J**	*0.500 U*	15
Freon-113	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	55000
Hexachlorobutadiene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	1.4
Isopropylbenzene (Cumene)	*0.500 U*	*0.500 U*	*0.500 U*	**0.620 J**	*0.500 U*	450
Methylene chloride	*2.50 U*	*2.50 U*	*2.50 U*	*2.50 U*	*2.50 U*	110
Methyl-t-butyl ether	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	140
Naphthalene	*0.500 U*	*0.500 U*	**0.870 J**	**6.63**	**0.620 J**	1.7
n-Butylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	1,000
n-Propylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	**1.19**	*0.500 U*	660
o-Xylene	*0.500 U*	*0.500 U*	**0.730 J**	**5.2**	**0.730 J**	See Total Xylenes
P & M -Xylene	*1.00 U*	*1.00 U*	*1.00 U*	**3.04**	*1.00 U*	See Total Xylenes
sec-Butylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	**0.900 J**	*0.500 U*	2,000
Styrene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	1,200
tert-Butylbenzene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	690
Tetrachloroethene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	41
Toluene	*0.500 U*	*0.500 U*	*0.500 U*	**0.310 J**	*0.500 U*	1,100
trans-1,2-Dichloroethene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	360
trans-1,3-Dichloropropene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	4.7
Trichloroethene	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	2.8
Trichlorofluoromethane	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	*0.500 U*	5,200
Vinyl acetate	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	*5.00 U*	410
Vinyl chloride	*0.0750 U*	*0.0750 U*	*0.0750 U*	*0.0750 U*	*0.0750 U*	0.19
Xylenes (total)	*1.50 U*	*1.50 U*	*1.50 U*	**8.24**	*1.50 U*	190

NOTES:

1) Volatile organic compounds (VOC) analyses by Method EPA SW8260C.
2) "ug/L" means "micrograms per liter".
3) **Bold** font indicates the analyte was detected above the laboratory Detection Limit (DL).
4) *Italicized* font with a U-qualifier indicates the analyte was not detected above the DL; the value presented is the limit of detection.
5) J flag indicates the result is an estimated value.
6) Light blue highlighting indicates that the DL is elevated above the cleanup level.
7) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.
8) RSE-X is a blind duplicate of RSE-3.

TABLE 4
ALASKA RAILROAD CORPORATION
HURRICANE - MILEPOST 284.2
SEMI-VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER

SEMI-VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER						
SAMPLE NUMBER	**RSE-1**	**RSE-2**	**RSE-3**	**RSE-4**	**RSE-X**	**ADEC METHOD 2 CLEANUP LEVEL FOR MIGRATION TO GROUNDWATER (ug/L)**
DATE	9/28/2018	9/28/2018	9/28/2018	9/28/2018	9/28/2018	
SGS WORK ORDER	1185585	1185585	1185585	1185585	1185585	
UNITS	ug/L	ug/L	ug/L	ug/L	ug/L	
1,2,4-Trichlorobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	4.0
1,2-Dichlorobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	300
1,3-Dichlorobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	300
1,4-Dichlorobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	4.8
1-Chloronaphthalene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
1-Methylnaphthalene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	11
2,4,5-Trichlorophenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	1200
2,4,6-Trichlorophenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	12
2,4-Dichlorophenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	46
2,4-Dimethylphenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	360
2,4-Dinitrophenol	*0.0259 U*	*0.0255 U*	*0.0256 U*	*0.0259 U*	*0.0266 U*	39
2,4-Dinitrotoluene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	2.4
2,6-Dichlorophenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	46
2,6-Dinitrotoluene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.49
2-Chloronaphthalene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
2-Chlorophenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	91
2-Methyl-4,6-dinitrophenol	*0.0259 U*	*0.0255 U*	*0.0256 U*	*0.0259 U*	*0.0266 U*	--
2-Methylnaphthalene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	36
2-Methylphenol (o-Cresol)	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	930
2-Nitroaniline	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
2-Nitrophenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
3&4-Methylphenol (p&m-Cresol)	*0.0140 U*	*0.0102 U*	*0.0103 U*	*0.0104 U*	*0.0107 U*	--
3,3-Dichlorobenzidine	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	1.3
3-Nitroaniline	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
4-Bromophenyl-phenylether	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
4-Chloro-3-methylphenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
4-Chloroaniline	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
4-Chlorophenyl-phenylether	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
4-Nitroaniline	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
4-Nitrophenol	*0.0259 U*	*0.0255 U*	*0.0256 U*	*0.0259 U*	*0.0266 U*	--
Acenaphthene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	530
Acenaphthylene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	260
Aniline	*0.0259 U*	*0.0251 U*	*0.02515 U*	*0.0259 U*	*0.0266 U*	--
Anthracene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	43(1800)[4]
Azobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
Benzo(a)Anthracene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
Benzo[a]pyrene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.25
Benzo[b]Fluoranthene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	2.5
Benzo[g,h,i]perylene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.26(600)[4]
Benzo[k]fluoranthene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.80(25)[4]
Benzoic acid	*0.0259 U*	*0.0255 U*	*0.0256 U*	*0.0259 U*	*0.0266 U*	75,000
Benzyl alcohol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	2,000
Bis(2chloro1methylethyl)Ether	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
Bis(2-Chloroethoxy)methane	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
Bis(2-Chloroethyl)ether	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.14
bis(2-Ethylhexyl)phthalate	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	56
Butylbenzylphthalate	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	160
Carbazole	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
Chrysene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	2.0(250)[4]
Dibenzo[a,h]anthracene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.25
Dibenzofuran	*0.00520 U*	*0.00255 U*	*0.00257 U*	*0.00259 U*	*0.00266 U*	7.9
Diethylphthalate	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	15,000
Dimethylphthalate	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	16,000
Di-n-butylphthalate	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
di-n-Octylphthalate	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	--
Fluoranthene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	260(800)[4]
Fluorene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	290
Hexachlorobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.098
Hexachlorobutadiene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.0159 U*	1.4
Hexachlorocyclopentadiene	*0.0156 U*	*0.0153 U*	*0.0154 U*	*0.0156 U*	*0.01530 U*	0.41
Hexachloroethane	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	3.3
Indeno[1,2,3-c,d] pyrene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.19
Isophorone	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	780
Naphthalene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	1.7
Nitrobenzene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	1.4
N-Nitrosodimethylamine	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.0011
N-Nitroso-di-n-propylamine	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	0.11
N-Nitrosodiphenylamine	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	120
Pentachlorophenol	*0.0259 U*	*0.0255 U*	*0.0256 U*	*0.0259 U*	*0.0266 U*	0.41
Phenanthrene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	170
Phenol	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	5,800
Pyrene	*0.00520 U*	*0.00510 U*	*0.00515 U*	*0.00520 U*	*0.00530 U*	120

NOTES:

1) Semi-volatile organic compounds (VOC) analyses by Method EPA SW8270D
2) "ug/L" means "micrograms per liter".
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) Light blue highlighting indicates that the DL is elevated above the cleanup level.
5) RSE-X is a blind duplicate of RSE-3.

TABLE 5
ALASKA RAILROAD CORPORATION
HURRICANE - MILEPOST 284.2
HISTORIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER

HYDROCARBONS 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)**
RSE-1					
RSE-1	9/9/2011	Primary	*ND (0.3)*	*ND (0.3)*	ND (0.06)
RSE-1	9/14/2012	Primary/Duplicate	*ND (0.34)/ND (0.362)*	*ND (0.34)/ND (0.434)*	ND (0.062)/ ND(0.062)
RSE-1	6/12/2013	Primary	**0.323 J**	**0.567**	ND (0.062)
RSE-1	9/26/2014	Primary	*ND (0.310)*	*ND (0.259)*	ND (0.05)
RSE-1	8/24/2017	Primary	**0.351 J**	**0.539**	*0.0500 U*
RSE-1	9/28/2018	Primary	*0.288 U*	*0.240 U*	*0.500 U*
RSE-2					
RSE-2	9/9/2011	Primary	**0.311 J**	*ND (0.3)*	ND (0.06)
RSE-2	9/14/2012	Primary	*ND (0.36)*	*ND (0.3)*	ND (0.062)
RSE-2	6/12/2013	Primary	**0.237 J**	**0.388**	ND (0.062)
RSE-2	9/26/2014	Primary	*ND (0.308)*	*ND (0.256)*	ND (0.05)
RSE-2	8/24/2017	Primary	**0.692**	**0.889**	*0.0500 U*
RSE-2	9/28/2018	Primary	*0.278 U*	*0.232 U*	*0.500 U*
RSE-3					
RSE-3	9/9/2011	Primary/Duplicate	**0.498 J/ 0.431 J**	*ND (0.3)/ND (0.3)*	*ND (0.06)/ ND (0.06)*
RSE-3	9/14/2012	Primary	**0.779**	*ND (0.3)*	*ND (0.062)*
RSE-3	6/12/2013	Primary	**5.51**	**1.34**	*ND (0.062)*
RSE-3	9/26/2014	Primary/Duplicate	**1.88/1.57**	**0.330 J/0.252 J**	*ND (0.05)/ ND (0.05)*
RSE-3	8/24/2017	Primary/Duplicate	**1.95/ 1.82**	**0.735/ 0.686**	*0.0500 / 0.0500 U*
RSE-3	9/28/2018	Primary/Duplicate	**1.42/1.86**	**0.156 J/0.252 J**	0.349/0.050 U
RSE-4					
RSE-4	9/9/2011	Primary	**1.52**	*ND (0.3)*	**0.0833 J**
RSE-4	9/14/2012	Primary	**0.601 J**	*ND (0.338)*	*0.0456 J*
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**	*ND (0.05)*
RSE-4	8/24/2017	Primary	**1.36**	**0.734**	--
RSE-4	9/28/2018	Primary	**2.73**	**0.277 J**	**0.0701 J**
ADEC GROUNDWATER CLEANUP LEVELS TABLE C (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) "mg/L" means "milligrams per liter".
3) **Bold** font indicates the analyte was detected above the detection limit (DL).
4) *Italicized* font with a U-flag indicates the analyte was not detected at the DL; the value presented is the limit of detection.
5) J flag indicates the result is an estimated value.
6) Yellow highlighting indicates the analyte was detected above the ADEC Table C Groundwater Cleanup Level.

Attachment C: Select Site Photographs

Monitoring well RSE-1; looking south

Monitoring well RSE-2; looking south

Monitoring well RSE-3; looking northwest

Monitoring well RSE-4

Attachment D: SGS Laboratory Report and Laboratory Data Review Checklist

RESTORATION Science & Engineering, LLC

Laboratory Report of Analysis

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

Report Number: **1185585**

Client Project: **ARRC Hurricane CW Assessment**

Dear Lucus Gamble,

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 Date
Project Manager
Charles.Homestead@sgs.com

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

Case Narrative

SGS Client: **Restoration Science & Eng**
SGS Project: **1185585**
Project Name/Site: **ARRC Hurricane CW Assessment**
Project Contact: **Lucus Gamble**

Refer to sample receipt form for information on sample condition.

LCSD for HBN 1787069 [XXX/4063 (1479794) LCSD

8270D - LCSD RPDs for pyridine, aniline, and benzoic acid do not meet QC criteria. The associated sample concentrations for these analytes are less than the LOQ.

LCSD for HBN 1787147 [XXX/4064 (1480161) LCSD

AK102/103 - Surrogate recovery in the LCSD for n-triacontane does not meet QC criteria; however, the surrogate recoveries in the samples are within criteria.

MB for HBN 1787147 [XXX/40641] (1480159) MB

AK102/103 - Surrogate recovery in the MB for n-triacontane does not meet QC criteria; however, the surrogate recoveries in the samples are within criteria.

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

SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
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Report of Manual Integrations

Laboratory ID	Client Sample ID	Analytical Batch	Analyte	Reason
SW8260C				
1185585003	RSE-4	VMS18398	4-Isopropyltoluene	SP
SW8270D				
1479793	LCS for HBN 1787069 [XXX/40635	XMS11152	1-Chloronaphthalene	SP
1479794	LCSD for HBN 1787069 [XXX/4063	XMS11152	1-Chloronaphthalene	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.

Print Date: 10/16/2018 3:47:56PM

Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & 17-021 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8015C, 8021B, 8082A, 8260C, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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

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

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
RSE-1	1185585001	09/28/2018	10/01/2018	Water (Surface, Eff., Ground)
RSE-2	1185585002	09/28/2018	10/01/2018	Water (Surface, Eff., Ground)
RSE-4	1185585003	09/28/2018	10/01/2018	Water (Surface, Eff., Ground)
RSE-3	1185585004	09/28/2018	10/01/2018	Water (Surface, Eff., Ground)
RSE-X	1185585005	09/28/2018	10/01/2018	Water (Surface, Eff., Ground)
Trip Blank	1185585006	09/28/2018	10/01/2018	Water (Surface, Eff., Ground)

Method	Method Description
AK102	DRO/RRO Low Volume Water
AK103	DRO/RRO Low Volume Water
AK101	Gasoline Range Organics (W)
SW8270D	SW846-8270 SVOC by GC/MS (W) Liq/Liq ext
SW8260C	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **RSE-2**
Lab Sample ID: 1185585002

Volatile GC/MS

Parameter	Result	Units
Chloromethane	0.340J	ug/L

Client Sample ID: **RSE-4**
Lab Sample ID: 1185585003

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	2.73	mg/L
Residual Range Organics	0.227J	mg/L
Gasoline Range Organics	0.0701J	mg/L
1,2,4-Trimethylbenzene	7.09	ug/L
4-Isopropyltoluene	0.480J	ug/L
Chloromethane	0.320J	ug/L
Ethylbenzene	0.720J	ug/L
Isopropylbenzene (Cumene)	0.620J	ug/L
Naphthalene	6.63	ug/L
n-Propylbenzene	1.19	ug/L
o-Xylene	5.20	ug/L
P & M -Xylene	3.04	ug/L
sec-Butylbenzene	0.900J	ug/L
Toluene	0.310J	ug/L
Xylenes (total)	8.24	ug/L

Client Sample ID: **RSE-3**
Lab Sample ID: 1185585004

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	1.42	mg/L
Residual Range Organics	0.156J	mg/L
Gasoline Range Organics	0.0349J	mg/L
Naphthalene	0.870J	ug/L
o-Xylene	0.730J	ug/L

Client Sample ID: **RSE-X**
Lab Sample ID: 1185585005

Semivolatile Organic Fuels

Volatile GC/MS

Parameter	Result	Units
Diesel Range Organics	1.86	mg/L
Residual Range Organics	0.252J	mg/L
4-Isopropyltoluene	0.340J	ug/L
Naphthalene	0.620J	ug/L
o-Xylene	0.730J	ug/L

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
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	0.288	U	0.577	0.173	mg/L	1		10/05/18 13:01
Surrogates								
5a Androstane (surr)	90.2		50-150		%	1		10/05/18 13:01

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 10/05/18 13:01
Container ID: 1185585001-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
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	0.240	U	0.481	0.144	mg/L	1		10/05/18 13:01
Surrogates								
n-Triacontane-d62 (surr)	109		50-150		%	1		10/05/18 13:01

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 10/05/18 13:01
Container ID: 1185585001-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
1,2-Dichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
1,3-Dichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
1,4-Dichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
1-Chloronaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
1-Methylnaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,4,5-Trichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,4,6-Trichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,4-Dichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,4-Dimethylphenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,4-Dinitrophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:17
2,4-Dinitrotoluene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,6-Dichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2,6-Dinitrotoluene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2-Chloronaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2-Chlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2-Methyl-4,6-dinitrophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:17
2-Methylnaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2-Methylphenol (o-Cresol)	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2-Nitroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
2-Nitrophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
3&4-Methylphenol (p&m-Cresol)	0.0104	U	0.0207	0.00642	mg/L	1		10/15/18 23:17
3,3-Dichlorobenzidine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
3-Nitroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
4-Bromophenyl-phenylether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
4-Chloro-3-methylphenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
4-Chloroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
4-Chlorophenyl-phenylether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
4-Nitroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
4-Nitrophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:17
Acenaphthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Acenaphthylene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Aniline	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:17
Anthracene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Azobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Benzo(a)Anthracene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Benzo[a]pyrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzo[b]Fluoranthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Benzo[g,h,i]perylene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Benzo[k]fluoranthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Benzoic acid	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:17
Benzyl alcohol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Bis(2chloro1methylethyl)Ether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Bis(2-Chloroethoxy)methane	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Bis(2-Chloroethyl)ether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
bis(2-Ethylhexyl)phthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Butylbenzylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Carbazole	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Chrysene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Dibenzo[a,h]anthracene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Dibenzofuran	0.00259	U	0.00518	0.00155	mg/L	1		10/15/18 23:17
Diethylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Dimethylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Di-n-butylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
di-n-Octylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Fluoranthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Fluorene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Hexachlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Hexachlorobutadiene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Hexachlorocyclopentadiene	0.0156	U	0.0311	0.00974	mg/L	1		10/15/18 23:17
Hexachloroethane	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Indeno[1,2,3-c,d] pyrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Isophorone	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Naphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Nitrobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
N-Nitrosodimethylamine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
N-Nitroso-di-n-propylamine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
N-Nitrosodiphenylamine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Pentachlorophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:17
Phenanthrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Phenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Pyrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:17
Surrogates								
2,4,6-Tribromophenol (surr)	80.7		43-140		%	1		10/15/18 23:17

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2-Fluorobiphenyl (surr)	79.8		44-119		%	1		10/15/18 23:17
2-Fluorophenol (surr)	52.9		19-119		%	1		10/15/18 23:17
Nitrobenzene-d5 (surr)	66.8		44-120		%	1		10/15/18 23:17
Phenol-d6 (surr)	50		10-115		%	1		10/15/18 23:17
Terphenyl-d14 (surr)	111		50-134		%	1		10/15/18 23:17

Batch Information

Analytical Batch: XMS11157
Analytical Method: SW8270D
Analyst: JMG
Analytical Date/Time: 10/15/18 23:17
Container ID: 1185585001-I

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/02/18 08:52
Prep Initial Wt./Vol.: 965 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		10/03/18 13:24
Surrogates								
4-Bromofluorobenzene (surr)	104		50-150		%	1		10/03/18 13:24

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 10/03/18 13:24
Container ID: 1185585001-A

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/03/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/02/18 17:38
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:38
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/02/18 17:38
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:38
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:38
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:38
Benzene	0.200	U	0.400	0.120	ug/L	1		10/02/18 17:38
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/02/18 17:38
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:38
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:38
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:38

Print Date: 10/16/2018 3:48:00PM

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Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Chloromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		10/02/18 17:38
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		10/02/18 17:38
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Freon-113	5.00 U		10.0	3.10	ug/L	1		10/02/18 17:38
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		10/02/18 17:38
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		10/02/18 17:38
Naphthalene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/02/18 17:38
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Styrene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Toluene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:38
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		10/02/18 17:38
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		10/02/18 17:38
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		10/02/18 17:38
Surrogates								
1,2-Dichloroethane-D4 (surr)	104		81-118		%	1		10/02/18 17:38
4-Bromofluorobenzene (surr)	103		85-114		%	1		10/02/18 17:38
Toluene-d8 (surr)	98.8		89-112		%	1		10/02/18 17:38

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-1**

Client Sample ID: **RSE-1**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585001
Lab Project ID: 1185585

Collection Date: 09/28/18 14:52
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 10/02/18 17:38
Container ID: 1185585001-D

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/02/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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

Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
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	0.278	U	0.556	0.167	mg/L	1		10/05/18 13:11
Surrogates								
5a Androstane (surr)	76.7		50-150		%	1		10/05/18 13:11

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 10/05/18 13:11
Container ID: 1185585002-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.232	U	0.463	0.139	mg/L	1		10/05/18 13:11
Surrogates								
n-Triacontane-d62 (surr)	94.9		50-150		%	1		10/05/18 13:11

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 10/05/18 13:11
Container ID: 1185585002-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trichlorobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
1,2-Dichlorobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
1,3-Dichlorobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
1,4-Dichlorobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
1-Chloronaphthalene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
1-Methylnaphthalene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,4,5-Trichlorophenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,4,6-Trichlorophenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,4-Dichlorophenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,4-Dimethylphenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,4-Dinitrophenol	0.0255	U	0.0510	0.0153	mg/L	1		10/15/18 23:34
2,4-Dinitrotoluene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,6-Dichlorophenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2,6-Dinitrotoluene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2-Chloronaphthalene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2-Chlorophenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2-Methyl-4,6-dinitrophenol	0.0255	U	0.0510	0.0153	mg/L	1		10/15/18 23:34
2-Methylnaphthalene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2-Methylphenol (o-Cresol)	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2-Nitroaniline	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
2-Nitrophenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
3&4-Methylphenol (p&m-Cresol)	0.0102	U	0.0204	0.00633	mg/L	1		10/15/18 23:34
3,3-Dichlorobenzidine	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
3-Nitroaniline	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
4-Bromophenyl-phenylether	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
4-Chloro-3-methylphenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
4-Chloroaniline	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
4-Chlorophenyl-phenylether	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
4-Nitroaniline	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
4-Nitrophenol	0.0255	U	0.0510	0.0153	mg/L	1		10/15/18 23:34
Acenaphthene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Acenaphthylene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Aniline	0.0255	U	0.0510	0.0153	mg/L	1		10/15/18 23:34
Anthracene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Azobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Benzo(a)Anthracene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Benzo[a]pyrene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34

Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzo[b]Fluoranthene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Benzo[g,h,i]perylene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Benzo[k]fluoranthene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Benzoic acid	0.0255	U	0.0510	0.0153	mg/L	1		10/15/18 23:34
Benzyl alcohol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Bis(2chloro1methylethyl)Ether	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Bis(2-Chloroethoxy)methane	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Bis(2-Chloroethyl)ether	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
bis(2-Ethylhexyl)phthalate	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Butylbenzylphthalate	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Carbazole	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Chrysene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Dibenzo[a,h]anthracene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Dibenzofuran	0.00255	U	0.00510	0.00153	mg/L	1		10/15/18 23:34
Diethylphthalate	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Dimethylphthalate	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Di-n-butylphthalate	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
di-n-Octylphthalate	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Fluoranthene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Fluorene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Hexachlorobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Hexachlorobutadiene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Hexachlorocyclopentadiene	0.0153	U	0.0306	0.00959	mg/L	1		10/15/18 23:34
Hexachloroethane	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Indeno[1,2,3-c,d] pyrene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Isophorone	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Naphthalene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Nitrobenzene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
N-Nitrosodimethylamine	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
N-Nitroso-di-n-propylamine	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
N-Nitrosodiphenylamine	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Pentachlorophenol	0.0255	U	0.0510	0.0153	mg/L	1		10/15/18 23:34
Phenanthrene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Phenol	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Pyrene	0.00510	U	0.0102	0.00316	mg/L	1		10/15/18 23:34
Surrogates								
2,4,6-Tribromophenol (surr)	82.2		43-140		%	1		10/15/18 23:34

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Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2-Fluorobiphenyl (surr)	71.7		44-119		%	1		10/15/18 23:34
2-Fluorophenol (surr)	49		19-119		%	1		10/15/18 23:34
Nitrobenzene-d5 (surr)	59.7		44-120		%	1		10/15/18 23:34
Phenol-d6 (surr)	48.7		10-115		%	1		10/15/18 23:34
Terphenyl-d14 (surr)	112		50-134		%	1		10/15/18 23:34

Batch Information

Analytical Batch: XMS11157
Analytical Method: SW8270D
Analyst: JMG
Analytical Date/Time: 10/15/18 23:34
Container ID: 1185585002-I

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/02/18 08:52
Prep Initial Wt./Vol.: 980 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		10/03/18 13:42
Surrogates								
4-Bromofluorobenzene (surr)	97.1		50-150		%	1		10/03/18 13:42

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 10/03/18 13:42
Container ID: 1185585002-A

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/03/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

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Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/02/18 17:53
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:53
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/02/18 17:53
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:53
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:53
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:53
Benzene	0.200	U	0.400	0.120	ug/L	1		10/02/18 17:53
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/02/18 17:53
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/02/18 17:53
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 17:53
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 17:53

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Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Chloromethane	0.340 J		1.00	0.310	ug/L	1		10/02/18 17:53
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		10/02/18 17:53
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		10/02/18 17:53
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Freon-113	5.00 U		10.0	3.10	ug/L	1		10/02/18 17:53
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		10/02/18 17:53
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		10/02/18 17:53
Naphthalene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
o-Xylene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/02/18 17:53
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Styrene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Toluene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 17:53
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		10/02/18 17:53
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		10/02/18 17:53
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		10/02/18 17:53
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		10/02/18 17:53
4-Bromofluorobenzene (surr)	102		85-114		%	1		10/02/18 17:53
Toluene-d8 (surr)	101		89-112		%	1		10/02/18 17:53

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Results of **RSE-2**

Client Sample ID: **RSE-2**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585002
Lab Project ID: 1185585

Collection Date: 09/28/18 15:25
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 10/02/18 17:53
Container ID: 1185585002-D

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/02/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
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	2.73		0.566	0.170	mg/L	1		10/05/18 13:22
Surrogates								
5a Androstane (surr)	96.6		50-150		%	1		10/05/18 13:22

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 10/05/18 13:22
Container ID: 1185585003-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.227	J	0.472	0.142	mg/L	1		10/05/18 13:22
Surrogates								
n-Triacontane-d62 (surr)	115		50-150		%	1		10/05/18 13:22

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 10/05/18 13:22
Container ID: 1185585003-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
1,2-Dichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
1,3-Dichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
1,4-Dichlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
1-Chloronaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
1-Methylnaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,4,5-Trichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,4,6-Trichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,4-Dichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,4-Dimethylphenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,4-Dinitrophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:51
2,4-Dinitrotoluene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,6-Dichlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2,6-Dinitrotoluene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2-Chloronaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2-Chlorophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2-Methyl-4,6-dinitrophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:51
2-Methylnaphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2-Methylphenol (o-Cresol)	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2-Nitroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
2-Nitrophenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
3&4-Methylphenol (p&m-Cresol)	0.0104	U	0.0207	0.00642	mg/L	1		10/15/18 23:51
3,3-Dichlorobenzidine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
3-Nitroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
4-Bromophenyl-phenylether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
4-Chloro-3-methylphenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
4-Chloroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
4-Chlorophenyl-phenylether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
4-Nitroaniline	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
4-Nitrophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:51
Acenaphthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Acenaphthylene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Aniline	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:51
Anthracene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Azobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Benzo(a)Anthracene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Benzo[a]pyrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzo[b]Fluoranthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Benzo[g,h,i]perylene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Benzo[k]fluoranthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Benzoic acid	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:51
Benzyl alcohol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Bis(2chloro1methylethyl)Ether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Bis(2-Chloroethoxy)methane	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Bis(2-Chloroethyl)ether	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
bis(2-Ethylhexyl)phthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Butylbenzylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Carbazole	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Chrysene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Dibenzo[a,h]anthracene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Dibenzofuran	0.00259	U	0.00518	0.00155	mg/L	1		10/15/18 23:51
Diethylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Dimethylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Di-n-butylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
di-n-Octylphthalate	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Fluoranthene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Fluorene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Hexachlorobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Hexachlorobutadiene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Hexachlorocyclopentadiene	0.0156	U	0.0311	0.00974	mg/L	1		10/15/18 23:51
Hexachloroethane	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Indeno[1,2,3-c,d] pyrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Isophorone	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Naphthalene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Nitrobenzene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
N-Nitrosodimethylamine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
N-Nitroso-di-n-propylamine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
N-Nitrosodiphenylamine	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Pentachlorophenol	0.0259	U	0.0518	0.0155	mg/L	1		10/15/18 23:51
Phenanthrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Phenol	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Pyrene	0.00520	U	0.0104	0.00321	mg/L	1		10/15/18 23:51
Surrogates								
2,4,6-Tribromophenol (surr)	91.3		43-140		%	1		10/15/18 23:51

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2-Fluorobiphenyl (surr)	76.6		44-119		%	1		10/15/18 23:51
2-Fluorophenol (surr)	50.8		19-119		%	1		10/15/18 23:51
Nitrobenzene-d5 (surr)	65.4		44-120		%	1		10/15/18 23:51
Phenol-d6 (surr)	49.1		10-115		%	1		10/15/18 23:51
Terphenyl-d14 (surr)	121		50-134		%	1		10/15/18 23:51

Batch Information

Analytical Batch: XMS11157
Analytical Method: SW8270D
Analyst: JMG
Analytical Date/Time: 10/15/18 23:51
Container ID: 1185585003-I

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/02/18 08:52
Prep Initial Wt./Vol.: 965 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0701	J	0.100	0.0310	mg/L	1		10/03/18 14:00
Surrogates								
4-Bromofluorobenzene (surr)	110		50-150		%	1		10/03/18 14:00

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 10/03/18 14:00
Container ID: 1185585003-A

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/03/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/02/18 18:08
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,2,4-Trimethylbenzene	7.09		1.00	0.310	ug/L	1		10/02/18 18:08
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/02/18 18:08
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
4-Isopropyltoluene	0.480	J	1.00	0.310	ug/L	1		10/02/18 18:08
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
Benzene	0.200	U	0.400	0.120	ug/L	1		10/02/18 18:08
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/02/18 18:08
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08

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Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Chloromethane	0.320	J	1.00	0.310	ug/L	1		10/02/18 18:08
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:08
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Ethylbenzene	0.720	J	1.00	0.310	ug/L	1		10/02/18 18:08
Freon-113	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Isopropylbenzene (Cumene)	0.620	J	1.00	0.310	ug/L	1		10/02/18 18:08
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		10/02/18 18:08
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
Naphthalene	6.63		1.00	0.310	ug/L	1		10/02/18 18:08
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
n-Propylbenzene	1.19		1.00	0.310	ug/L	1		10/02/18 18:08
o-Xylene	5.20		1.00	0.310	ug/L	1		10/02/18 18:08
P & M -Xylene	3.04		2.00	0.620	ug/L	1		10/02/18 18:08
sec-Butylbenzene	0.900	J	1.00	0.310	ug/L	1		10/02/18 18:08
Styrene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Toluene	0.310	J	1.00	0.310	ug/L	1		10/02/18 18:08
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:08
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:08
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		10/02/18 18:08
Xylenes (total)	8.24		3.00	1.00	ug/L	1		10/02/18 18:08
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		10/02/18 18:08
4-Bromofluorobenzene (surr)	102		85-114		%	1		10/02/18 18:08
Toluene-d8 (surr)	99		89-112		%	1		10/02/18 18:08

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J flagging is activated

Results of **RSE-4**

Client Sample ID: **RSE-4**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585003
Lab Project ID: 1185585

Collection Date: 09/28/18 16:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 10/02/18 18:08
Container ID: 1185585003-D

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/02/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
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	1.42		0.577	0.173	mg/L	1		10/05/18 13:32
Surrogates								
5a Androstane (surr)	80.5		50-150		%	1		10/05/18 13:32

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 10/05/18 13:32
Container ID: 1185585004-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
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	0.156	J	0.481	0.144	mg/L	1		10/05/18 13:32
Surrogates								
n-Triacontane-d62 (surr)	98.5		50-150		%	1		10/05/18 13:32

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 10/05/18 13:32
Container ID: 1185585004-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

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Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trichlorobenzene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
1,2-Dichlorobenzene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
1,3-Dichlorobenzene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
1,4-Dichlorobenzene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
1-Chloronaphthalene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
1-Methylnaphthalene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,4,5-Trichlorophenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,4,6-Trichlorophenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,4-Dichlorophenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,4-Dimethylphenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,4-Dinitrophenol	0.0256	U	0.0513	0.0154	mg/L	1		10/16/18 00:07
2,4-Dinitrotoluene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,6-Dichlorophenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2,6-Dinitrotoluene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2-Chloronaphthalene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2-Chlorophenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2-Methyl-4,6-dinitrophenol	0.0256	U	0.0513	0.0154	mg/L	1		10/16/18 00:07
2-Methylnaphthalene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2-Methylphenol (o-Cresol)	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2-Nitroaniline	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
2-Nitrophenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
3&4-Methylphenol (p&m-Cresol)	0.0103	U	0.0205	0.00636	mg/L	1		10/16/18 00:07
3,3-Dichlorobenzidine	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
3-Nitroaniline	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
4-Bromophenyl-phenylether	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
4-Chloro-3-methylphenol	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
4-Chloroaniline	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
4-Chlorophenyl-phenylether	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
4-Nitroaniline	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
4-Nitrophenol	0.0256	U	0.0513	0.0154	mg/L	1		10/16/18 00:07
Acenaphthene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
Acenaphthylene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
Aniline	0.0256	U	0.0513	0.0154	mg/L	1		10/16/18 00:07
Anthracene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
Azobenzene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
Benzo(a)Anthracene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07
Benzo[a]pyrene	0.00515	U	0.0103	0.00318	mg/L	1		10/16/18 00:07

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Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzo[b]Fluoranthene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Benzo[g,h,i]perylene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Benzo[k]fluoranthene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Benzoic acid	0.0256 U		0.0513	0.0154	mg/L	1		10/16/18 00:07
Benzyl alcohol	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Bis(2chloro1methylethyl)Ether	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Bis(2-Chloroethoxy)methane	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Bis(2-Chloroethyl)ether	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
bis(2-Ethylhexyl)phthalate	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Butylbenzylphthalate	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Carbazole	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Chrysene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Dibenzo[a,h]anthracene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Dibenzofuran	0.00257 U		0.00513	0.00154	mg/L	1		10/16/18 00:07
Diethylphthalate	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Dimethylphthalate	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Di-n-butylphthalate	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
di-n-Octylphthalate	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Fluoranthene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Fluorene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Hexachlorobenzene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Hexachlorobutadiene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Hexachlorocyclopentadiene	0.0154 U		0.0308	0.00964	mg/L	1		10/16/18 00:07
Hexachloroethane	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Indeno[1,2,3-c,d] pyrene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Isophorone	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Naphthalene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Nitrobenzene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
N-Nitrosodimethylamine	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
N-Nitroso-di-n-propylamine	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
N-Nitrosodiphenylamine	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Pentachlorophenol	0.0256 U		0.0513	0.0154	mg/L	1		10/16/18 00:07
Phenanthrene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Phenol	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Pyrene	0.00515 U		0.0103	0.00318	mg/L	1		10/16/18 00:07
Surrogates								
2,4,6-Tribromophenol (surr)	90.4		43-140		%	1		10/16/18 00:07

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J flagging is activated

Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2-Fluorobiphenyl (surr)	68.4		44-119		%	1		10/16/18 00:07
2-Fluorophenol (surr)	44.9		19-119		%	1		10/16/18 00:07
Nitrobenzene-d5 (surr)	57.1		44-120		%	1		10/16/18 00:07
Phenol-d6 (surr)	43.6		10-115		%	1		10/16/18 00:07
Terphenyl-d14 (surr)	114		50-134		%	1		10/16/18 00:07

Batch Information

Analytical Batch: XMS11157
Analytical Method: SW8270D
Analyst: JMG
Analytical Date/Time: 10/16/18 00:07
Container ID: 1185585004-I

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/02/18 08:52
Prep Initial Wt./Vol.: 975 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0349	J	0.100	0.0310	mg/L	1		10/03/18 14:18
Surrogates								
4-Bromofluorobenzene (surr)	105		50-150		%	1		10/03/18 14:18

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 10/03/18 14:18
Container ID: 1185585004-A

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/03/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/16/2018 3:48:00PM

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Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/02/18 18:23
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:23
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/02/18 18:23
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:23
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:23
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:23
Benzene	0.200	U	0.400	0.120	ug/L	1		10/02/18 18:23
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/02/18 18:23
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:23
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:23
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:23

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Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Chloromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		10/02/18 18:23
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		10/02/18 18:23
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Freon-113	5.00 U		10.0	3.10	ug/L	1		10/02/18 18:23
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		10/02/18 18:23
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		10/02/18 18:23
Naphthalene	0.870 J		1.00	0.310	ug/L	1		10/02/18 18:23
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
o-Xylene	0.730 J		1.00	0.310	ug/L	1		10/02/18 18:23
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/02/18 18:23
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Styrene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Toluene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:23
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		10/02/18 18:23
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		10/02/18 18:23
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		10/02/18 18:23
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		10/02/18 18:23
4-Bromofluorobenzene (surr)	101		85-114		%	1		10/02/18 18:23
Toluene-d8 (surr)	99.4		89-112		%	1		10/02/18 18:23

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-3**

Client Sample ID: **RSE-3**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585004
Lab Project ID: 1185585

Collection Date: 09/28/18 17:30
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 10/02/18 18:23
Container ID: 1185585004-D

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/02/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
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	1.86		0.566	0.170	mg/L	1		10/05/18 13:43
Surrogates								
5a Androstane (surr)	92.4		50-150		%	1		10/05/18 13:43

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK102
Analyst: VDL
Analytical Date/Time: 10/05/18 13:43
Container ID: 1185585005-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	0.252	J	0.472	0.142	mg/L	1		10/05/18 13:43
Surrogates								
n-Triacontane-d62 (surr)	117		50-150		%	1		10/05/18 13:43

Batch Information

Analytical Batch: XFC14680
Analytical Method: AK103
Analyst: VDL
Analytical Date/Time: 10/05/18 13:43
Container ID: 1185585005-G

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/03/18 07:54
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,2,4-Trichlorobenzene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
1,2-Dichlorobenzene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
1,3-Dichlorobenzene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
1,4-Dichlorobenzene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
1-Chloronaphthalene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
1-Methylnaphthalene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,4,5-Trichlorophenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,4,6-Trichlorophenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,4-Dichlorophenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,4-Dimethylphenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,4-Dinitrophenol	0.0266	U	0.0532	0.0160	mg/L	1		10/16/18 00:24
2,4-Dinitrotoluene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,6-Dichlorophenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2,6-Dinitrotoluene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2-Chloronaphthalene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2-Chlorophenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2-Methyl-4,6-dinitrophenol	0.0266	U	0.0532	0.0160	mg/L	1		10/16/18 00:24
2-Methylnaphthalene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2-Methylphenol (o-Cresol)	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2-Nitroaniline	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
2-Nitrophenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
3&4-Methylphenol (p&m-Cresol)	0.0107	U	0.0213	0.00660	mg/L	1		10/16/18 00:24
3,3-Dichlorobenzidine	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
3-Nitroaniline	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
4-Bromophenyl-phenylether	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
4-Chloro-3-methylphenol	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
4-Chloroaniline	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
4-Chlorophenyl-phenylether	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
4-Nitroaniline	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
4-Nitrophenol	0.0266	U	0.0532	0.0160	mg/L	1		10/16/18 00:24
Acenaphthene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
Acenaphthylene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
Aniline	0.0266	U	0.0532	0.0160	mg/L	1		10/16/18 00:24
Anthracene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
Azobenzene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
Benzo(a)Anthracene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24
Benzo[a]pyrene	0.00530	U	0.0106	0.00330	mg/L	1		10/16/18 00:24

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Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzo[b]Fluoranthene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Benzo[g,h,i]perylene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Benzo[k]fluoranthene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Benzoic acid	0.0266 U		0.0532	0.0160	mg/L	1		10/16/18 00:24
Benzyl alcohol	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Bis(2chloro1methylethyl)Ether	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Bis(2-Chloroethoxy)methane	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Bis(2-Chloroethyl)ether	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
bis(2-Ethylhexyl)phthalate	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Butylbenzylphthalate	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Carbazole	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Chrysene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Dibenzo[a,h]anthracene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Dibenzofuran	0.00266 U		0.00532	0.00160	mg/L	1		10/16/18 00:24
Diethylphthalate	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Dimethylphthalate	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Di-n-butylphthalate	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
di-n-Octylphthalate	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Fluoranthene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Fluorene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Hexachlorobenzene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Hexachlorobutadiene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Hexachlorocyclopentadiene	0.0159 U		0.0319	0.0100	mg/L	1		10/16/18 00:24
Hexachloroethane	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Indeno[1,2,3-c,d] pyrene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Isophorone	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Naphthalene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Nitrobenzene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
N-Nitrosodimethylamine	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
N-Nitroso-di-n-propylamine	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
N-Nitrosodiphenylamine	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Pentachlorophenol	0.0266 U		0.0532	0.0160	mg/L	1		10/16/18 00:24
Phenanthrene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Phenol	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Pyrene	0.00530 U		0.0106	0.00330	mg/L	1		10/16/18 00:24
Surrogates								
2,4,6-Tribromophenol (surr)	87.6		43-140		%	1		10/16/18 00:24

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J flagging is activated

Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
2-Fluorobiphenyl (surr)	72.7		44-119		%	1		10/16/18 00:24
2-Fluorophenol (surr)	46.2		19-119		%	1		10/16/18 00:24
Nitrobenzene-d5 (surr)	61.9		44-120		%	1		10/16/18 00:24
Phenol-d6 (surr)	45.5		10-115		%	1		10/16/18 00:24
Terphenyl-d14 (surr)	107		50-134		%	1		10/16/18 00:24

Batch Information

Analytical Batch: XMS11157
Analytical Method: SW8270D
Analyst: JMG
Analytical Date/Time: 10/16/18 00:24
Container ID: 1185585005-I

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/02/18 08:52
Prep Initial Wt./Vol.: 940 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		10/03/18 14:36
Surrogates								
4-Bromofluorobenzene (surr)	103		50-150		%	1		10/03/18 14:36

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 10/03/18 14:36
Container ID: 1185585005-A

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/03/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

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Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/02/18 18:39
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:39
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/02/18 18:39
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:39
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:39
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
4-Isopropyltoluene	0.340	J	1.00	0.310	ug/L	1		10/02/18 18:39
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:39
Benzene	0.200	U	0.400	0.120	ug/L	1		10/02/18 18:39
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/02/18 18:39
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/02/18 18:39
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 18:39
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 18:39

Print Date: 10/16/2018 3:48:00PM

J flagging is activated

Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Chloromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		10/02/18 18:39
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		10/02/18 18:39
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Freon-113	5.00 U		10.0	3.10	ug/L	1		10/02/18 18:39
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		10/02/18 18:39
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		10/02/18 18:39
Naphthalene	0.620 J		1.00	0.310	ug/L	1		10/02/18 18:39
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
o-Xylene	0.730 J		1.00	0.310	ug/L	1		10/02/18 18:39
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		10/02/18 18:39
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Styrene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Toluene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		10/02/18 18:39
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		10/02/18 18:39
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		10/02/18 18:39
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		10/02/18 18:39
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		10/02/18 18:39
4-Bromofluorobenzene (surr)	101		85-114		%	1		10/02/18 18:39
Toluene-d8 (surr)	99.7		89-112		%	1		10/02/18 18:39

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J flagging is activated

Results of **RSE-X**

Client Sample ID: **RSE-X**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585005
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 10/02/18 18:39
Container ID: 1185585005-D

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/02/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585006
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.0500	U	0.100	0.0310	mg/L	1		10/03/18 13:06
Surrogates								
4-Bromofluorobenzene (surr)	99.7		50-150		%	1		10/03/18 13:06

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Analyst: ACL
Analytical Date/Time: 10/03/18 13:06
Container ID: 1185585006-A

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/03/18 08:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585006
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		10/02/18 16:52
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		10/02/18 16:52
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
Benzene	0.200	U	0.400	0.120	ug/L	1		10/02/18 16:52
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
Bromoform	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Bromomethane	2.50	U	5.00	1.50	ug/L	1		10/02/18 16:52
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
Chloroethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585006
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Chloromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		10/02/18 16:52
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Freon-113	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Isopropylbenzene (Cumene)	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		10/02/18 16:52
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
Naphthalene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
n-Propylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
o-Xylene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		10/02/18 16:52
sec-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Styrene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
tert-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Toluene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		10/02/18 16:52
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		10/02/18 16:52
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		10/02/18 16:52
Xylenes (total)	1.50	U	3.00	1.00	ug/L	1		10/02/18 16:52
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		10/02/18 16:52
4-Bromofluorobenzene (surr)	103		85-114		%	1		10/02/18 16:52
Toluene-d8 (surr)	98.2		89-112		%	1		10/02/18 16:52

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Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **ARRC Hurricane CW Assessment**
Lab Sample ID: 1185585006
Lab Project ID: 1185585

Collection Date: 09/28/18 12:00
Received Date: 10/01/18 09:13
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Analyst: FDR
Analytical Date/Time: 10/02/18 16:52
Container ID: 1185585006-B

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/02/18 00:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1787152 [VXX/33251]
Blank Lab ID: 1480175

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,1-Trichloroethane	0.500U	1.00	0.310	ug/L
1,1,2,2-Tetrachloroethane	0.250U	0.500	0.150	ug/L
1,1,2-Trichloroethane	0.200U	0.400	0.120	ug/L
1,1-Dichloroethane	0.500U	1.00	0.310	ug/L
1,1-Dichloroethene	0.500U	1.00	0.310	ug/L
1,1-Dichloropropene	0.500U	1.00	0.310	ug/L
1,2,3-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,3-Trichloropropane	0.500U	1.00	0.310	ug/L
1,2,4-Trichlorobenzene	0.500U	1.00	0.310	ug/L
1,2,4-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,2-Dibromo-3-chloropropane	5.00U	10.0	3.10	ug/L
1,2-Dibromoethane	0.0375U	0.0750	0.0180	ug/L
1,2-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,2-Dichloroethane	0.250U	0.500	0.150	ug/L
1,2-Dichloropropane	0.500U	1.00	0.310	ug/L
1,3,5-Trimethylbenzene	0.500U	1.00	0.310	ug/L
1,3-Dichlorobenzene	0.500U	1.00	0.310	ug/L
1,3-Dichloropropane	0.250U	0.500	0.150	ug/L
1,4-Dichlorobenzene	0.250U	0.500	0.150	ug/L
2,2-Dichloropropane	0.500U	1.00	0.310	ug/L
2-Butanone (MEK)	5.00U	10.0	3.10	ug/L
2-Chlorotoluene	0.500U	1.00	0.310	ug/L
2-Hexanone	5.00U	10.0	3.10	ug/L
4-Chlorotoluene	0.500U	1.00	0.310	ug/L
4-Isopropyltoluene	0.500U	1.00	0.310	ug/L
4-Methyl-2-pentanone (MIBK)	5.00U	10.0	3.10	ug/L
Benzene	0.200U	0.400	0.120	ug/L
Bromobenzene	0.500U	1.00	0.310	ug/L
Bromochloromethane	0.500U	1.00	0.310	ug/L
Bromodichloromethane	0.250U	0.500	0.150	ug/L
Bromoform	0.500U	1.00	0.310	ug/L
Bromomethane	2.50U	5.00	1.50	ug/L
Carbon disulfide	5.00U	10.0	3.10	ug/L
Carbon tetrachloride	0.500U	1.00	0.310	ug/L
Chlorobenzene	0.250U	0.500	0.150	ug/L
Chloroethane	0.500U	1.00	0.310	ug/L
Chloroform	0.500U	1.00	0.310	ug/L

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Method Blank

Blank ID: MB for HBN 1787152 [VXX/33251]
Blank Lab ID: 1480175

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	0.500U	1.00	0.310	ug/L
cis-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
cis-1,3-Dichloropropene	0.250U	0.500	0.150	ug/L
Dibromochloromethane	0.250U	0.500	0.150	ug/L
Dibromomethane	0.500U	1.00	0.310	ug/L
Dichlorodifluoromethane	0.500U	1.00	0.310	ug/L
Ethylbenzene	0.500U	1.00	0.310	ug/L
Freon-113	5.00U	10.0	3.10	ug/L
Hexachlorobutadiene	0.500U	1.00	0.310	ug/L
Isopropylbenzene (Cumene)	0.500U	1.00	0.310	ug/L
Methylene chloride	2.50U	5.00	1.00	ug/L
Methyl-t-butyl ether	5.00U	10.0	3.10	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
n-Butylbenzene	0.500U	1.00	0.310	ug/L
n-Propylbenzene	0.500U	1.00	0.310	ug/L
o-Xylene	0.500U	1.00	0.310	ug/L
P & M -Xylene	1.00U	2.00	0.620	ug/L
sec-Butylbenzene	0.500U	1.00	0.310	ug/L
Styrene	0.500U	1.00	0.310	ug/L
tert-Butylbenzene	0.500U	1.00	0.310	ug/L
Tetrachloroethene	0.500U	1.00	0.310	ug/L
Toluene	0.500U	1.00	0.310	ug/L
trans-1,2-Dichloroethene	0.500U	1.00	0.310	ug/L
trans-1,3-Dichloropropene	0.500U	1.00	0.310	ug/L
Trichloroethene	0.500U	1.00	0.310	ug/L
Trichlorofluoromethane	0.500U	1.00	0.310	ug/L
Vinyl acetate	5.00U	10.0	3.10	ug/L
Vinyl chloride	0.0750U	0.150	0.0500	ug/L
Xylenes (total)	1.50U	3.00	1.00	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	103	81-118		%
4-Bromofluorobenzene (surr)	104	85-114		%
Toluene-d8 (surr)	98.6	89-112		%

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Method Blank

Blank ID: MB for HBN 1787152 [VXX/33251]
Blank Lab ID: 1480175

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS18398
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: FDR
Analytical Date/Time: 10/2/2018 12:44:00PM

Prep Batch: VXX33251
Prep Method: SW5030B
Prep Date/Time: 10/2/2018 12:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [VXX33251]
Blank Spike Lab ID: 1480176
Date Analyzed: 10/02/2018 13:27

Spike Duplicate ID: LCSD for HBN 1185585 [VXX33251]
Spike Duplicate Lab ID: 1480177
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	30	27.1	90	30	27.2	91	(78-124)	0.33	(< 20)
1,1,1-Trichloroethane	30	27.9	93	30	27.4	91	(74-131)	1.70	(< 20)
1,1,2,2-Tetrachloroethane	30	27.8	93	30	27.7	92	(71-121)	0.43	(< 20)
1,1,2-Trichloroethane	30	28.2	94	30	27.8	93	(80-119)	1.40	(< 20)
1,1-Dichloroethane	30	28.4	95	30	28.1	94	(77-125)	1.10	(< 20)
1,1-Dichloroethene	30	28.3	94	30	27.4	91	(71-131)	3.10	(< 20)
1,1-Dichloropropene	30	29.5	98	30	28.8	96	(79-125)	2.40	(< 20)
1,2,3-Trichlorobenzene	30	29.9	100	30	29.8	99	(69-129)	0.17	(< 20)
1,2,3-Trichloropropane	30	26.5	89	30	26.7	89	(73-122)	0.49	(< 20)
1,2,4-Trichlorobenzene	30	30.3	101	30	30.1	100	(69-130)	0.66	(< 20)
1,2,4-Trimethylbenzene	30	29.2	97	30	29.1	97	(79-124)	0.24	(< 20)
1,2-Dibromo-3-chloropropane	30	26.5	88	30	26.2	87	(62-128)	1.10	(< 20)
1,2-Dibromoethane	30	27.6	92	30	27.2	91	(77-121)	1.80	(< 20)
1,2-Dichlorobenzene	30	28.4	95	30	28.4	95	(80-119)	0.25	(< 20)
1,2-Dichloroethane	30	27.9	93	30	27.8	93	(73-128)	0.47	(< 20)
1,2-Dichloropropane	30	28.8	96	30	28.6	95	(78-122)	0.66	(< 20)
1,3,5-Trimethylbenzene	30	28.9	96	30	29.1	97	(75-124)	0.52	(< 20)
1,3-Dichlorobenzene	30	28.9	96	30	28.7	96	(80-119)	0.63	(< 20)
1,3-Dichloropropane	30	28.7	96	30	28.3	94	(80-119)	1.20	(< 20)
1,4-Dichlorobenzene	30	28.7	96	30	28.5	95	(79-118)	0.70	(< 20)
2,2-Dichloropropane	30	29.8	99	30	29.1	97	(60-139)	2.30	(< 20)
2-Butanone (MEK)	90	71.9	80	90	71.5	80	(56-143)	0.57	(< 20)
2-Chlorotoluene	30	29.6	99	30	29.3	98	(79-122)	1.10	(< 20)
2-Hexanone	90	76.3	85	90	75.1	84	(57-139)	1.50	(< 20)
4-Chlorotoluene	30	29.7	99	30	29.6	99	(78-122)	0.37	(< 20)
4-Isopropyltoluene	30	29.9	100	30	29.4	98	(77-127)	1.80	(< 20)
4-Methyl-2-pentanone (MIBK)	90	77.6	86	90	77.0	86	(67-130)	0.87	(< 20)
Benzene	30	28.4	95	30	28.1	94	(79-120)	0.99	(< 20)
Bromobenzene	30	28.2	94	30	28.2	94	(80-120)	0.07	(< 20)
Bromochloromethane	30	26.6	89	30	26.1	87	(78-123)	1.60	(< 20)
Bromodichloromethane	30	28.0	93	30	28.0	93	(79-125)	0.00	(< 20)
Bromoform	30	25.9	86	30	25.4	85	(66-130)	1.90	(< 20)
Bromomethane	30	38.1	127	30	32.7	109	(53-141)	15.30	(< 20)
Carbon disulfide	45	42.4	94	45	41.1	91	(64-133)	3.20	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [VXX33251]
Blank Spike Lab ID: 1480176
Date Analyzed: 10/02/2018 13:27

Spike Duplicate ID: LCSD for HBN 1185585 [VXX33251]
Spike Duplicate Lab ID: 1480177
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Carbon tetrachloride	30	27.7	92	30	27.2	91	(72-136)	1.90	(< 20)
Chlorobenzene	30	27.0	90	30	26.7	89	(82-118)	1.20	(< 20)
Chloroethane	30	27.0	90	30	26.9	90	(60-138)	0.26	(< 20)
Chloroform	30	27.5	92	30	27.3	91	(79-124)	0.77	(< 20)
Chloromethane	30	27.8	93	30	26.7	89	(50-139)	4.00	(< 20)
cis-1,2-Dichloroethene	30	27.4	91	30	27.4	91	(78-123)	0.15	(< 20)
cis-1,3-Dichloropropene	30	28.1	94	30	27.9	93	(75-124)	0.82	(< 20)
Dibromochloromethane	30	27.6	92	30	27.2	91	(74-126)	1.40	(< 20)
Dibromomethane	30	27.2	91	30	27.0	90	(79-123)	0.77	(< 20)
Dichlorodifluoromethane	30	25.0	83	30	24.1	80	(32-152)	3.90	(< 20)
Ethylbenzene	30	28.6	95	30	28.6	95	(79-121)	0.00	(< 20)
Freon-113	45	44.3	98	45	43.0	96	(70-136)	2.90	(< 20)
Hexachlorobutadiene	30	30.9	103	30	29.4	98	(66-134)	5.00	(< 20)
Isopropylbenzene (Cumene)	30	29.1	97	30	28.5	95	(72-131)	1.90	(< 20)
Methylene chloride	30	29.2	97	30	29.1	97	(74-124)	0.14	(< 20)
Methyl-t-butyl ether	45	40.1	89	45	40.2	89	(71-124)	0.20	(< 20)
Naphthalene	30	30.8	103	30	30.7	102	(61-128)	0.52	(< 20)
n-Butylbenzene	30	32.4	108	30	31.6	105	(75-128)	2.50	(< 20)
n-Propylbenzene	30	30.6	102	30	30.5	102	(76-126)	0.59	(< 20)
o-Xylene	30	27.9	93	30	27.8	93	(78-122)	0.43	(< 20)
P & M -Xylene	60	58.1	97	60	56.6	94	(80-121)	2.60	(< 20)
sec-Butylbenzene	30	30.2	101	30	30.2	101	(77-126)	0.26	(< 20)
Styrene	30	28.4	95	30	28.0	93	(78-123)	1.30	(< 20)
tert-Butylbenzene	30	29.3	98	30	28.9	96	(78-124)	1.40	(< 20)
Tetrachloroethene	30	28.9	96	30	28.0	93	(74-129)	3.00	(< 20)
Toluene	30	27.6	92	30	27.3	91	(80-121)	0.84	(< 20)
trans-1,2-Dichloroethene	30	28.0	93	30	27.4	92	(75-124)	2.10	(< 20)
trans-1,3-Dichloropropene	30	28.0	93	30	27.6	92	(73-127)	1.50	(< 20)
Trichloroethene	30	28.6	95	30	28.3	94	(79-123)	1.10	(< 20)
Trichlorofluoromethane	30	28.4	95	30	27.7	92	(65-141)	2.30	(< 20)
Vinyl acetate	30	30.1	100	30	29.8	100	(54-146)	0.80	(< 20)
Vinyl chloride	30	28.8	96	30	27.6	92	(58-137)	4.20	(< 20)
Xylenes (total)	90	86.0	96	90	84.4	94	(79-121)	1.90	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [VXX33251]
Blank Spike Lab ID: 1480176
Date Analyzed: 10/02/2018 13:27

Spike Duplicate ID: LCSD for HBN 1185585 [VXX33251]
Spike Duplicate Lab ID: 1480177
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **SW8260C**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	96.5	97	30	95.9	96	(81-118)	0.69	
4-Bromofluorobenzene (surr)	30	101	101	30	101	101	(85-114)	0.36	
Toluene-d8 (surr)	30	99.9	100	30	99.3	99	(89-112)	0.67	

Batch Information

Analytical Batch: **VMS18398**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **FDR**

Prep Batch: **VXX33251**
Prep Method: **SW5030B**
Prep Date/Time: **10/02/2018 00:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1787221 [VXX/33260]
Blank Lab ID: 1480487

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **AK101**

Parameter	Results	LOQ/CL	DL	Units
Gasoline Range Organics	0.0500U	0.100	0.0310	mg/L
Surrogates				
4-Bromofluorobenzene (surr)	102	50-150		%

Batch Information

Analytical Batch: VFC14473
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ACL
Analytical Date/Time: 10/3/2018 12:12:00PM

Prep Batch: VXX33260
Prep Method: SW5030B
Prep Date/Time: 10/3/2018 8:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [VXX33260]
Blank Spike Lab ID: 1480488
Date Analyzed: 10/03/2018 12:48

Spike Duplicate ID: LCSD for HBN 1185585 [VXX33260]
Spike Duplicate Lab ID: 1480489
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005, 1185585006

Results by **AK101**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Gasoline Range Organics	1.00	1.09	109	1.00	1.12	112	(60-120)	2.50	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	0.0500	111	111	0.0500	111	111	(50-150)	0.38	

Batch Information

Analytical Batch: **VFC14473**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ACL**

Prep Batch: **VXX33260**
Prep Method: **SW5030B**
Prep Date/Time: **10/03/2018 08:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1787069 [XXX/40635]
Blank Lab ID: 1479792

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **SW8270D**

Parameter	Results	LOQ/CL	DL	Units
1,2,4-Trichlorobenzene	0.00500U	0.0100	0.00310	mg/L
1,2-Dichlorobenzene	0.00500U	0.0100	0.00310	mg/L
1,3-Dichlorobenzene	0.00500U	0.0100	0.00310	mg/L
1,4-Dichlorobenzene	0.00500U	0.0100	0.00310	mg/L
1-Chloronaphthalene	0.00500U	0.0100	0.00310	mg/L
1-Methylnaphthalene	0.00500U	0.0100	0.00310	mg/L
2,4,5-Trichlorophenol	0.00500U	0.0100	0.00310	mg/L
2,4,6-Trichlorophenol	0.00500U	0.0100	0.00310	mg/L
2,4-Dichlorophenol	0.00500U	0.0100	0.00310	mg/L
2,4-Dimethylphenol	0.00500U	0.0100	0.00310	mg/L
2,4-Dinitrophenol	0.0250U	0.0500	0.0150	mg/L
2,4-Dinitrotoluene	0.00500U	0.0100	0.00310	mg/L
2,6-Dichlorophenol	0.00500U	0.0100	0.00310	mg/L
2,6-Dinitrotoluene	0.00500U	0.0100	0.00310	mg/L
2-Chloronaphthalene	0.00500U	0.0100	0.00310	mg/L
2-Chlorophenol	0.00500U	0.0100	0.00310	mg/L
2-Methyl-4,6-dinitrophenol	0.0250U	0.0500	0.0150	mg/L
2-Methylnaphthalene	0.00500U	0.0100	0.00310	mg/L
2-Methylphenol (o-Cresol)	0.00500U	0.0100	0.00310	mg/L
2-Nitroaniline	0.00500U	0.0100	0.00310	mg/L
2-Nitrophenol	0.00500U	0.0100	0.00310	mg/L
3&4-Methylphenol (p&m-Cresol)	0.0100U	0.0200	0.00620	mg/L
3,3-Dichlorobenzidine	0.00500U	0.0100	0.00310	mg/L
3-Nitroaniline	0.00500U	0.0100	0.00310	mg/L
4-Bromophenyl-phenylether	0.00500U	0.0100	0.00310	mg/L
4-Chloro-3-methylphenol	0.00500U	0.0100	0.00310	mg/L
4-Chloroaniline	0.00500U	0.0100	0.00310	mg/L
4-Chlorophenyl-phenylether	0.00500U	0.0100	0.00310	mg/L
4-Nitroaniline	0.00500U	0.0100	0.00310	mg/L
4-Nitrophenol	0.0250U	0.0500	0.0150	mg/L
Acenaphthene	0.00500U	0.0100	0.00310	mg/L
Acenaphthylene	0.00500U	0.0100	0.00310	mg/L
Aniline	0.0250U	0.0500	0.0150	mg/L
Anthracene	0.00500U	0.0100	0.00310	mg/L
Azobenzene	0.00500U	0.0100	0.00310	mg/L
Benzo(a)Anthracene	0.00500U	0.0100	0.00310	mg/L
Benzo[a]pyrene	0.00500U	0.0100	0.00310	mg/L
Benzo[b]Fluoranthene	0.00500U	0.0100	0.00310	mg/L

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Method Blank

Blank ID: MB for HBN 1787069 [XXX/40635]
Blank Lab ID: 1479792

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **SW8270D**

Parameter	Results	LOQ/CL	DL	Units
Benzo[g,h,i]perylene	0.00500U	0.0100	0.00310	mg/L
Benzo[k]fluoranthene	0.00500U	0.0100	0.00310	mg/L
Benzoic acid	0.0250U	0.0500	0.0150	mg/L
Benzyl alcohol	0.00500U	0.0100	0.00310	mg/L
Bis(2chloro1methylethyl)Ether	0.00500U	0.0100	0.00310	mg/L
Bis(2-Chloroethoxy)methane	0.00500U	0.0100	0.00310	mg/L
Bis(2-Chloroethyl)ether	0.00500U	0.0100	0.00310	mg/L
bis(2-Ethylhexyl)phthalate	0.00500U	0.0100	0.00310	mg/L
Butylbenzylphthalate	0.00500U	0.0100	0.00310	mg/L
Carbazole	0.00500U	0.0100	0.00310	mg/L
Chrysene	0.00500U	0.0100	0.00310	mg/L
Dibenzo[a,h]anthracene	0.00500U	0.0100	0.00310	mg/L
Dibenzofuran	0.00250U	0.00500	0.00150	mg/L
Diethylphthalate	0.00500U	0.0100	0.00310	mg/L
Dimethylphthalate	0.00500U	0.0100	0.00310	mg/L
Di-n-butylphthalate	0.00500U	0.0100	0.00310	mg/L
di-n-Octylphthalate	0.00500U	0.0100	0.00310	mg/L
Fluoranthene	0.00500U	0.0100	0.00310	mg/L
Fluorene	0.00500U	0.0100	0.00310	mg/L
Hexachlorobenzene	0.00500U	0.0100	0.00310	mg/L
Hexachlorobutadiene	0.00500U	0.0100	0.00310	mg/L
Hexachlorocyclopentadiene	0.0150U	0.0300	0.00940	mg/L
Hexachloroethane	0.00500U	0.0100	0.00310	mg/L
Indeno[1,2,3-c,d] pyrene	0.00500U	0.0100	0.00310	mg/L
Isophorone	0.00500U	0.0100	0.00310	mg/L
Naphthalene	0.00500U	0.0100	0.00310	mg/L
Nitrobenzene	0.00500U	0.0100	0.00310	mg/L
N-Nitrosodimethylamine	0.00500U	0.0100	0.00310	mg/L
N-Nitroso-di-n-propylamine	0.00500U	0.0100	0.00310	mg/L
N-Nitrosodiphenylamine	0.00500U	0.0100	0.00310	mg/L
Pentachlorophenol	0.0250U	0.0500	0.0150	mg/L
Phenanthrene	0.00500U	0.0100	0.00310	mg/L
Phenol	0.00500U	0.0100	0.00310	mg/L
Pyrene	0.00500U	0.0100	0.00310	mg/L
Surrogates				
2,4,6-Tribromophenol (surr)	87.6	43-140		%
2-Fluorobiphenyl (surr)	78.2	44-119		%
2-Fluorophenol (surr)	63.9	19-119		%

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Method Blank

Blank ID: MB for HBN 1787069 [XXX/40635]
Blank Lab ID: 1479792

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **SW8270D**

Parameter	Results	LOQ/CL	DL	Units
Nitrobenzene-d5 (surr)	70	44-120		%
Phenol-d6 (surr)	65	10-115		%
Terphenyl-d14 (surr)	98.8	50-134		%

Batch Information

Analytical Batch: XMS11152
Analytical Method: SW8270D
Instrument: HP 6890/5973 SSA
Analyst: JMG
Analytical Date/Time: 10/14/2018 5:56:00PM

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/2/2018 8:52:02AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11157
Analytical Method: SW8270D
Instrument: HP 6890/5973 SSA
Analyst: JMG
Analytical Date/Time: 10/15/2018 4:39:00PM

Prep Batch: XXX40635
Prep Method: SW3520C
Prep Date/Time: 10/2/2018 8:52:02AM
Prep Initial Wt./Vol.: 1000 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [XXX40635]
Blank Spike Lab ID: 1479793
Date Analyzed: 10/14/2018 19:19

Spike Duplicate ID: LCSD for HBN 1185585 [XXX40635]
Spike Duplicate Lab ID: 1479794
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **SW8270D**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2,4-Trichlorobenzene	0.1	0.0560	56	0.1	0.0540	54	(29-116)	3.70	(< 20)
1,2-Dichlorobenzene	0.1	0.0505	51	0.1	0.0489	49	(32-111)	3.30	(< 20)
1,3-Dichlorobenzene	0.1	0.0502	50	0.1	0.0486	49	(28-110)	3.30	(< 20)
1,4-Dichlorobenzene	0.1	0.0504	50	0.1	0.0490	49	(29-112)	2.90	(< 20)
1-Chloronaphthalene	0.04	0.0325	81	0.04	0.0306	76	(58-111)	6.20	(< 20)
1-Methylnaphthalene	0.1	0.0645	65	0.1	0.0612	61	(41-119)	5.20	(< 20)
2,4,5-Trichlorophenol	0.1	0.0696	70	0.1	0.0666	67	(53-123)	4.50	(< 20)
2,4,6-Trichlorophenol	0.1	0.0697	70	0.1	0.0657	66	(50-125)	5.80	(< 20)
2,4-Dichlorophenol	0.1	0.0611	61	0.1	0.0563	56	(47-121)	8.20	(< 20)
2,4-Dimethylphenol	0.1	0.0567	57	0.1	0.0478	48	(31-124)	17.00	(< 20)
2,4-Dinitrophenol	0.18	0.147	82	0.18	0.134	74	(23-143)	9.90	(< 20)
2,4-Dinitrotoluene	0.1	0.0657	66	0.1	0.0645	65	(57-128)	1.90	(< 20)
2,6-Dichlorophenol	0.04	0.0245	61	0.04	0.0230	57	(50-118)	6.60	(< 20)
2,6-Dinitrotoluene	0.1	0.0649	65	0.1	0.0632	63	(57-124)	2.60	(< 20)
2-Chloronaphthalene	0.1	0.0613	61	0.1	0.0582	58	(40-116)	5.10	(< 20)
2-Chlorophenol	0.1	0.0545	55	0.1	0.0497	50	(38-117)	9.20	(< 20)
2-Methyl-4,6-dinitrophenol	0.18	0.136	76	0.18	0.136	76	(44-137)	0.13	(< 20)
2-Methylnaphthalene	0.1	0.0574	57	0.1	0.0548	55	(40-121)	4.70	(< 20)
2-Methylphenol (o-Cresol)	0.1	0.0538	54	0.1	0.0477	48	(30-117)	12.10	(< 20)
2-Nitroaniline	0.1	0.0766	77	0.1	0.0714	71	(55-117)	7.00	(< 20)
2-Nitrophenol	0.1	0.0651	65	0.1	0.0613	61	(47-123)	5.90	(< 20)
3&4-Methylphenol (p&m-Cresol)	0.14	0.0823	59	0.14	0.0732	52	(29-110)	11.70	(< 20)
3,3-Dichlorobenzidine	0.1	0.0540	54	0.1	0.0637	64	(27-129)	16.40	(< 20)
3-Nitroaniline	0.1	0.0695	70	0.1	0.0619	62	(41-128)	11.50	(< 20)
4-Bromophenyl-phenylether	0.1	0.0828	83	0.1	0.0810	81	(55-124)	2.10	(< 20)
4-Chloro-3-methylphenol	0.1	0.0618	62	0.1	0.0555	56	(52-119)	10.70	(< 20)
4-Chloroaniline	0.1	0.0476	48	0.1	0.0425	43	(33-117)	11.30	(< 20)
4-Chlorophenyl-phenylether	0.1	0.0734	73	0.1	0.0702	70	(53-121)	4.50	(< 20)
4-Nitroaniline	0.1	0.0690	69	0.1	0.0626	63	(55-105)	9.80	(< 20)
Acenaphthene	0.1	0.0754	75	0.1	0.0721	72	(47-122)	4.50	(< 20)
Acenaphthylene	0.1	0.0760	76	0.1	0.0732	73	(41-130)	3.90	(< 20)
Aniline	0.1	0.0259J	26	0.1	0.0205J	21	(10-87)	23.40	* (< 20)
Anthracene	0.1	0.0790	79	0.1	0.0781	78	(57-123)	1.20	(< 20)
Azobenzene	0.1	0.0834	83	0.1	0.0836	84	(61-116)	0.26	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [XXX40635]
Blank Spike Lab ID: 1479793
Date Analyzed: 10/14/2018 19:19

Spike Duplicate ID: LCSD for HBN 1185585 [XXX40635]
Spike Duplicate Lab ID: 1479794
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **SW8270D**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzo(a)Anthracene	0.1	0.0811	81	0.1	0.0811	81	(58-125)	0.10	(< 20)
Benzo[a]pyrene	0.1	0.0797	80	0.1	0.0792	79	(54-128)	0.60	(< 20)
Benzo[b]Fluoranthene	0.1	0.0857	86	0.1	0.0861	86	(53-131)	0.38	(< 20)
Benzo[g,h,i]perylene	0.1	0.0805	81	0.1	0.0832	83	(50-134)	3.30	(< 20)
Benzo[k]fluoranthene	0.1	0.0867	87	0.1	0.0845	85	(57-129)	2.50	(< 20)
Benzoic acid	0.14	0.0687	49	0.14	0.0556	40	(21-107)	21.10 *	(< 20)
Benzyl alcohol	0.1	0.0510	51	0.1	0.0443	44	(31-112)	14.20	(< 20)
Bis(2chloro1methylethyl)Ether	0.1	0.0573	57	0.1	0.0556	56	(37-130)	3.10	(< 20)
Bis(2-Chloroethoxy)methane	0.1	0.0645	65	0.1	0.0586	59	(48-120)	9.60	(< 20)
Bis(2-Chloroethyl)ether	0.1	0.0547	55	0.1	0.0506	51	(43-118)	7.70	(< 20)
bis(2-Ethylhexyl)phthalate	0.1	0.0884	88	0.1	0.0889	89	(55-135)	0.58	(< 20)
Butylbenzylphthalate	0.1	0.0898	90	0.1	0.0929	93	(53-134)	3.40	(< 20)
Carbazole	0.1	0.0780	78	0.1	0.0787	79	(60-122)	0.82	(< 20)
Chrysene	0.1	0.0836	84	0.1	0.0822	82	(59-123)	1.80	(< 20)
Dibenzo[a,h]anthracene	0.1	0.0861	86	0.1	0.0881	88	(51-134)	2.30	(< 20)
Dibenzofuran	0.1	0.0638	64	0.1	0.0616	62	(53-118)	3.40	(< 20)
Diethylphthalate	0.1	0.0674	67	0.1	0.0695	70	(56-125)	3.00	(< 20)
Dimethylphthalate	0.1	0.0700	70	0.1	0.0694	69	(45-127)	0.82	(< 20)
Di-n-butylphthalate	0.1	0.0823	82	0.1	0.0820	82	(59-127)	0.40	(< 20)
di-n-Octylphthalate	0.1	0.0843	84	0.1	0.0825	83	(51-140)	2.10	(< 20)
Fluoranthene	0.1	0.0752	75	0.1	0.0746	75	(57-128)	0.85	(< 20)
Fluorene	0.1	0.0741	74	0.1	0.0716	72	(52-124)	3.40	(< 20)
Hexachlorobenzene	0.1	0.0696	70	0.1	0.0676	68	(53-125)	3.00	(< 20)
Hexachlorobutadiene	0.1	0.0634	63	0.1	0.0599	60	(22-124)	5.60	(< 20)
Hexachlorocyclopentadiene	0.1	0.0359	36	0.1	0.0358	36	(10-93)	0.25	(< 20)
Hexachloroethane	0.1	0.0505	51	0.1	0.0485	49	(21-115)	4.10	(< 20)
Indeno[1,2,3-c,d] pyrene	0.1	0.0823	82	0.1	0.0843	84	(52-134)	2.40	(< 20)
Isophorone	0.1	0.0604	60	0.1	0.0562	56	(42-124)	7.20	(< 20)
Naphthalene	0.1	0.0645	65	0.1	0.0618	62	(40-121)	4.30	(< 20)
Nitrobenzene	0.1	0.0584	58	0.1	0.0549	55	(45-121)	6.20	(< 20)
N-Nitrosodimethylamine	0.1	0.0486	49	0.1	0.0412	41	(41-117)	16.40	(< 20)
N-Nitroso-di-n-propylamine	0.1	0.0673	67	0.1	0.0634	63	(49-119)	6.10	(< 20)
N-Nitrosodiphenylamine	0.1	0.0663	66	0.1	0.0685	69	(51-123)	3.30	(< 20)
Pentachlorophenol	0.14	0.106	76	0.14	0.110	79	(35-138)	4.50	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [XXX40635]
Blank Spike Lab ID: 1479793
Date Analyzed: 10/14/2018 19:19

Spike Duplicate ID: LCSD for HBN 1185585 [XXX40635]
Spike Duplicate Lab ID: 1479794
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **SW8270D**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Phenanthrene	0.1	0.0807	81	0.1	0.0797	80	(59-120)	1.20	(< 20)
Phenol	0.1	0.0451	45	0.1	0.0391	39	(39-84)	14.20	(< 20)
Pyrene	0.1	0.0892	89	0.1	0.0915	92	(57-126)	2.50	(< 20)
4-Nitrophenol	0.14	0.0830	59	0.14	0.0773	55	(52-111)	7.20	(< 20)
Surrogates									
2,4,6-Tribromophenol (surr)	0.2	102	102	0.2	99.2	99	(43-140)	2.50	
2-Fluorobiphenyl (surr)	0.1	84.9	85	0.1	80.8	81	(44-119)	5.00	
2-Fluorophenol (surr)	0.2	65.5	66	0.2	60.7	61	(19-119)	7.70	
Nitrobenzene-d5 (surr)	0.1	78.5	79	0.1	72.1	72	(44-120)	8.50	
Phenol-d6 (surr)	0.2	65.3	65	0.2	58.9	59	(10-115)	10.30	
Terphenyl-d14 (surr)	0.1	108	108	0.1	111	111	(50-134)	2.60	

Batch Information

Analytical Batch: **XMS11152**
Analytical Method: **SW8270D**
Instrument: **HP 6890/5973 SSA**
Analyst: **JMG**

Prep Batch: **XXX40635**
Prep Method: **SW3520C**
Prep Date/Time: **10/02/2018 08:52**
Spike Init Wt./Vol.: 0.1 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.1 mg/L Extract Vol: 1 mL

Analytical Batch: **XMS11157**
Analytical Method: **SW8270D**
Instrument: **HP 6890/5973 SSA**
Analyst: **JMG**

Prep Batch: **XXX40635**
Prep Method: **SW3520C**
Prep Date/Time: **10/02/2018 08:52**
Spike Init Wt./Vol.: 0.14 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 0.14 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1787147 [XXX/40641]
Blank Lab ID: 1480159

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.300U	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	104	60-120		%

Batch Information

Analytical Batch: XFC14678
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: VDL
Analytical Date/Time: 10/4/2018 2:13:00PM

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/3/2018 7:54:21AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/16/2018 3:48:16PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [XXX40641]
Blank Spike Lab ID: 1480160
Date Analyzed: 10/04/2018 14:23

Spike Duplicate ID: LCSD for HBN 1185585 [XXX40641]
Spike Duplicate Lab ID: 1480161
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **AK102**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Diesel Range Organics	20	21.9	110	20	21.5	107	(75-125)	1.90	(< 20)
Surrogates									
5a Androstane (surr)	0.4	111	111	0.4	116	116	(60-120)	4.50	

Batch Information

Analytical Batch: **XFC14678**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **VDL**

Prep Batch: **XXX40641**
Prep Method: **SW3520C**
Prep Date/Time: **10/03/2018 07:54**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1787147 [XXX/40641]
Blank Lab ID: 1480159

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **AK103**

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	0.250U	0.500	0.150	mg/L
Surrogates				
n-Triacontane-d62 (surr)	123*	60-120		%

Batch Information

Analytical Batch: XFC14678
Analytical Method: AK103
Instrument: Agilent 7890B R
Analyst: VDL
Analytical Date/Time: 10/4/2018 2:13:00PM

Prep Batch: XXX40641
Prep Method: SW3520C
Prep Date/Time: 10/3/2018 7:54:21AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1185585 [XXX40641]
Blank Spike Lab ID: 1480160
Date Analyzed: 10/04/2018 14:23

Spike Duplicate ID: LCSD for HBN 1185585 [XXX40641]
Spike Duplicate Lab ID: 1480161
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1185585001, 1185585002, 1185585003, 1185585004, 1185585005

Results by **AK103**

	Blank Spike (mg/L)			Spike Duplicate (mg/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Residual Range Organics	20	21.2	106	20	21.4	107	(60-120)	0.61	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	0.4	116	116	0.4	126	126	* (60-120)	8.00	

Batch Information

Analytical Batch: **XFC14678**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **VDL**

Prep Batch: **XXX40641**
Prep Method: **SW3520C**
Prep Date/Time: **10/03/2018 07:54**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL

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SGS North America Inc.
CHAIN OF CUSTODY RECORD

1185585

Locations Nationwide

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

www.us.sgs.com

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

Page 1 of 1

Section 1

CLIENT: RESTORATION SCIENCE & ENGINEERING, LLC

CONTACT: LUCAS GAMBLE PHONE NO: 907-278-1023

PROJECT NAME: ARRC HURRICANE CW ASSESSMENT PROJECT/ PWSID/ PERMIT#:

REPORTS TO: RSE E-MAIL: LGAMBLE@RESTORSCI.COM

INVOICE TO: ARRC QUOTE #: P.O. #:

Section 3

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Type C = COMP G = GRAB MI = Multi Incre-mental Soils	Preservative: HCl — 8021/8015 DRO/RRO	Preservative: HCl — GRO AK101	Preservative: HCl — VOC 8260	Preservative: / — SVOC 8270	REMARKS/ LOC ID
(1) A-J	RSE-1	09/28/18	14:52	H2O	10	G	X	X	X	X	
(2) A-J	RSE-2	09/28/18	15:25		10	G	X	X	X	X	
(3) A-J	RSE-4	09/28/18	16:00		10	G	X	X	X	X	
(4) A-J	RSE-3	09/29/18	17:30		10	G	X	X	X	X	
(5) A-J	RSE-X	09/29/18	12:00	H2O	10	G	X	X	X	X	
(6) A-C											

Section 5

	Date	Time	Received By:
Relinquished By: (1)	10/1/18	9:30am	
Relinquished By: (2)			
Relinquished By: (3)			
Relinquished By: (4)	10/1/18	9:13	JKV

Section 4

DOD Project? Yes No

Cooler ID:

Data Deliverable Requirements:

Requested Turnaround Time and/or Special Instructions:

Temp Blank °C: 4.0°C D36

or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

HD

[ ] 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
[ ] 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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

e-Sample Receipt Form

SGS Workorder #: **1185585**

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		YES Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	ABSENT
COC accompanied samples?	YES	
N/A **Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required		
Temperature blank compliant* (i.e., 0-6 °C after CF)?	YES	Cooler ID: 1 @ 4.0 °C Therm. ID: D36
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
	N/A	Cooler ID: @ °C Therm. ID:
If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	N/A	
If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled".		
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	YES	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	YES	
**Note: If times differ <1hr, record details & login per COC.		
Were analyses requested unambiguous? (i.e., method is specified for analyses with >1 option for analysis)	YES	
	N/A	***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	YES	
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	YES	**Only one set of VOA vials arrived for the trip blank. Logged in with one container for GRO and two containers for VOC.**
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	YES	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

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

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition
1185585001-A	HCL to pH < 2	OK
1185585001-B	HCL to pH < 2	OK
1185585001-C	HCL to pH < 2	OK
1185585001-D	HCL to pH < 2	OK
1185585001-E	HCL to pH < 2	OK
1185585001-F	HCL to pH < 2	OK
1185585001-G	HCL to pH < 2	OK
1185585001-H	HCL to pH < 2	OK
1185585001-I	No Preservative Required	OK
1185585001-J	No Preservative Required	OK
1185585002-A	HCL to pH < 2	OK
1185585002-B	HCL to pH < 2	OK
1185585002-C	HCL to pH < 2	OK
1185585002-D	HCL to pH < 2	OK
1185585002-E	HCL to pH < 2	OK
1185585002-F	HCL to pH < 2	OK
1185585002-G	HCL to pH < 2	OK
1185585002-H	HCL to pH < 2	OK
1185585002-I	No Preservative Required	OK
1185585002-J	No Preservative Required	OK
1185585003-A	HCL to pH < 2	OK
1185585003-B	HCL to pH < 2	OK
1185585003-C	HCL to pH < 2	OK
1185585003-D	HCL to pH < 2	OK
1185585003-E	HCL to pH < 2	OK
1185585003-F	HCL to pH < 2	OK
1185585003-G	HCL to pH < 2	OK
1185585003-H	HCL to pH < 2	OK
1185585003-I	No Preservative Required	OK
1185585003-J	No Preservative Required	OK
1185585004-A	HCL to pH < 2	OK
1185585004-B	HCL to pH < 2	OK
1185585004-C	HCL to pH < 2	OK
1185585004-D	HCL to pH < 2	OK
1185585004-E	HCL to pH < 2	OK
1185585004-F	HCL to pH < 2	OK
1185585004-G	HCL to pH < 2	OK
1185585004-H	HCL to pH < 2	OK
1185585004-I	No Preservative Required	OK
1185585004-J	No Preservative Required	OK
1185585005-A	HCL to pH < 2	OK
1185585005-B	HCL to pH < 2	OK
1185585005-C	HCL to pH < 2	OK
1185585005-D	HCL to pH < 2	OK
1185585005-E	HCL to pH < 2	OK
1185585005-F	HCL to pH < 2	OK
1185585005-G	HCL to pH < 2	OK
1185585005-H	HCL to pH < 2	OK
1185585005-I	No Preservative Required	OK
1185585005-J	No Preservative Required	OK
1185585006-A	HCL to pH < 2	OK
1185585006-B	HCL to pH < 2	OK
1185585006-C	HCL to pH < 2	OK

Container Id	Preservative	Container Condition	Container Id	Preservative	Container Condition

Container Condition Glossary

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

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

Laboratory Data Review Checklist

Completed By:

Lisa Koeneman

Title:

Environmental Scientist

Date:

12/14/2018

CS Report Name:

Letter Report for Groundwater Sampling and Elevation Survey at ARRC MP 284.2 Hurricane Section, Alaska ADEC File # 2258.26.008

Report Date:

December 2018

Consultant Firm:

Restoration Science & Engineering, LLC

Laboratory Name:

SGS North America

Laboratory Report Number:

1185585

ADEC File Number:

2258.26.008

Hazard Identification Number:

1185585

1. Laboratory

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

   (•) Yes ( ) No Comments:

   All samples received and analyzed at ADEC approved laboratory SGS North America Inc.

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

   (•) Yes ( ) No Comments:

   Samples were not transferred.

2. Chain of Custody (CoC)

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

   (•) Yes ( ) No Comments:

   CoC completed, signed, and dated.

   b. Correct Analyses requested?

   (•) Yes ( ) No Comments:

   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 Comments:

   Cooler was delivered at 4.0 degrees C.

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

   (•) Yes ( ) No Comments:

   All samples preserved appropriately

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

   (•) Yes ( ) No Comments:

   No samples damaged, broken, or leaking..

   d. Data quality or usability affected?

   Comments:

   Data quality and usability not affected.

1185585

4. Case Narrative

a. Present and understandable?

(•) Yes ( ) No Comments:

Case narrative is present and understandable.

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

(•) Yes ( ) No Comments:

Recoveries for a couple anayltes were outside of lab limits.

c. Were all corrective actions documented?

(•) Yes ( ) No Comments:

Sample was re-extracted outside of hold time, but in hold time data was reported.

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

Comments:

Data quality and usability are not affected.

5. Samples Results

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

(•) Yes ( ) No Comments:

All analyses requested were performed.

b. All applicable holding times met?

(•) Yes ( ) No Comments:

All samples were delivered within appropriate holding times

c. All soils reported on a dry weight basis?

(•) Yes ( ) No Comments:

Samples are water.

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

( ) Yes (•) No Comments:

A few LOQs are above the detection limit.

e. Data quality or usability affected?

○ Yes ◉ No Comments:

Data quality and usability are not affected.

6. QC Samples

a. Method Blank

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

◉ Yes ○ No Comments:

One method blank is reported.

ii. All method blank results less than limit of quantitation (LOQ)?

◉ Yes ○ No Comments:

All method blank results are less than the LOQ.

iii. If above LOQ, 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 Comments:

No data flags are present.

v. Data quality or usability affected?

Comments:

The data quality and usability are not 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 Comments:

One LCS analysis reported

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

○ Yes ◉ No Comments:

No metals or inorganics analyzed

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

(•) Yes ( ) No Comments:

Some percent recoveries are outside of lab limits.

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

(•) Yes ( ) No Comments:

Some RPDs are outside of 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 Comments:

No samples are affected.

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

Comments:

Data quality and usability were not affected.

c. Surrogates – Organics Only

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

(•) Yes ( ) No Comments:

All surrogate recoveries were reported.

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

(•) Yes ( ) No Comments:

All percent recoveries for surrogates were reported and within methods or laboratory limits.

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

(•) Yes ( ) No Comments:

Surrogate flag clearly are defined.

iv. Data quality or usability affected?

Comments:

Data quality and usability not affected.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

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

(•) Yes ( ) No Comments:

Trip blank was delivered with each 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 Comments:

The cooler is clearly indicated on the COC.

iii. All results less than LOQ?

(•) Yes ( ) No Comments:

All results less than LOQ.

iv. If above LOQ, what samples are affected?

Comments:

No samples were affected.

v. Data quality or usability affected?

Comments:

Data quality and usability not affected.

e. Field Duplicate

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

(•) Yes ( ) No Comments:

One blind duplicate was submitted for four samples.

ii. Submitted blind to lab?

(•) Yes ( ) No Comments:

One blind duplicate was submitted to laboratory.

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

( ) Yes (•) No Comments:

Some RPDs are outside of lab limits.

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

Comments:

Data quality or usability were not affected.

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

( ) Yes ( ) No (•) Not Applicable

No equipment blank submitted.

i. All results less than LOQ?

( ) Yes (•) No Comments:

N/A

ii. If above LOQ, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected?

Comments:

N/A

1185585

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

   a. Defined and appropriate?

   (•) Yes ( ) No Comments:

Rec (%) and RPD's out of range for several analytes in the matrix spike and marked with an asterisk. Data quality and usability not affected.

Attachment E: Scanned Field Notes

RESTORATION
Science & Engineering, LLC

9/28/19 ARRC HURRICANE GW

12:00 ARRIVE ON-SITE, LOCATE ALL FOUR WELLS & CLEAR GRAVEL FROM RSE-3 TO ACCESS WELL BELOW BROKEN PVC.

50 °F, LIGHT WIND, PARTLY CLOUDY

DTW PRIOR TO PURGE

RSE-1	4.16	x 3	BELOW MP ON TOC
RSE-2	4.26	x 3	
RSE-4	1.56	x 3	
RSE-3	3.39	x 3	~~MP MARKED AT TOP CUT FROM HIGHEST POINT OF~~ PVC

RSE-1 TARGET PURGE 3 GALLONS

GAL	°C	COND	SP. COND	DO %	DO mg/L	PH	ORP
1	7.96	0.073	47	21.6	2.5	5.39	278.0
2	7.55	0.046	31	46.1	5.25	5.45	255.6
3	7.53	0.046	31	50.6	5.39	5.52	250.8
4	7.46	0.050	34	21.6	2.39	5.44	246.2

DTW POST PURGE & SAMPLING - DID NOT COLLECT

SAMPLED RSE-1 AT 14:52

NO SHEEN, NO ODOR

RSE-2 TARGET PURGE 3 GALLONS

GAL	°C	COND	SP COND	DO %	DO mg/L	PH	ORP
1	7.13	0.138	90	54.9	6.66	6.04	254
2	7.14	0.115	76	55.3	6.70	5.92	239.1
3	7.13	0.112	74	57.4	6.97	5.91	241.0

DTW POST PURGE & SAMPLING N/A

SAMPLED RSE-1 AT 15:25

PVC VISIBLE ROSE UP AFTER PULLING UP - CUT USING DOWNHOLE CUTTER

SLOW PRODUCER INITIALLY RUNS DRY AT 1 GAL/30 SEC RECHARGES APPROX. 1/8 gallon / minute

RSE-4 TARGET PURGE 4 GALLONS

GAL	°C	COND	SP. COND	DO %	DO mg/L	PH	ORP
1	7.43	0.059	39	58.5	7.02	6.26	62.9
2	7.08	0.065	43	38.6	4.04	6.18	-31.5
3	6.92	0.067	44	93.7	11.39	6.23	-48.8
4	6.93	0.069	45	91.0	11.17	6.24	-62.9

DTW POST PURGE AND SAMPLING 1.62'

SAMPLED RSE-4 AT 16:00

NO ODOR, NO SHEEN, SLIGHTLY TURBID

9/28/18 ARRC HURRICANE CW

RSE-3 TARGET PURGE 4 GALLONS

GAL	°C	COND	SP. COND	DO %	DO mg/L	PH	ORP
1	8.39	0.128	88	69.1	8.11	6.38	109.1
2	7.94	0.142	96	68.4	8.08	6.21	102.6
3	7.52	0.142	94	28.5	3.32	6.16	97.4
4	7.22	0.139	92	13.8	1.66	6.17	87.6

DTW POST PURGE & SAMPLING - SAME PUMPING CONDITIONS AS SAMPLED RSE-3 AT 17:30 RSE-2

RSE-X IS A FIELD DUPLICATE OF RSE-3

REHAD'D RSE-3 PRIOR TO PURGING OR SAMPLING

HURRICANE 3/

9/28/18

SET 1	+	-	H.I.	ELEV.
TBM	5.420		105.420	100.00
RSE-1		5.765		99.655
RSE-2		5.920		99.500
RSE-3		7.160		98.260
RSE-4		9.210		96.210
TBM	5.420		105.420	100.00

SET 2	+	-	H.I.	ELEV.
TBM	5.530		105.530	100.00
RSE-1		5.880		99.650
RSE-2		6.030		99.500
RSE-3		7.270		98.260
RSE-4		9.330		96.200
TBM	5.530		105.530	100.00