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April 8, 2020

Mr. Prathap Kodial
Crowley Fuels, LLC
201 Arctic Slope Ave.
Anchorage, AK 99518

Subject: Report for September 2019 Groundwater Monitoring Event; Former Newhalen Tank Farm, Newhalen, Alaska; ADEC File Number 2619.38.

Dear Mr. Kodial:

This letter report summarizes the results of groundwater monitoring conducted in September 2019 by DNA Environmental Consultants, LLC (DNA) at the Former Newhalen Tank Farm site located in Newhalen, Alaska. Newhalen is located on the north shore of Lake Iliamna at the mouth of the Newhalen River. Newhalen is accessed by air via an airfield at Iliamna, Alaska. Newhalen is located in the Iliamna Recording District, 5 miles south of Iliamna and 320 miles southwest of Anchorage (see Attachment 1, Figure 1). The former tank farm site is located at approximately 59°43'10.73" north latitude and 154°53'29.92" west longitude. The site land is owned by the City of Newhalen. The site is located within Bureau of Land Management Public Land Survey Section 28, Township 5 South, Range 33 West, Seward Meridian.

PROJECT OBJECTIVE

The objective of groundwater monitoring in 2019 was to collect additional data to determine if the dissolved-phase groundwater contaminant plume is either in a steady state, shrinking, or expanding.

SITE BACKGROUND

The site is owned by the City of Newhalan, with conveyance completed under Alaska Native Claims Settlement Act in 1988.

Operations

Aerial photographs from 1981, 1982, 1983, 1987, and 1997 were reviewed to evaluate site use. The 1982 photographs show initial activities at the site included pad grading and staging two connex boxes at the northwest corner of the site. The 1983 photographs indicate a tank with similar dimension as Tank No. 471, with no secondary containment. This same tank is present in the 1987 photograph, but with a liner under it, and repositioned southward, near its current location. By 1997, it appears the northern half of the lined tank farm had been constructed (OASIS 2010). At completion, the former Newhalen Tank Farm consisted of eight aboveground fuel storage tanks located inside a secondary containment constructed of metal walls and a polymer liner.

In 1982 or 1983, the Kijik Corporation (doing business as the Nondalton Native Fuel Services, Inc. [NNFS]) began using the site for fuel storage. In 1990, NNFS sold the tank farm to Moody's Fuel, later known as Yukon Fuel.

In 1999, the City of Newhalen reported to the Alaska Department of Environmental Conservation (ADEC) that 50,000 gallons of fuel were released in 1983 due to vandalism (Clay 1999). Site characterization work in 2009 discovered additional details of the 1983 release. A 37,000-gallon fuel tank (identified as Tank No. 471) containing either heating oil or diesel fuel released its entire contents onto the ground surface. At the time of the release, the tank and property lease were maintained by the Kijik Corporation. A response was conducted with oversight by ADEC and the United States Coast Guard, and remediation activities recovered between 10,000 and 32,000 gallons of fuel (R&M Engineering, Inc., no date).

Crowley acquired the property in 2005, when it purchased Yukon Fuel.

2008 Release

On October 30, 2008, Tank No. 471 failed along a weld, resulting in the release of an estimated 13,630 gallons of Jet-A fuel into the secondary containment. A breach in the secondary containment resulted in an estimated loss of 2,836 gallons of fuel on the eastern side of the secondary containment. Delineation of the spill area was conducted in November 2008, and June and September 2009.

The Tank Farm was decommissioned in August 2009 by removing fuel from all tanks and lines, and subsequently removing all tanks, containment liner, and distribution lines. At this time, ADEC's Prevention and Emergency Response Program transferred oversight of characterization activities to the Contaminated Sites Program.

2009 Site Characterizations

In June 2009, field screening samples were collected from 48 test pits and 132 locations within the tank farm footprint. Laboratory analysis was performed on samples from 21 test pits and 12 footprint locations. Six temporary wells were advanced and sampled (OASIS 2009).

Field screening indicated an area of petroleum hydrocarbon impact along the northeast and southeast sides of the tank farm footprint, indicating failure of the secondary containment, causing impact to surface soil below the tank farm liner. Soil results exceeded ADEC Method Two Soil Cleanup Levels.

Groundwater sample results documented gasoline-range organics (GRO), diesel-range organics (DRO), benzene and ethylene benzene concentrations exceeding the ADEC Table C Groundwater Cleanup Levels.

Additional site characterization in September 2009 included advancing 21 test pits and installing six additional well points. Soil samples from nine of the test pits were used to define the boundaries of impact. All 12 temporary well points were sampled and indicate a dissolved-phase hydrocarbon plume located predominantly within the southern end of the pad, and in the area immediately downgradient of the site (OASIS 2010).

2010 Groundwater Monitoring Well Installation

In the fall of 2010, eight soil borings were advanced using a direct-push drill rig, and continuous soil cores were retrieved from the surface to 10 feet below ground surface (bgs). Soil cores were screened using a

photoionization detector (PID). At each of the eight locations, one discrete soil sample was collected for laboratory analysis. At two of the boring locations, a second soil sample was collected for analysis. Each boring location was then converted into a permanent groundwater monitoring well and identified as MW-1 through MW-8.

Field observations of soil borings indicated hydrocarbon impacts at the following locations:

- MW-1 at 9 feet bgs in gravel soils;
- MW-3 had an increasing PID response below 5 feet bgs;
- MW-4 at 7.5 feet bgs;
- MW-5 at 2 to 5 feet bgs;
- MW-7 below 5 feet bgs; and
- MW-8 from 5 to 6 feet bgs.

Field screening did not indicate hydrocarbon impacts at MW-2 or MW-6. Laboratory soil results confirmed impact at MW-5 only. However, soil samples were not necessarily collected from depths where impact was noted (OASIS 2011b).

Groundwater results matched the 2009 temporary well point sample results, with a dissolved-phase hydrocarbon plume defined by wells MW-2, MW-3, and MW-5. MW-5 is located in the center of the pad and impacted area, MW-3 is located east of the impacted area adjacent to a sewage lagoon, and MW-2 is located downgradient of MW-3 and MW-5 (OASIS 2011a).

2011 Removal and Landfarm Construction

Excavation and landfarming of contaminated soil were completed in September of 2011, after Crowley decommissioned and removed the tank farm. The 2011 remediation goal was removal of impacted soil exceeding the ADEC Method Two Soil Cleanup Level Maximum Allowable Concentrations (MACs) for DRO (12,500 milligrams per kilogram [mg/kg]), GRO (1,400 mg/kg) and total xylenes (63 mg/kg). Excavated soil would be treated by landfarming until concentrations were reduced below the MACs.

A total of 2,800 bank cubic yards of soil were excavated from below the former tank farm and moved to a landfarm onsite. Two-hundred gallons of fuel were recovered from groundwater that entered the excavation. The area around MW-5 was left intact. Imported clean fill was used to backfill the excavation and underlay the landfarm (OASIS 2011b).

Sidewall confirmation samples indicated soils exceeding MACs had been successfully removed. The highest reported sidewall concentrations were 220 mg/kg GRO and 5,800 mg/kg DRO.

MAC concentrations were achieved for land-farmed soil with an average GRO concentration of 288 mg/kg and an average DRO concentration of 1,804 mg/kg (Weston 2012).

On-going Groundwater Monitoring

In the fall of 2010, the current network of eight groundwater monitoring wells (MW-1 through MW-8) was installed. The locations of monitoring wells were based on results from temporary well points installed in

2009 (OASIS 2010). Groundwater sampling was conducted in 2010, three times in 2011, twice in 2012, and once annually since 2013. However, since 2013 only wells MW-2, MW-3, and MW-5 have been sampled. In 2018, polycyclic aromatic hydrocarbons (PAH) and volatile organic compounds (VOC) were added to laboratory analysis, with results indicating the presence of a dissolved-phase naphthalene plume at all three wells sampled as well as 1,2,4-Trimethylbenzene at MW-2. Based on the PAH and VOC results, ADEC requested that wells MW-7 and MW-8 be included in the 2019 sampling event to determine the extent of VOC and PAH contamination downgradient of the site.

GEOLOGY/HYDROLOGY

The site is located on an alluvial plain along the north shore of Iliamna Lake. The near-surface soils on-pad generally consist of gravel with sand. In some areas off the pad, the surface soil (top 0.5 to 1.5 feet) consists of a finer grained, highly organic soil horizon. Groundwater at the site is encountered at approximately 1.5–2.5 feet bgs. Groundwater is estimated to flow from northwest to southeast at the site. The nearest major water body is Lake Iliamna, about 1,000 feet downgradient of the property. The estimated elevation difference between the site and Lake Iliamna is 20 to 30 feet.

FIELD ACTIVITIES

DNA performed groundwater monitoring activities on September 17, 2019. Fieldwork was performed by DNA in accordance with the most recent ADEC-approved work plan (Weston 2018). Field activities were documented in a bound logbook, with well purge and sampling information recorded on separate well sampling sheets. Sample collection time, date, and location are summarized in Attachment 2, Table 1. All field documents are provided in Attachment 3. A photographic log is provided as Attachment 4.

All eight monitoring wells (MW-1 through MW-8) at the site were gauged for depth to groundwater. Each well scheduled for sampling (all wells except MW-4 and MW-6) was then purged following the United States Environmental Protection Agency (EPA) low-flow (minimal drawdown) sampling technique, and then a sample was collected.

All field work was conducted by Daniel Frank; Mr. Frank meets the ADEC's requirements of a qualified environmental professional per 18 AAC 75.333 and 18 AAC 78.088. There were no deviations from the work plan.

Field Observations

Water Table

Static water level measurements and calculated elevations are presented in Attachment 2, Table 2. Attachment 1, Figure 2 depicts the calculated water elevation at each well and inferred isocontours using Surfer® software version 17. The well casing at MW-8 was frost-jacked, therefore the elevation is not considered usable for evaluating gradient.

Groundwater elevations were within the screening interval for each monitoring well except MW-2, where the static water level was 1.81 feet above the top of the well screen. Groundwater flow direction, as found during previous monitoring events, is interpreted as south-southeast (Attachment 1, Figure 2).

Water Quality

Water quality parameters recorded during the sample purge included temperature, conductivity, turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP). Final parameter values recorded at the end of purging and prior to sample collection are summarized in Attachment 2, Table 3.

Water from all wells generally appeared non-turbid at the completion of the purge, with most values for turbidity less than 10 Nephelometric Turbidity Units (NTU), and the highest recorded value at 60.4 NTUs. The color of purge water was clear, with a hydrocarbon odor noted at MW-2 but no sheening. The average temperature across the site was 10.47 degrees Celsius (°C), ranging from 8.88 to 12.40 °C. Values for pH ranged from 5.64 to 6.19. Conductivity was between 0.0343 and 0.121 milli-siemens per centimeter (mS/cm). Values for DO were between 0.59 and 4.44 milligrams per liter (mg/L), indicating anaerobic conditions at MW-2, MW-3, MW-5, and MW-8. Values for ORP ranged from 95 to 210 millivolts (mV), indicating nitrification.

Analytical Methods

All groundwater samples were submitted to SGS North America, Inc. (SGS), an ADEC-approved laboratory for the following analyses:

- DRO by Alaska method AK102;
- VOCs by United States EPA Solid Waste (SW) method 8260C; and,
- PAHs by EPA method SW8270D-SIM.

Analytical Results

Laboratory analytical results are presented in Attachment 2, Table 4, with historical values presented in Table 5 for all past sampling events. The SGS laboratory report is included as Attachment 5 to this letter, and the ADEC Checklist and associated data quality assessment is included as Attachment 6.

Analytical results are compared to Alaska Administrative Code, Title 18, Chapter 75, Article 3 (18 AAC 75.345): Oil and Other Hazardous Substances Pollution Control (ADEC 2018), Table C, Groundwater Cleanup Levels (GCLs).

DRO remains the main contaminant of concern with detections greater than the GCL of 1.5 mg/L at the same three monitoring wells as found in the past: MW-2 (2.27 mg/L), MW-3 (2.06 mg/L), and MW5 (4.02 mg/L).

VOCs detected at a concentration greater than a GCL include petroleum hydrocarbon co-constituents 1,2,4-Trimethylbenzene at MW-2 (83.8 micrograms per liter [µg/L]); and Naphthalene at MW-2 (38.0 µg/L), MW-3 (2.8 µg/L), MW-5 (3.25 µg/L), and at down gradient wells MW-7 (1.77 µg/L) and MW-8 (2.35 µg/L). No other VOCs were reported at a concentration greater than an associated GCL.

The PAH petroleum hydrocarbon co-constituent 1-Methylnaphthalene was detected at a concentration greater than the GCL of 11 at MW-2 (23.3 µg/L). Naphthalene as a PAH was reported at a concentration greater than the GCL of 1.7 µg/L at MW-2 (23.8 µg/L). No other PAHs were reported at a concentration greater than an associated GCL.

Trend Analysis

DNA conducted a trend analysis of DRO concentrations over time at monitoring wells MW-2, MW-3, and MW-5 using the Mann-Kendall trend test. The trend test was conducted using the GSI Mann-Kendall Toolkit. Input data is summarized in Attachment 2, Table 6, and output data is provided as Attachment 7.

The trend test indicates a spatially stable plume, with a decreasing concentration trend at in-plume well MW-5. No concentration trend is evident using the Mann-Kendall test at in-plume wells MW-2 and MW-3, and a visual assessment of the data indicates a stable to declining concentration trend.

CONCLUSIONS AND RECOMMENDATIONS

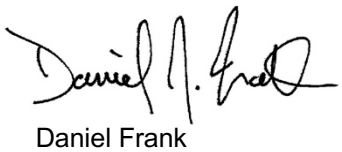
When historical groundwater data is evaluated, the more volatile compounds previously found at the site have dissipated, likely as a result of the 2010 removal effort.

A dissolved-phase DRO plume remains present and the trend analysis for DRO indicates a spatially stable dissolved-phase plume in steady state with a declining concentration trend at one in-plume well.

A dissolved-phase naphthalene plume is present at the same wells as those defining the DRO plume, with the exception that the naphthalene plume appears to extend beyond downgradient wells MW-7 and MW-8. Insufficient data exists to determine a concentration tend for naphthalene; however, naphthalene is a common fuel constituent and a remedial effort has been conducted to address the source of the impact to groundwater at the site, and therefore the naphthalene plume is expected to mirror the steady state of the dissolved-phase DRO plume.

DNA recommends resampling the wells at a three- to five-year interval, as annual sampling appears too frequent given the current plume equilibrium. DNA recommends future analysis of groundwater include naphthalene by EPA Method 8260 and DRO at all wells except MW-4 and MW-6.

Sincerely,
DNA Environmental Consultants, LLC



Daniel Frank
Principal

Attachments

1. Figures
2. Tables
3. Field Forms and Notes
4. Photograph Log
5. Laboratory Report
6. ADEC Checklist and Data Quality Report
7. Mann-Kendall Output

REFERENCES

Alaska Department of Environmental Conservation (ADEC), 2018. 18 AAC 75, Oil and Other Hazardous *Substances Pollution Control*, October 27.

Clay. 1999. Letter from John Clay, Newhalen City Administrator to David Pikul, Environmental Specialist with Alaska Department of Environmental Conservation. October 6.

OASIS Environmental, Inc., 2011a. Former Newhalen Tank Farm Groundwater Characterization Report Newhalen, Alaska; ADEC File Number 2619.38.002; ADEC Hazard ID Number 25452. January 21.

_____, 2011b. Soil Excavation Completion; Former Newhalen Tank Farm, Newhalen, Alaska; ADEC File Number 2619.38.002; ADEC Hazard ID Number 25452 (letter format). December 22.

_____, 2010. Additional Site Characterization Report. Newhalen Tank Farm, Newhalen, Alaska. January 14.

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R&M Engineering, Inc., no date. City of Newhalen (Kijik) Fuel Facility, Newhalen, Alaska Phase I Environmental Site Assessment.

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_____, 2012. 2012 Newhalen Landfarm Sampling and Maintenance; Former Newhalen Tank Farm; Newhalen, Alaska; ADEC File No. 269.38.002 (letter format). August 27.

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ATTACHMENT 1

Figures

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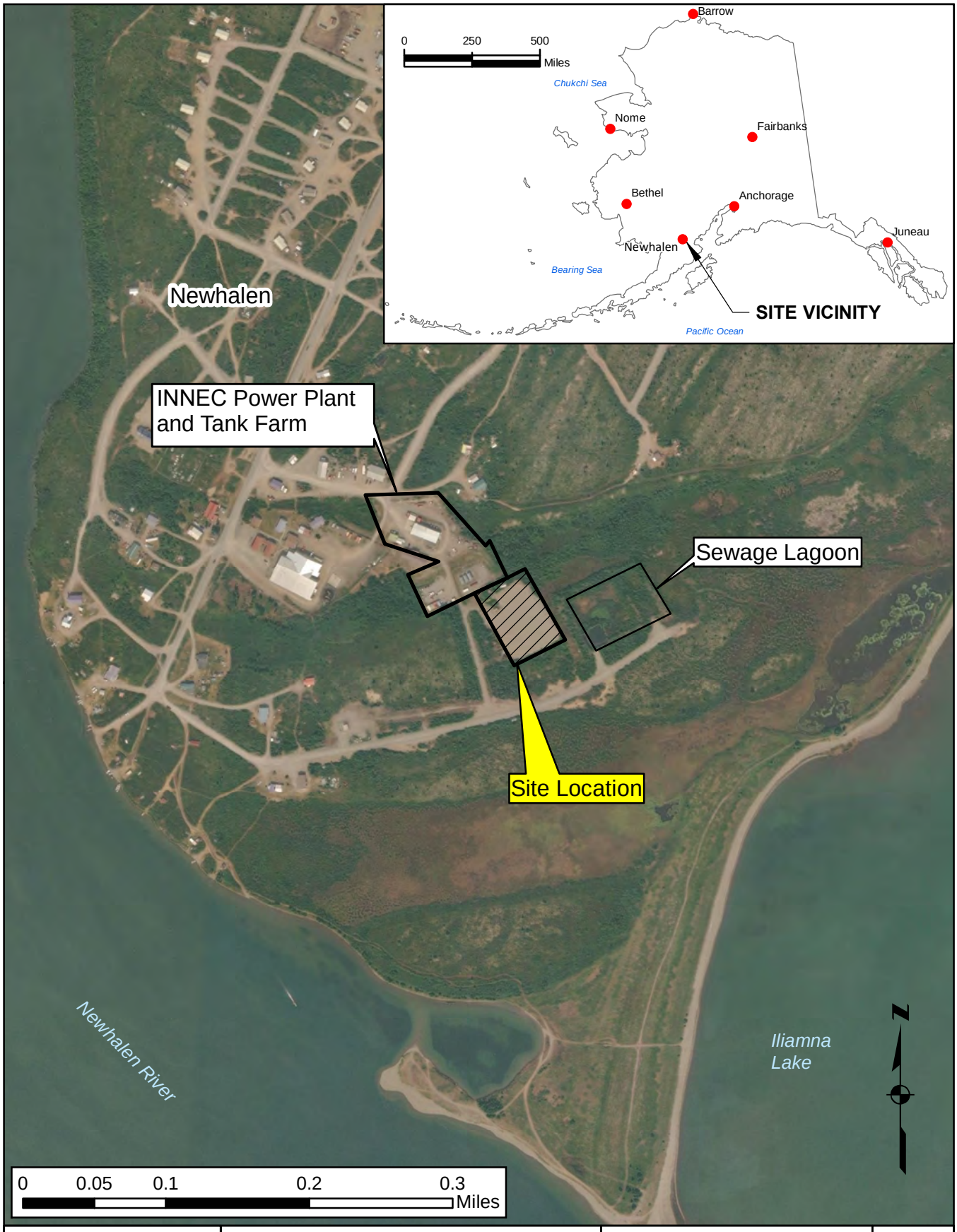

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September 2019 Groundwater Monitoring Event
Former Newhalen Tank Farm
Newhalen, Alaska

1 inch equals 0.09 miles

Project Location

2/xx/2020 | 19.CMS.07

DRAWN: xxx | CHKD: DJF

Figure 1

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LEGEND

- Monitoring Wells
- (00.00) Groundwater Elevation (AMSL)
- Groundwater Elevation Isocontour (AMSL)
- Groundwater Flow Direction
- * Well casing at MW-8 is frost-jacked; elevation not used for calculating isocontours

Figure: 2

Groundwater Elevations and Contours

19.CMS.07

2/xx/2020

Checked By: DJF

Drafted By: xxx

September 2019 Groundwater Monitoring Event
Former Newhalen Tank Farm
Newhalen, Alaska

1 inch = 0.01 miles

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LEGEND

- Monitoring Wells (mg/L)
- DRO at 1.5 mg/L
- Naphthalene at 0.0017 mg/L
- SNR — Sampling not required at this location per ADEC-approved work plan.
- * — By EPA PAH Method 8270
- ** — By EPA VOC Method 8260
- *** — Duplicate sample location, highest result shown here

NOTE: Bold/red text indicates an exceedance of ADEC Groundwater Cleanup Levels.

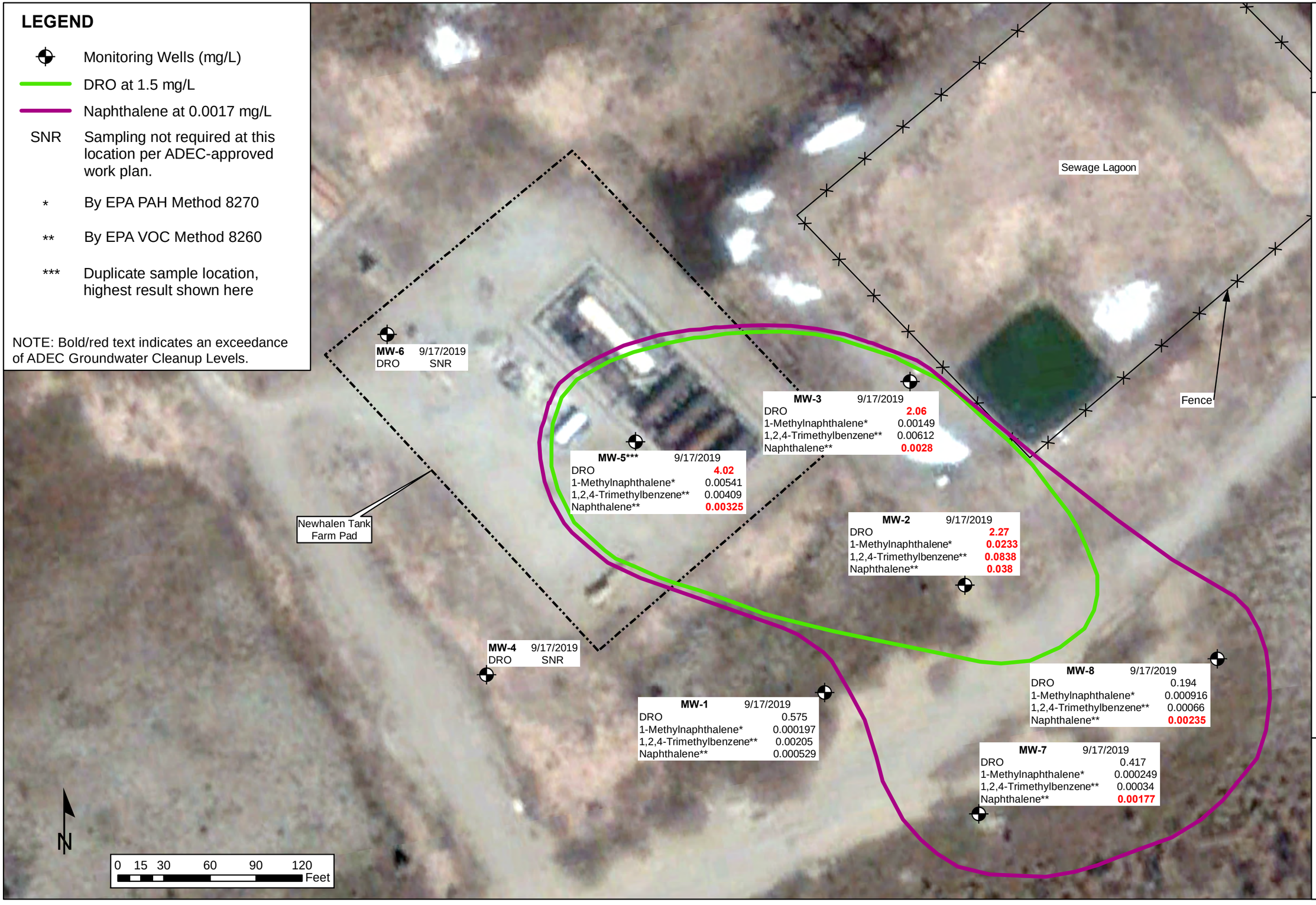

Figure: 3

Dissolved-Phase Hydrocarbon Concentrations in Groundwater

19.CMS.07

Date: 4/9/2020

Checked By: DJF

Drafted By: ECR

September 2019 Groundwater Monitoring Event
Former Newhalen Tank Farm
Newhalen, Alaska

1 inch = 0.01 miles

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ATTACHMENT 2

Tables

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TABLE 1: SAMPLE COLLECTION SUMMARY
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Sample Location	Sample Number	Duplicate	MS/MSD	Sample Date	Sample Time	Laboratory Analyses		
						DRO (AK 102)	PAHs (EPA 8270D SIM)	VOCs (EPA 8260C)
Groundwater								
MW-1	19-NHTF-103-GW			9/17/19	1240	✓	✓	✓
MW-2	19-NHTF-104-GW			9/17/19	1335	✓	✓	✓
MW-3	19-NHTF-105-GW			9/17/19	1430	✓	✓	✓
MW-4	*Guage Only*							
MW-5	19-NHTF-106-GW			9/17/19	1520	✓	✓	✓
	19-NHTF-107-GW	✓			1620	✓	✓	✓
MW-6	*Guage Only*							
MW-7	19-NHTF-101-GW		✓	9/17/19	1100	✓	✓	✓
MW-8	19-NHTF-102-GW			9/17/19	1200	✓	✓	✓
Quality Control								
--	Trip Blank			9/17/19	1100	✓	✓	✓
--	19-NHTF-101-RB			9/17/19	1845	✓	✓	

Key:

ADEC = Alaska Department of Environmental Conservation
AK = Alaska
DRO = Diesel-range organics
EPA = United States Environmental Protection Agency
GW = Groundwater
ID = Identification
MW = Monitoring well
NHTF = Newhalen Tank Farm
PAHs = Polycyclic aromatic hydrocarbons
RB = Rinsate Blank
SIM = Selective ion monitoring
VOCs = Volatile Organic Compounds

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TABLE 2: GROUNDWATER ELEVATION DATA
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Well ID	Installation Date	Land Survey Details				Well Design			Field Measurements					Water Elevation (feet AMSL)	Groundwater Interface within Screen Interval?
		Ground Elevation [2,3]	TOC Elevation [2,3]	Northing [1]	Easting [1]	Screen Length (feet)	Top of Screen (BTOC)	Bottom of Screen (BTOC)	Gauge Date	Depth to LNAPL (BTOC)	Depth to Water (BTOC)	TD (BTOC)	Depth to Water (BGS)		
MW-1	8/26/10	50.40	52.92	2090279.19	1475936.04	5.00	6.31	11.31	9/17/19	--	6.51	11.32	3.99	46.41	Yes
MW-2	8/26/10	48.40	51.01	2090330.81	1476038.02	5.00	6.38	11.38	9/17/19	--	4.57	11.35	1.96	46.44	No
MW-3	8/26/10	50.00	52.71	2090467.00	1476026.87	5.00	5.32	10.32	9/17/19	--	6.21	9.90	3.50	46.50	Yes
MW-4	8/26/10	51.20	53.76	2090329.53	1475722.57	5.00	6.14	11.14	9/17/19	--	7.20	10.93	4.64	46.56	Yes
MW-5	8/26/10	49.00	51.24	2090460.98	1475844.91	5.00	4.10	9.10	9/17/19	--	4.61	9.12	2.37	46.63	Yes
MW-6	8/26/10	49.50	51.87	2090558.15	1475699.01	5.00	4.49	9.49	9/17/19	--	5.18	9.47	2.81	46.69	Yes
MW-7	8/27/10	50.40	52.87	2090183.38	1476019.91	5.00	6.45	11.45	9/17/19	--	6.62	11.47	4.15	46.25	Yes
MW-8[4]	8/27/10	48.00	51.02	2090254.33	1476190.18	5.00	3.55	8.55	9/17/19	--	6.10	8.52	3.08	44.92	Yes

Notes: All measurements are in units of feet. Mammoth Consulting, August 2012.

[1] NAD83 Alaska State Plane Zone 5; US Feet

[2] NAVD88; US Feet

[3] Top of (PVC) pipe elev's are at black mark; From trig levels - accuracy is +/- 0.01'.

[4] This well has frost-heaved and is not reliable for vertical measurement to water.

Key:
-- = Not present
AMSL = Above Mean Sea Level
BTOC = Below top of casing, a.k.a. below measuring point
LNAPL = Light non-aqueous phase liquid
NA = Not available
NR = not recorded
TD = Total Depth
TOC = top of casing (PVC) meeasuring poin
BGS = below ground surface

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TABLE 3: FIELD-COLLECTED WATER QUALITY DATA

Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Well ID	Purge/ Sample Date	Sample Method	Color	Odor	Temperature (°C)	pH	Conductivity (mS/cm)	Turbidity (NTU)	DO (mg/L)	ORP (mV)
MW-1	9/17/19	Positive Pressure Pump[(1)]	clear	none	8.88	5.64	0.034	14.5	4.44	210.0
MW-2	9/17/19		clear	hydrocarbon	9.84	6.19	0.060	1.4	0.60	95.0
MW-3	9/17/19		clear	none	10.04	6.09	0.121	3.8	0.60	146.0
MW-5	9/17/19		clear	none	12.40	5.97	0.081	3.2	0.59	123.0
MW-7	9/17/19		clear	none	10.89	5.85	0.043	60.4	2.21	185.0
MW-8	9/17/19		clear	none	10.76	5.99	0.056	7.3	1.41	176.0

Notes: Above data is final reading after purge and before sampling.

[(1)] Proactive® Mega-Monsoon ™ (stainless steel pump); low-flow method.

Key:

°C = Degrees Celsius
DO = Dissolved oxygen
mg/L = Milligrams per liter
mS/cm = milli-siemens per centimeter
mV = Millivolts
MW = Monitoring well
NTU = Nephelometric Turbidity Units
ORP = Oxidation-reduction potential
SS = Stainless Steel

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TABLE 4: LABORATORY RESULTS SUMMARY
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Well ID:	ADEC Cleanup Levels	MW-1		MW-2		MW-3		MW-5		MW-5 DUP		MW-7		MW-8		Rinsate		Trip Blank	
Project Sample ID:		**19-NHTF-103-GW**		**19-NHTF-104-GW**		**19-NHTF-105-GW**		**19-NHTF-106-GW**		**19-NHTF-107-GW**		**19-NHTF-101-GW**		**19-NHTF-102-GW**		**19-NHTF-101-RB**		**Trip Blank**	
Lab Sample ID:		1195455003		1195455004		1195455005		1195455006		1195455007		1195455001		1195455002		1195455008		1195455009	
Collection Date/Time:		9/17/19 12:40		9/17/2019 1:35 PM		9/17/2019 2:30 PM		9/17/2019 3:20 PM		9/17/2019 4:20 PM		9/17/2019 11:00 AM		9/17/2019 12:00 PM		9/17/2019 6:45 PM		9/17/2019 11:00 AM	
Alaska DEC Fuels (AK102; mg/L)																			
DRO C10-C25	1.5	0.575	J	2.27		2.06		4.02		3.28		0.417	J	0.194	J	0.294	U	--	--
PAHs (EPA 8270D-SIM LV; µg/L)																			
1-Methylnaphthalene	11	0.197		23.3		1.49		5.41		4.05		0.249		0.916		0.0232	U	--	--
2-Methylnaphthalene	36	0.0250	U	25.2		0.377		2.98		2.26		0.0240	U	0.497		0.0232	U	--	--
Acenaphthene	530	0.0250	U	0.362		0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0588		0.0232	U	--	--
Acenaphthylene	260	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Anthracene	43	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Benzo(a)Anthracene	0.3	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Benzo[a]pyrene	0.25	0.0100	U	0.00980	U	0.00980	U	0.00980	U	0.00945	U	0.00960	U	0.00980	U	0.00925	U	--	--
Benzo[b]Fluoranthene	2.5	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Benzo[g,h,i]perylene	0.26	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Benzo[k]fluoranthene	0.8	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Chrysene	2	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Dibenzo[a,h]anthracene	0.25	0.0100	U	0.00980	U	0.00980	U	0.00980	U	0.00945	U	0.00960	U	0.00980	U	0.00925	U	--	--
Fluoranthene	260	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Fluorene	290	0.0250	U	0.444		0.0245	U	0.350		0.253		0.0620		0.0691		0.0232	U	--	--
Indeno[1,2,3-c,d] pyrene	0.19	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Naphthalene	1.7	0.529		23.8		0.806		1.32		0.967		1.04		1.45		0.0463	U	--	--
Phenanthrene	170	0.0250	U	0.0684		0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
Pyrene	120	0.0250	U	0.0245	U	0.0245	U	0.0245	U	0.0236	U	0.0240	U	0.0245	U	0.0232	U	--	--
VOCs (EPA 8260C; µg/L; BTEX First)																			
Benzene	4.6	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
Toluene	1100	0.500	U	0.340	J	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Ethylbenzene	15	0.500	U	10.0		0.470	J	0.500	U	0.500	U	0.330	J	0.570	J	0.500	U	0.500	U
Xylenes (total)	190	1.50	U	44.3		2.74	J	1.00	J	1.03	J	1.50	U	1.50	U	1.50	U	1.50	U
1,1,1,2-Tetrachloroethane	5.7	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
1,1,1-Trichloroethane	8000	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,1,2,2-Tetrachloroethane	0.76	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
1,1,2-Trichloroethane	0.41	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U	0.200	U
1,1-Dichloroethane	28	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,1-Dichloroethene	280	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,1-Dichloropropene		0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,2,3-Trichlorobenzene	7	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,2,3-Trichloropropane**	0.0075*	0.500*	U	0.500*	U	0.500*	U	0.500*	U	0.500*	U	0.500*	U	0.500*	U	0.500*	U	0.500*	U
1,2,4-Trichlorobenzene	4	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,2,4-Trimethylbenzene	56	2.05		83.8		6.12		4.02		4.09		0.340	J	0.660	J	0.500	U	0.500	U
1,2-Dibromo-3-chloropropane		5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U

TABLE 4: LABORATORY RESULTS SUMMARY
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Well ID:	ADEC Cleanup Levels	MW-1		MW-2		MW-3		MW-5		MW-5 DUP		MW-7		MW-8		Rinsate		Trip Blank	
Project Sample ID:		**19-NHTF-103-GW**		**19-NHTF-104-GW**		**19-NHTF-105-GW**		**19-NHTF-106-GW**		**19-NHTF-107-GW**		**19-NHTF-101-GW**		**19-NHTF-102-GW**		**19-NHTF-101-RB**		**Trip Blank**	
Lab Sample ID:		1195455003		1195455004		1195455005		1195455006		1195455007		1195455001		1195455002		1195455008		1195455009	
Collection Date/Time:		9/17/19 12:40		9/17/2019 1:35 PM		9/17/2019 2:30 PM		9/17/2019 3:20 PM		9/17/2019 4:20 PM		9/17/2019 11:00 AM		9/17/2019 12:00 PM		9/17/2019 6:45 PM		9/17/2019 11:00 AM	
1,2-Dibromoethane	0.075	0.0375	U	0.0375	U	0.0375	U	0.0375	U	0.0375	U	0.0375	U	0.0375	U	0.0375	U	0.0375	U
1,2-Dichlorobenzene	300	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,2-Dichloroethane	1.7	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
1,2-Dichloropropane	8.2	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,3,5-Trimethylbenzene	60	0.500	U	20.4		3.09		8.46		8.63		0.500	U	0.500	U	0.500	U	0.500	U
1,3-Dichlorobenzene	300	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
1,3-Dichloropropane		0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
1,4-Dichlorobenzene	4.8	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
2,2-Dichloropropane		0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
2-Butanone (MEK)	5600	5.00	U	5.00	U	5.00	U	6.49	J	6.16	J	5.00	U	5.00	U	5.00	U	5.00	U
2-Chlorotoluene		0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
2-Hexanone	38	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
4-Chlorotoluene		0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
4-Isopropyltoluene		0.660	J	23.1		2.79		6.53		6.68		1.34		2.31		0.500	U	0.500	U
4-Methyl-2-pentanone	6300	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Bromobenzene	62	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Bromochloromethane		0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Bromodichloromethane	1.3	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Bromoform	33	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Bromomethane	7.5	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
Carbon disulfide	810	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Carbon tetrachloride	4.6	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Chlorobenzene	78	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Chloroethane	21000	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Chloroform	2.2	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Chloromethane	190	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.440	J	0.500	U	0.410	J
Dibromochloromethane	8.7	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
Dibromomethane	8.3	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Dichlorodifluoromethane	200	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Freon-113	10000	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Hexachlorobutadiene	1.4	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Isopropylbenzene	450	0.370	J	11.9		0.540	J	1.07		1.04		0.810	J	1.26		0.500	U	0.500	U
Methyl-t-butyl ether	140	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Methylene chloride	110	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U	2.50	U
Naphthalene	1.7	0.830	J	**38.0**		**2.80**		**3.25**		**3.25**		**1.77**		**2.35**		0.500	U	0.500	U
P & M -Xylene		1.00	U	19.1		1.05	J	1.00	U	1.00	U	1.00	U	0.620	J	1.00	U	1.00	U
Styrene	1200	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U

TABLE 4: LABORATORY RESULTS SUMMARY
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Well ID:	ADEC Cleanup Levels	MW-1		MW-2		MW-3		MW-5		MW-5 DUP		MW-7		MW-8		Rinsate		Trip Blank	
Project Sample ID:		**19-NHTF-103-GW**		**19-NHTF-104-GW**		**19-NHTF-105-GW**		**19-NHTF-106-GW**		**19-NHTF-107-GW**		**19-NHTF-101-GW**		**19-NHTF-102-GW**		**19-NHTF-101-RB**		**Trip Blank**	
Lab Sample ID:		1195455003		1195455004		1195455005		1195455006		1195455007		1195455001		1195455002		1195455008		1195455009	
Collection Date/Time:		9/17/19 12:40		9/17/2019 1:35 PM		9/17/2019 2:30 PM		9/17/2019 3:20 PM		9/17/2019 4:20 PM		9/17/2019 11:00 AM		9/17/2019 12:00 PM		9/17/2019 6:45 PM		9/17/2019 11:00 AM	
Tetrachloroethene	41	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Trichloroethene	2.8	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Trichlorofluoromethane	5200	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Vinyl acetate	410	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U	5.00	U
Vinyl chloride	0.19	0.0750	U	0.0750	U	0.0750	U	0.0750	U	0.0750	U	0.0750	U	0.0750	U	0.0750	U	0.0750	U
cis-1,2-Dichloroethene	36	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
cis-1,3-Dichloropropene	4.7	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U	0.250	U
n-Butylbenzene	1000	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
n-Propylbenzene	660	0.390	J	19.9		1.14		2.10		2.10		0.710	J	1.51		0.500	U	0.500	U
o-Xylene		0.500	U	25.2		1.69		1.00		1.03		0.500	U	0.500	U	0.500	U	0.500	U
sec-Butylbenzene	2000	0.500	U	6.82		0.910	J	1.81		1.84		0.520	J	1.35		0.500	U	0.500	U
tert-Butylbenzene	690	0.500	U	0.500	U	0.500	U	0.370	J	0.380	J	0.500	U	0.500	U	0.500	U	0.500	U
trans-1,2-Dichloroethene	360	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
trans-1,3-Dichloropropene	4.7	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U

Notes: Results greater than ADEC cleanup values are underlined & bolded. ADEC Cleanup Levels from: 18 AAC 75.345, Table C , October 27, 2018. **Laboratory unable to detect at cleanup level for 1,2,3-Trichloropropane.

Key:
-- not applicable
ADEC = Alaska Department of Environmental Conservation
AK = Alaska
DRO = Diesel-range organics
EPA = United States Environmental Protection Agency
GW = Groundwater
ID = Identification
LV = low volume
MW = Monitoring well
NHTF = Newhalen Tank Farm
PAHs = Polycyclic aromatic hydrocarbons
RB = Rinsate Blank
SIM = Selective ion monitoring
VOCs = Volatile Organic Compounds
mg/L = milligrams per liter
ug/L = micrograms per liter

Data Flags:
J = Estimated concentration; analyte was detected between the method detection limit and the practical quantitation limit.
U - Not detected.

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TABLE 5: HISTORICAL DATA
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Sample ID	Sample Date	Duplicate	GRO (mg/L)	DRO (mg/L)	RRO (mg/L)	BTEX (µg/L)			
						Benzene	Toluene	Ethyl-benzene	Total Xylenes
ADEC Groundwater Cleanup Level [(1)]:			***2.2***	***1.5***	***1.1***	***4.6***	***1100***	***15***	***190***
MW-1									
10-NHTF-MW1-01-GW	8/28/10		0.354 JS	0.675	ND (0.435)	0.00113 JS	ND (0.001) R	0.0314 JS	0.0686 JS
11-NWH-101-GW	3/31/11		0.11	ND (0.800)	ND (0.200)	0.0037	ND (0.005)	ND (0.001)	ND (0.003)
11-NWH-102-GW	3/31/11	✓	0.1	0.92	0.09	0.0036	ND (0.005)	ND (0.001)	ND (0.003)
11-NHTF-207-GW	6/21/11		ND (0.100)	0.18 J	ND (0.200)	ND (0.001)	0.0021 J	0.00088 J	0.0081
11-NHTF-306-GW	9/19/11		0.48	0.83	ND (0.200)	0.071 J	0.003 J	0.056	0.14
12-NEW-105-GW	7/9/12		0.857	1.2	ND (1.1)	ND (0.001)	0.0752	ND (0.001)	0.252
12-NEW-206-GW	10/25/12		0.373	ND (1.3)	ND (1.1)	ND (0.001)	0.0279	ND (0.001)	0.0593
19-NHTF-103-GW	9/17/19		--	0.575 J	--	ND (0.200)	ND (0.500)	ND (0.500)	ND (0.150)
MW-2									
10-NHTF-MW2-01-GW	8/28/10		2.96	1.5	ND (0.427)	0.0255	0.158	0.0989	0.841
11-NWH-103-GW	3/31/11		2.3	1.2	ND (0.200)	0.0013	0.14	0.17	1.1
11-NHTF-208-GW	6/21/11		2.3	2.0	ND (0.240)	0.0025	0.12	0.14	0.81
11-NHTF-308-GW	9/19/11		2.7	2.2	ND (0.200)	0.0067	0.28	0.17	1.1
12-NEW-102-GW	7/9/12		1.97	1.8	ND (1.1)	ND (0.001)	0.0991	0.049	0.61
12-NEW-208-GW	10/26/12		2.99	2.0	1.4	ND (0.001)	0.116	0.069	0.676
13-NHTF-102-GW	5/22/13		2.3	1.2	0.20	0.01	0.067	0.11	0.68
MW-2	6/11/14		1.88	1.22	ND (0.272)	ND (0.0002)	0.0257	0.0826	0.5610
GW-062715-MW2-01	6/27/15		1.19	3.61	1.50	ND (0.0002)	0.0034	0.0604	0.3010
GW-080716-MW2-03	8/7/16		0.721	1.43	0.394 J	--	--	--	--
GW-080716-MW4-04	8/7/16	✓	0.823	1.36	0.286 J	--	--	--	--
GW-NHTF-MW4-080117-03	8/1/17		0.506	1.71	0.199 J	--	--	--	--
GW-NHTF-MW10-080117-04	8/1/17	✓	0.516	1.64	0.179 J	--	--	--	--
GW-NHTF-09212018-MW2-4	9/21/18		--	0.960	--	ND (0.200)	0.310 J	10.8	45.6
19-NHTF-104-GW	9/17/19		--	2.27	--	ND (0.200)	0.340 J	10.0	44.3
MW-3									
10-NHTF-MW3-01-GW	8/28/10		1.34 JS	2.43	0.92	0.0255	.	0.0989	0.841
No Sample	3/31/11		*Insufficient water volume due to slushy/frozen water.*						
11-NHTF-206-GW	6/19/11		0.42	1.6	0.24	ND (0.001)	0.031	0.0067	0.044
11-NHTF-303-GW	9/18/11		0.28	1.5	0.24	ND (0.001)	0.021	0.0043	0.03
12-NEW-103-GW	7/9/12		0.146	1.3	ND (1.1)	ND (0.001)	0.0017	0.0109	0.0107
12-NEW-201-GW	10/25/12		0.379	ND (1.1)	ND (1.1)	ND (0.001)	0.0096	0.0092	0.0639
13-NHTF-103-GW	5/22/13		0.51	1.8	0.56	ND (0.001)	0.051	0.003	0.028
MW-3	6/11/14		0.283	0.846	ND (0.267)	ND (0.0002)	0.00191	0.00686	0.0494
GW-062715-MW3-03	6/27/15		0.358	1.42	ND (0.266)	ND (0.0002)	0.000570 J	0.0111	0.301
GW-080716-MW3-02	8/7/16		0.289	7.4	0.514 J	--	--	--	--
GW-NHTF-MW3-080117-02	8/1/17		0.355	2.08	0.205 J	--	--	--	--
GW-NHTF-09212018-MW3-3	9/21/18		--	0.555 J	--	0.200 U	0.350 J	ND (0.500)	ND (0.150)
19-NHTF-105-GW	9/17/19		--	2.06	--	ND (0.200)	ND (0.500)	0.470	2.74
MW-4									
10-NHTF-MW4-01-GW	8/28/10		0.0546 JS	ND (0.400)	ND (0.400)	ND (0.0005) JS	ND (0.001) JS	ND (0.001) JS	0.00395 JS
No Sample	3/31/11		*Insufficient water volume due to slushy/frozen water.*						
11-NHTF-209-GW	6/21/11		ND (0.100)	0.068 J	ND (0.200)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.003)
11-NHTF-305-GW	9/19/11		ND (0.100)	0.039 J	ND (0.200)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.003)
12-NEW-106-GW	7/9/12		ND (0.100)	ND (0.57)	ND (1.1)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)
12-NEW-204-GW	10/25/12		ND (0.100)	ND (1.1)	ND (1.1)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)
MW-5									
10-NHTF-MW5-01-GW	8/28/10		4.29 JS	2.48	ND (0.435)	0.00341 JS	0.146 JS	0.188 JS	2.91
10-NHTF-MW9-01-GW		✓	4.44 JS	3.04	ND (0.424)	0.00339 JS	0.147 JS	0.176 JS	2.73 JS
No Sample	3/31/11		*Frozen*						
11-NHTF-204-GW	6/19/11		8.0	4.5 JD	ND (0.200)	0.00076 J	0.13	0.3	3.0
11-NHTF-205-GW		✓	8.2	13 JD	ND (0.200)	0.00065 J	0.12	0.3	3.0
11-NHTF-301-GW	9/18/11		8.9	4.5	ND (0.200)	ND (0.010)	0.066	0.21	3.1
11-NHTF-302-GW		✓	7.0	4.2	ND (0.200)	ND (0.010)	0.064	0.2	2.8
12-NEW-107-GW	7//2012		3.93	2.9	ND (1.1)	ND (0.001)	0.0862	0.0263	1.23
12-NEW-108-GW		✓	4.25	2.5	ND (1.1)	ND (0.001)	0.0882	0.0258	1.2
12-NEW-202-GW	10/25/12		4.08	2.5	ND (1.1)	ND (0.001)	0.0778	0.0123	1.17
12-NEW-203-GW		✓	4.3	2.4	ND (1.0)	ND (0.001)	0.0768	0.0121	1.18
13-NHTF-104-GW	5/22/13		4.0	4.6	0.37	0.00042	0.0085	0.046	0.97
13-NHTF-105-GW		✓	4.0	4.1	0.37	ND (0.001)	0.021	0.052	0.88
MW-5	6/11/14		0.8350	1.710	ND (0.272)	ND (0.0002)	0.00047 J	0.0031	0.0889
MW-5X			0.8190	1.790	ND (0.284)	ND (0.0002)	0.00051 J	0.0032	0.8880
GW-062615-MW5-01	6/27/15		1.0600	2.890	0.409	ND (0.002)	ND (0.0005)	0.00489	0.0935
GW-062615-MW9-04		✓	1.1000	2.0900	0.258 J	ND (0.0002)	ND (0.0005)	0.00489	0.0889
GW-080716-MW5-01	8/7/16		0.444	1.46	0.344 J	--	--	--	--
GW-NHTF-080117-MW5-01	8/1/17		0.310	2.03	0.187 J	--	--	--	--
GW-NHTF-09212018-MW5-1	9/21/18		--	1.30	--	ND (0.200)	1.11	ND (0.500)	2.58 J
GW-NHTF-09212018-MW11-2		✓	--	1.28	--	ND (0.200)	1.86	ND (0.500)	2.61 J
19-NHTF-106-GW	9/17/19		--	4.02	--	ND (0.200)	ND (0.500)	ND (0.500)	1.00 J
19-NHTF-107-GW		✓	--	3.38	--	ND (0.200)	ND (0.500)	ND (0.500)	1.03 J
MW-6									
10-NHTF-MW6-01-GW	8/28/10		0.116 JS	ND (0.417)	ND (0.417)	ND (0.0005) JS	0.00135 JS	ND (0.001) JS	0.0139 JS
--	3/31/11		Insufficient water volume due to slushy/frozen water.						
11-NHTF-203-GW	6/19/11		ND (0.100)	0.16 J	ND (0.200)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.003)
11-NHTF-304-GW	9/18/11		ND (0.100)	0.16 J	ND (0.200)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.003)
12-NEW-109-GW	7/9/12		ND (0.100)	ND (0.57)	ND (1.1)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)
12-NEW-205-GW	10/25/12		ND (0.100)	ND (1.0)	ND (1.0)	ND (0.001)	ND (0.001)	ND (0.001)	ND (0.003)
MW-7									
10-NHTF-MW7-01-GW	8/28/10		0.0564 JS	ND (0.427)	ND (0.427)	ND (0.0005) R	ND (0.001) R	ND (0.001) R	ND (0.003) R
11-NWH-105-GW	3/31/11		0.13	0.49 J	ND (0.200)	ND (0.001)	ND (0.005)	ND (0.001)	ND (0.003)
11-NHTF-202-GW	6/18/11		ND (0.100)	0.440	ND (0.200)	ND (0.001)	ND (0.005)	0.001	0.002
11-NHTF-307-GW	9/19/11		0.061 J	0.130 J	ND (0.200)	ND (0.001)	ND (0.005)	0.00044 J	ND (0.003)
12-NEW-104-GW	7/9/12		ND (0.100)	ND (0.54)	ND (1.1)	ND (0.001)	0.001	ND (0.001)	ND (0.003)
12-NEW-207-GW	10/25/12		ND (0.100)	ND (1.3)	ND (1.3)	ND (0.001)	0.0013	ND (0.001)	ND (0.003)
19-NHTF-101-GW	9/17/19		--	0.417 J	--	ND (0.200)	ND (0.500)	0.330 J	ND (0.150)

TABLE 5: HISTORICAL DATA
Ground Water Monitoring Report – September 2019
Former Newhalen Tank Farm
Crowley Fuels, LLC
Newhalen, Alaska

Sample ID	Sample Date	Duplicate	GRO (mg/L)	DRO (mg/L)	RRO (mg/L)	BTEX (µg/L)			
						Benzene	Toluene	Ethyl-benzene	Total Xylenes
ADEC Groundwater Cleanup Level [(1)]:			***2.2***	***1.5***	***1.1***	***4.6***	***1100***	***15***	***190***
MW-8									
10-NHTF-MW8-01-GW	8/28/10		0.145 JS	0.445	ND (0.431)	0.00295 JS	ND (0.001) JS	0.0136 JS	0.0152 JS
11-NWH-104-GW	3/31/11		0.086 J	0.51 J	ND (0.200)	ND (0.001)	ND (0.005)	0.0012	ND (0.003)
11-NHTF-201-GW	6/18/11		0.3	0.82	ND (0.200)	0.012	0.001	0.036	0.14
11-NHTF-309-GW	9/19/11		0.12	0.46 J	ND (0.200)	ND (0.001)	ND (0.005)	0.014	0.019
12-NEW-101-GW	7/9/12		0.336	0.85	ND (1.1)	ND (0.001)	0.0258	ND (0.001)	0.1
12-NEW-209-GW	10/26/12		0.299	ND (1.0)	ND (1.0)	ND (0.001)	0.0263	ND (0.001)	0.036
13-NHTF-101-GW	5/22/13		0.18	0.15	0.077	ND (0.001)	ND (0.005)	0.016	0.048
19-NHTF-102-GW	9/17/19		--	0.19 4J	--	ND (0.200)	ND (0.500)	0.570 J	ND (0.150)

Notes:

[(1)] ADEC Cleanup Levels from: 18 AAC 75.345, Table C , October 27, 2018.

Key:

-- - Not analyzed or not applicable
AAC - Alaska Administrative Code
ADEC - Alaska Department of Environmental Conservation
B - Blank contamination, the analyte was detected within 5 times of blank sample.
BTEX - Benzene, toluene, ethylbenzene, and total xylenes
DRO - Diesel-range organics
GRO - Gasoline-range organics
J - Estimated Value. Analyte detected at less than the RDL and greater than or equal to the MDL
JS - Estimated value. Surrogate recoveries outside of method acceptance limits.
mg/L - Milligrams per liter
MDL - Method Detection Limit
ND - Not detected; analyte not detected above the RDL.
U - Analyte was analyzed for, but not detected
R - Reject due to surrogate recovery < 10%. Data is usable for screening purposes.
RDL - Reported detection limit
RRO - Residual-range organics

TABLE 6: MANN-KENDALL INPUT DATA

Ground Water Monitoring Report – September 2019

Former Newhalen Tank Farm

Crowley Fuels, LLC

Newhalen, Alaska

MW-2	
8/28/2010	1.50
3/31/2011	1.20
6/21/2011	2.00
9/19/2011	2.20
7/9/2012	1.80
10/26/2012	2.00
5/22/2013	1.20
6/11/2014	1.22
6/27/2015	3.61
8/7/2016	1.43
8/1/2017	1.71
9/21/2018	0.96
9/17/2019	2.27

MW-3	
8/28/2010	2.43
6/21/2011	1.60
9/19/2011	1.50
7/9/2012	1.30
10/26/2012*	0.55
5/22/2013	1.80
6/11/2014	0.85
6/27/2015	1.42
8/7/2016	7.40
8/1/2017	2.08
9/21/2018	0.56
9/17/2019	0.56

MW-5	
8/28/2010	3.04
6/21/2011	13.00
9/19/2011	4.50
7/9/2012	2.90
5/22/2013	2.50
6/11/2014	4.60
6/27/2015	1.79
8/7/2016	2.89
8/1/2017	2.03
9/21/2018	1.28
9/17/2019	4.02

*For ND values, used 1/2 of laboratory RL.

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ATTACHMENT 3

Field Forms and Notes

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CONTENTS

PAGE	REFERENCE	DATE
	well locks = 1099	
	cw/lodge = mark@ 571-8222	
	Iliamna Air = 571-1245	

9/17/19 Newhalen DNA

0915 Arrive at site. Locate well.
0930 Call PK at Crosby regarding combination for well locks.
0950 Confirm lock combination is 1099.
1000 gauge MW-6:
DTW = 5.18
TD = 9.47
1015 gauge MW-4:
DTW = 7.20
TD = 10.93
1035 Arrive at MW-9.
1100 collect sample 19-NHTF-101-GW at MW-7.
1130 Begin purge at MW-8.
1200 Collect sample 19-NHTF-102-GW at MW-8.
1220 Gauge water at MW-1.
1225 Begin purge at MW-1.
1240 collect sample 19-NHTF-103-GW at MW-1.
1300 Arrive at MW-2.
1310 Begin purge at MW-2.
1335 Collect sample 19-NHTF-104-GW at MW-2.
1400 Setup at MW-3.

9/17/19

9/17/19 Newhalen DNA

1430 Collect sample 19-NHTF-105 @ MW-3.
1440 Setup at MW-5.
1520 Collect dup sample set 19-NHTF-106-GW and 19-NHTF-107-GW @ MW-5.
1555 Complete packing up and depart site.

9/17/19

Groundwater Sampling Worksheet

dnaENVIRONMENTAL

Project Name: **Newhalen Tank Farm** | Sample Location (ie. MW1): MW-1

Client: **Crowley Fuels, LLC** | Date: 9-17-19

Sampler: D. Frank | Purge Start Time: 1225

Weather Conditions: Cloudy ~54°F / overcast

Sample ID:	19-NHTF-103-GW	Time: 1245	(primary)	dup	split	ms/msd	
Sample ID:		Time:	primary	dup	split	ms/msd	
Sample ID:		Time:	primary	dup	split	ms/msd	

Analyses	✓	Number/type of Bottles	Comments/ preservation:	Analyses	Number/type of Bottles	Comments/ preservation:
VOCs	✓	3x40mL VOA	HCl			
DRO	✓	2x250mL amber	~~ice~~ HCl			
PAHs	✓	2x250mL amber	ice			

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2"

Product Present? (y/n/sheen) no

Depth to Top of Product (ft BTOC): —

Depth to Oil/Water Interface (ft BTOC): —

(BTOC = below top of casing)

Total Well Depth (ft BTOC): 11.32 (depth to bottom)

Depth to Water (ft BTOC): 6.51

Water Column (ft) 4.81

One Purge Volume (gal): 0.77

purge calcluation formula on back

Sensory Observations

Color: (Clear), Amber, Tan, Brown, Grey, Milky White, Other:

Odor: (None), Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: (None), Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume (gal)	Temp °C	pH	Conductivity (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	1237		8.88	5.65	0.033	3.29	3.29	211	clear	none	6.60	0.09
2	1240		8.88	5.64	0.034	4.50	4.50	210	"	"	6.60	0.09
3	1244		8.88	5.64	0.034	4.44	4.44	210	"	"	6.60	0.09
4												
5												
6												
7												
8												
9												
10												
11												
12												

see back for additional entry lines if needed

Purge Rate (low flow): 0.40 L/min | Total Volume Purged: ~2.1 gal | Measured Drawdown (ft): 0.09

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. Note that site's hyrogeology may make it difficult to achieve this specification.

Purge Method (disposable bailer, teflon bailer, (submersible pump), etc.):

Sample Method (disposable bailer, teflon bailer, (submersible pump), etc.):

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

Remarks (well recovery, unusual conditions/observations): overgrown area

Signed: [signature] | Date: 9/18/19

Signed/Reviewer: | Date:

Instrument Observations (continued)

dnaENVIRONMENTAL — Groundwater Sampling Worksheet

Project Name: **Newhalen Tank Farm** Sample Location (ie. MW1): MW-2

Client: **Crowley Fuels, LLC** Date: 9/17/19

Sampler: D. Frank Purge Start Time: 1310

Weather Conditions: overcast some light rain

Sample ID: 19-NHTF-104-GW Time: 1335 (primary) dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Analyses	Number/type of Bottles	Comments/ preservation:	Analyses	Number/type of Bottles	Comments/ preservation:
VOCs ✓	3x40mL VOA	HCl			
DRO ✓	2x250mL amber	~~ice~~ HCl			
PAHs ✓	2x250mL amber	ice			

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2" Total Well Depth (ft BTOC): 11.35 (depth to bottom)

Product Present? (y/n/sheen) no Depth to Water (ft BTOC): 4.94.57

Depth to Top of Product (ft BTOC): - Water Column (ft) 6.76

Depth to Oil/Water Interface (ft BTOC): - One Purge Volume (gal): 1.08

(BTOC = below top of casing) *purge calculation formula on back*

Sensory Observations

Color: (Clear), Amber, Tan, Brown, Grey, Milky White, Other:

Odor: None, Low, Medium, High, Very Strong, H2S, (Fuel Like), Chemical ?, Unknown

Turbidity: (None), Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume (gal)	Temp °C	pH	Conductivity (mS/cm)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	1315		9.65	6.09	0.073	4.00	1.20	136	clear	HC	4.57	0.0
2	1318		9.71	6.14	0.060	2.04	0.94	125	clear	HC	4.57	0.0
3	1322		9.82	6.20	0.057	1.82	0.71	121	clear	HC	"	"
4	1325		9.82	6.20	0.058	1.76	0.64	95.6	clear	HC	"	"
5	1335		9.84	6.19	0060	1.35	0.60	95.0	clear	HC	"	"
6												
7												
8												
9												
10												
11												
12												

see back for additional entry lines if needed

Purge Rate (low flow): 0.375 L/min Total Volume Purged: ~2.5 gal Measured Drawdown (ft): 0.0

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. Note that site's hyrogeology may make it difficult to achieve this specification.

Purge Method (disposable bailer, teflon bailer, (submersible pump) etc.):

Sample Method (disposable bailer, teflon bailer, (submersible pump) etc.):

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

Remarks (well recovery, unusual conditions/observations): overgrown

Signed: Date: 9/17/19

Signed/Reviewer: Date:

Instrument Observations (continued)

dna ENVIRONMENTAL — Groundwater Sampling Worksheet

Project Name: **Newhalen Tank Farm** | Sample Location (ie. MW1): MW-3
Client: **Crowley Fuels, LLC** | Date: 9-17-19
Sampler: D. Frank | Purge Start Time: 1410
Weather Conditions: Overcast no wind

Sample ID: 19-NHTF-104-GW | Time: 1430 | (primary) dup split ms/msd
Sample ID: | Time: | primary dup split ms/msd
Sample ID: | Time: | primary dup split ms/msd

Analyses	Number/type of Bottles	Comments/ preservation:	Analyses	Number/type of Bottles	Comments/ preservation:
VOCs ✓	3x40mL VOA	HCl			
DRO ✓	2x250mL amber	~~ice~~ HCl			
PAHs ✓	2x250mL amber	ice			

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2"
Product Present? (y/n/sheen) NO
Depth to Top of Product (ft BTOC): —
Depth to Oil/Water Interface (ft BTOC): —
(BTOC = below top of casing)

Total Well Depth (ft BTOC): 9.90 (depth to bottom)
Depth to Water (ft BTOC): 6.21
Water Column (ft) 3.69
One Purge Volume (gal): 0.59
purge calculation formula on back

Sensory Observations

Color: (Clear), Amber, Tan, Brown, Grey, Milky White, Other:
Odor: (None), Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown
Turbidity: (None), Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume (gal)	Temp °C	pH	Conductivity (M)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	1413		10:04	6.09	0.119	4.36	0.90	147	clear	NO	6.21	0.0
2	1421		10:04	6.09	0.121	3.73	0.64	144	clear	NO	6.21	0.0
3	1427		10:04	6.09	0.121	3.84	0.60	146	clear	NO	6.21	0.0
4												
5												
6												
7												
8												
9												
10												
11												
12												

see back for additional entry lines if needed

Purge Rate (low flow): 0.450 L/min | Total Volume Purged: ~2.1gal. | Measured Drawdown (ft): 0.0

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. ~~Note that~~ site's hyrogeology may make it difficult to achieve this specification.

Purge Method (disposable bailer, teflon bailer, (submersible pump), etc.):
Sample Method (disposable bailer, teflon bailer, (submersible pump), etc.):

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

Remarks (well recovery, unusual conditions/observations): overgrown

Signed: [signature] Date: 9/17/19

Signed/Reviewer: Date:

Instrument Observations (continued)

dna ENVIRONMENTAL — Groundwater Sampling Worksheet

Project Name: **Newhalen Tank Farm** | Sample Location (ie. MW1): MW-5
Client: **Crowley Fuels, LLC** | Date: 9-17-19
Sampler: D. Frank | Purge Start Time: 1440
Weather Conditions: overcast ~55

Sample ID: 19-NHTF-106-GW Time: _____ (primary) dup split ms/msd
Sample ID: 19-NHTF-107-GW Time: _____ primary (dup) split ms/msd
Sample ID: _____ Time: _____ primary dup split ms/msd

Analyses		Number/type of Bottles	Comments/ preservation:	Analyses	Number/type of Bottles	Comments/ preservation:
VOCs	✓	3x40mL VOA	HCl			
DRO	✓	2x250mL amber	~~ice~~ HCl			
PAHs	✓	2x250mL amber	ice			

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2"
Product Present? (y/n/sheen) NO
Depth to Top of Product (ft BTOC): —
Depth to Oil/Water Interface (ft BTOC): —
(BTOC = below top of casing)

Total Well Depth (ft BTOC): 9.12 (depth to bottom)
Depth to Water (ft BTOC): 4.61
Water Column (ft) 4.51
One Purge Volume (gal): 0.72
purge calculation formula on back

Sensory Observations

Color: (Clear,) Amber, Tan, Brown, Grey, Milky White, Other:
Odor: None, (Low,) Medium, High, Very Strong, H2S, (Fuel Like,) Chemical ?, Unknown
Turbidity: (None,) Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume (gal)	Temp °C	pH	Conductivity (M)	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	1500	12.96	12.44	6.00	0.078	4.46	0.61	124	clear	HC	4.61	0.0
2	1510	12	12.46	5.98	0.081	3.50	0.53	123	clear	HC	4.61	0.0
3	1515	/	12.40	5.97	0.081	3.20	0.59	123	clear	HC	4.61	0.0
4												
5												
6												
7												
8												
9												
10												
11												
12												

see back for additional entry lines if needed

Purge Rate (low flow): 0.440 L/min | Total Volume Purged: ~4 gallons | Measured Drawdown (ft): 0.0

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. Note that site's hyrogeology may make it difficult to achieve this specification.

Purge Method (disposable bailer, teflon bailer, (submersible pump,) etc.):
Sample Method (disposable bailer, teflon bailer, (submersible pump,) etc.):

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

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

Signed: _____ Date: 9/17/19

Signed/Reviewer: _____ Date: _____

Instrument Observations (continued)

Groundwater Sampling Worksheet

dna ENVIRONMENTAL

Project Name: **Newhalen Tank Farm** Sample Location (ie. MW1): MW-7

Client: **Crowley Fuels, LLC** Date: 9-17-19

Sampler: D. Frank Purge Start Time: 1037

Weather Conditions: Calm 54°F overcast

Sample ID: 19-NHTF-101-G-W Time: 1100 (primary) dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Analyses	Number/type of Bottles	Comments/ preservation:	Analyses	Number/type of Bottles	Comments/ preservation:
VOCs ✓	3x40mL VOA	HCl			
DRO ✓	2x250mL amber	~~ice~~ HCl			
PAHs ✓	2x250mL amber	ice			

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2"

Product Present? (y/n/sheen) no

Depth to Top of Product (ft BTOC): —

Depth to Oil/Water Interface (ft BTOC): —

(BTOC = below top of casing)

Total Well Depth (ft BTOC): 11.47 (depth to bottom)

Depth to Water (ft BTOC): 6.62

Water Column (ft) 4.85

One Purge Volume (gal): 2.775

purge calculation formula on back

Sensory Observations

Color: (Clear) Amber, Tan, Brown, Grey, Milky White, Other:

Odor: (None) Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, (Low) (Medium) High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume ~~(gal)~~ L	Temp °C	pH	Conductivity ( )	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	1041	1.25	11.2	5.64	0.047	846.9	2.70	170	milk	none	6.68	0.06
2	1047	2.3	10.89	5.86	0.043	427.5	2.60	169	clear	none	6.66	.04
3	1055	4.5	10.93	5.84	0.043	99.89	2.26	178	clear	none	6.66	.04
4	1059	6.9	10.89	5.85	0.043	60.40	2.21	185	clear	none	6.66	.04
5												
6												
7												
8												
9												
10												
11												
12												

see back for additional entry lines if needed

Purge Rate (low flow): 0.30 L/min Total Volume Purged: ~2 gallons Measured Drawdown (ft): 0.04

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. Note that site's hyrogeology may make it difficult to achieve this specification.

Purge Method (disposable bailer, teflon bailer, (submersible pump), etc.):

Sample Method (disposable bailer, teflon bailer, (submersible pump), etc.):

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

Remarks (well recovery, unusual conditions/observations):

Signed: Date: 9/17/19

Signed/Reviewer: Date:

Instrument Observations (continued)

Groundwater Sampling Worksheet

dna ENVIRONMENTAL

Project Name: **Newhalen Tank Farm** Sample Location (ie. MW1): MW-8

Client: **Crowley Fuels, LLC** Date: 9-17-19

Sampler: D. Frank Purge Start Time: 1130

Weather Conditions: overcast 59°F

Sample ID: 19-NHTF-102-GW Time: 1200 (primary) dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Sample ID: Time: primary dup split ms/msd

Analyses		Number/type of Bottles	Comments/ preservation:	Analyses	Number/type of Bottles	Comments/ preservation:
VOCs	✓	3x40mL VOA	HCl			
DRO	✓	2x250mL amber	~~ice~~ HCl			
PAHs	✓	2x250mL amber	ice			

Well Information / Purge Volume Calculation

Well Casing Diameter (in): 2"

Product Present? (y/n/sheen) NO

Depth to Top of Product (ft BTOC): —

Depth to Oil/Water Interface (ft BTOC): —

(BTOC = below top of casing)

Total Well Depth (ft BTOC): 8.52 (depth to bottom)

Depth to Water (ft BTOC): 6.10

Water Column (ft) 2.42 1120

One Purge Volume (gal): 0.38

purge calculation formula on back

Sensory Observations

Color: Clear, Amber, Tan, Brown, Grey, Milky White, Other:

Odor: None, Low, Medium, High, Very Strong, H2S, Fuel Like, Chemical ?, Unknown

Turbidity: None, Low, Medium, High, Very Turbid, Heavy Silts

Instrument Observations

Round	Time	Volume (gal)	Temp °C	pH	Conductivity ( )	Turbidity (NTUs)	DO (mg/L)	ORP (mV)	Color	Odor	Water Level (ft BTOC)	Draw-down (ft)
1	1134	1	10.79	6.00	0.053	70.09	2.32	176	clear	none	6.10	0.0
2	1150	2.2	10.81	6.00	0.056	16.42	1.66	178	"	"	6.10	"
3	1156	2.7	10.76	5.99	0.056	7.32	1.41	176	"	"	6.10	"
4												
5												
6												
7												
8												
9												
10												
11												
12												

see back for additional entry lines if needed

Purge Rate (low flow): 0.410 L/min Total Volume Purged: Measured Drawdown (ft): 0.0

Notes: Drawdown should be less than 0.3 feet while sampling. Minimal drawdown shall be achieved and measured by pumping at a low rate (approximately 0.1 to 0.5 liter/minute) and continually measuring water levels in the well. Note that site's hydrogeology may make it difficult to achieve this specification.

Purge Method (disposable bailer, teflon bailer, ~~submersible pump~~, etc.):

Sample Method (disposable bailer, teflon bailer, submersible pump, etc.):

Well Integrity (condition of casing, flush mount sealing properly, cement seal intact, etc.): Water casing at surface, appears jacket out of ground.

Remarks (well recovery, unusual conditions/observations): Frost-jacked out

Signed: Date: 9/17/19

Signed/Reviewer: Date:

Instrument Observations (continued)

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ATTACHMENT 4

Photograph Log

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Photograph Log

Attachment 4

Photo: **1** Time: **1058** Date: **9/17/2019** Direction: **East**
Subject: **MW-6, overgrown.**

Photo: **2** Time: **1058** Date: **9/17/2019** Direction: **East**
Subject: **MW-6, overgrown.**

Report: September 2019 Newhalen Tank Farm Groundwater Monitoring

Photo: **3** Time: **1115** Date: **9/17/2019** Direction: **East**
Subject: **MW-4.**

Photo: **4** Time: **1118** Date: **9/17/2019** Direction: **Northeast**
Subject: **MW-7.**

Photo: **5** Time: **1218** Date: **9/17/2019** Direction: **East**
Subject: **MW-8, note jacking.**

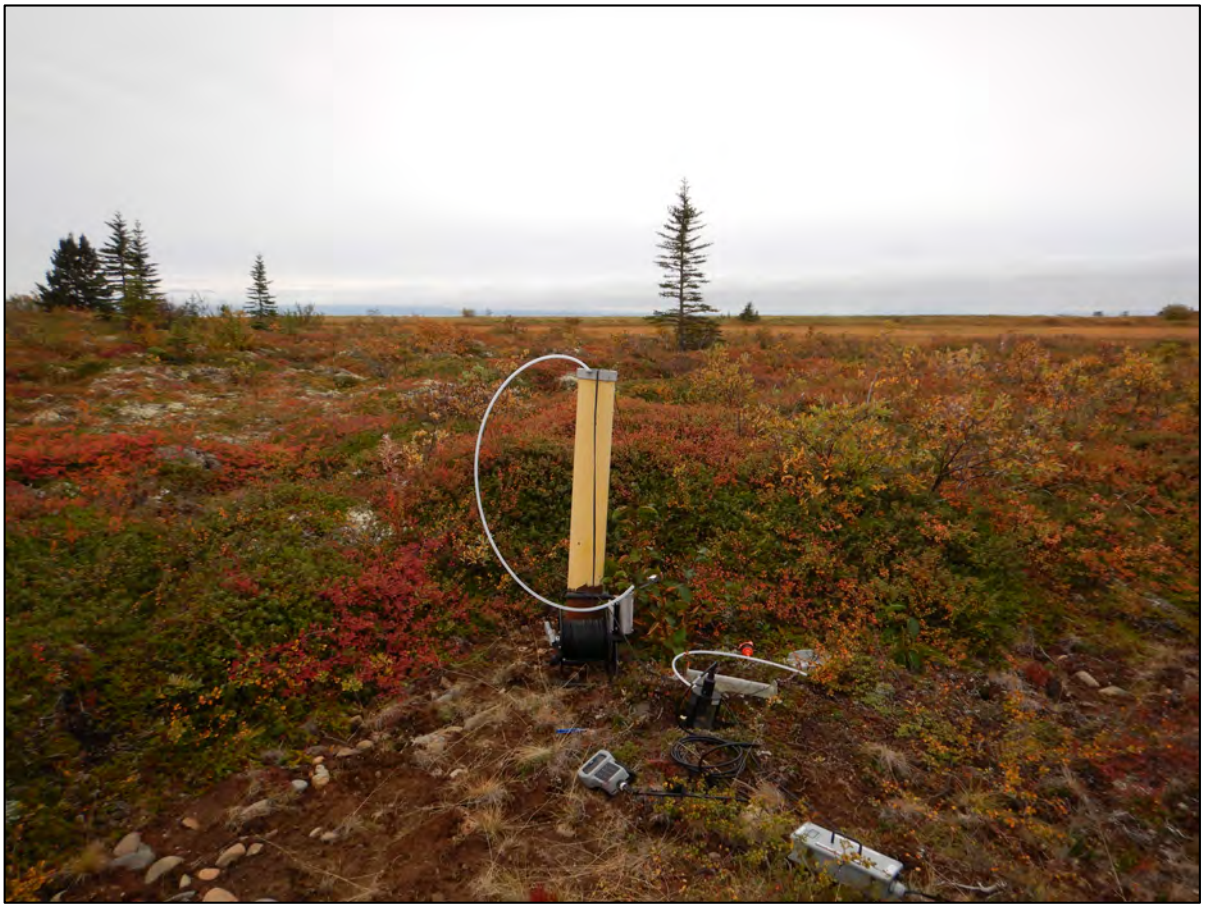

Photo: **6** Time: **1306** Date: **9/17/2019** Direction: **Southeast**
Subject: **MW-8, sampling.**

Photo: **7** Time: **1314** Date: **9/17/2019** Direction: **North**
Subject: **MW-1.**

Photo: **8** Time: **1400** Date: **9/17/2019** Direction: **Southeast**
Subject: **MW-2, overgrown.**

Photo: **9** Time: **1455** Date: **9/17/2019** Direction: **East**
Subject: **MW-3.**

Photo: **10** Time: **1455** Date: **9/17/2019** Direction: **East**
Subject: **MW-3, overgrown.**

Photo: **9** Time: **1554** Date: **9/17/2019** Direction: **East**
Subject: **Sampling at MW-5.**

Photo: **10** Time: **1642** Date: **9/17/2019** Direction: **Northwest**
Subject: **MW-5, surrounded by tilled landfarm.**

Photo: **11** Time: **1045** Date: **9/17/2019** Direction: **South**
Subject: **Site in relation to Lake Iliamna.**

Photo: **12** Time: **1046** Date: **9/17/2019** Direction: **Down**
Subject: **Landfarm conditions.**

Photo: **11** Time: **1050** Date: **9/17/2019** Direction: **Northwest**
Subject: **Site in relation to village of Newhalen.**

Photo: **12** Time: **1054** Date: **9/17/2019** Direction: **Southeast**
Subject: **Landfarm conditions, lake Iliamna in background.**

ATTACHMENT 5

Laboratory Report

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Laboratory Report of Analysis

To: DNA Environmental Consultants, LLC
111 W. 9th Ave
Anchorage, AK 99501
(907)350-4897

Report Number: **1195455**

Client Project: **NEWHALEN**

Dear Daniel Frank,

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: **DNA Environmental Consultants, LLC**
SGS Project: **1195455**
Project Name/Site: **NEWHALEN**
Project Contact: **Daniel Frank**

Refer to sample receipt form for information on sample condition.

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

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

Laboratory Qualifiers

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

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

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & 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). SGS is only certified for the analytes listed on our Drinking Water Certification, and only those analytes will be reported to the State of Alaska for compliance. Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

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

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
19-NHTF-101-GW	1195455001	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-102-GW	1195455002	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-103-GW	1195455003	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-104-GW	1195455004	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-105-GW	1195455005	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-106-GW	1195455006	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-107-GW	1195455007	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
19-NHTF-101-RB	1195455008	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)
Trip Blank	1195455009	09/17/2019	09/18/2019	Water (Surface, Eff., Ground)

Method	Method Description
8270D SIM LV (PAH)	8270 PAH SIM GC/MS Liq/Liq ext. LV
AK102	DRO Low Volume (W)
SW8260C	Volatile Organic Compounds (W) FULL

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Detectable Results Summary

Client Sample ID: **19-NHTF-101-GW**
Lab Sample ID: 1195455001

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.249	ug/L
	Fluorene	0.0620	ug/L
	Naphthalene	1.04	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.417J	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	0.340J	ug/L
	4-Isopropyltoluene	1.34	ug/L
	Ethylbenzene	0.330J	ug/L
	Isopropylbenzene (Cumene)	0.810J	ug/L
	Naphthalene	1.77	ug/L
	n-Propylbenzene	0.710J	ug/L
	sec-Butylbenzene	0.520J	ug/L

Client Sample ID: **19-NHTF-102-GW**
Lab Sample ID: 1195455002

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.916	ug/L
	2-Methylnaphthalene	0.497	ug/L
	Acenaphthene	0.0588	ug/L
	Fluorene	0.0691	ug/L
	Naphthalene	1.45	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.194J	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	0.660J	ug/L
	4-Isopropyltoluene	2.31	ug/L
	Chloromethane	0.440J	ug/L
	Ethylbenzene	0.570J	ug/L
	Isopropylbenzene (Cumene)	1.26	ug/L
	Naphthalene	2.35	ug/L
	n-Propylbenzene	1.51	ug/L
	P & M -Xylene	0.620J	ug/L
	sec-Butylbenzene	1.35	ug/L

Client Sample ID: **19-NHTF-103-GW**
Lab Sample ID: 1195455003

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	0.197	ug/L
	Naphthalene	0.529	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	0.575J	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	2.05	ug/L
	4-Isopropyltoluene	0.660J	ug/L
	Isopropylbenzene (Cumene)	0.370J	ug/L
	Naphthalene	0.830J	ug/L
	n-Propylbenzene	0.390J	ug/L

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Detectable Results Summary

Client Sample ID: **19-NHTF-104-GW**
Lab Sample ID: 1195455004

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	23.3	ug/L
	2-Methylnaphthalene	25.2	ug/L
	Acenaphthene	0.362	ug/L
	Fluorene	0.444	ug/L
	Naphthalene	23.8	ug/L
	Phenanthrene	0.0684	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	2.27	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	83.8	ug/L
	1,3,5-Trimethylbenzene	20.4	ug/L
	4-Isopropyltoluene	23.1	ug/L
	Ethylbenzene	10.0	ug/L
	Isopropylbenzene (Cumene)	11.9	ug/L
	Naphthalene	38.0	ug/L
	n-Propylbenzene	19.9	ug/L
	o-Xylene	25.2	ug/L
	P & M -Xylene	19.1	ug/L
	sec-Butylbenzene	6.82	ug/L
	Toluene	0.340J	ug/L
	Xylenes (total)	44.3	ug/L

Client Sample ID: **19-NHTF-105-GW**
Lab Sample ID: 1195455005

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	1.49	ug/L
	2-Methylnaphthalene	0.377	ug/L
	Naphthalene	0.806	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	2.06	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	6.12	ug/L
	1,3,5-Trimethylbenzene	3.09	ug/L
	4-Isopropyltoluene	2.79	ug/L
	Ethylbenzene	0.470J	ug/L
	Isopropylbenzene (Cumene)	0.540J	ug/L
	Naphthalene	2.80	ug/L
	n-Propylbenzene	1.14	ug/L
	o-Xylene	1.69	ug/L
	P & M -Xylene	1.05J	ug/L
	sec-Butylbenzene	0.910J	ug/L
	Xylenes (total)	2.74J	ug/L

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Detectable Results Summary

Client Sample ID: **19-NHTF-106-GW**
Lab Sample ID: 1195455006

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	5.41	ug/L
	2-Methylnaphthalene	2.98	ug/L
	Fluorene	0.350	ug/L
	Naphthalene	1.32	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	4.02	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	4.02	ug/L
	1,3,5-Trimethylbenzene	8.46	ug/L
	2-Butanone (MEK)	6.49J	ug/L
	4-Isopropyltoluene	6.53	ug/L
	Isopropylbenzene (Cumene)	1.07	ug/L
	Naphthalene	3.25	ug/L
	n-Propylbenzene	2.10	ug/L
	o-Xylene	1.00	ug/L
	sec-Butylbenzene	1.81	ug/L
	tert-Butylbenzene	0.370J	ug/L
	Xylenes (total)	1.00J	ug/L

Client Sample ID: **19-NHTF-107-GW**
Lab Sample ID: 1195455007

	Parameter	Result	Units
Polynuclear Aromatics GC/MS	1-Methylnaphthalene	4.05	ug/L
	2-Methylnaphthalene	2.26	ug/L
	Fluorene	0.253	ug/L
	Naphthalene	0.967	ug/L
Semivolatile Organic Fuels	Diesel Range Organics	3.28	mg/L
Volatile GC/MS	1,2,4-Trimethylbenzene	4.09	ug/L
	1,3,5-Trimethylbenzene	8.63	ug/L
	2-Butanone (MEK)	6.16J	ug/L
	4-Isopropyltoluene	6.68	ug/L
	Isopropylbenzene (Cumene)	1.04	ug/L
	Naphthalene	3.25	ug/L
	n-Propylbenzene	2.10	ug/L
	o-Xylene	1.03	ug/L
	sec-Butylbenzene	1.84	ug/L
	tert-Butylbenzene	0.380J	ug/L
	Xylenes (total)	1.03J	ug/L

Client Sample ID: **Trip Blank**
Lab Sample ID: 1195455009

	Parameter	Result	Units
Volatile GC/MS	Chloromethane	0.410J	ug/L

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Results of **19-NHTF-101-GW**

Client Sample ID: **19-NHTF-101-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455001
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.249		0.0481	0.0144	ug/L	1		09/19/19 18:22
2-Methylnaphthalene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Acenaphthene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Acenaphthylene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Benzo(a)Anthracene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Benzo[a]pyrene	0.00960	U	0.0192	0.00596	ug/L	1		09/19/19 18:22
Benzo[b]Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Benzo[g,h,i]perylene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Benzo[k]fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Chrysene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Dibenzo[a,h]anthracene	0.00960	U	0.0192	0.00596	ug/L	1		09/19/19 18:22
Fluoranthene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Fluorene	0.0620		0.0481	0.0144	ug/L	1		09/19/19 18:22
Indeno[1,2,3-c,d] pyrene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Naphthalene	1.04		0.0962	0.0298	ug/L	1		09/19/19 18:22
Phenanthrene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Pyrene	0.0240	U	0.0481	0.0144	ug/L	1		09/19/19 18:22
Surrogates								
2-Methylnaphthalene-d10 (surr)	73.2		47-106		%	1		09/19/19 18:22
Fluoranthene-d10 (surr)	75.5		24-116		%	1		09/19/19 18:22

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 18:22
Container ID: 1195455001-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-101-GW**

Client Sample ID: **19-NHTF-101-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455001
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
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	0.417	J	0.600	0.180	mg/L	1		10/11/19 00:22
Surrogates								
5a Androstane (surr)	84.9		50-150		%	1		10/11/19 00:22

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 00:22
Container ID: 1195455001-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-101-GW**

Client Sample ID: **19-NHTF-101-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455001
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
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		09/22/19 16:22
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:22
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 16:22
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,2,4-Trimethylbenzene	0.340	J	1.00	0.310	ug/L	1		09/22/19 16:22
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:22
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 16:22
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:22
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:22
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:22
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:22
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:22
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
4-Isopropyltoluene	1.34		1.00	0.310	ug/L	1		09/22/19 16:22
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:22
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 16:22
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:22
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 16:22
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:22
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:22
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:22

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-101-GW**

Client Sample ID: **19-NHTF-101-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455001
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
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		09/22/19 16:22
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 16:22
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 16:22
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Ethylbenzene	0.330 J		1.00	0.310	ug/L	1		09/22/19 16:22
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:22
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Isopropylbenzene (Cumene)	0.810 J		1.00	0.310	ug/L	1		09/22/19 16:22
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 16:22
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:22
Naphthalene	1.77		1.00	0.310	ug/L	1		10/01/19 18:29
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
n-Propylbenzene	0.710 J		1.00	0.310	ug/L	1		09/22/19 16:22
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/22/19 16:22
sec-Butylbenzene	0.520 J		1.00	0.310	ug/L	1		09/22/19 16:22
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:22
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:22
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 16:22
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/22/19 16:22
Surrogates								
1,2-Dichloroethane-D4 (surr)	106		81-118		%	1		09/22/19 16:22
4-Bromofluorobenzene (surr)	97.9		85-114		%	1		09/22/19 16:22
Toluene-d8 (surr)	99.5		89-112		%	1		09/22/19 16:22

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-101-GW**

Client Sample ID: **19-NHTF-101-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455001
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 16:22
Container ID: 1195455001-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19512
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/01/19 18:29
Container ID: 1195455001-G

Prep Batch: VXX34990
Prep Method: SW5030B
Prep Date/Time: 10/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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

Results of **19-NHTF-102-GW**

Client Sample ID: **19-NHTF-102-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455002
Lab Project ID: 1195455

Collection Date: 09/17/19 12:00
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.916		0.0490	0.0147	ug/L	1		09/19/19 18:43
2-Methylnaphthalene	0.497		0.0490	0.0147	ug/L	1		09/19/19 18:43
Acenaphthene	0.0588		0.0490	0.0147	ug/L	1		09/19/19 18:43
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 18:43
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 18:43
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Fluorene	0.0691		0.0490	0.0147	ug/L	1		09/19/19 18:43
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Naphthalene	1.45		0.0980	0.0304	ug/L	1		09/19/19 18:43
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 18:43
Surrogates								
2-Methylnaphthalene-d10 (surr)	71		47-106		%	1		09/19/19 18:43
Fluoranthene-d10 (surr)	70.3		24-116		%	1		09/19/19 18:43

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 18:43
Container ID: 1195455002-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-102-GW**

Client Sample ID: **19-NHTF-102-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455002
Lab Project ID: 1195455

Collection Date: 09/17/19 12:00
Received Date: 09/18/19 11:19
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	0.194	J	0.600	0.180	mg/L	1		10/11/19 00:32
Surrogates								
5a Androstane (surr)	86		50-150		%	1		10/11/19 00:32

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 00:32
Container ID: 1195455002-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-102-GW**

Client Sample ID: **19-NHTF-102-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455002
Lab Project ID: 1195455

Collection Date: 09/17/19 12:00
Received Date: 09/18/19 11:19
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		09/22/19 16:37
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:37
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 16:37
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,2,4-Trimethylbenzene	0.660	J	1.00	0.310	ug/L	1		09/22/19 16:37
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:37
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 16:37
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:37
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:37
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:37
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:37
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:37
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
4-Isopropyltoluene	2.31		1.00	0.310	ug/L	1		09/22/19 16:37
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:37
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 16:37
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:37
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 16:37
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:37
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:37
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:37

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-102-GW**

Client Sample ID: **19-NHTF-102-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455002
Lab Project ID: 1195455

Collection Date: 09/17/19 12:00
Received Date: 09/18/19 11:19
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		09/22/19 16:37
Chloromethane	0.440 J		1.00	0.310	ug/L	1		09/22/19 16:37
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 16:37
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 16:37
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Ethylbenzene	0.570 J		1.00	0.310	ug/L	1		09/22/19 16:37
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:37
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Isopropylbenzene (Cumene)	1.26		1.00	0.310	ug/L	1		09/22/19 16:37
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 16:37
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:37
Naphthalene	2.35		1.00	0.310	ug/L	1		10/01/19 18:44
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
n-Propylbenzene	1.51		1.00	0.310	ug/L	1		09/22/19 16:37
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
P & M -Xylene	0.620 J		2.00	0.620	ug/L	1		09/22/19 16:37
sec-Butylbenzene	1.35		1.00	0.310	ug/L	1		09/22/19 16:37
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:37
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:37
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 16:37
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/22/19 16:37
Surrogates								
1,2-Dichloroethane-D4 (surr)	107		81-118		%	1		09/22/19 16:37
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/22/19 16:37
Toluene-d8 (surr)	98.8		89-112		%	1		09/22/19 16:37

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-102-GW**

Client Sample ID: **19-NHTF-102-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455002
Lab Project ID: 1195455

Collection Date: 09/17/19 12:00
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 16:37
Container ID: 1195455002-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19512
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 10/01/19 18:44
Container ID: 1195455002-G

Prep Batch: VXX34990
Prep Method: SW5030B
Prep Date/Time: 10/01/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **19-NHTF-103-GW**

Client Sample ID: **19-NHTF-103-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455003
Lab Project ID: 1195455

Collection Date: 09/17/19 12:40
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.197		0.0500	0.0150	ug/L	1		09/19/19 19:04
2-Methylnaphthalene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Acenaphthene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Acenaphthylene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Benzo(a)Anthracene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Benzo[a]pyrene	0.0100	U	0.0200	0.00620	ug/L	1		09/19/19 19:04
Benzo[b]Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Benzo[g,h,i]perylene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Benzo[k]fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Chrysene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Dibenzo[a,h]anthracene	0.0100	U	0.0200	0.00620	ug/L	1		09/19/19 19:04
Fluoranthene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Fluorene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Indeno[1,2,3-c,d] pyrene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Naphthalene	0.529		0.100	0.0310	ug/L	1		09/19/19 19:04
Phenanthrene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Pyrene	0.0250	U	0.0500	0.0150	ug/L	1		09/19/19 19:04
Surrogates								
2-Methylnaphthalene-d10 (surr)	73.6		47-106		%	1		09/19/19 19:04
Fluoranthene-d10 (surr)	74.2		24-116		%	1		09/19/19 19:04

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 19:04
Container ID: 1195455003-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-103-GW**

Client Sample ID: **19-NHTF-103-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455003
Lab Project ID: 1195455

Collection Date: 09/17/19 12:40
Received Date: 09/18/19 11:19
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	0.575	J	0.610	0.183	mg/L	1		10/11/19 00:42
Surrogates								
5a Androstane (surr)	85.5		50-150		%	1		10/11/19 00:42

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 00:42
Container ID: 1195455003-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 246 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-103-GW**

Client Sample ID: **19-NHTF-103-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455003
Lab Project ID: 1195455

Collection Date: 09/17/19 12:40
Received Date: 09/18/19 11:19
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		09/22/19 16:52
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:52
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 16:52
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,2,4-Trimethylbenzene	2.05		1.00	0.310	ug/L	1		09/22/19 16:52
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:52
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 16:52
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:52
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:52
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:52
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:52
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:52
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
4-Isopropyltoluene	0.660	J	1.00	0.310	ug/L	1		09/22/19 16:52
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:52
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 16:52
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:52
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 16:52
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 16:52
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 16:52
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 16:52

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J flagging is activated

Results of **19-NHTF-103-GW**

Client Sample ID: **19-NHTF-103-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455003
Lab Project ID: 1195455

Collection Date: 09/17/19 12:40
Received Date: 09/18/19 11:19
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		09/22/19 16:52
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 16:52
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 16:52
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:52
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Isopropylbenzene (Cumene)	0.370 J		1.00	0.310	ug/L	1		09/22/19 16:52
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 16:52
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:52
Naphthalene	0.830 J		1.00	0.310	ug/L	1		09/25/19 22:16
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
n-Propylbenzene	0.390 J		1.00	0.310	ug/L	1		09/22/19 16:52
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/22/19 16:52
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 16:52
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 16:52
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 16:52
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/22/19 16:52
Surrogates								
1,2-Dichloroethane-D4 (surr)	112		81-118		%	1		09/22/19 16:52
4-Bromofluorobenzene (surr)	100		85-114		%	1		09/22/19 16:52
Toluene-d8 (surr)	98.3		89-112		%	1		09/22/19 16:52

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J flagging is activated

Results of **19-NHTF-103-GW**

Client Sample ID: **19-NHTF-103-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455003
Lab Project ID: 1195455

Collection Date: 09/17/19 12:40
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 16:52
Container ID: 1195455003-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 22:16
Container ID: 1195455003-G

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **19-NHTF-104-GW**

Client Sample ID: **19-NHTF-104-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455004
Lab Project ID: 1195455

Collection Date: 09/17/19 13:35
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	23.3		0.245	0.0735	ug/L	5		09/21/19 18:58
2-Methylnaphthalene	25.2		0.245	0.0735	ug/L	5		09/21/19 18:58
Acenaphthene	0.362		0.0490	0.0147	ug/L	1		09/19/19 19:24
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 19:24
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 19:24
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Fluorene	0.444		0.0490	0.0147	ug/L	1		09/19/19 19:24
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Naphthalene	23.8		0.490	0.152	ug/L	5		09/21/19 18:58
Phenanthrene	0.0684		0.0490	0.0147	ug/L	1		09/19/19 19:24
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:24
Surrogates								
2-Methylnaphthalene-d10 (surr)	68.1		47-106		%	1		09/19/19 19:24
Fluoranthene-d10 (surr)	76		24-116		%	1		09/19/19 19:24

Batch Information

Analytical Batch: XMS11734
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/21/19 18:58
Container ID: 1195455004-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 19:24
Container ID: 1195455004-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-104-GW**

Client Sample ID: **19-NHTF-104-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455004
Lab Project ID: 1195455

Collection Date: 09/17/19 13:35
Received Date: 09/18/19 11:19
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	2.27		0.595	0.179	mg/L	1		10/11/19 00:52
Surrogates								
5a Androstane (surr)	95.2		50-150		%	1		10/11/19 00:52

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 00:52
Container ID: 1195455004-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 252 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-104-GW**

Client Sample ID: **19-NHTF-104-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455004
Lab Project ID: 1195455

Collection Date: 09/17/19 13:35
Received Date: 09/18/19 11:19
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		09/22/19 17:06
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:06
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:06
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,2,4-Trimethylbenzene	83.8		1.00	0.310	ug/L	1		09/22/19 17:06
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:06
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 17:06
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:06
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,3,5-Trimethylbenzene	20.4		1.00	0.310	ug/L	1		09/22/19 17:06
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:06
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:06
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:06
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:06
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
4-Isopropyltoluene	23.1		1.00	0.310	ug/L	1		09/22/19 17:06
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:06
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:06
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:06
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 17:06
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:06
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:06
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:06

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J flagging is activated

Results of **19-NHTF-104-GW**

Client Sample ID: **19-NHTF-104-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455004
Lab Project ID: 1195455

Collection Date: 09/17/19 13:35
Received Date: 09/18/19 11:19
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		09/22/19 17:06
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 17:06
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 17:06
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Ethylbenzene	10.0		1.00	0.310	ug/L	1		09/22/19 17:06
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:06
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Isopropylbenzene (Cumene)	11.9		1.00	0.310	ug/L	1		09/22/19 17:06
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 17:06
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:06
Naphthalene	38.0		1.00	0.310	ug/L	1		09/25/19 23:32
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
n-Propylbenzene	19.9		1.00	0.310	ug/L	1		09/22/19 17:06
o-Xylene	25.2		1.00	0.310	ug/L	1		09/22/19 17:06
P & M -Xylene	19.1		2.00	0.620	ug/L	1		09/22/19 17:06
sec-Butylbenzene	6.82		1.00	0.310	ug/L	1		09/22/19 17:06
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Toluene	0.340 J		1.00	0.310	ug/L	1		09/22/19 17:06
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:06
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:06
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 17:06
Xylenes (total)	44.3		3.00	1.00	ug/L	1		09/22/19 17:06
Surrogates								
1,2-Dichloroethane-D4 (surr)	113		81-118		%	1		09/22/19 17:06
4-Bromofluorobenzene (surr)	103		85-114		%	1		09/22/19 17:06
Toluene-d8 (surr)	94.6		89-112		%	1		09/22/19 17:06

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Results of **19-NHTF-104-GW**

Client Sample ID: **19-NHTF-104-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455004
Lab Project ID: 1195455

Collection Date: 09/17/19 13:35
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 17:06
Container ID: 1195455004-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 23:32
Container ID: 1195455004-G

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **19-NHTF-105-GW**

Client Sample ID: **19-NHTF-105-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455005
Lab Project ID: 1195455

Collection Date: 09/17/19 14:30
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	1.49		0.0490	0.0147	ug/L	1		09/19/19 19:45
2-Methylnaphthalene	0.377		0.0490	0.0147	ug/L	1		09/19/19 19:45
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 19:45
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 19:45
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Fluorene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Naphthalene	0.806		0.0980	0.0304	ug/L	1		09/19/19 19:45
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 19:45
Surrogates								
2-Methylnaphthalene-d10 (surr)	72.9		47-106		%	1		09/19/19 19:45
Fluoranthene-d10 (surr)	68.5		24-116		%	1		09/19/19 19:45

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 19:45
Container ID: 1195455005-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-105-GW**

Client Sample ID: **19-NHTF-105-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455005
Lab Project ID: 1195455

Collection Date: 09/17/19 14:30
Received Date: 09/18/19 11:19
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	2.06		0.588	0.176	mg/L	1		10/11/19 01:02
Surrogates								
5a Androstane (surr)	83.9		50-150		%	1		10/11/19 01:02

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 01:02
Container ID: 1195455005-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-105-GW**

Client Sample ID: **19-NHTF-105-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455005
Lab Project ID: 1195455

Collection Date: 09/17/19 14:30
Received Date: 09/18/19 11:19
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		09/22/19 17:21
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:21
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:21
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,2,4-Trimethylbenzene	6.12		1.00	0.310	ug/L	1		09/22/19 17:21
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:21
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 17:21
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:21
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,3,5-Trimethylbenzene	3.09		1.00	0.310	ug/L	1		09/22/19 17:21
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:21
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:21
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:21
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:21
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
4-Isopropyltoluene	2.79		1.00	0.310	ug/L	1		09/22/19 17:21
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:21
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:21
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:21
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 17:21
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:21
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:21
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:21

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Results of **19-NHTF-105-GW**

Client Sample ID: **19-NHTF-105-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455005
Lab Project ID: 1195455

Collection Date: 09/17/19 14:30
Received Date: 09/18/19 11:19
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		09/22/19 17:21
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 17:21
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 17:21
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Ethylbenzene	0.470 J		1.00	0.310	ug/L	1		09/22/19 17:21
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:21
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Isopropylbenzene (Cumene)	0.540 J		1.00	0.310	ug/L	1		09/22/19 17:21
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 17:21
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:21
Naphthalene	2.80		1.00	0.310	ug/L	1		09/25/19 22:31
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
n-Propylbenzene	1.14		1.00	0.310	ug/L	1		09/22/19 17:21
o-Xylene	1.69		1.00	0.310	ug/L	1		09/22/19 17:21
P & M -Xylene	1.05 J		2.00	0.620	ug/L	1		09/22/19 17:21
sec-Butylbenzene	0.910 J		1.00	0.310	ug/L	1		09/22/19 17:21
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:21
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:21
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 17:21
Xylenes (total)	2.74 J		3.00	1.00	ug/L	1		09/22/19 17:21
Surrogates								
1,2-Dichloroethane-D4 (surr)	105		81-118		%	1		09/22/19 17:21
4-Bromofluorobenzene (surr)	101		85-114		%	1		09/22/19 17:21
Toluene-d8 (surr)	99.1		89-112		%	1		09/22/19 17:21

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Results of **19-NHTF-105-GW**

Client Sample ID: **19-NHTF-105-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455005
Lab Project ID: 1195455

Collection Date: 09/17/19 14:30
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 17:21
Container ID: 1195455005-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 22:31
Container ID: 1195455005-G

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **19-NHTF-106-GW**

Client Sample ID: **19-NHTF-106-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455006
Lab Project ID: 1195455

Collection Date: 09/17/19 15:20
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	5.41		0.0490	0.0147	ug/L	1		09/19/19 20:05
2-Methylnaphthalene	2.98		0.0490	0.0147	ug/L	1		09/19/19 20:05
Acenaphthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Acenaphthylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Benzo(a)Anthracene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Benzo[a]pyrene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 20:05
Benzo[b]Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Benzo[g,h,i]perylene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Benzo[k]fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Chrysene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Dibenzo[a,h]anthracene	0.00980	U	0.0196	0.00608	ug/L	1		09/19/19 20:05
Fluoranthene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Fluorene	0.350		0.0490	0.0147	ug/L	1		09/19/19 20:05
Indeno[1,2,3-c,d] pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Naphthalene	1.32		0.0980	0.0304	ug/L	1		09/19/19 20:05
Phenanthrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Pyrene	0.0245	U	0.0490	0.0147	ug/L	1		09/19/19 20:05
Surrogates								
2-Methylnaphthalene-d10 (surr)	73.8		47-106		%	1		09/19/19 20:05
Fluoranthene-d10 (surr)	72		24-116		%	1		09/19/19 20:05

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 20:05
Container ID: 1195455006-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-106-GW**

Client Sample ID: **19-NHTF-106-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455006
Lab Project ID: 1195455

Collection Date: 09/17/19 15:20
Received Date: 09/18/19 11:19
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	4.02		0.600	0.180	mg/L	1		10/11/19 01:12
Surrogates								
5a Androstane (surr)	91.9		50-150		%	1		10/11/19 01:12

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 01:12
Container ID: 1195455006-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-106-GW**

Client Sample ID: **19-NHTF-106-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455006
Lab Project ID: 1195455

Collection Date: 09/17/19 15:20
Received Date: 09/18/19 11:19
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		09/22/19 17:36
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:36
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:36
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,2,4-Trimethylbenzene	4.02		1.00	0.310	ug/L	1		09/22/19 17:36
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:36
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 17:36
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:36
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,3,5-Trimethylbenzene	8.46		1.00	0.310	ug/L	1		09/22/19 17:36
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:36
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:36
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
2-Butanone (MEK)	6.49	J	10.0	3.10	ug/L	1		09/22/19 17:36
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:36
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
4-Isopropyltoluene	6.53		1.00	0.310	ug/L	1		09/22/19 17:36
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:36
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:36
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:36
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 17:36
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:36
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:36
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:36

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-106-GW**

Client Sample ID: **19-NHTF-106-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455006
Lab Project ID: 1195455

Collection Date: 09/17/19 15:20
Received Date: 09/18/19 11:19
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		09/22/19 17:36
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 17:36
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 17:36
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:36
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Isopropylbenzene (Cumene)	1.07		1.00	0.310	ug/L	1		09/22/19 17:36
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 17:36
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:36
Naphthalene	3.25		1.00	0.310	ug/L	1		09/25/19 22:46
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
n-Propylbenzene	2.10		1.00	0.310	ug/L	1		09/22/19 17:36
o-Xylene	1.00		1.00	0.310	ug/L	1		09/22/19 17:36
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/22/19 17:36
sec-Butylbenzene	1.81		1.00	0.310	ug/L	1		09/22/19 17:36
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
tert-Butylbenzene	0.370 J		1.00	0.310	ug/L	1		09/22/19 17:36
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 17:36
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 17:36
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 17:36
Xylenes (total)	1.00 J		3.00	1.00	ug/L	1		09/22/19 17:36
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		81-118		%	1		09/22/19 17:36
4-Bromofluorobenzene (surr)	104		85-114		%	1		09/22/19 17:36
Toluene-d8 (surr)	98.9		89-112		%	1		09/22/19 17:36

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-106-GW**

Client Sample ID: **19-NHTF-106-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455006
Lab Project ID: 1195455

Collection Date: 09/17/19 15:20
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 17:36
Container ID: 1195455006-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 22:46
Container ID: 1195455006-G

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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

Results of **19-NHTF-107-GW**

Client Sample ID: **19-NHTF-107-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455007
Lab Project ID: 1195455

Collection Date: 09/17/19 16:20
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	4.05		0.0472	0.0142	ug/L	1		09/19/19 20:26
2-Methylnaphthalene	2.26		0.0472	0.0142	ug/L	1		09/19/19 20:26
Acenaphthene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Acenaphthylene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Benzo(a)Anthracene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Benzo[a]pyrene	0.00945	U	0.0189	0.00585	ug/L	1		09/19/19 20:26
Benzo[b]Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Benzo[g,h,i]perylene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Benzo[k]fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Chrysene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Dibenzo[a,h]anthracene	0.00945	U	0.0189	0.00585	ug/L	1		09/19/19 20:26
Fluoranthene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Fluorene	0.253		0.0472	0.0142	ug/L	1		09/19/19 20:26
Indeno[1,2,3-c,d] pyrene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Naphthalene	0.967		0.0943	0.0292	ug/L	1		09/19/19 20:26
Phenanthrene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Pyrene	0.0236	U	0.0472	0.0142	ug/L	1		09/19/19 20:26
Surrogates								
2-Methylnaphthalene-d10 (surr)	51.3		47-106		%	1		09/19/19 20:26
Fluoranthene-d10 (surr)	48.3		24-116		%	1		09/19/19 20:26

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 20:26
Container ID: 1195455007-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 265 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-107-GW**

Client Sample ID: **19-NHTF-107-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455007
Lab Project ID: 1195455

Collection Date: 09/17/19 16:20
Received Date: 09/18/19 11:19
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	3.28		0.577	0.173	mg/L	1		10/11/19 03:04
Surrogates								
5a Androstane (surr)	94		50-150		%	1		10/11/19 03:04

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 03:04
Container ID: 1195455007-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 260 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-107-GW**

Client Sample ID: **19-NHTF-107-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455007
Lab Project ID: 1195455

Collection Date: 09/17/19 16:20
Received Date: 09/18/19 11:19
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		09/22/19 17:51
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:51
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,2,4-Trimethylbenzene	4.09		1.00	0.310	ug/L	1		09/22/19 17:51
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 17:51
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,3,5-Trimethylbenzene	8.63		1.00	0.310	ug/L	1		09/22/19 17:51
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
2-Butanone (MEK)	6.16	J	10.0	3.10	ug/L	1		09/22/19 17:51
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
4-Isopropyltoluene	6.68		1.00	0.310	ug/L	1		09/22/19 17:51
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 17:51
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 17:51
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-107-GW**

Client Sample ID: **19-NHTF-107-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455007
Lab Project ID: 1195455

Collection Date: 09/17/19 16:20
Received Date: 09/18/19 11:19
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		09/22/19 17:51
Chloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
cis-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
cis-1,3-Dichloropropene	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
Dibromochloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 17:51
Dibromomethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Dichlorodifluoromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Ethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Freon-113	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
Hexachlorobutadiene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Isopropylbenzene (Cumene)	1.04		1.00	0.310	ug/L	1		09/22/19 17:51
Methylene chloride	2.50	U	5.00	1.00	ug/L	1		09/22/19 17:51
Methyl-t-butyl ether	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
Naphthalene	3.25		1.00	0.310	ug/L	1		09/25/19 23:02
n-Butylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
n-Propylbenzene	2.10		1.00	0.310	ug/L	1		09/22/19 17:51
o-Xylene	1.03		1.00	0.310	ug/L	1		09/22/19 17:51
P & M -Xylene	1.00	U	2.00	0.620	ug/L	1		09/22/19 17:51
sec-Butylbenzene	1.84		1.00	0.310	ug/L	1		09/22/19 17:51
Styrene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
tert-Butylbenzene	0.380	J	1.00	0.310	ug/L	1		09/22/19 17:51
Tetrachloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Toluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
trans-1,2-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
trans-1,3-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Trichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Trichlorofluoromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 17:51
Vinyl acetate	5.00	U	10.0	3.10	ug/L	1		09/22/19 17:51
Vinyl chloride	0.0750	U	0.150	0.0500	ug/L	1		09/22/19 17:51
Xylenes (total)	1.03	J	3.00	1.00	ug/L	1		09/22/19 17:51
Surrogates								
1,2-Dichloroethane-D4 (surr)	103		81-118		%	1		09/22/19 17:51
4-Bromofluorobenzene (surr)	104		85-114		%	1		09/22/19 17:51
Toluene-d8 (surr)	100		89-112		%	1		09/22/19 17:51

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J flagging is activated

Results of **19-NHTF-107-GW**

Client Sample ID: **19-NHTF-107-GW**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455007
Lab Project ID: 1195455

Collection Date: 09/17/19 16:20
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 17:51
Container ID: 1195455007-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 23:02
Container ID: 1195455007-G

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **19-NHTF-101-RB**

Client Sample ID: **19-NHTF-101-RB**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455008
Lab Project ID: 1195455

Collection Date: 09/17/19 18:45
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Polynuclear Aromatics GC/MS**

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
2-Methylnaphthalene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Acenaphthene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Acenaphthylene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Benzo(a)Anthracene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Benzo[a]pyrene	0.00925	U	0.0185	0.00574	ug/L	1		09/19/19 20:46
Benzo[b]Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Benzo[g,h,i]perylene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Benzo[k]fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Chrysene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Dibenzo[a,h]anthracene	0.00925	U	0.0185	0.00574	ug/L	1		09/19/19 20:46
Fluoranthene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Fluorene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Indeno[1,2,3-c,d] pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Naphthalene	0.0463	U	0.0926	0.0287	ug/L	1		09/19/19 20:46
Phenanthrene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Pyrene	0.0232	U	0.0463	0.0139	ug/L	1		09/19/19 20:46
Surrogates								
2-Methylnaphthalene-d10 (surr)	80.1		47-106		%	1		09/19/19 20:46
Fluoranthene-d10 (surr)	83.5		24-116		%	1		09/19/19 20:46

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Analyst: DSD
Analytical Date/Time: 09/19/19 20:46
Container ID: 1195455008-C

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 09/19/19 09:40
Prep Initial Wt./Vol.: 270 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-101-RB**

Client Sample ID: **19-NHTF-101-RB**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455008
Lab Project ID: 1195455

Collection Date: 09/17/19 18:45
Received Date: 09/18/19 11:19
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	0.294	U	0.588	0.176	mg/L	1		10/11/19 03:14
Surrogates								
5a Androstane (surr)	87.1		50-150		%	1		10/11/19 03:14

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Analyst: CMS
Analytical Date/Time: 10/11/19 03:14
Container ID: 1195455008-A

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 09/28/19 09:14
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **19-NHTF-101-RB**

Client Sample ID: **19-NHTF-101-RB**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455008
Lab Project ID: 1195455

Collection Date: 09/17/19 18:45
Received Date: 09/18/19 11:19
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		09/22/19 18:05
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 18:05
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 18:05
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 18:05
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 18:05
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 18:05
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 18:05
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 18:05
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 18:05
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 18:05
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 18:05
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 18:05
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 18:05
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/22/19 18:05
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 18:05
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 18:05
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 18:05

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Results of **19-NHTF-101-RB**

Client Sample ID: **19-NHTF-101-RB**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455008
Lab Project ID: 1195455

Collection Date: 09/17/19 18:45
Received Date: 09/18/19 11:19
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		09/22/19 18:05
Chloromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 18:05
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 18:05
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 18:05
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 18:05
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 18:05
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/25/19 23:17
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/22/19 18:05
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 18:05
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 18:05
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 18:05
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/22/19 18:05
Surrogates								
1,2-Dichloroethane-D4 (surr)	101		81-118		%	1		09/22/19 18:05
4-Bromofluorobenzene (surr)	98.7		85-114		%	1		09/22/19 18:05
Toluene-d8 (surr)	100		89-112		%	1		09/22/19 18:05

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Results of **19-NHTF-101-RB**

Client Sample ID: **19-NHTF-101-RB**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455008
Lab Project ID: 1195455

Collection Date: 09/17/19 18:45
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 18:05
Container ID: 1195455008-E

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 23:17
Container ID: 1195455008-G

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
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: **NEWHALEN**
Lab Sample ID: 1195455009
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
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		09/22/19 15:08
1,1,1-Trichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,1,2,2-Tetrachloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 15:08
1,1,2-Trichloroethane	0.200	U	0.400	0.120	ug/L	1		09/22/19 15:08
1,1-Dichloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,1-Dichloroethene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,1-Dichloropropene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,2,3-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,2,3-Trichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,2,4-Trichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,2,4-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,2-Dibromo-3-chloropropane	5.00	U	10.0	3.10	ug/L	1		09/22/19 15:08
1,2-Dibromoethane	0.0375	U	0.0750	0.0180	ug/L	1		09/22/19 15:08
1,2-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,2-Dichloroethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 15:08
1,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,3,5-Trimethylbenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,3-Dichlorobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
1,3-Dichloropropane	0.250	U	0.500	0.150	ug/L	1		09/22/19 15:08
1,4-Dichlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 15:08
2,2-Dichloropropane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
2-Butanone (MEK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 15:08
2-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
2-Hexanone	5.00	U	10.0	3.10	ug/L	1		09/22/19 15:08
4-Chlorotoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
4-Isopropyltoluene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
4-Methyl-2-pentanone (MIBK)	5.00	U	10.0	3.10	ug/L	1		09/22/19 15:08
Benzene	0.200	U	0.400	0.120	ug/L	1		09/22/19 15:08
Bromobenzene	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
Bromochloromethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
Bromodichloromethane	0.250	U	0.500	0.150	ug/L	1		09/22/19 15:08
Bromoform	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
Bromomethane	2.50	U	5.00	1.50	ug/L	1		09/25/19 19:13
Carbon disulfide	5.00	U	10.0	3.10	ug/L	1		09/22/19 15:08
Carbon tetrachloride	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08
Chlorobenzene	0.250	U	0.500	0.150	ug/L	1		09/22/19 15:08
Chloroethane	0.500	U	1.00	0.310	ug/L	1		09/22/19 15:08

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J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455009
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
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		09/22/19 15:08
Chloromethane	0.410 J		1.00	0.310	ug/L	1		09/22/19 15:08
cis-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
cis-1,3-Dichloropropene	0.250 U		0.500	0.150	ug/L	1		09/22/19 15:08
Dibromochloromethane	0.250 U		0.500	0.150	ug/L	1		09/22/19 15:08
Dibromomethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Dichlorodifluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Ethylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Freon-113	5.00 U		10.0	3.10	ug/L	1		09/22/19 15:08
Hexachlorobutadiene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Isopropylbenzene (Cumene)	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Methylene chloride	2.50 U		5.00	1.00	ug/L	1		09/22/19 15:08
Methyl-t-butyl ether	5.00 U		10.0	3.10	ug/L	1		09/22/19 15:08
Naphthalene	0.500 U		1.00	0.310	ug/L	1		09/25/19 19:13
n-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
n-Propylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
o-Xylene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
P & M -Xylene	1.00 U		2.00	0.620	ug/L	1		09/22/19 15:08
sec-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Styrene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
tert-Butylbenzene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Tetrachloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Toluene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
trans-1,2-Dichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
trans-1,3-Dichloropropene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Trichloroethene	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Trichlorofluoromethane	0.500 U		1.00	0.310	ug/L	1		09/22/19 15:08
Vinyl acetate	5.00 U		10.0	3.10	ug/L	1		09/22/19 15:08
Vinyl chloride	0.0750 U		0.150	0.0500	ug/L	1		09/22/19 15:08
Xylenes (total)	1.50 U		3.00	1.00	ug/L	1		09/22/19 15:08
Surrogates								
1,2-Dichloroethane-D4 (surr)	108		81-118		%	1		09/22/19 15:08
4-Bromofluorobenzene (surr)	100		85-114		%	1		09/22/19 15:08
Toluene-d8 (surr)	98.4		89-112		%	1		09/22/19 15:08

Print Date: 10/14/2019 4:01:50PM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **NEWHALEN**
Lab Sample ID: 1195455009
Lab Project ID: 1195455

Collection Date: 09/17/19 11:00
Received Date: 09/18/19 11:19
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/22/19 15:08
Container ID: 1195455009-A

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 09/22/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Analytical Batch: VMS19490
Analytical Method: SW8260C
Analyst: CMC
Analytical Date/Time: 09/25/19 19:13
Container ID: 1195455009-C

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 09/25/19 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Method Blank

Blank ID: MB for HBN 1799882 [VXX/34946]
Blank Lab ID: 1533868

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

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 1799882 [VXX/34946]
Blank Lab ID: 1533868

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

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
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)	107	81-118		%
4-Bromofluorobenzene (surr)	100	85-114		%
Toluene-d8 (surr)	99.3	89-112		%

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Method Blank

Blank ID: MB for HBN 1799882 [VXX/34946]
Blank Lab ID: 1533868

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units

Batch Information

Analytical Batch: VMS19479
Analytical Method: SW8260C
Instrument: VPA 780/5975 GC/MS
Analyst: CMC
Analytical Date/Time: 9/22/2019 1:28:00PM

Prep Batch: VXX34946
Prep Method: SW5030B
Prep Date/Time: 9/22/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [VXX34946]
Blank Spike Lab ID: 1533869
Date Analyzed: 09/22/2019 13:43

Spike Duplicate ID: LCSD for HBN 1195455 [VXX34946]
Spike Duplicate Lab ID: 1533870
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

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	32.1	107	30	31.7	106	(78-124)	1.30	(< 20)
1,1,1-Trichloroethane	30	30.5	102	30	29.6	99	(74-131)	2.90	(< 20)
1,1,2,2-Tetrachloroethane	30	30.1	100	30	30.1	100	(71-121)	0.00	(< 20)
1,1,2-Trichloroethane	30	31.1	104	30	30.4	101	(80-119)	2.40	(< 20)
1,1-Dichloroethane	30	29.1	97	30	28.5	95	(77-125)	2.20	(< 20)
1,1-Dichloroethene	30	30.3	101	30	29.3	98	(71-131)	3.20	(< 20)
1,1-Dichloropropene	30	29.8	99	30	29.5	98	(79-125)	1.10	(< 20)
1,2,3-Trichlorobenzene	30	26.5	88	30	28.1	94	(69-129)	5.70	(< 20)
1,2,3-Trichloropropane	30	31.0	103	30	31.0	103	(73-122)	0.03	(< 20)
1,2,4-Trichlorobenzene	30	27.8	93	30	27.9	93	(69-130)	0.40	(< 20)
1,2,4-Trimethylbenzene	30	31.6	105	30	31.0	103	(79-124)	2.00	(< 20)
1,2-Dibromo-3-chloropropane	30	29.1	97	30	30.0	100	(62-128)	2.80	(< 20)
1,2-Dibromoethane	30	28.4	95	30	28.0	93	(77-121)	1.40	(< 20)
1,2-Dichlorobenzene	30	30.5	102	30	29.9	100	(80-119)	1.90	(< 20)
1,2-Dichloroethane	30	28.3	94	30	27.8	93	(73-128)	1.70	(< 20)
1,2-Dichloropropane	30	29.1	97	30	29.3	98	(78-122)	0.72	(< 20)
1,3,5-Trimethylbenzene	30	31.1	104	30	30.1	100	(75-124)	3.20	(< 20)
1,3-Dichlorobenzene	30	31.1	104	30	30.3	101	(80-119)	2.60	(< 20)
1,3-Dichloropropane	30	28.2	94	30	27.7	92	(80-119)	1.80	(< 20)
1,4-Dichlorobenzene	30	30.8	103	30	30.1	100	(79-118)	2.20	(< 20)
2,2-Dichloropropane	30	29.9	100	30	29.2	97	(60-139)	2.50	(< 20)
2-Butanone (MEK)	90	89.6	100	90	90.7	101	(56-143)	1.30	(< 20)
2-Chlorotoluene	30	30.2	101	30	29.5	98	(79-122)	2.30	(< 20)
2-Hexanone	90	92.8	103	90	92.8	103	(57-139)	0.02	(< 20)
4-Chlorotoluene	30	30.6	102	30	29.7	99	(78-122)	3.10	(< 20)
4-Isopropyltoluene	30	31.5	105	30	30.4	101	(77-127)	3.50	(< 20)
4-Methyl-2-pentanone (MIBK)	90	89.3	99	90	88.4	98	(67-130)	0.98	(< 20)
Benzene	30	29.7	99	30	29.1	97	(79-120)	1.80	(< 20)
Bromobenzene	30	30.8	103	30	29.8	99	(80-120)	3.40	(< 20)
Bromochloromethane	30	29.0	97	30	28.5	95	(78-123)	1.70	(< 20)
Bromodichloromethane	30	31.7	106	30	31.1	104	(79-125)	1.90	(< 20)
Bromoform	30	33.0	110	30	32.7	109	(66-130)	1.00	(< 20)
Bromomethane	30	37.0	123	30	36.8	123	(53-141)	0.65	(< 20)
Carbon disulfide	45	45.6	101	45	44.1	98	(64-133)	3.50	(< 20)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [VXX34946]
Blank Spike Lab ID: 1533869
Date Analyzed: 09/22/2019 13:43

Spike Duplicate ID: LCSD for HBN 1195455 [VXX34946]
Spike Duplicate Lab ID: 1533870
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

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	31.2	104	30	30.6	102	(72-136)	2.00	(< 20)
Chlorobenzene	30	28.9	96	30	28.4	95	(82-118)	1.90	(< 20)
Chloroethane	30	30.9	103	30	28.8	96	(60-138)	7.10	(< 20)
Chloroform	30	29.5	98	30	28.8	96	(79-124)	2.40	(< 20)
Chloromethane	30	29.4	98	30	28.7	96	(50-139)	2.50	(< 20)
cis-1,2-Dichloroethene	30	29.3	98	30	28.9	96	(78-123)	1.30	(< 20)
cis-1,3-Dichloropropene	30	28.9	96	30	29.2	97	(75-124)	1.00	(< 20)
Dibromochloromethane	30	32.0	107	30	31.6	105	(74-126)	1.40	(< 20)
Dibromomethane	30	29.4	98	30	28.9	97	(79-123)	1.40	(< 20)
Dichlorodifluoromethane	30	30.3	101	30	29.1	97	(32-152)	4.10	(< 20)
Ethylbenzene	30	29.9	100	30	29.3	98	(79-121)	1.80	(< 20)
Freon-113	45	46.7	104	45	45.3	101	(70-136)	3.00	(< 20)
Hexachlorobutadiene	30	30.7	102	30	30.5	102	(66-134)	0.82	(< 20)
Isopropylbenzene (Cumene)	30	30.1	100	30	29.4	98	(72-131)	2.30	(< 20)
Methylene chloride	30	28.6	95	30	28.1	94	(74-124)	1.80	(< 20)
Methyl-t-butyl ether	45	45.1	100	45	44.7	99	(71-124)	1.00	(< 20)
n-Butylbenzene	30	29.6	99	30	28.9	96	(75-128)	2.60	(< 20)
n-Propylbenzene	30	30.5	102	30	30.0	100	(76-126)	1.50	(< 20)
o-Xylene	30	29.3	98	30	29.0	97	(78-122)	1.30	(< 20)
P & M -Xylene	60	58.4	97	60	58.3	97	(80-121)	0.10	(< 20)
sec-Butylbenzene	30	30.4	101	30	30.0	100	(77-126)	1.40	(< 20)
Styrene	30	30.3	101	30	29.7	99	(78-123)	2.20	(< 20)
tert-Butylbenzene	30	30.1	100	30	29.5	98	(78-124)	1.80	(< 20)
Tetrachloroethene	30	31.3	104	30	30.3	101	(74-129)	3.10	(< 20)
Toluene	30	29.2	97	30	28.4	95	(80-121)	2.60	(< 20)
trans-1,2-Dichloroethene	30	29.1	97	30	28.2	94	(75-124)	3.10	(< 20)
trans-1,3-Dichloropropene	30	28.7	96	30	28.9	96	(73-127)	0.73	(< 20)
Trichloroethene	30	30.1	100	30	29.3	98	(79-123)	2.50	(< 20)
Trichlorofluoromethane	30	33.0	110	30	30.8	103	(65-141)	6.80	(< 20)
Vinyl acetate	30	31.3	104	30	31.2	104	(54-146)	0.48	(< 20)
Vinyl chloride	30	29.5	98	30	28.5	95	(58-137)	3.50	(< 20)
Xylenes (total)	90	87.7	98	90	87.3	97	(79-121)	0.50	(< 20)

Surrogates

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [VXX34946]
Blank Spike Lab ID: 1533869
Date Analyzed: 09/22/2019 13:43

Spike Duplicate ID: LCSD for HBN 1195455 [VXX34946]
Spike Duplicate Lab ID: 1533870
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

Results by **SW8260C**

	Blank Spike (%)			Spike Duplicate (%)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,2-Dichloroethane-D4 (surr)	30	97.4	97	30	97.9	98	(81-118)	0.48	
4-Bromofluorobenzene (surr)	30	98.8	99	30	98.7	99	(85-114)	0.10	
Toluene-d8 (surr)	30	101	101	30	101	101	(89-112)	0.40	

Batch Information

Analytical Batch: **VMS19479**
Analytical Method: **SW8260C**
Instrument: **VPA 780/5975 GC/MS**
Analyst: **CMC**

Prep Batch: **VXX34946**
Prep Method: **SW5030B**
Prep Date/Time: **09/22/2019 06:00**
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 1800006 [VXX/34964]
Blank Lab ID: 1534429

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Bromomethane	2.50U	5.00	1.50	ug/L
Naphthalene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	108	81-118		%
4-Bromofluorobenzene (surr)	98.6	85-114		%
Toluene-d8 (surr)	97.1	89-112		%

Batch Information

Analytical Batch: VMS19490
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: CMC
Analytical Date/Time: 9/25/2019 4:40:00PM

Prep Batch: VXX34964
Prep Method: SW5030B
Prep Date/Time: 9/25/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [VXX34964]
Blank Spike Lab ID: 1534430
Date Analyzed: 09/25/2019 16:55

Spike Duplicate ID: LCSD for HBN 1195455 [VXX34964]
Spike Duplicate Lab ID: 1534431
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008, 1195455009

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Bromomethane	30	42.0	140	30	41.5	138	(53-141)	1.20	(< 20)
Naphthalene	30	32.8	109	30	36.1	120	(61-128)	9.70	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	104	104	30	102	102	(81-118)	2.00	
4-Bromofluorobenzene (surr)	30	98.1	98	30	97.4	97	(85-114)	0.72	
Toluene-d8 (surr)	30	97.9	98	30	97.9	98	(89-112)	0.03	

Batch Information

Analytical Batch: **VMS19490**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **CMC**

Prep Batch: **VXX34964**
Prep Method: **SW5030B**
Prep Date/Time: **09/25/2019 06:00**
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 1800272 [VXX/34990]
Blank Lab ID: 1535709

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455001, 1195455002

Results by **SW8260C**

Parameter	Results	LOQ/CL	DL	Units
Naphthalene	0.500U	1.00	0.310	ug/L
Surrogates				
1,2-Dichloroethane-D4 (surr)	105	81-118		%
4-Bromofluorobenzene (surr)	99.6	85-114		%
Toluene-d8 (surr)	99.3	89-112		%

Batch Information

Analytical Batch: VMS19512
Analytical Method: SW8260C
Instrument: Agilent 7890-75MS
Analyst: CMC
Analytical Date/Time: 10/1/2019 12:00:00PM

Prep Batch: VXX34990
Prep Method: SW5030B
Prep Date/Time: 10/1/2019 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [VXX34990]
Blank Spike Lab ID: 1535710
Date Analyzed: 10/01/2019 12:15

Spike Duplicate ID: LCSD for HBN 1195455 [VXX34990]
Spike Duplicate Lab ID: 1535711
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455001, 1195455002

Results by **SW8260C**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Naphthalene	30	29.1	97	30	30.1	100	(61-128)	3.40	(< 20)
Surrogates									
1,2-Dichloroethane-D4 (surr)	30	98.6	99	30	96.4	96	(81-118)	2.30	
4-Bromofluorobenzene (surr)	30	98.2	98	30	101	101	(85-114)	2.90	
Toluene-d8 (surr)	30	97.1	97	30	99.5	100	(89-112)	2.40	

Batch Information

Analytical Batch: **VMS19512**
Analytical Method: **SW8260C**
Instrument: **Agilent 7890-75MS**
Analyst: **CMC**

Prep Batch: **VXX34990**
Prep Method: **SW5030B**
Prep Date/Time: **10/01/2019 06:00**
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 1799654 [XXX/42300]
Blank Lab ID: 1532863

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008

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

Parameter	Results	LOQ/CL	DL	Units
1-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
2-Methylnaphthalene	0.0250U	0.0500	0.0150	ug/L
Acenaphthene	0.0250U	0.0500	0.0150	ug/L
Acenaphthylene	0.0250U	0.0500	0.0150	ug/L
Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo(a)Anthracene	0.0250U	0.0500	0.0150	ug/L
Benzo[a]pyrene	0.0100U	0.0200	0.00620	ug/L
Benzo[b]Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Benzo[g,h,i]perylene	0.0250U	0.0500	0.0150	ug/L
Benzo[k]fluoranthene	0.0250U	0.0500	0.0150	ug/L
Chrysene	0.0250U	0.0500	0.0150	ug/L
Dibenzo[a,h]anthracene	0.0100U	0.0200	0.00620	ug/L
Fluoranthene	0.0250U	0.0500	0.0150	ug/L
Fluorene	0.0250U	0.0500	0.0150	ug/L
Indeno[1,2,3-c,d] pyrene	0.0250U	0.0500	0.0150	ug/L
Naphthalene	0.0500U	0.100	0.0310	ug/L
Phenanthrene	0.0250U	0.0500	0.0150	ug/L
Pyrene	0.0250U	0.0500	0.0150	ug/L
Surrogates				
2-Methylnaphthalene-d10 (surr)	65.8	47-106		%
Fluoranthene-d10 (surr)	76.4	24-116		%

Batch Information

Analytical Batch: XMS11727
Analytical Method: 8270D SIM LV (PAH)
Instrument: SVA Agilent 780/5975 GC/MS
Analyst: DSD
Analytical Date/Time: 9/19/2019 5:21:00PM

Prep Batch: XXX42300
Prep Method: SW3520C
Prep Date/Time: 9/19/2019 9:40:54AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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t 907.562.2343 **f** 907.561.5301 www.us.sgs.com

Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [XXX42300]
Blank Spike Lab ID: 1532864
Date Analyzed: 09/19/2019 17:41

Spike Duplicate ID: LCSD for HBN 1195455 [XXX42300]
Spike Duplicate Lab ID: 1532865
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008

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

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1-Methylnaphthalene	2	1.62	81	2	1.75	88	(41-115)	8.00	(< 20)
2-Methylnaphthalene	2	1.58	79	2	1.71	86	(39-114)	7.90	(< 20)
Acenaphthene	2	1.65	83	2	1.76	88	(48-114)	6.20	(< 20)
Acenaphthylene	2	1.76	88	2	1.87	93	(35-121)	6.10	(< 20)
Anthracene	2	1.66	83	2	1.71	86	(53-119)	2.90	(< 20)
Benzo(a)Anthracene	2	1.67	84	2	1.75	88	(59-120)	4.60	(< 20)
Benzo[a]pyrene	2	1.65	83	2	1.74	87	(53-120)	4.90	(< 20)
Benzo[b]Fluoranthene	2	1.79	90	2	1.86	93	(53-126)	3.80	(< 20)
Benzo[g,h,i]perylene	2	1.55	78	2	1.72	86	(44-128)	10.20	(< 20)
Benzo[k]fluoranthene	2	1.73	86	2	1.81	90	(54-125)	4.50	(< 20)
Chrysene	2	1.72	86	2	1.78	89	(57-120)	3.90	(< 20)
Dibenzo[a,h]anthracene	2	1.43	72	2	1.65	83	(44-131)	14.00	(< 20)
Fluoranthene	2	1.81	91	2	1.88	94	(58-120)	3.50	(< 20)
Fluorene	2	1.65	83	2	1.79	89	(50-118)	7.70	(< 20)
Indeno[1,2,3-c,d] pyrene	2	1.67	84	2	1.83	91	(48-130)	8.60	(< 20)
Naphthalene	2	1.71	85	2	1.85	92	(43-114)	7.90	(< 20)
Phenanthrene	2	1.58	79	2	1.68	84	(53-115)	5.90	(< 20)
Pyrene	2	1.88	94	2	1.96	98	(53-121)	4.10	(< 20)
Surrogates									
2-Methylnaphthalene-d10 (surr)	2	71.4	71	2	77.6	78	(47-106)	8.40	
Fluoranthene-d10 (surr)	2	80.2	80	2	84.2	84	(24-116)	4.90	

Batch Information

Analytical Batch: **XMS11727**
Analytical Method: **8270D SIM LV (PAH)**
Instrument: **SVA Agilent 780/5975 GC/MS**
Analyst: **DSD**

Prep Batch: **XXX42300**
Prep Method: **SW3520C**
Prep Date/Time: **09/19/2019 09:40**
Spike Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 2 ug/L Extract Vol: 1 mL

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Method Blank

Blank ID: MB for HBN 1800114 [XXX/42360]
Blank Lab ID: 1534910

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008

Results by **AK102**

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	0.186J	0.600	0.180	mg/L
Surrogates				
5a Androstane (surr)	89.2	60-120		%

Batch Information

Analytical Batch: XFC15391
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: CMS
Analytical Date/Time: 10/10/2019 8:09:00PM

Prep Batch: XXX42360
Prep Method: SW3520C
Prep Date/Time: 9/28/2019 9:14:55AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1195455 [XXX42360]
Blank Spike Lab ID: 1534911
Date Analyzed: 10/10/2019 21:20

Spike Duplicate ID: LCSD for HBN 1195455 [XXX42360]
Spike Duplicate Lab ID: 1534912
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1195455001, 1195455002, 1195455003, 1195455004, 1195455005, 1195455006, 1195455007, 1195455008

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	21.7	108	20	18.3	92	(75-125)	16.80	(< 20)
Surrogates									
5a Androstane (surr)	0.4	109	109	0.4	95.2	95	(60-120)	13.10	

Batch Information

Analytical Batch: **XFC15391**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **CMS**

Prep Batch: **XXX42360**
Prep Method: **SW3520C**
Prep Date/Time: **09/28/2019 09:14**
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

1195455

SGS North America Inc.
CHAIN OF CUSTODY RECORD

www.us.sgs.com

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

Page ____ of ____

Section 1

CLIENT: DNA Environmental Consultants, LLC			
CONTACT: Dan Frank	PHONE #: 907-350-4897		
PROJECT NAME: NEWHALEN	PROJECT/ PWSID/ PERMIT#: N/A		
REPORTS TO: Dan Frank	E-MAIL: daniel. frank@dnaenviro.com	Profile #: 358723	
INVOICE TO: DNA Environmental Consultants, LLC	QUOTE #: P.O. #:		

Section 2

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE mm/dd/yy	TIME HH:MM	MATRIX/ MATRIX CODE	# CONTAINERS	Comp Grab MI (Multi-incremental)	Section 3 Preservative: HCl	HCl	None	Analysis*: AK102 - DRO	8260C - VOC	8270D SIM - PAH								REMARKS/LOC ID
(1) AB-G	19-NHTF-101-GW	9/17/19	11:00	WA	7					2	3	2								
(2) A-G	19-NHTF-102-GW	9/17/19	12:00	WA	7					2	3	2								
(3) A-G	19-NHTF-103-GW	9/17/19	12:40	WA	7					2	3	2								
(4) A-G	19-NHTF-104-GW	9/17/19	13:35	WA	7					2	3	2								
(5) A-G	19-NHTF-105-GW	9/17/19	14:30	WA	7					2	3	2								
(6) A-G	19-NHTF-106-GW	9/17/19	15:20	WA	7					2	3	2								
(7) A-G	19-NHTF-107-GW	9/17/19	16:20	WA	7					2	3	2								
(8) A-G	19-NHTF-101-RB	9/17/19	18:45	WA	7					2	3	2								
(9) A-C																				

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

Section 5

Relinquished By: (1)	Date 9/18/19	Time 1120	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 11:19	Time 9.11.19	Received For Laboratory By:

Section 4

DOD Project? Yes No

Data Deliverable Requirements: AK SEDD

Cooler ID:

Requested Turnaround Time and/or Special Instructions:

laboratory provided trip blank provided with VOCs

Temp Blank °C: 0.1 0.4 or Ambient [ ]

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Delivery Method: Hand Delivery [ ] Commerical Delivery [ ]

0.7c DSG

HD

e-Sample Receipt Form

SGS Workorder #: **1195455**

1195455

Review Criteria	Condition (Yes, No, N/A)	Exceptions Noted below
Chain of Custody / Temperature Requirements		Yes — Exemption permitted if sampler hand carries/delivers.
Were Custody Seals intact? Note # & location	N/A	Absent
COC accompanied samples?	Yes	
DOD: Were samples received in COC corresponding coolers?	N/A	
	N/A	**Exemption permitted if chilled & collected <8 hours ago, or for samples where chilling is not required
Temperature blank compliant* (i.e., 0-6 °C after CF)?	Yes	Cooler ID: 1 @ 0.8 °C Therm. ID: D54
	Yes	Cooler ID: 2 @ 0.7 °C Therm. ID: D58
If samples received without a temperature blank, the "cooler temperature" will be documented instead & "COOLER TEMP" will be noted to the right. "ambient" or "chilled" will be noted if neither is available.		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
		Cooler ID: @ °C Therm. ID:
*If >6°C, were samples collected <8 hours ago?	N/A	
If <0°C, were sample containers ice free?	No	Containers 1A and B, 3 A and B, 4 B and D, 5B, and 7B were received with a thin layer of ice. Proceeding with analysis.
Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed.		
Holding Time / Documentation / Sample Condition Requirements		Note: Refer to form F-083 "Sample Guide" for specific holding times.
Were samples received within holding time?	Yes	
Do samples **match COC**** (i.e.,sample IDs,dates/times collected)?	Yes	
**Note: If times differ <1hr, record details & login per COC.		
***Note: If sample information on containers differs from COC, SGS will default to COC information		
Were analytical requests clear? (i.e., method is specified for analyses with multiple option for analysis (Ex: BTEX, Metals)	Yes	
	N/A	***Exemption permitted for metals (e.g,200.8/6020A).
Were proper containers (type/mass/volume/preservative***)used?	No	Container 8B was received unpreserved, and was preserved to compliance using 2mL HCl, LW09-0463-15-14.
Volatile / LL-Hg Requirements		
Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples?	Yes	
Were all water VOA vials free of headspace (i.e., bubbles ≤ 6mm)?	Yes	
Were all soil VOAs field extracted with MeOH+BFB?	N/A	

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

Additional notes (if applicable):

Sample Containers and Preservatives

Container Id	Preservative	Container Condition
1195455001-A	HCL to pH < 2	OK
1195455001-B	HCL to pH < 2	OK
1195455001-C	No Preservative Required	OK
1195455001-D	No Preservative Required	OK
1195455001-E	HCL to pH < 2	OK
1195455001-F	HCL to pH < 2	OK
1195455001-G	HCL to pH < 2	OK
1195455002-A	HCL to pH < 2	OK
1195455002-B	HCL to pH < 2	OK
1195455002-C	No Preservative Required	OK
1195455002-D	No Preservative Required	OK
1195455002-E	HCL to pH < 2	OK
1195455002-F	HCL to pH < 2	OK
1195455002-G	HCL to pH < 2	OK
1195455003-A	HCL to pH < 2	OK
1195455003-B	HCL to pH < 2	OK
1195455003-C	No Preservative Required	OK
1195455003-D	No Preservative Required	OK
1195455003-E	HCL to pH < 2	OK
1195455003-F	HCL to pH < 2	OK
1195455003-G	HCL to pH < 2	OK
1195455004-A	HCL to pH < 2	OK
1195455004-B	HCL to pH < 2	OK
1195455004-C	No Preservative Required	OK
1195455004-D	No Preservative Required	OK
1195455004-E	HCL to pH < 2	OK
1195455004-F	HCL to pH < 2	OK
1195455004-G	HCL to pH < 2	OK
1195455005-A	HCL to pH < 2	OK
1195455005-B	HCL to pH < 2	OK
1195455005-C	No Preservative Required	OK
1195455005-D	No Preservative Required	OK
1195455005-E	HCL to pH < 2	OK
1195455005-F	HCL to pH < 2	OK
1195455005-G	HCL to pH < 2	OK
1195455006-A	HCL to pH < 2	OK
1195455006-B	HCL to pH < 2	OK
1195455006-C	No Preservative Required	OK
1195455006-D	No Preservative Required	OK
1195455006-E	HCL to pH < 2	OK
1195455006-F	HCL to pH < 2	OK
1195455006-G	HCL to pH < 2	OK
1195455007-A	HCL to pH < 2	OK
1195455007-B	HCL to pH < 2	OK
1195455007-C	No Preservative Required	OK
1195455007-D	No Preservative Required	OK
1195455007-E	HCL to pH < 2	OK
1195455007-F	HCL to pH < 2	OK
1195455007-G	HCL to pH < 2	OK
1195455008-A	HCL to pH < 2	OK
1195455008-B	HCL to pH < 2	PA
1195455008-C	No Preservative Required	OK
1195455008-D	No Preservative Required	OK
1195455008-E	HCL to pH < 2	OK
1195455008-F	HCL to pH < 2	OK
1195455008-G	HCL to pH < 2	OK
1195455009-A	HCL to pH < 2	OK
1195455009-B	HCL to pH < 2	OK
1195455009-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.
NC- The container provided was not preserved or was under-preserved. The method does not allow for additional preservative added after collection.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
QN - Insufficient sample quantity provided.

ATTACHMENT 6

ADEC Checklist and Data Quality Report

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Arctic Data Services

302 Cushman St. #203
Fairbanks, AK 99701
907-457-3147

Date:	2/24/2020
Project name:	Newhalen Groundwater Monitoring
Laboratory:	SGS North America, Inc. – Anchorage, Alaska
Sample Delivery Groups:	1195455
Prepared By:	Alexander Thompson
Title:	Chemist
Approved by:	Rodney Guritz
Title:	Principal Chemist

To: Mr. Dan Frank
DNA Environmental, LLC
111 W. 9th Avenue
Anchorage, AK 99501

Data Quality Assessment

This letter summarizes the findings of a data quality assessment (DQA) conducted by Arctic Data Services, LLC (ADS) on behalf of DNA Environmental, LLC (DNA) for the above-referenced project data. Precision, accuracy, sensitivity, representativeness, comparability, and completeness of the data were evaluated by reviewing laboratory-supplied quality assurance/quality control (QA/QC) information as well as conducting independent QC checks on the data. A Stage 2A validation was conducted in general accordance with the US Environmental Protection Agency (USEPA) *National Functional Guidelines for Organic Superfund Methods Data Review* (2017). Stage 2A validation includes reviewing sample handling, custody, and sample-batch-level QC information, applying data qualifiers to sample results affected by anomalies and QC failures, and summarizing the impacts to data quality. This validation meets the requirements of the Alaska Department of Environmental Conservation (ADEC) *Technical Memorandum on Data Quality Objectives, Checklists, Quality Assurance Requirements for Laboratory Data, and Sample Handling* (March 2017). In the absence of project-specific control limits or measurement quality objectives (MQOs), QC-sample recoveries and relative percent differences (RPDs) were compared to laboratory control limits. Field-duplicate RPDs were compared to the ADEC-recommended MQOs.

An ADEC laboratory data review checklist was completed for the single sample delivery group (SDG), and is attached to this DQA. Also attached is a tabular summary of data qualified in the course of this review (Table 1), and a tabular summary of results lacking analytical sensitivity (Table 2). All data qualifiers applied are defined in Table 1. The following sections provide a summary of the findings for each QA/QC element reviewed; anomalies that had no impact to data quality are discussed in the ADEC laboratory data review checklist and are not further described herein.

Sample Analysis Summary

The following summarizes sample data reviewed in this DQA. Samples were submitted in a single SDG to SGS North America, Inc. in Anchorage, Alaska. Field duplicate samples were collected at the required frequency of at least one duplicate per ten project samples; field duplicates are included in the tally of total samples below.

A total of 8 groundwater samples were submitted for analysis of the following:

- Diesel range organics (DRO) by Alaska Method AK102;
- Volatile organic compounds (VOCs) by EPA Method 8260C; and
- Polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8270D-SIM.

Sample Preservation, Handling, Custody, and Holding Times

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

There were no sample handling, custody or preservation anomalies affecting project-sample data quality. Refer to the attached ADEC laboratory data review checklist for further discussion.

Method Blanks

The laboratory analyzed and reported a method blank (MB) for each preparatory batch, to check for laboratory-based sample contamination. Where analytes were detected in a MB, corresponding project sample results were compared to the MB concentration and qualified in accordance with the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, 2017). Corresponding detections below the limit of quantitation (LOQ) in project samples are qualified with a 'UB' flag at the LOQ. Using professional judgement, corresponding detections above the LOQ are flagged as follows. Associated sample results above the LOQ but within 5-times the MB concentration are qualified 'UB' at the detected concentration, as not detected due to laboratory-based sample contamination. Associated sample results above 5-times but within 10-times the MB concentration are qualified 'J+' as estimated, biased high, due to laboratory-based sample contamination. Refer to Table 1 (attached) for a full list of qualified results.

The following MB detections affected project-sample data quality:

- **1195455.** DRO was detected below the LOQ in the MB associated with AK102 prep batch XXX42360. DRO was detected below the LOQ in samples 19-NHTF-101-GW, 19-NHTF-102-GW, and 19-NHTF-103-GW;

these results are qualified 'UB' at the LOQ, indicating results should be considered "not detected" due to laboratory-based sample contamination. Remaining DRO results were not affected. The impact to data usability is minor, as the affected results were below the groundwater cleanup level (GCL).

Trip Blanks

At least one trip blank (TB) was submitted in each cooler containing groundwater samples for volatile analyses (VOCs), to check for cross-contamination of samples during sampling, shipment, or storage. Where analytes were detected in a TB, corresponding project sample results were compared to the TB concentration and qualified in accordance with the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, 2017), as described above (see *Method Blanks)*.

The following TB detections affected project-sample data quality:

- **1195455.** Chloromethane was detected below the LOQ in the trip blank sample (at 0.410 J µg/L). The chloromethane result for sample 19-NHTF-102-GW is considered affected, and is qualified 'UB' at the LOQ. The impact to data usability is minimal, as the affected result is multiple orders of magnitude below the cleanup level.

Equipment Blanks.

Sample 19-NHTF-101-RB was submitted as an equipment blank (EB) sample, to check for potential cross-contamination of samples from reusable sampling equipment.

There were no EB detections affecting project-sample data quality.

Laboratory Control Samples

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

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

Surrogate Recovery

Samples submitted for analysis of organic compounds were spiked with analyte surrogates to evaluate extraction efficiency and to check for matrix interference. Surrogate recoveries were reviewed for each project sample and

analysis. Project sample results are not considered affected by surrogate recovery failures if the samples were excessively diluted (a dilution factor of 10 or greater).

There were no surrogate recovery failures affecting project-sample data quality.

Field Duplicates

Field duplicate samples were collected for project samples. The field-duplicate collection frequency met the required minimum frequency of 10% for the groundwater sampling event. RPDs were calculated between field duplicate results. In the case where one result was quantitatively detected and the other result was not detected, an RPD was calculated using the LOD for the non-detect result.

The following field-duplicate RPD failures affected project-sample data quality:

- **1195455.** RPDs for naphthalene and fluorene exceeded the 30% ADEC recommended measurement quality objective for the submitted water duplicate sample pair. Refer to the checklist and Table 1 (attached) for a full list of affected results. Detected results affected by RPD failures are qualified as estimated and flagged 'J', indicating an unknown direction of bias. Non-detect results are qualified 'UJ', indicating there is uncertainty in the presence or absence of the analyte. The higher of duplicate results should be used for decision making purposes.

Summary of Data Quality Indicators

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

Sensitivity

Sensitivity describes the ability of the sampling and analytical methodology to meet detection and/or quantitation limit objectives. Analytical sensitivity was evaluated by checking that LOQs and limits of detection (LODs) are below relevant cleanup levels where target analytes were not detected. Groundwater sample LOQs and LODs were compared to ADEC 18 AAC 75.345 (October 2018) Table C GCLs.

LODs for VOC analyte 1,2,3-trichloropropane exceeded the GCL for all groundwater samples (see Table 2). Non-detect results where the LOD exceeds the PAL cannot be used to conclusively rule out the potential presence of

the analyte at concentrations above the cleanup levels. Overall analytical sensitivity is considered adequate for the purposes of this project, as all target analytes for this project had LODs below GCLs.

Precision

Precision is a measure of the reproducibility of repetitive measurements. Precision was evaluated based on laboratory QC-sample and field-duplicate sample RPDs. There were no QC-sample RPD failures affecting project-sample data quality; however, a number of results were qualified due to field duplicate RPD failures. These results are qualified as estimated, with an unknown direction of bias. Overall precision was deemed acceptable for purposes of this project, with the exceptions noted above.

Accuracy

Accuracy is a measure of the correctness, or the closeness, between the true value and the quantity detected. Accuracy was evaluated based on analyte recoveries for laboratory QC samples and recovery of surrogate spikes for project samples. There were no surrogate recovery failures or QC-sample recovery failures affecting project-sample data quality. Overall, accuracy was deemed acceptable for purposes of this project.

Representativeness

Representativeness describes the degree to which data accurately and precisely represent site characteristics. Representativeness is affected by factors such as sample frequency and matrix or contaminant heterogeneity, as well as analytical performance (including sensitivity, accuracy, precision) and sample cross-contamination. A small number of results were qualified due to a detection in a corresponding blank sample. These results are not wholly representative of site-conditions and have been qualified with 'UB' flags as "not detected" due to blank contamination. However, the impact to data usability is minor as the affected results are below relevant cleanup levels in each case. Samples were collected in accordance with an approved work plan, and overall representativeness was deemed acceptable for purposes of this project, with the above noted exceptions taken into account.

Comparability

Comparability describes whether two data sets can be considered equivalent with respect to project goals. Comparability is affected by factors such as sampling methodology and analytical performance (including sensitivity, accuracy, and precision). Comparability was evaluated by checking that standard analytical methods were employed, and analytical performance was acceptable. Overall, project-sample results are deemed generally comparable.

Completeness

Completeness describes the amount of valid data obtained from the sampling event(s). It is calculated as the percentage of valid measurements compared to the total number of measurements. No results were rejected during the course of this review. The dataset is 100% complete, and all results are usable as qualified.

Conclusions

Overall, precision, accuracy, representativeness, comparability, and completeness were deemed acceptable, with the exceptions described above taken into account. Project sample results affected by the QC anomalies described above have been flagged accordingly (see Table 1). The data are usable for the purposes of this project, as qualified.

Limitations

This review was based solely on information provided by the analytical laboratory in the laboratory reports for the SDGs reviewed. ADS did not review instrument-level QC elements, such as calibration verification or internal standard response, except to the extent that the laboratory identified instrument-level anomalies in the case narratives. ADS did not conduct independent recalculations of the data (e.g. recalculating results based on instrument responses) or review any raw chemical data (e.g. chromatograms). ADS makes no warranty, express or implied, of the conclusions presented in this report, or the completeness, accuracy, or validity of third-party information. Further, data quality indicators such as representativeness and comparability are affected by factors beyond the scope of a single analytical dataset; these elements are also dependent on the sampling design and heterogeneity (spatial and temporal) of a given site. Evaluation of these indicators as well as overall completeness of the dataset in the context of project data quality objectives should be conducted by the broader project team. A data quality assessment helps reduce the risk of reliance on data of compromised quality; however, it does not eliminate that risk.

Attachments:

Table 1 - Summary of Qualified Data
Table 2 - Summary of Analytical Sensitivity
ADEC Laboratory Data Review Checklists: 1195455

Table 1
Summary of Qualified Data
Newhalen Groundwater Monitoring
Data Quality Assessment

Lab	SDG	Client Sample ID	Matrix	Method	Analyte	CAS	Units	DL	LOD	LOQ	Result	Lab flags	QC Flags	Note	Final Qualified Result
SGSA	1195455	19-NHTF-101-GW	Groundwater	AK102	Diesel Range Organics	68334-30-5	mg/L	0.18	0.3	0.6	0.417	J	UB	MB	0.417 UB
SGSA	1195455	19-NHTF-102-GW	Groundwater	8260C	Chloromethane	74-87-3	µg/L	0.31	0.5	1	0.44	J	UB	TB	0.44 UB
SGSA	1195455	19-NHTF-102-GW	Groundwater	AK102	Diesel Range Organics	68334-30-5	mg/L	0.18	0.3	0.6	0.194	J	UB	MB	0.194 UB
SGSA	1195455	19-NHTF-103-GW	Groundwater	AK102	Diesel Range Organics	68334-30-5	mg/L	0.183	0.305	0.61	0.575	J	UB	MB	0.575 UB
SGSA	1195455	19-NHTF-106-GW	Groundwater	8270DSIM	Fluorene	86-73-7	µg/L	0.0147	0.0245	0.049	0.35		J	FD_RPD	0.350 J
SGSA	1195455	19-NHTF-106-GW	Groundwater	8270DSIM	Naphthalene	91-20-3	µg/L	0.0304	0.049	0.098	1.32		J	FD_RPD	1.32 J
SGSA	1195455	19-NHTF-107-GW	Groundwater	8270DSIM	Fluorene	86-73-7	µg/L	0.0142	0.0236	0.0472	0.253		J	FD_RPD	0.253 J
SGSA	1195455	19-NHTF-107-GW	Groundwater	8270DSIM	Naphthalene	91-20-3	µg/L	0.0292	0.0471	0.0943	0.967		J	FD_RPD	0.967 J

Table 1
Summary of Qualified Data
Newhalen Groundwater Monitoring
Data Quality Assessment

Notes

MB	Laboratory-based contamination (identified by a MB detection)
TB	Sample cross-contamination (identified by a TB detection)
FD_RPD	Field duplicate RPD failure

QC	quality control
RPD	relative percent difference
SDG	sample delivery group
CAS	Chemical Abstract Service registry number
DL	detection limit
LOD	limit of detection
LOQ	limit of quantitation
SGSA	SGS North America, Inc. - Anchorage, AK
MB	method blank
TB	trip blank

Data Qualifiers

J	The result is considered estimated; the analyte was detected below the LOQ (*laboratory-applied)* or affected by a QC anomaly.
UJ	The analyte was not detected; however, there is uncertainty in the presence of the analyte due to a QC anomaly.
UB	The result is considered a false-positive detection due to contamination, and is qualified as not detected.

Table 2
Analytical Sensitivity Summary
Newhalen Groundwater Monitoring
Data Quality Assessment

Arctic Data Services, LLC

SDG	Sample ID	Matrix	Method	Analyte	CAS	Units	DL		LOD		LOQ		Lab Flag	PAL
1195455	19-NHTF-101-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-101-RB	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-102-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-103-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-104-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-105-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-106-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075
1195455	19-NHTF-107-GW	Groundwater	8260C	1,2,3-Trichloropropane	96-18-4	µg/L	0.31	*	0.5	*	1	*	ND	0.0075

Table 2
Analytical Sensitivity Summary
Newhalen Groundwater Monitoring
Data Quality Assessment

Notes

SDG	sample delivery group
CAS	Chemical Abstract Service registry number
DL	detection limit
LOD	limit of detection
LOQ	limit of quantitation
ND	non-detect / not detected
PAL	project action limit
	PALs are the most stringent of the following:
	ADEC 18 AAC 75.345 Table C Groundwater cleanup levels (October 2018)
µg/L	micrograms per liter

Laboratory Data Review Checklist

Completed By:

Alex Thompson

Title:

Chemist

Date:

February 24, 2020

Consultant Firm:

Arctic Data Services, LLC for DNA Environmental, LLC

Laboratory Name:

SGS North America, Inc. – Anchorage, AK

Laboratory Report Number:

1195455

Laboratory Report Date:

October 2, 2019

CS Site Name:

Newhalen Bulk Fuel Storage

ADEC File Number:

2619.38.001

Hazard Identification Number:

1865

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

1. Laboratory

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

   Yes☒ No☐ N/A☐ Comments:

All samples were received and analyzed by SGS North America, Inc. in Anchorage, Alaska.

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

   Yes☐ No☐ N/A☒ Comments:

No samples were transferred to another laboratory.

2. Chain of Custody (CoC)

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

   Yes☒ No☐ N/A☐ Comments:

   b. Correct analyses requested?

   Yes☒ No☐ N/A☐ Comments:

However, the trip blank sample was not listed on the COC. The laboratory logged the sample as "Trip Blank" and analyzed the sample for VOCs.

3. Laboratory Sample Receipt Documentation

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

   Yes☒ No☐ N/A☐ Comments:

Two coolers were hand delivered to the laboratory and received within the acceptable temperature range at 0.8 and 0.7 °C.

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

   Yes☐ No☒ N/A☐ Comments:

Container 8B for sample 19-NHTF-101-RB was received unpreserved. The laboratory added the proper amount of HCl preservative when the sample was received. This container was not used for any of the performed analyses, so no data are considered affected.

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

   Yes☒ No☐ N/A☐ Comments:

Samples were received in good condition, with the exception of the presence of a thin layer of ice in certain sample containers (see below).

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

Yes☒ No☐ N/A☐ Comments:

The laboratory noted that containers 1A & B, 3A & B, 4 B & D, 5B, and 7B had a thin layer of ice present. The laboratory performed the requested analysis using some of these containers. As the coolers were received within the acceptable temperature range, and only a small amount of ice was present, no sample results are considered affected.

e. Data quality or usability affected?

Comments:

Data quality and usability were not affected.

4. Case Narrative

a. Present and understandable?

Yes☒ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☒ Comments:

No batch-level or instrument-level QC failures were identified in the laboratory case narrative.

c. Were all corrective actions documented?

Yes☐ No☐ N/A☒ Comments:

No corrective actions were performed.

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

Comments:

Data quality and usability were not affected.

5. Samples Results

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

Yes☒ No☐ N/A☐ Comments:

b. All applicable holding times met?

Yes☒ No☐ N/A☐ Comments:

c. All soils reported on a dry weight basis?

Yes☐ No☐ N/A☒ Comments:

No soil samples were submitted in this work order.

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

Yes☐ No☒ N/A☐ Comments:

LODs and LOQs were compared to the ADEC 18 AAC 75.345 Table C groundwater cleanup levels (October 2018). 1,2,3-trichloropropane had LODs and/or LOQs exceeding cleanup levels in various samples. Refer to table 2 of the DQA for a full list of affected results.

e. Data quality or usability affected?

Data quality is not affected. Results where the LOD exceeds cleanup levels cannot be used to conclusively rule out the potential presence of the analyte above cleanup levels.

6. QC Samples

a. Method Blank

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

However, DRO was detected below the LOQ (at 0.186 J mg/L) in the method blank sample associated with AK102 prep batch XXX42360.

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

Comments:

Associated sample results below the LOQ are qualified ‘UB’ at the LOQ, as not detected due to laboratory-based sample contamination.
Associated sample results above the LOQ but within 5x the MB concentration are qualified ‘UB’ at the detected concentration, as not detected due to laboratory-based sample contamination.
Associated sample results above 5x but within 10x the MB concentration are qualified ‘J+’ as estimated, biased high, due to laboratory-based sample contamination.
DRO was detected below the LOQ in samples 19-NHTF-101-GW, 19-NHTF-102-GW, and 19-NHTF-103-GW; these results are qualified ‘UB’ at the LOQ, indicating results should be considered not detected due to laboratory-based sample contamination. Remaining DRO results were not affected.

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

Yes☒ No☐ N/A☐ Comments:

See above.

v. Data quality or usability affected?

Comments:

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

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

Yes☒ No☐ N/A☐ Comments:

An LCS and LCSD were analyzed for each preparatory batch for Alaska Methods. An LCS and LCSD were analyzed for each preparatory batch for EPA SW846 Methods.

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

Yes☐ No☐ N/A☒ Comments:

No metals/inorganic analyses were performed in this work order.

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

Yes☒ No☐ N/A☐ Comments:

All LCS/LCSD recoveries were within laboratory control limits.

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

Yes☒ No☐ N/A☐ Comments:

There were no LCS/LCSD RPD failures.

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

Comments:

No samples are considered affected, see above.

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

Yes☐ No☐ N/A☒ Comments:

NA; see above.

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

Comments:

Data quality and usability were not affected.

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

Note: Leave blank if not required for project

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

Yes☐ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Comments:

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

Yes☐ No☐ N/A☐ Comments:

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

Comments:

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

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

Yes☒ No☐ N/A☐ Comments:

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

Yes☒ No☐ N/A☐ Comments:

All surrogate recoveries were within laboratory control limits.

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

Yes☐ No☐ N/A☐ Comments:

No samples are considered affected, see above.

iv. Data quality or usability affected?

Comments:

Data quality and usability were not affected.

e. Trip Blanks

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

Yes☒ No☐ N/A☐ Comments:

Sample Trip Blank was analyzed for VOCs by 8260C.

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

Yes☐ No☒ N/A☐ Comments:

There is no clear indication on the COC which cooler transported volatile samples. However, the COC notes that the trip blank was provided with volatile organic analysis sample containers.

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

Yes☒ No☐ N/A☐ Comments:

However, chloromethane was detected below the LOQ in the trip blank sample (0.410 J µg/L).

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

Comments:

Associated sample results below the LOQ are qualified ‘UB’ at the LOQ, as not detected due to sample cross-contamination.
Associated sample results above the LOQ but within 5x the TB concentration are qualified ‘UB’ at the detected concentration, as not detected due to sample cross-contamination.
Associated sample results above 5x but within 10x the TB concentration are qualified ‘J+’ as estimated, biased high, due to sample cross-contamination.
Chloromethane was detected below the LOQ in sample 19-NHTF-102-GW; this result is considered affected and qualified ‘UB’ at the LOQ, and should be considered not detected due to sample cross-contamination.

v. Data quality or usability affected?

Comments:

Data quality is affected as described above. The impact to data usability is minimal, as the affected result is multiple orders of magnitude below the cleanup level.

f. Field Duplicate

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

Yes☒ No☐ N/A☐ Comments:

Sample 19-NHTF-107-GW was submitted as a field duplicate of sample 19-NHTF-106-GW.

ii. Submitted blind to lab?

Yes☒ No☐ N/A☐ Comments:

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

Yes☐ No☒ N/A☐ Comments:

Where an analyte was quantitatively detected in one sample but not detected in the other, LODs were used for non-detect results in RPD calculations. RPDs for naphthalene and fluorene exceeded the 30% ADEC recommended measurement quality objective for water samples.

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

Comments:

Detected results affected by RPD failures are qualified as estimated and flagged 'J', indicating an unknown direction of bias. Non-detect results are qualified 'UJ', indicating there is uncertainty in the presence or absence of the analyte. The higher of duplicate results should be used for decision making purposes.

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

Yes☒ No☐ N/A☐ Comments:

Sample 19-NHTF-101-RB was submitted as an equipment blank sample in this work order.

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

Yes☒ No☐ N/A☐ Comments:

No analytes were detected in the equipment blank sample.

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

Comments:

No samples were affected, see above.

iii. Data quality or usability affected?

Comments:

Data quality and usability were not affected.

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

a. Defined and appropriate?

Yes☐ No☐ N/A☒ Comments:

There were no additional qualifiers/flags applied by the laboratory.

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ATTACHMENT 7

Mann-Kendall Output

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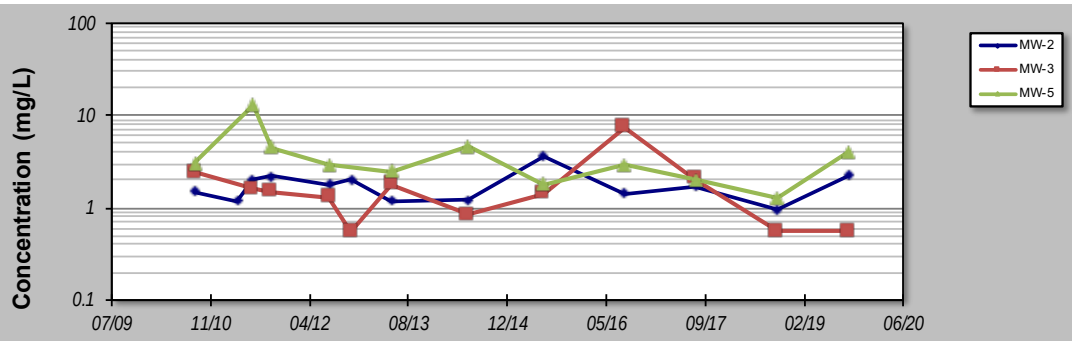
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 28-Feb-20
Facility Name: NHTF
Conducted By: DNA Environmental
Job ID:
Constituent: DRO
Concentration Units: mg/L

Sampling Point ID:	MW-2	MW-3	MW-5				
Sampling Event	Sampling Date	DRO CONCENTRATION (mg/L)						
1	28-Aug-10	1.5	2.43	3.04				
2	31-Mar-11	1.2						
3	21-Jun-11	2	1.6	13				
4	19-Sep-11	2.2	1.5	4.5				
5	9-Jul-12	1.8	1.3	2.9				
6	26-Oct-12	2	0.55					
7	22-May-13	1.2	1.8	2.5				
8	11-Jun-14	1.22	0.846	4.6				
9	27-Jun-15	3.61	1.42	1.79				
10	7-Aug-16	1.43	7.4	2.89				
11	1-Aug-17	1.71	2.08	2.03				
12	21-Sep-18	0.96	0.555	1.28				
13	17-Sep-19	2.27	0.555	4.02				
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.39	1.01	0.83				
Mann-Kendall Statistic (S):		2	-15	-23				
Confidence Factor:		52.4%	82.8%	95.7%				
Concentration Trend:		No Trend	No Trend	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.