NORTECH

SUSTAINABLE ENVIRONMENT, ENERGY,
HEALTH & SAFETY PROFESSIONAL SERVICES

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July 15, 2019

Sent via email to:
c.toh@cmiak.com

GGATS, LLC
5400 Homer Drive
Anchorage, AK 99518

ATTN: Chee Kong Toh

RE: March 2012 Groundwater Sampling Results – Shop
1949 Ada Street/2615 20th Avenue, Fairbanks, Alaska

Chee Kong:

This letter report summarizes the groundwater sampling event completed on March 27, 2012 at 1949 Ada Street/2615 20th Avenue, Block 14, E M Jones Subdivision (the Site). The groundwater sample was drawn from monitoring well MW-21. The work was executed in general accordance with the proposal dated December 1, 2011 and the ADEC Request for Information letter dated August 30, 2011. This report also provides the most recent data as requested in the April 26, 2019 letter from ADEC.

The March 2012 results from MW-21 are generally decreasing, consistent with the source removal action completed at this site. A number of contaminants of concern (COCs) remain present above ADEC groundwater cleanup levels. In addition, several of these are volatile organic compounds (VOCs) with a potential to result in vapor intrusion into the occupied spaces of the building. The development of a long-term monitoring plan and vapor intrusion mitigation system plan should be developed to document and manage these potential concerns.

Project Background

In September 2006, ***NORTECH*** and CMI completed a limited groundwater sampling event of two former areas of potential contamination and an inspection to document the discharge location of the shop floor drain in accordance with requests from ADEC and EPA. The initial groundwater investigation indicated the two areas of concern were not contaminated. The floor drain investigation indicated that the drainage structure was located beneath the trench drain. This structure was classified as a Class V injection well and needed to be closed.

NORTECH and CMI closed the injection well structure and installed a new oil water separator in April and May 2007. The injection well was identified as a four-foot diameter culvert installed vertically beneath the floor slab adjacent to the trench drain (see Figure 1). The culvert contained approximately 2 feet of water and 6 feet of oily sludge and was perforated to provide water drainage. The culvert and contaminated material were removed to the maximum extent practical. Approximately one-half of the culvert was left in place to reduce the potential structural impacts to the existing concrete slab and trench drain.

The new oil water separator system consists of a grit chamber followed by an oil-water separator. This system discharges into the Golden Heart Utilities (GHU) wastewater treatment system and has been inspected and approved by GHU. An operations and maintenance manual was developed and provided for this system.

During the culvert removal, all sludge-like material within the culvert and more than half the contaminated material outside the culvert was removed and thermally remediated. A limited quantity remained in place at the limits of excavation adjacent to (behind) the culvert due to structural concerns. Laboratory results indicate that limited soil remaining beneath the slab exceeded the ADEC migration to groundwater cleanup levels for DRO, RRO, benzene, and tetrachloroethene (PCE) in one or more places. This soil has limited potential for additional migration because the drain has been re-routed, the wet material was removed, and the building and slab prevent infiltration.

A temporary direct push monitoring well was installed at the bottom of the excavation to assess the groundwater conditions adjacent to the former injection well location. The results indicated that DRO, RRO, and benzene were the contaminants of concern (COCs) that exceeded the ADEC Table C groundwater cleanup levels in the regulations in 2007. Table C was revised in 2017 and 1,2,4-trimethylbenzene and naphthalene concentrations from 2007 are also above the current regulatory limits. PCE and trichloroethene (TCE) were detected below the cleanup levels, along with a variety of other benzene derivatives. Two SVOC compounds (including naphthalene) and three metals were also detected below the cleanup levels. The groundwater data from this temporary sampling point are included in Table 2 as the April 2007 sampling event.

A permanent micro-well (MW-21) was installed as close as possible to the source area in November 2007. Petroleum and VOCs were detected at lower concentrations than April 2007 in the source area and are shown in Table 2. At this time, five direct-push temporary sampling points were also installed along the north and west (downgradient) exterior sides of the building in November 2007. No petroleum fractions or VOCs were detected in the five exterior locations, indicating that contaminant migration from the source area with the groundwater is minimal. These results confirmed that no off-site properties or receptors were impacted by this groundwater contamination. This report concluded that the potential for further contamination of the groundwater from the site has been significantly reduced through the removal of the source and secondary source soils adjacent to the former discharge structure and that potential contact with the groundwater contaminants is limited by the presence of the shop building.

The final report for this assessment effort was submitted to ADEC and EPA in 2011 with a recommendation for long term monitoring of a single monitoring well in the source area. EPA indicated that the floor drain structure removal was adequate to close the Class V injection well and confirmed that the remaining contaminated site issues would be managed by ADEC. ADEC agreed that annual sampling of the single monitoring well would be appropriate to establish the trend of dissolved contamination.

Scope of Work and Objectives

Based on correspondence with ADEC and CMI, ***NORTECH*** proposed completing a groundwater sampling event in 2012 that consisted of the following:

- Complete groundwater sampling of MW-21 during low water in the spring of 2012
- Create a report documenting the fieldwork, provides a discussion of the results from fieldwork and laboratory analysis.

Methodology

Lab Sampling and Analyses

Field personnel completed groundwater sampling in general accordance with the 2010 ADEC Field Sampling Guidance. MW-21 was to be purged and sampled using a peristaltic pump at a low flow rate to prevent air from entering the tubing during sampling. Samples were to be collected into laboratory provided glassware and stored in a chilled cooler until delivery to SGS Environmental Services (SGS). Based on the known release and under revised groundwater cleanup levels. The following analyses were to be completed:

- Diesel Range Organics (DRO) by Method AK102
- Residual Range Organics (RRO) by Method AK103
- Volatile Organic Compounds (VOCs) by Method 8260

ADEC Cleanup Levels

As indicated above, ADEC revised the regulatory cleanup levels for groundwater in January 2017. The applicable groundwater cleanup levels for this site are in Table C of 18 AAC 75.345. While this does not necessarily apply "retroactively" to closed sites, these revisions apply to all open sites, including the CMI Shop. The previous and current cleanup levels for the COCs for the release at this Site are listed in the attached Table 1 and Table 2.

Field Activities

Andrew Croan and Stephanie Dunham of ***NORTECH*** mobilized to the site on March 27, 2012 to inspect and sample one monitoring well, MW-21, which is located inside the shop. Field activities were in accordance with the ADEC 2010 Field Sampling Guidance and previous groundwater sampling events at the site. The well and monument were inspected and in good condition. The depth to water was measured at 11.61 feet from the top of the casing. Approximately 5.08 feet of water was present in the well casing.

The well was purged and sampled using low-flow techniques. The approximately two gallons of purged water was dark in color and had a septic/anaerobic odor. Two laboratory samples, MW21 (primary sample) and DUP-1 (field duplicate) were collected directly into laboratory-provided glassware. These were immediately placed on ice and delivered to the laboratory under a standard chain of custody analyses identified above. The samples were delivered to SGS less than three hours after they were collected.

Laboratory Results with Discussion

The 2012 analytical results (27-Mar-12) are summarized in Table 1 (left portion) along with the field duplicate quality control summary (right portion). The higher result of each duplicate pair for this (and each) sampling event are compiled into the historical results summary in Table 2. Copies of the laboratory analytical report and the ADEC Laboratory Data Review Checklist (LDRC) are attached to this report (Attachment 3).

In this sampling event, DRO, 1,2,4-trimethylbenzene, and naphthalene were more than an order of magnitude above their respective cleanup levels. RRO and xylenes were slightly above their cleanup levels. Benzene and seven other VOCs were detected below their respective cleanup levels. The only chlorinated compound that was detected was cis-1,2-dichloroethene and the concentration was below the cleanup level.

As shown in Table 1, the RPD between the primary sample and the field duplicate pair is within the +/- 30% objective, indicate the field and laboratory methods are sufficiently reproducible. Several data quality issues are noted in the LDRC, of which the most notable is the elevated

limit of quantitation (LOQ) for multiple VOCs. These were further evaluated to the limit of detection (LOD), resulting in estimated detections (j-flagged) results for several compounds. Following this review, only TCE has an LOD above the ADEC cleanup level. Based on this, the non-detect for TCE is not considered definitive to document conditions at the site. Since the site is not being considered for closure and additional VOC monitoring is planned at this location, this is not considered a significant concern. This and other minor QC issues are discussed in the LDRC and the data is acceptable and usable as presented in this report.

Historic Data and Trend Analysis

The groundwater at the former injection well structure has been sampled three times: in April 2007 during remediation and in November 2007 and March 2012 from the long-term monitoring well. This location has detectable concentrations of DRO, RRO, and multiple petroleum-related VOCs, as well as a few chlorinated solvent VOCs. The detected compounds in groundwater match the detected compounds in soil, indicating that the MW-21 groundwater results are representative of the remaining contamination beneath the structure.

Three sampling events are the minimum required to establish a trend at a contaminated site. The existing data set does not establish a clear trend because the November 2007 sampling event is lower than the earlier April 2007 event and the most-recent March 2012 event. In general, the March 2012 results are the same order of magnitude but slightly lower than the April 2007 results. At a minimum, this indicates that the plume is at least stable following removal of the source and secondary source soils.

The three completed sampling events do not provide adequate data to determine a trend, which could be related to a number of factors. The most obvious is seasonal differences between the November and March/April time period. While both of these are considered “low-water” periods of time during the annual groundwater recession (October to early May), the March time period (lower groundwater) has higher groundwater elevations. In addition, the change from a temporary to permanent well likely impacted concentrations. While the data has shown that the contaminants are not migrating outside the building footprint and are relatively stable, additional groundwater data is necessary to confirm this with definitive data.

Recommended Long-term Monitoring Program

Additional groundwater data should be collected as part of a long-term monitoring plan for the site. This long-term monitoring program should be approved by ADEC and provide clear guidance for the future groundwater monitoring at the site. The recommended conceptual approach is to confirm the existing data and then provide periodic sampling at longer intervals and reduced COCs to the extent practical. Long-term monitoring is expected to continue until the groundwater meets the Table C cleanup levels for each COC or additional soil remediation is conducted that changes the conditions at the site. Conditions for potential changes to the COCs and frequency of the long-term monitoring events would be approved by ADEC. ***NORTECH*** recommends the following groundwater sampling events for the long-term monitoring program:

Sampling Timeframe	Rationale
2019 – November	Current conditions, 2nd early period of low groundwater
2020 – March	2nd late period of low groundwater
2021	Confirmation sampling event, re-evaluate COCs and time of sampling as identified and approved through 2020 annual report
2024	Long-term Monitoring event, extend the interval to 5 years as warranted
2029 and beyond	Long-term Monitoring event, maintain a 5-year interval as warranted

Vapor Intrusion Potential

The 2008 report documenting the injection well closure indicates that vapor intrusion to indoor air is a potentially complete exposure pathway, while documenting that the source has been stopped, much of the secondary source soil has been removed, and the concrete slab has been repaired and sealed. In addition, the report documents that the activities in the shop include use of most of the COCs for vapor intrusion, so indoor air testing is not a reasonable means to assess the vapor intrusion potential. A direct correlation between soil concentrations and vapor intrusion is not possible, so ADEC typically requests sub-slab soil gas testing to assess the potential for vapor intrusion.

Groundwater results can be used directly to assess the potential for vapor intrusion from the groundwater to the indoor air (assuming no soil contamination is present). Appendix F of the 2017 vapor intrusion guidance identifies residential and commercial target levels for groundwater as a guideline for when vapor intrusion may be a concern. A preliminary review of the groundwater results compared to Appendix F of the vapor intrusion guidance is included as Table 3. This indicates that no compounds at the site have exceeded the commercial target level in any sampling event. Four compounds exceeded the residential target level in 2007 and one compound, 1,2,4,-trimethylbenzene, exceeded the residential target level in 2012.

Taken together, the groundwater and soil results indicate that the potential exists for vapor intrusion into the shop space from the remaining subsurface contamination. The shop continues to contain a variety of petroleum products for use during daily activities, so indoor air sampling is not expected. Based on our experience, sub-slab soil gas testing is expected to show that vapors are accumulating in the sub-slab area. Instead of putting together a soil gas sampling program to assess this concern, ***NORTECH*** recommends installing a sub-slab vapor mitigation system that can be used to test the sub-slab conditions and provide mitigation if necessary. Due to the limited area of contamination and known subsurface conditions (gravel backfill around oil water separator components), a small vapor collection system with an exhaust elevated on the exterior of the building is expected to be effective. The details of the construction and testing of this system should be developed in a work plan for ADEC approval.

Conclusions

This letter report summarizes the results of the 2012 groundwater sampling event for MW-21 and evaluates these results in terms of the previous results and potential vapor intrusion at the Site. Based on the current and historical groundwater data, ***NORTECH*** has arrived at the following conclusions and recommendations:

- COC concentrations were slightly lower than the previous sampling event in April 2007
  - Five contaminants of concern exceed the ADEC cleanup levels
  - Future sampling events should include the following analyses:
    - DRO and RRO (AK Method 102/103)
    - VOCs (EPA Method 8260)
  - Future sampling events should be completed as part of an ADEC-approved comprehensive long-term monitoring program that includes the following items:
    - Sampling in October/November 2019 to collect current information and “early” seasonal low groundwater
    - Sampling in March 2020 during “late” seasonal low groundwater (expected “worst case” conditions)

  - Confirmation events in 2021 and at 3-5 year intervals based on lack of contaminant migration and long-term industrial ownership/operation at the facility
- Available results indicate that vapor intrusion is a potential concern due to the presence of contaminated soil and groundwater beneath the shop
  - Installation of a vapor mitigation system is recommended
    - The extent of the system should be limited due to known subsurface locations and conditions
    - The system should be piped beneath the slab with the exhaust and fan outside the building
  - The system will provide the ability for screening, testing, and mitigation
  - This system should be installed under an ADEC approved work plan

This report should be submitted to ADEC to document completion of the groundwater sampling event of MW-21 in 2012. Based on the April 2019 letter from ADEC, ***NORTECH*** recommends that this report be submitted with a work plan that details the recommended long-term monitoring program for groundwater, as well as the vapor mitigation system. This will provide a comprehensive update and work plan that ADEC has requested. Approval and implementation of this work plan will provide the CMI with clear technical planning and financial programming commitments for the long-term operation of the facility.

Please contact me at your earliest convenience if you have any questions about the data presented in the report or the site in general.

Sincerely,
NORTECH

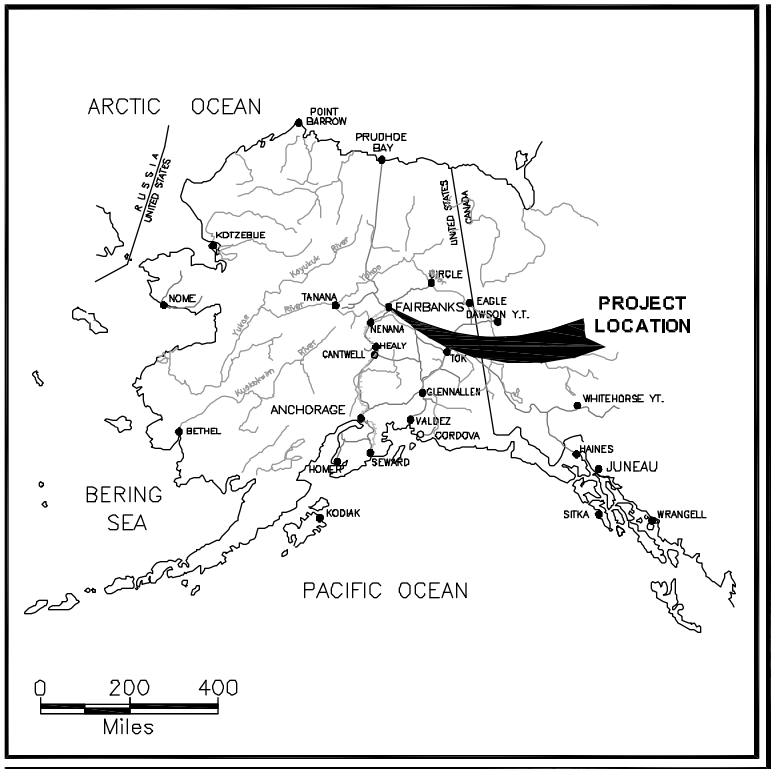
Peter Beardsley, PE
Environmental Engineer

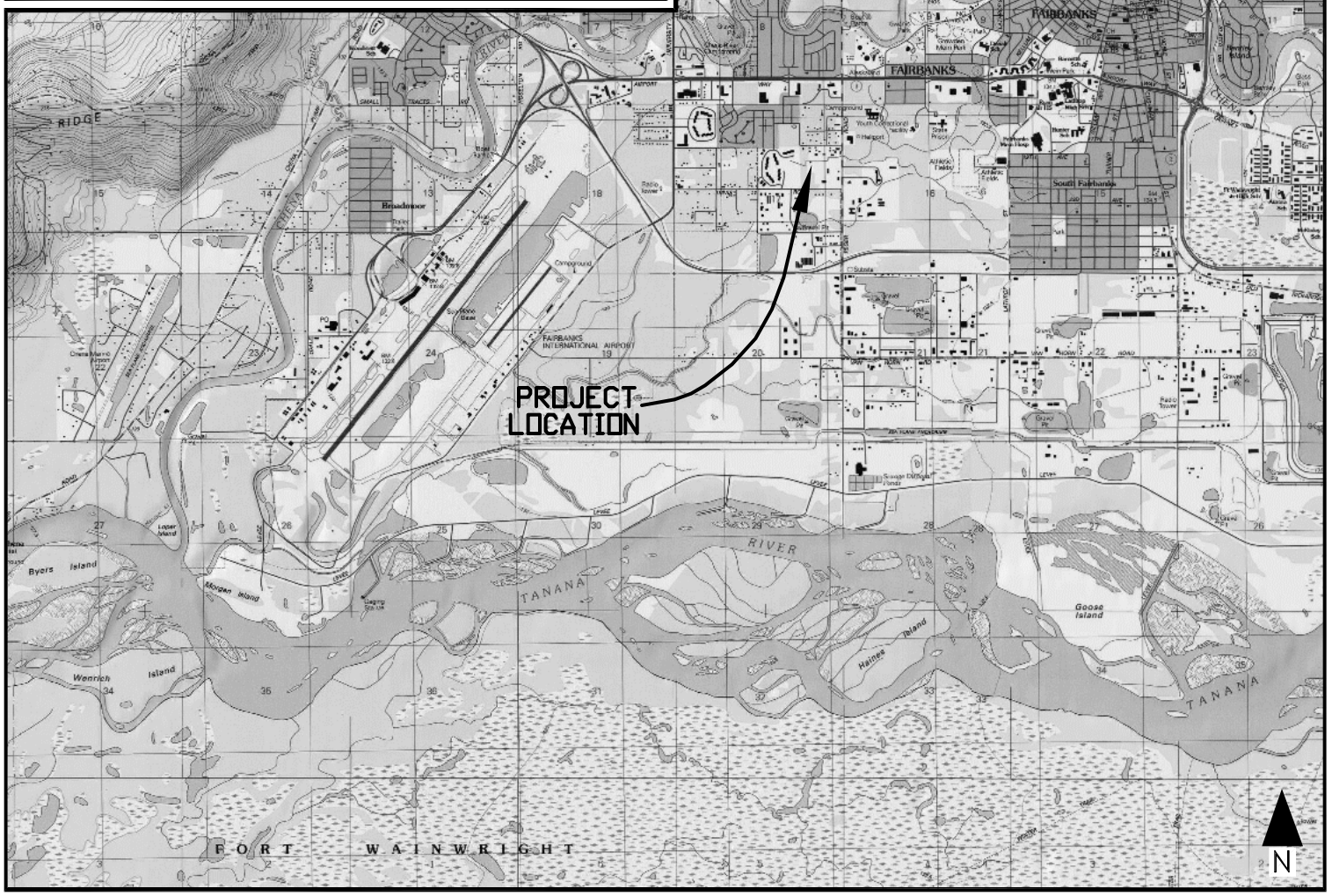
Attachments:

	Figure 1	Location Map
	Figure 2	Vicinity Map
	Figure 3	Sample Location
	Table 1	Groundwater Laboratory Results and QC Summary
	Table 2	Historical Groundwater Results with Cleanup Levels
	Table 3	Historical Groundwater Results with Vapor Intrusion Targets

Copy of Original Laboratory Report
ADEC Laboratory Data Review Checklist

Attachment 1





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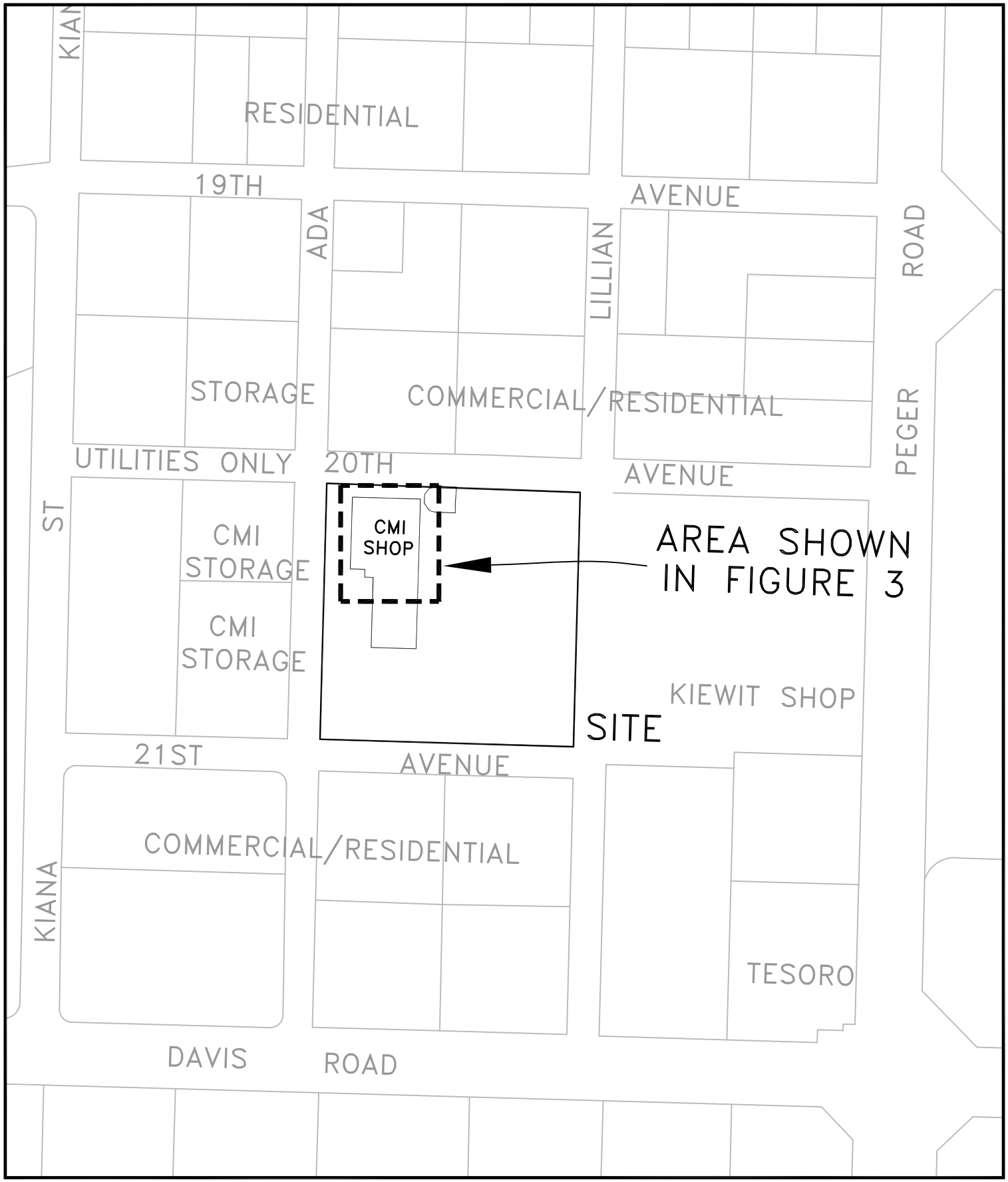
Location Map
1949 Ada St / 2615 20th Avenue
Block 14 EM Jones Subdivision
Fairbanks, Alaska

SCALE:	1"=1 mi	FIGURE: 1
DESIGN:	PLB	
DRAWN:	PLB	
PROJECT NO:	10-1088	
DWG:	101088sb(01)	
DATE:	07/08/2019	



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Vicinity Map
1949 Ada St / 2615 20th Avenue
Block 14 EM Jones Subdivision
Fairbanks, Alaska

SCALE:	1" = 200'	FIGURE: 2
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DRAWN:	PLB	
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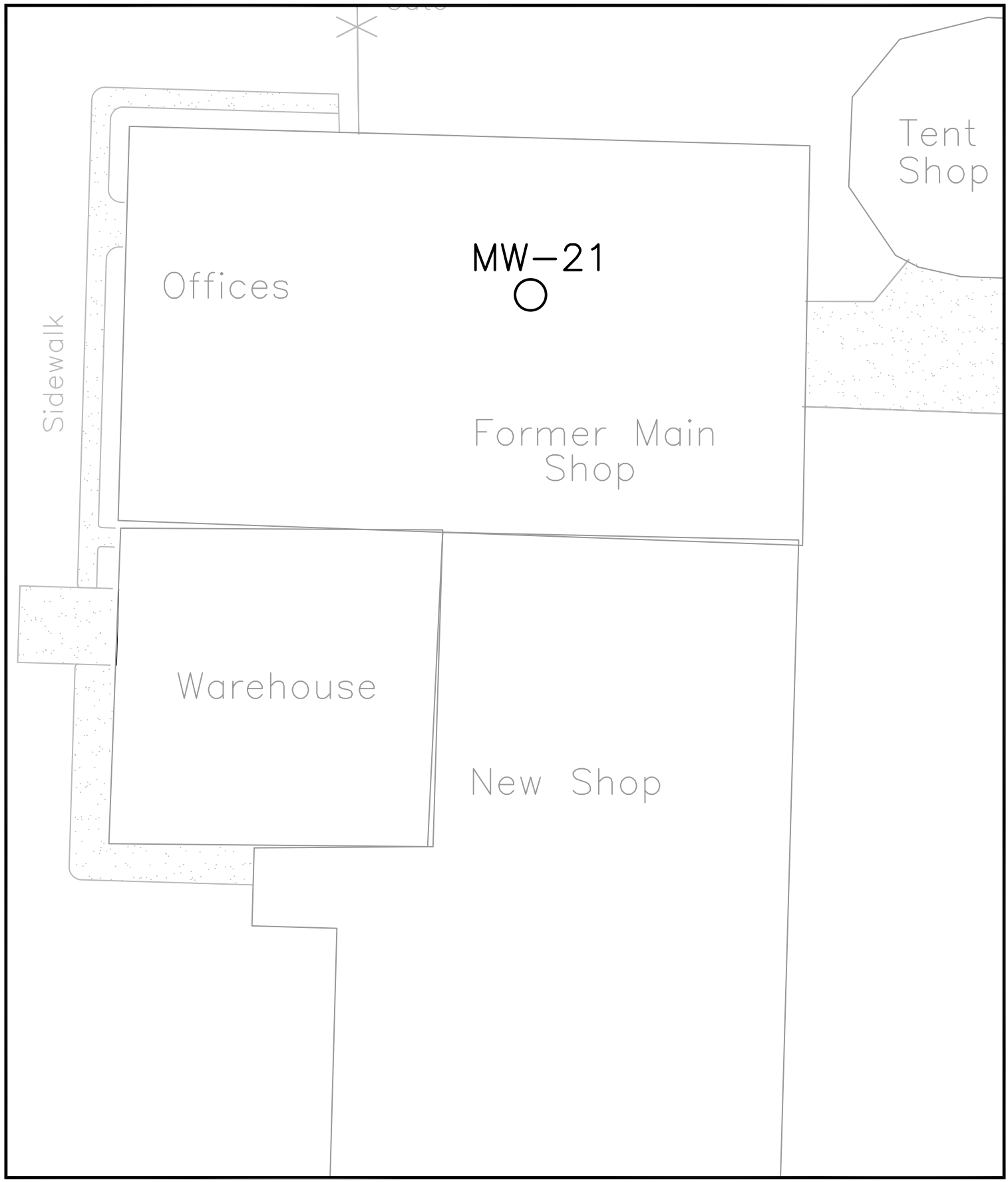
DATE:	07/08/2019	



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Site Map
1949 Ada St / 2615 20th Avenue
Block 14 EM Jones Subdivision
Fairbanks, Alaska

SCALE: 1" = 20'	FIGURE: 3
DESIGN: PLB	
DRAWN: PLB	
PROJECT NO: 10–1088	
DWG: 101088sb(03)	
DATE: 07/08/2019	

Attachment 2

Table 1
Groundwater Results Summary
March 2012

			Laboratory Results			Quality Control Analysis		
Sample ID	ADEC Limits		MW-21	Dup-1		Average	Difference	RPD
Analyte	Prior	Current	mg/l	mg/l		mg/L	mg/L	%
Petroleum Fractions (Method AK 102, AK 103)								
DRO	1.5	1.5	**26.4**	**33.7**		30.05	7.30	24%
RRO	1.1	1.1	**1.89**	**2.51**		2.20000	0.62000	28%
VOCs (Method 8260B)								
Benzene	0.005	0.0046	0.00150J	0.00140J		0.00145	-0.00010	-7%
Toluene	1	1.1	0.0327	0.0354		0.03405	0.00270	8%
Ethylbenzene	0.7	0.15	0.0219	0.0248		0.02335	0.00290	12%
Xylenes (total)	10	0.19	**0.207**	**0.226**		0.21650	0.01900	9%
Trichloroethene (TCE)	0.005	0.0028	*U(0.00310)*	*U(0.00310)*		NA	NA	NA
Tetrachloroethene (PCE)	0.005	0.041	U(0.00310)	U(0.00310)		NA	NA	NA
cis-1,2-Dichloroethene	0.07	0.036	0.01710	0.01820		0.01765	0.00110	6%
trans-1,2-Dichloroethene	0.1	0.360	U(0.00310)	U(0.00310)		0.00310	0.00000	0%
Cumene	3.7	0.450	0.00460J	0.0050J		0.00480	0.00040	8%
n-Propylbenzene	0.37	0.660	0.00680J	0.00720J		0.00700	0.00040	6%
tert-Butylbenzene	0.37	0.690	U(0.00310)	U(0.00310)		NA	NA	NA
1,3,5-Trimethylbenzene	1.8	0.120	0.02500	0.02130		0.02315	-0.00370	-16%
1,2,4-Trimethylbenzene	1.8	0.015	**0.0558**	**0.0578**		0.05680	0.00200	4%
n-Butylbenzene	0.37	1	U(0.00310)	U(0.00310)		NA	NA	NA
2-Butanone (MEK)	22	5.6	0.45400	0.34500		0.39950	-0.10900	-27%
4-Isopropyltoluene	NE	NE	0.02210	0.02290		0.02250	0.00080	4%
Napthalene (8260)	0.73	0.0017	**0.0275**	**0.0292**		0.02835	0.00170	6%

Notes

	Dup-1 is a field duplicate of MW-21
ND(X.XX)	Analyte not detected at the listed Limit of Quantitation (LOQ)
U(X.XX)	Analyte not detected at the listed Limit of Detection (LOD)
J	Analyte concentration estimated between LOD and LOQ.
NT	Analyte not analyzed for
Italic/Underline	Analyte not detected, LOD above ADEC Cleanup Level
Shade	Analyte detected in concentration below the ADEC Cleanup level
Bold	Analyte detected in concentration exceeding the ADEC Cleanup level
NE	Cleanup Level for listed Analyte has not been established
NA	The calculation is not applicable.
RPD	Relative percent difference

Table 2
Historical Groundwater Results and Cleanup Levels
Monitoring Well MW-21: 2007 - 2012

Sample ID	ADEC Limits		CM-1/CMI-2	CMI-21/21(a)	MW-21/Dup-1
Analyte	Prior	Current	mg/l	mg/l	mg/l
			Apr-2007	**Nov-2007**	**Mar-2012**
Petroleum Fractions (Method AK 102, AK 103)					
DRO	1.5	1.5	**31.1**	**6.27**	**33.7**
RRO	1.1	1.1	**4.14**	**1.88**	**2.51**
Detected VOCs (Method 8260B)					
Benzene	0.005	0.0046	**0.0342**	0.00330	0.00150J
Toluene	1	1.1	0.224	ND(0.0010)	0.0354
Ethylbenzene	0.7	0.15	0.0361	0.00956	0.0248
Xylenes (total)	10	0.19	**0.365**	0.05730	**0.226**
Trichloroethene (TCE)	0.005	0.0028	0.00185	0.00110	*U(0.00310)*
Tetrachloroethene (PCE)	0.005	0.041	0.00177	0.00437	U(0.00310)
cis-1,2-Dichloroethene	0.07	0.036	ND(0.010)	0.00360	0.01820
trans-1,2-Dichloroethene	0.1	0.36	ND(0.0010)	ND(0.0010)	U(0.00310)
Isopropylbenzene	3.7	0.45	0.00859	0.00363	0.0050J
n-Propylbenzene	0.37	0.66	0.0102	ND(0.0010)	0.00720J
tert-Butylbenzene	0.37	0.69	0.00101	ND(0.0010)	U(0.00310)
1,3,5-Trimethylbenzene	1.8	0.12	0.0330	0.00804	0.02500
1,2,4-Trimethylbenzene	1.8	0.015	**0.0683**	**0.0243**	**0.0578**
n-Butylbenzene	0.37	1	0.00215	ND(0.0010)	U(0.00310)
2-Butanone (MEK)	22	5.6	ND(1.00)	ND(0.0100)	0.45400
4-Isopropyltoluene	NE	NE	0.0925	0.01060	0.02290
Napthalene (8260)	0.73	0.0017	**0.0482**	**0.0109**	**0.0292**

Notes:	Higher results from primary sample or field duplicate for each event
ND(X.XX)	Analyte not detected at the listed level of quantitation (LOQ)
U(X.XX)	Analyte not detected at the listed detection limit (DL)
J	Analyte concentration estimated between DL and LOQ
NT	Analyte not analyzed for
Italic/Underline	Analyte not detected, LOD above ADEC Cleanup Level
Shade	Analyte detected in concentration below the ADEC Cleanup level
Bold	Analyte detected in concentration exceeding the ADEC Cleanup level
NE	Cleanup Level for listed Analyte has not been established

Table 3
Historical Groundwater Results and Vapor Intrusion Targets
Monitoring Well MW-21: 2007 - 2012

Sample ID	ADEC Limits		CM-1/CMI-2	CMI-21/21(a)	MW-21/Dup-1
Analyte	Res	Comm	mg/l	mg/l	mg/l
			Apr-2007	**Nov-2007**	**Mar-2012**
Petroleum Fractions (Method AK 102, AK 103)					
DRO	NE	NE	31.1	6.27	33.7
RRO	NE	NE	4.14	1.88	2.51
Detected VOCs (Method 8260B)					
Benzene	0.016	0.069	*0.0342*	0.00330	0.00150J
Toluene	190	810	0.224	ND(0.0010)	0.0354
Ethylbenzene	0.035	0.150	*0.0361*	0.00956	0.0248
Xylenes (total)	0.38	1.60	0.365	0.05730	0.226
Trichloroethene (TCE)	0.005	0.021	0.00185	0.00110	U(0.00310)
Tetrachloroethene (PCE)	0.058	0.24	0.00177	0.00437	U(0.00310)
cis-1,2-Dichloroethene	NE	NE	ND(0.010)	0.00360	0.01820
trans-1,2-Dichloroethene	NE	NE	ND(0.0010)	ND(0.0010)	U(0.00310)
Isopropylbenzene	0.89	3.900	0.00859	0.00363	0.0050J
n-Propylbenzene	2.40	10.0	0.0102	ND(0.0010)	0.00720J
tert-Butylbenzene	NE	NE	0.00101	ND(0.0010)	U(0.00310)
1,3,5-Trimethylbenzene	NE	NE	0.0330	0.00804	0.02500
1,2,4-Trimethylbenzene	0.029	0.12	*0.0683*	0.0243	*0.0578*
n-Butylbenzene	NE	NE	0.00215	ND(0.0010)	U(0.00310)
2-Butanone (MEK)	2200	9400	ND(1.00)	ND(0.0100)	0.45400
4-Isopropyltoluene	NE	NE	0.0925	0.01060	0.02290
Napthalene (8260)	0.046	0.200	*0.0482*	0.0109	0.0292

Notes:	Higher results from primary sample or field duplicate for each event
ND(X.XX)	Analyte not detected at the listed level of quantitation (LOQ)
U(X.XX)	Analyte not detected at the listed detection limit (DL)
J	Analyte concentration estimated between DL and LOQ
Shade	Analyte detected in concentration below the VI residential target level
Italic/Underline	Analyte detected above the VI residential target level, but below the commercial target
Bold	Analyte detected above the VI commercial target level
NE	VI target levels have not been established

Attachment 3

SGS North America Inc.
Alaska Division
Level II Laboratory Data Report

Project:	CM I 10-1088
Client:	Nortech
SGS Work Order:	1127647

Released by:

Alaska Division Technical Director

Stephen Ede
2012.08.07
10:53:32 -08'00'

Contents:

Client Name: Nortech
Project Name: CM I 10-1088
Workorder No.: 1127647

Sample Comments

Refer to the sample receipt form for information on sample condition.

Lab Sample ID	Sample Type	Client Sample ID
1127647001	PS	MW 21

AK101/8021B - Sample has a pH greater than two; there is a possible low bias.
AK102 - The pattern is consistent with a weathered gasoline.
8260B - Sample cannot be reanalyzed at a lower dilution due to insufficient sample volume.
Corrected Report: 8260B analysis not intially analyzed and reported due to lab error.
Revised Report: J flagging turned on per client request.

1127647002	PS	DUP-1

AK101/8021B - Sample has a pH greater than two; there is a possible low bias.
AK102 - The pattern is consistent with a weathered gasoline.
8260B - Sample cannot be reanalyzed at a lower dilution due to insufficient sample volume.
Corrected Report: 8260B analysis not intially analyzed and reported due to lab error.
Revised Report: J flagging turned on per client request.

1127647003	* TB	TB A

Corrected Report: 8260B analysis not intially analyzed and reported due to lab error.
Revised Report: J flagging turned on per client request.

1081175	* IB	IB for HBN 1325659 (XFC/10325)

AK102 - IB recovery for 5a-androstane (surrogate) do not meet QC criteria (biased high); however the batch QC and all associated sample surrogates are within criteria.

1081689	* MB	MB for HBN 1327566 [VXX/23380]

8260B - MB result for cyclohexane is greater than half the LOQ but lower than the LOQ. This analyte was not reported in the associated samples.

1081692	* IB	IB for HBN 1327567 [VMS/12763]

8260B - IB result for cyclohexane is greater than half the LOQ but lower than the LOQ. This analyte was not reported in the associated samples.

1081693	* CCV	CCV for HBN 1327567 [VMS/12763

8260B - CCV recovery for dichlorodifluoromethane and chloromethane does not meet QC criteria (biased high). These analytes were not detected above the LOQ in the associated samples.

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

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Laboratory Analytical Report

Client: **Nortech**
2400 College Rd
Fairbanks, AK 99709

Attn: **Andrew Croan**
T: (907)452-5688 F:
acroan@nortechengr.com

Project: **CM I 10-1088**

Workorder No.: **1127647**

Certification:

This data package is in compliance with the terms and conditions of the contract, both technically and for completeness, unless otherwise noted on the sample data sheet(s) and/or case narrative. This certification applies only to the tested parameters and the specific sample(s) received at the laboratory. If you have any questions regarding this report, or if we can be of further assistance, please contact your SGS Project Manager.

Jennifer Dawkins

Project Manager

Contents (Bookmarked in PDF):

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Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. If you have any questions regarding this report, or if we can be of any other assistance, please contact your SGS Project Manager at 907-562-2343. All work is provided under SGS general terms and conditions (<http://www.sgs.com/terms_and_conditions.htm>), unless other written agreements have been accepted by both parties.

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) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO 17025 (RCRA methods: 1020A, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035B, 6020, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040B, 9045C, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

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

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV	Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 2xDL)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RL	Reporting Limit
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

Print Date: 8/7/2012 10:19 am

Client Name: Nortech
Project Name: CM I 10-1088
Workorder No.: 1127647

Analytical Methods

Method Description	Analytical Method
DRO/RRO Low Volume Water	AK102
DRO/RRO Low Volume Water	AK103
Volatile Organic Compounds (W) FULL	SW8260B

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1127647001	MW 21
1127647002	DUP-1
1127647003	TB A

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Detectable Results Summary

Print Date: 8/7/2012 10:19 am

Client Sample ID: **MW 21**
SGS Ref. #: 1127647001

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	26.4	mg/L
Residual Range Organics	1.89	mg/L
Volatile Gas Chromatography/Mass Spectroscopy		
Benzene	1.50J	ug/L
Toluene	32.7	ug/L
Ethylbenzene	21.9	ug/L
Carbon disulfide	9.10J	ug/L
1,3,5-Trimethylbenzene	20.5	ug/L
4-Methyl-2-pentanone (MIBK)	46.3J	ug/L
cis-1,2-Dichloroethene	17.1	ug/L
4-Isopropyltoluene	22.1	ug/L
n-Propylbenzene	6.80J	ug/L
2-Butanone (MEK)	454	ug/L
P & M -Xylene	119	ug/L
Naphthalene	27.5	ug/L
o-Xylene	87.8	ug/L
Xylenes (total)	207	ug/L
1,2,4-Trimethylbenzene	55.8	ug/L
Isopropylbenzene (Cumene)	4.60J	ug/L

Detectable Results Summary

Print Date: 8/7/2012 10:19 am

Client Sample ID: **DUP-1**
SGS Ref. #: 1127647002

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	33.7	mg/L
Residual Range Organics	2.51	mg/L
Volatile Gas Chromatography/Mass Spectroscopy		
Benzene	1.40J	ug/L
Toluene	35.4	ug/L
Ethylbenzene	24.8	ug/L
Carbon disulfide	9.20J	ug/L
1,3,5-Trimethylbenzene	21.3	ug/L
4-Methyl-2-pentanone (MIBK)	49.9J	ug/L
cis-1,2-Dichloroethene	18.2	ug/L
4-Isopropyltoluene	22.9	ug/L
n-Propylbenzene	7.20J	ug/L
2-Butanone (MEK)	345	ug/L
P & M -Xylene	129	ug/L
Naphthalene	29.2	ug/L
o-Xylene	96.3	ug/L
Xylenes (total)	226	ug/L
1,2,4-Trimethylbenzene	57.8	ug/L
Isopropylbenzene (Cumene)	5.00J	ug/L

Client Sample ID: **TB A**
SGS Ref. #: 1127647003

Parameter	Result	Units
Volatile Gas Chromatography/Mass Spectroscopy		
Carbon disulfide	0.920J	ug/L

Client Sample ID: **MW 21**
SGS Ref. #: 1127647001
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:55
Receipt Date/Time: 03/29/12 09:30

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	26.4	0.600	0.180	mg/L	1	XFC10325	XXX26662	
Residual Range Organics	1.89	0.500	0.150	mg/L	1	XFC10325	XXX26662	
5a Androstane <surr>	88.7	50-150		%	1	XFC10325	XXX26662	
n-Triacontane-d62 <surr>	83.9	50-150		%	1	XFC10325	XXX26662	

Batch Information

Analytical Batch: XFC10325
Analytical Method: AK102
Analysis Date/Time: 04/05/12 16:43
Dilution Factor: 1
Prep Batch: XXX26662
Prep Method: SW3520C
Prep Date/Time: 04/03/12 09:40
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1127647001-D
Analyst: LCE

Analytical Batch: XFC10325
Analytical Method: AK103
Analysis Date/Time: 04/05/12 16:43
Dilution Factor: 1
Prep Batch: XXX26662
Prep Method: SW3520C
Prep Date/Time: 04/03/12 09:40
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1127647001-D
Analyst: LCE

Client Sample ID: **MW 21**
SGS Ref. #: 1127647001
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:55
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
1,1,1,2-Tetrachloroethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
1,1,1-Trichloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1,2,2-Tetrachloroethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
1,1,2-Trichloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1-Dichloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1-Dichloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1-Dichloropropene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,3-Trichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,3-Trichloropropane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,4-Trichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,4-Trimethylbenzene	55.8	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2-Dibromo-3-chloropropane	12.4 U	20.0	6.20	ug/L	10	VMS12763	VXX23380	
1,2-Dibromoethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2-Dichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2-Dichloroethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
1,2-Dichloropropane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,3,5-Trimethylbenzene	20.5	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,3-Dichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,3-Dichloropropane	2.40 U	4.00	1.20	ug/L	10	VMS12763	VXX23380	
1,4-Dichlorobenzene	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
2,2-Dichloropropane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
2-Butanone (MEK)	454	100	31.0	ug/L	10	VMS12763	VXX23380	
2-Chlorotoluene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
2-Hexanone	62.0 U	100	31.0	ug/L	10	VMS12763	VXX23380	
4-Chlorotoluene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
4-Isopropyltoluene	22.1	10.0	3.10	ug/L	10	VMS12763	VXX23380	
4-Methyl-2-pentanone (MIBK)	46.3J	100	31.0	ug/L	10	VMS12763	VXX23380	
Benzene	1.50J	4.00	1.20	ug/L	10	VMS12763	VXX23380	
Bromobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Bromochloromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Bromodichloromethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
Bromoform	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Bromomethane	18.8 U	30.0	9.40	ug/L	10	VMS12763	VXX23380	
Carbon disulfide	9.10J	20.0	6.20	ug/L	10	VMS12763	VXX23380	
Carbon tetrachloride	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Chlorobenzene	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	

Client Sample ID: **MW 21**
SGS Ref. #: 1127647001
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:55
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Chloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Chloroform	6.00 U	10.0	3.00	ug/L	10	VMS12763	VXX23380	
Chloromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
cis-1,2-Dichloroethene	17.1	10.0	3.10	ug/L	10	VMS12763	VXX23380	
cis-1,3-Dichloropropene	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
Dibromochloromethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
Dibromomethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Dichlorodifluoromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Ethylbenzene	21.9	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Hexachlorobutadiene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Isopropylbenzene (Cumene)	4.60J	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Methylene chloride	20.0 U	50.0	10.0	ug/L	10	VMS12763	VXX23380	
Methyl-t-butyl ether	30.0 U	50.0	15.0	ug/L	10	VMS12763	VXX23380	
Naphthalene	27.5	20.0	6.20	ug/L	10	VMS12763	VXX23380	
n-Butylbenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
n-Propylbenzene	6.80J	10.0	3.10	ug/L	10	VMS12763	VXX23380	
o-Xylene	87.8	10.0	3.10	ug/L	10	VMS12763	VXX23380	
P & M -Xylene	119	20.0	6.20	ug/L	10	VMS12763	VXX23380	
sec-Butylbenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Styrene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
tert-Butylbenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Tetrachloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Toluene	32.7	10.0	3.10	ug/L	10	VMS12763	VXX23380	
trans-1,2-Dichloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
trans-1,3-Dichloropropene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Trichloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Trichlorofluoromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Vinyl chloride	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Xylenes (total)	207	30.0	9.40	ug/L	10	VMS12763	VXX23380	
1,2-Dichloroethane-D4 <surr>	101	70-120		%	10	VMS12763	VXX23380	
4-Bromofluorobenzene <surr>	97.7	75-120		%	10	VMS12763	VXX23380	
Toluene-d8 <surr>	101	85-120		%	10	VMS12763	VXX23380	

Client Sample ID: **MW 21**
SGS Ref. #: 1127647001
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:55
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers

Batch Information

Analytical Batch: VMS12763
Analytical Method: SW8260B
Analysis Date/Time: 04/09/12 20:56
Dilution Factor: 10

Prep Batch: VXX23380
Prep Method: SW5030B
Prep Date/Time: 04/09/12 09:55

Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1127647001-C
Analyst: JPI

Client Sample ID: **DUP-1**
SGS Ref. #: 1127647002
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	33.7	0.600	0.180	mg/L	1	XFC10325	XXX26662	
Residual Range Organics	2.51	0.500	0.150	mg/L	1	XFC10325	XXX26662	
5a Androstane <surr>	93.4	50-150		%	1	XFC10325	XXX26662	
n-Triacontane-d62 <surr>	87.8	50-150		%	1	XFC10325	XXX26662	

Batch Information

Analytical Batch: XFC10325
Analytical Method: AK102
Analysis Date/Time: 04/05/12 17:04
Dilution Factor: 1
Prep Batch: XXX26662
Prep Method: SW3520C
Prep Date/Time: 04/03/12 09:40
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1127647002-D
Analyst: LCE

Analytical Batch: XFC10325
Analytical Method: AK103
Analysis Date/Time: 04/05/12 17:04
Dilution Factor: 1
Prep Batch: XXX26662
Prep Method: SW3520C
Prep Date/Time: 04/03/12 09:40
Initial Prep Wt./Vol.: 250 mL
Prep Extract Vol.: 1 mL
Container ID:1127647002-D
Analyst: LCE

Client Sample ID: **DUP-1**
SGS Ref. #: 1127647002
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
1,1,1,2-Tetrachloroethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
1,1,1-Trichloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1,2,2-Tetrachloroethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
1,1,2-Trichloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1-Dichloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1-Dichloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,1-Dichloropropene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,3-Trichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,3-Trichloropropane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,4-Trichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2,4-Trimethylbenzene	57.8	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2-Dibromo-3-chloropropane	12.4 U	20.0	6.20	ug/L	10	VMS12763	VXX23380	
1,2-Dibromoethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2-Dichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,2-Dichloroethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
1,2-Dichloropropane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,3,5-Trimethylbenzene	21.3	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,3-Dichlorobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
1,3-Dichloropropane	2.40 U	4.00	1.20	ug/L	10	VMS12763	VXX23380	
1,4-Dichlorobenzene	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
2,2-Dichloropropane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
2-Butanone (MEK)	345	100	31.0	ug/L	10	VMS12763	VXX23380	
2-Chlorotoluene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
2-Hexanone	62.0 U	100	31.0	ug/L	10	VMS12763	VXX23380	
4-Chlorotoluene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
4-Isopropyltoluene	22.9	10.0	3.10	ug/L	10	VMS12763	VXX23380	
4-Methyl-2-pentanone (MIBK)	49.9J	100	31.0	ug/L	10	VMS12763	VXX23380	
Benzene	1.40J	4.00	1.20	ug/L	10	VMS12763	VXX23380	
Bromobenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Bromochloromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Bromodichloromethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
Bromoform	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Bromomethane	18.8 U	30.0	9.40	ug/L	10	VMS12763	VXX23380	
Carbon disulfide	9.20J	20.0	6.20	ug/L	10	VMS12763	VXX23380	
Carbon tetrachloride	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Chlorobenzene	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	

Client Sample ID: **DUP-1**
SGS Ref. #: 1127647002
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Chloroethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Chloroform	6.00 U	10.0	3.00	ug/L	10	VMS12763	VXX23380	
Chloromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
cis-1,2-Dichloroethene	18.2	10.0	3.10	ug/L	10	VMS12763	VXX23380	
cis-1,3-Dichloropropene	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
Dibromochloromethane	3.00 U	5.00	1.50	ug/L	10	VMS12763	VXX23380	
Dibromomethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Dichlorodifluoromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Ethylbenzene	24.8	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Hexachlorobutadiene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Isopropylbenzene (Cumene)	5.00J	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Methylene chloride	20.0 U	50.0	10.0	ug/L	10	VMS12763	VXX23380	
Methyl-t-butyl ether	30.0 U	50.0	15.0	ug/L	10	VMS12763	VXX23380	
Naphthalene	29.2	20.0	6.20	ug/L	10	VMS12763	VXX23380	
n-Butylbenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
n-Propylbenzene	7.20J	10.0	3.10	ug/L	10	VMS12763	VXX23380	
o-Xylene	96.3	10.0	3.10	ug/L	10	VMS12763	VXX23380	
P & M -Xylene	129	20.0	6.20	ug/L	10	VMS12763	VXX23380	
sec-Butylbenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Styrene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
tert-Butylbenzene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Tetrachloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Toluene	35.4	10.0	3.10	ug/L	10	VMS12763	VXX23380	
trans-1,2-Dichloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
trans-1,3-Dichloropropene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Trichloroethene	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Trichlorofluoromethane	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Vinyl chloride	6.20 U	10.0	3.10	ug/L	10	VMS12763	VXX23380	
Xylenes (total)	226	30.0	9.40	ug/L	10	VMS12763	VXX23380	
1,2-Dichloroethane-D4 <surr>	101	70-120		%	10	VMS12763	VXX23380	
4-Bromofluorobenzene <surr>	96.9	75-120		%	10	VMS12763	VXX23380	
Toluene-d8 <surr>	99.8	85-120		%	10	VMS12763	VXX23380	

Client Sample ID: **DUP-1**
SGS Ref. #: 1127647002
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers

Batch Information

Analytical Batch: VMS12763
Analytical Method: SW8260B
Analysis Date/Time: 04/09/12 21:23
Dilution Factor: 10

Prep Batch: VXX23380
Prep Method: SW5030B
Prep Date/Time: 04/09/12 09:55

Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1127647002-C
Analyst: JPI

Client Sample ID: **TB A**
SGS Ref. #: 1127647003
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
1,1,1,2-Tetrachloroethane	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
1,1,1-Trichloroethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,1,2,2-Tetrachloroethane	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
1,1,2-Trichloroethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,1-Dichloroethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,1-Dichloroethene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,1-Dichloropropene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2,3-Trichlorobenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2,3-Trichloropropane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2,4-Trichlorobenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2,4-Trimethylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2-Dibromo-3-chloropropane	1.24 U	2.00	0.620	ug/L	1	VMS12763	VXX23380	
1,2-Dibromoethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2-Dichlorobenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,2-Dichloroethane	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
1,2-Dichloropropane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,3,5-Trimethylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,3-Dichlorobenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
1,3-Dichloropropane	0.240 U	0.400	0.120	ug/L	1	VMS12763	VXX23380	
1,4-Dichlorobenzene	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
2,2-Dichloropropane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
2-Butanone (MEK)	6.20 U	10.0	3.10	ug/L	1	VMS12763	VXX23380	
2-Chlorotoluene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
2-Hexanone	6.20 U	10.0	3.10	ug/L	1	VMS12763	VXX23380	
4-Chlorotoluene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
4-Isopropyltoluene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
4-Methyl-2-pentanone (MIBK)	6.20 U	10.0	3.10	ug/L	1	VMS12763	VXX23380	
Benzene	0.240 U	0.400	0.120	ug/L	1	VMS12763	VXX23380	
Bromobenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Bromochloromethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Bromodichloromethane	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
Bromoform	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Bromomethane	1.88 U	3.00	0.940	ug/L	1	VMS12763	VXX23380	
Carbon disulfide	0.920J	2.00	0.620	ug/L	1	VMS12763	VXX23380	
Carbon tetrachloride	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Chlorobenzene	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	

Client Sample ID: **TB A**
SGS Ref. #: 1127647003
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Chloroethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Chloroform	0.600 U	1.00	0.300	ug/L	1	VMS12763	VXX23380	
Chloromethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
cis-1,2-Dichloroethene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
cis-1,3-Dichloropropene	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
Dibromochloromethane	0.300 U	0.500	0.150	ug/L	1	VMS12763	VXX23380	
Dibromomethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Dichlorodifluoromethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Ethylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Hexachlorobutadiene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Isopropylbenzene (Cumene)	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Methylene chloride	2.00 U	5.00	1.00	ug/L	1	VMS12763	VXX23380	
Methyl-t-butyl ether	3.00 U	5.00	1.50	ug/L	1	VMS12763	VXX23380	
Naphthalene	1.24 U	2.00	0.620	ug/L	1	VMS12763	VXX23380	
n-Butylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
n-Propylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
o-Xylene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
P & M -Xylene	1.24 U	2.00	0.620	ug/L	1	VMS12763	VXX23380	
sec-Butylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Styrene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
tert-Butylbenzene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Tetrachloroethene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Toluene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
trans-1,2-Dichloroethene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
trans-1,3-Dichloropropene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Trichloroethene	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Trichlorofluoromethane	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Vinyl chloride	0.620 U	1.00	0.310	ug/L	1	VMS12763	VXX23380	
Xylenes (total)	1.88 U	3.00	0.940	ug/L	1	VMS12763	VXX23380	
1,2-Dichloroethane-D4 <surr>	104	70-120		%	1	VMS12763	VXX23380	
4-Bromofluorobenzene <surr>	94	75-120		%	1	VMS12763	VXX23380	
Toluene-d8 <surr>	96.5	85-120		%	1	VMS12763	VXX23380	

Client Sample ID: **TB A**
SGS Ref. #: 1127647003
Project ID: CM I 10-1088
Matrix: Water (Surface, Eff., Ground)

Collection Date/Time: 03/27/12 14:00
Receipt Date/Time: 03/29/12 09:30

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers

Batch Information

Analytical Batch: VMS12763
Analytical Method: SW8260B
Analysis Date/Time: 04/09/12 16:05
Dilution Factor: 1

Prep Batch: VXX23380
Prep Method: SW5030B
Prep Date/Time: 04/09/12 09:55

Initial Prep Wt./Vol.: 5 mL
Prep Extract Vol.: 5 mL
Container ID:1127647003-B
Analyst: JPI

SGS Ref.#	1080803	Method Blank	**Printed Date/Time**	08/07/2012 10:19
Client Name	Nortech		**Prep Batch**	XXX26662
Project Name/#	CM I 10-1088		**Method**	SW3520C
Matrix	Water (Surface, Eff., Ground)		**Date**	04/03/2012

QC results affect the following production samples:

1127647001, 1127647002

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	0.360 U	0.600	0.180	mg/L	04/05/12
Surrogates					
5a Androstane <surr>	110	60-120		%	04/05/12
Batch XFC10325					
Method AK102					
Instrument HP 7890A FID SV E F					
Residual Range Organics	0.300 U	0.500	0.150	mg/L	04/05/12
Surrogates					
n-Triacontane-d62 <surr>	103	60-120		%	04/05/12
Batch XFC10325					
Method AK103					
Instrument HP 7890A FID SV E F					

SGS Ref.#	1081114	Leaching Blank	**Printed Date/Time**	08/07/2012 10:19
Client Name	Nortech		**Prep Batch**	VXX23380
Project Name/#	CM I 10-1088		**Method**	SW5030B
Matrix	Water (Surface, Eff., Ground)		**Date**	04/09/2012

QC results affect the following production samples:
1127647001, 1127647002, 1127647003

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
TCLP Volatiles GC/MS					
1,1-Dichloroethene	124 U	200	62.0	ug/L	04/09/12
1,2-Dichloroethane	60.0 U	100	30.0	ug/L	04/09/12
1,4-Dichlorobenzene	60.0 U	100	30.0	ug/L	04/09/12
2-Butanone (MEK)	1240 U	2000	620	ug/L	04/09/12
Benzene	48.0 U	80.0	24.0	ug/L	04/09/12
Carbon tetrachloride	124 U	200	62.0	ug/L	04/09/12
Chlorobenzene	60.0 U	100	30.0	ug/L	04/09/12
Chloroform	120 U	200	60.0	ug/L	04/09/12
Hexachlorobutadiene	124 U	200	62.0	ug/L	04/09/12
Tetrachloroethene	124 U	200	62.0	ug/L	04/09/12
Trichloroethene	124 U	200	62.0	ug/L	04/09/12
Vinyl chloride	124 U	200	62.0	ug/L	04/09/12
Surrogates					
1,2-Dichloroethane-D4 <surr>	104	70-120		%	04/09/12
4-Bromofluorobenzene <surr>	95.7	75-120		%	04/09/12
Toluene-d8 <surr>	97.8	85-120		%	04/09/12

Batch VMS12763
Method SW8260B
Instrument HP 5890 Series II MS3 VNA

SGS Ref.#	1081689	Method Blank	**Printed Date/Time**	08/07/2012 10:19
Client Name	Nortech		**Prep Batch**	VXX23380
Project Name/#	CM I 10-1088		**Method**	SW5030B
Matrix	Water (Surface, Eff., Ground)		**Date**	04/09/2012

QC results affect the following production samples:

1127647001, 1127647002, 1127647003

Parameter	Results	LOQ/CL	DL	Units	Analysis Date

Volatile Gas Chromatography/Mass Spectroscopy

SGS Ref.#	1081689 Method Blank	**Printed Date/Time**	08/07/2012 10:19	
Client Name	Nortech	**Prep Batch**	VXX23380	
Project Name/#	CM I 10-1088	**Method**	SW5030B	
Matrix	Water (Surface, Eff., Ground)	**Date**	04/09/2012	

Volatile Gas Chromatography/Mass Spectroscopy

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
1,1,1,2-Tetrachloroethane	0.300 U	0.500	0.150	ug/L	04/09/12
1,1,1-Trichloroethane	0.620 U	1.00	0.310	ug/L	04/09/12
1,1,2,2-Tetrachloroethane	0.300 U	0.500	0.150	ug/L	04/09/12
1,1,2-Trichloroethane	0.620 U	1.00	0.310	ug/L	04/09/12
1,1-Dichloroethane	0.620 U	1.00	0.310	ug/L	04/09/12
1,1-Dichloroethene	0.620 U	1.00	0.310	ug/L	04/09/12
1,1-Dichloropropene	0.620 U	1.00	0.310	ug/L	04/09/12
1,2,3-Trichlorobenzene	0.620 U	1.00	0.310	ug/L	04/09/12
1,2,3-Trichloropropane	0.620 U	1.00	0.310	ug/L	04/09/12
1,2,4-Trichlorobenzene	0.620 U	1.00	0.310	ug/L	04/09/12
1,2,4-Trimethylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
1,2-Dibromo-3-chloropropane	1.24 U	2.00	0.620	ug/L	04/09/12
1,2-Dibromoethane	0.620 U	1.00	0.310	ug/L	04/09/12
1,2-Dichlorobenzene	0.620 U	1.00	0.310	ug/L	04/09/12
1,2-Dichloroethane	0.300 U	0.500	0.150	ug/L	04/09/12
1,2-Dichloropropane	0.620 U	1.00	0.310	ug/L	04/09/12
1,3,5-Trimethylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
1,3-Dichlorobenzene	0.620 U	1.00	0.310	ug/L	04/09/12
1,3-Dichloropropane	0.240 U	0.400	0.120	ug/L	04/09/12
1,4-Dichlorobenzene	0.300 U	0.500	0.150	ug/L	04/09/12
2,2-Dichloropropane	0.620 U	1.00	0.310	ug/L	04/09/12
2-Butanone (MEK)	6.20 U	10.0	3.10	ug/L	04/09/12
2-Chlorotoluene	0.620 U	1.00	0.310	ug/L	04/09/12
2-Hexanone	6.20 U	10.0	3.10	ug/L	04/09/12
4-Chlorotoluene	0.620 U	1.00	0.310	ug/L	04/09/12
4-Isopropyltoluene	0.620 U	1.00	0.310	ug/L	04/09/12
4-Methyl-2-pentanone (MIBK)	6.20 U	10.0	3.10	ug/L	04/09/12
Benzene	0.240 U	0.400	0.120	ug/L	04/09/12
Bromobenzene	0.620 U	1.00	0.310	ug/L	04/09/12
Bromochloromethane	0.620 U	1.00	0.310	ug/L	04/09/12
Bromodichloromethane	0.300 U	0.500	0.150	ug/L	04/09/12
Bromoform	0.620 U	1.00	0.310	ug/L	04/09/12
Bromomethane	1.88 U	3.00	0.940	ug/L	04/09/12
Carbon disulfide	1.24 U	2.00	0.620	ug/L	04/09/12
Carbon tetrachloride	0.620 U	1.00	0.310	ug/L	04/09/12
Chlorobenzene	0.300 U	0.500	0.150	ug/L	04/09/12
Chloroethane	0.620 U	1.00	0.310	ug/L	04/09/12
Chloroform	0.350J	1.00	0.300	ug/L	04/09/12
Chloromethane	0.620 U	1.00	0.310	ug/L	04/09/12

SGS Ref.#	1081689	Method Blank	**Printed Date/Time**		08/07/2012 10:19
Client Name	Nortech		**Prep**	**Batch**	VXX23380
Project Name/#	CM I 10-1088			**Method**	SW5030B
Matrix	Water (Surface, Eff., Ground)			**Date**	04/09/2012

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy					
cis-1,2-Dichloroethene	0.620 U	1.00	0.310	ug/L	04/09/12
cis-1,3-Dichloropropene	0.300 U	0.500	0.150	ug/L	04/09/12
Dibromochloromethane	0.300 U	0.500	0.150	ug/L	04/09/12
Dibromomethane	0.620 U	1.00	0.310	ug/L	04/09/12
Dichlorodifluoromethane	0.620 U	1.00	0.310	ug/L	04/09/12
Ethylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
Hexachlorobutadiene	0.620 U	1.00	0.310	ug/L	04/09/12
Isopropylbenzene (Cumene)	0.620 U	1.00	0.310	ug/L	04/09/12
Methylene chloride	2.00 U	5.00	1.00	ug/L	04/09/12
Methyl-t-butyl ether	3.00 U	5.00	1.50	ug/L	04/09/12
Naphthalene	1.24 U	2.00	0.620	ug/L	04/09/12
n-Butylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
n-Propylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
o-Xylene	0.620 U	1.00	0.310	ug/L	04/09/12
P & M -Xylene	1.24 U	2.00	0.620	ug/L	04/09/12
sec-Butylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
Styrene	0.620 U	1.00	0.310	ug/L	04/09/12
tert-Butylbenzene	0.620 U	1.00	0.310	ug/L	04/09/12
Tetrachloroethene	0.620 U	1.00	0.310	ug/L	04/09/12
Toluene	0.620 U	1.00	0.310	ug/L	04/09/12
trans-1,2-Dichloroethene	0.620 U	1.00	0.310	ug/L	04/09/12
trans-1,3-Dichloropropene	0.620 U	1.00	0.310	ug/L	04/09/12
Trichloroethene	0.620 U	1.00	0.310	ug/L	04/09/12
Trichlorofluoromethane	0.620 U	1.00	0.310	ug/L	04/09/12
Vinyl chloride	0.620 U	1.00	0.310	ug/L	04/09/12
Xylenes (total)	1.88 U	3.00	0.940	ug/L	04/09/12
Surrogates					
1,2-Dichloroethane-D4 <surr>	103	70-120		%	04/09/12
4-Bromofluorobenzene <surr>	99.3	75-120		%	04/09/12
Toluene-d8 <surr>	99.6	85-120		%	04/09/12

Batch VMS12763
Method SW8260B
Instrument HP 5890 Series II MS3 VNA

SGS Ref.#	1080804	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1080805	Lab Control Sample Duplicate	**Prep Batch**	XXX26662	
Client Name	Nortech		**Method**	SW3520C	
Project Name/#	CM I 10-1088		**Date**	04/03/2012	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1127647001, 1127647002

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	22.3	112	(75-125)			20 mg/L	04/05/2012
	LCSD	22.4	112		0	(< 20)	20 mg/L	04/05/2012
Surrogates								
5a Androstane <surr>	LCS		104	(60-120)				04/05/2012
	LCSD		106		2			04/05/2012
Batch XFC10325 **Method** AK102 **Instrument** HP 7890A FID SV E F								
Residual Range Organics	LCS	20.2	101	(60-120)			20 mg/L	04/05/2012
	LCSD	20.4	102		1	(< 20)	20 mg/L	04/05/2012
Surrogates								
n-Triacontane-d62 <surr>	LCS		97	(60-120)				04/05/2012
	LCSD		98		2			04/05/2012
Batch XFC10325 **Method** AK103 **Instrument** HP 7890A FID SV E F								

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

QC results affect the following production samples:

1127647001, 1127647002, 1127647003

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date

Volatile Gas Chromatography/Mass Spectroscopy

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
1,1,1,2-Tetrachloroethane	LCS	30.3	101	(80-130)			30 ug/L	04/09/2012
	LCSD	31.0	103		2	(< 20)	30 ug/L	04/09/2012
1,1,1-Trichloroethane	LCS	29.7	99	(65-130)			30 ug/L	04/09/2012
	LCSD	30.8	103		4	(< 20)	30 ug/L	04/09/2012
1,1,2,2-Tetrachloroethane	LCS	33.8	113	(65-130)			30 ug/L	04/09/2012
	LCSD	34.7	116		3	(< 20)	30 ug/L	04/09/2012
1,1,2-Trichloroethane	LCS	34.1	114	(75-125)			30 ug/L	04/09/2012
	LCSD	34.8	116		2	(< 20)	30 ug/L	04/09/2012
1,1-Dichloroethane	LCS	30.5	102	(70-135)			30 ug/L	04/09/2012
	LCSD	31.6	105		4	(< 20)	30 ug/L	04/09/2012
1,1-Dichloroethene	LCS	29.4	98	(70-130)			30 ug/L	04/09/2012
	LCSD	30.5	102		4	(< 20)	30 ug/L	04/09/2012
1,1-Dichloropropene	LCS	32.9	110	(75-130)			30 ug/L	04/09/2012
	LCSD	32.9	110		0	(< 20)	30 ug/L	04/09/2012
1,2,3-Trichlorobenzene	LCS	31.7	106	(55-140)			30 ug/L	04/09/2012
	LCSD	33.3	111		5	(< 20)	30 ug/L	04/09/2012
1,2,3-Trichloropropane	LCS	33.2	111	(75-125)			30 ug/L	04/09/2012
	LCSD	34.5	115		4	(< 20)	30 ug/L	04/09/2012
1,2,4-Trichlorobenzene	LCS	33.0	110	(65-135)			30 ug/L	04/09/2012
	LCSD	33.6	112		2	(< 20)	30 ug/L	04/09/2012
1,2,4-Trimethylbenzene	LCS	30.4	101	(75-130)			30 ug/L	04/09/2012
	LCSD	30.8	103		1	(< 20)	30 ug/L	04/09/2012
1,2-Dibromo-3-chloropropane	LCS	34.2	114	(50-130)			30 ug/L	04/09/2012
	LCSD	33.3	111		3	(< 20)	30 ug/L	04/09/2012
1,2-Dibromoethane	LCS	31.0	103	(80-120)			30 ug/L	04/09/2012
	LCSD	31.4	105		2	(< 20)	30 ug/L	04/09/2012
1,2-Dichlorobenzene	LCS	30.8	103	(70-120)			30 ug/L	04/09/2012
	LCSD	31.0	103		1	(< 20)	30 ug/L	04/09/2012

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
1,2-Dichloroethane	LCS	30.1	100	(70-130)			30 ug/L	04/09/2012
	LCSD	31.3	104		4	(< 20)	30 ug/L	04/09/2012
1,2-Dichloropropane	LCS	32.5	108	(75-125)			30 ug/L	04/09/2012
	LCSD	34.1	114		5	(< 20)	30 ug/L	04/09/2012
1,3,5-Trimethylbenzene	LCS	33.4	111	(75-130)			30 ug/L	04/09/2012
	LCSD	33.7	112		1	(< 20)	30 ug/L	04/09/2012
1,3-Dichlorobenzene	LCS	31.0	103	(75-125)			30 ug/L	04/09/2012
	LCSD	31.7	106		2	(< 20)	30 ug/L	04/09/2012
1,3-Dichloropropane	LCS	33.7	112	(75-125)			30 ug/L	04/09/2012
	LCSD	34.2	114		2	(< 20)	30 ug/L	04/09/2012
1,4-Dichlorobenzene	LCS	31.1	104	(75-125)			30 ug/L	04/09/2012
	LCSD	31.3	104		1	(< 20)	30 ug/L	04/09/2012
2,2-Dichloropropane	LCS	32.0	107	(70-135)			30 ug/L	04/09/2012
	LCSD	33.1	110		3	(< 20)	30 ug/L	04/09/2012
2-Butanone (MEK)	LCS	98.8	110	(30-150)			90 ug/L	04/09/2012
	LCSD	104	116		5	(< 20)	90 ug/L	04/09/2012
2-Chlorotoluene	LCS	31.4	105	(75-125)			30 ug/L	04/09/2012
	LCSD	31.7	106		1	(< 20)	30 ug/L	04/09/2012
2-Hexanone	LCS	95.3	106	(55-130)			90 ug/L	04/09/2012
	LCSD	97.7	109		2	(< 20)	90 ug/L	04/09/2012
4-Chlorotoluene	LCS	32.4	108	(75-130)			30 ug/L	04/09/2012
	LCSD	32.4	108		0	(< 20)	30 ug/L	04/09/2012
4-Isopropyltoluene	LCS	30.3	101	(75-130)			30 ug/L	04/09/2012
	LCSD	30.6	102		1	(< 20)	30 ug/L	04/09/2012
4-Methyl-2-pentanone (MIBK)	LCS	93.8	104	(60-135)			90 ug/L	04/09/2012
	LCSD	97.1	108		3	(< 20)	90 ug/L	04/09/2012
Benzene	LCS	30.4	101	(80-120)			30 ug/L	04/09/2012

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
	LCSD	31.2	104		2	(< 20)	30 ug/L	04/09/2012
Bromobenzene	LCS	30.9	103	(75-125)			30 ug/L	04/09/2012
	LCSD	31.3	104		1	(< 20)	30 ug/L	04/09/2012
Bromochloromethane	LCS	31.7	106	(65-130)			30 ug/L	04/09/2012
	LCSD	31.7	106		0	(< 20)	30 ug/L	04/09/2012
Bromodichloromethane	LCS	30.6	102	(75-120)			30 ug/L	04/09/2012
	LCSD	31.3	104		2	(< 20)	30 ug/L	04/09/2012
Bromoform	LCS	32.9	110	(70-130)			30 ug/L	04/09/2012
	LCSD	33.7	112		2	(< 20)	30 ug/L	04/09/2012
Bromomethane	LCS	33.3	111	(30-145)			30 ug/L	04/09/2012
	LCSD	33.1	110		1	(< 20)	30 ug/L	04/09/2012
Carbon disulfide	LCS	42.3	94	(35-160)			45 ug/L	04/09/2012
	LCSD	43.5	97		3	(< 20)	45 ug/L	04/09/2012
Carbon tetrachloride	LCS	29.5	98	(65-140)			30 ug/L	04/09/2012
	LCSD	29.9	100		2	(< 20)	30 ug/L	04/09/2012
Chlorobenzene	LCS	30.6	102	(80-120)			30 ug/L	04/09/2012
	LCSD	31.3	104		2	(< 20)	30 ug/L	04/09/2012
Chloroethane	LCS	33.1	110	(60-135)			30 ug/L	04/09/2012
	LCSD	30.8	103		7	(< 20)	30 ug/L	04/09/2012
Chloroform	LCS	30.6	102	(65-135)			30 ug/L	04/09/2012
	LCSD	30.7	102		0	(< 20)	30 ug/L	04/09/2012
Chloromethane	LCS	36.5	122	(40-125)			30 ug/L	04/09/2012
	LCSD	36.8	123		1	(< 20)	30 ug/L	04/09/2012
cis-1,2-Dichloroethene	LCS	30.1	100	(70-125)			30 ug/L	04/09/2012
	LCSD	31.2	104		4	(< 20)	30 ug/L	04/09/2012
cis-1,3-Dichloropropene	LCS	32.0	107	(70-130)			30 ug/L	04/09/2012
	LCSD	33.0	110		3	(< 20)	30 ug/L	04/09/2012

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
Dibromochloromethane	LCS	30.7	102	(60-135)			30 ug/L	04/09/2012
	LCSD	31.2	104		2	(< 20)	30 ug/L	04/09/2012
Dibromomethane	LCS	32.7	109	(75-125)			30 ug/L	04/09/2012
	LCSD	33.6	112		3	(< 20)	30 ug/L	04/09/2012
Dichlorodifluoromethane	LCS	37.4	125	(30-155)			30 ug/L	04/09/2012
	LCSD	38.7	129		3	(< 20)	30 ug/L	04/09/2012
Ethylbenzene	LCS	31.8	106	(75-125)			30 ug/L	04/09/2012
	LCSD	32.5	108		2	(< 20)	30 ug/L	04/09/2012
Hexachlorobutadiene	LCS	32.0	107	(50-140)			30 ug/L	04/09/2012
	LCSD	33.2	111		4	(< 20)	30 ug/L	04/09/2012
Isopropylbenzene (Cumene)	LCS	33.2	111	(75-125)			30 ug/L	04/09/2012
	LCSD	33.5	112		1	(< 20)	30 ug/L	04/09/2012
Methylene chloride	LCS	28.4	95	(55-140)			30 ug/L	04/09/2012
	LCSD	29.5	98		4	(< 20)	30 ug/L	04/09/2012
Methyl-t-butyl ether	LCS	50.4	112	(65-125)			45 ug/L	04/09/2012
	LCSD	51.6	115		3	(< 20)	45 ug/L	04/09/2012
Naphthalene	LCS	30.6	102	(55-140)			30 ug/L	04/09/2012
	LCSD	32.8	109		7	(< 20)	30 ug/L	04/09/2012
n-Butylbenzene	LCS	30.2	101	(70-135)			30 ug/L	04/09/2012
	LCSD	30.4	101		1	(< 20)	30 ug/L	04/09/2012
n-Propylbenzene	LCS	32.6	109	(70-130)			30 ug/L	04/09/2012
	LCSD	32.7	109		0	(< 20)	30 ug/L	04/09/2012
o-Xylene	LCS	33.3	111	(80-120)			30 ug/L	04/09/2012
	LCSD	33.3	111		0	(< 20)	30 ug/L	04/09/2012
P & M -Xylene	LCS	64.2	107	(75-130)			60 ug/L	04/09/2012
	LCSD	65.0	108		1	(< 20)	60 ug/L	04/09/2012
sec-Butylbenzene	LCS	33.2	111	(70-125)			30 ug/L	04/09/2012
	LCSD	33.5	112		1	(< 20)	30 ug/L	04/09/2012

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Gas Chromatography/Mass Spectroscopy								
Styrene	LCS	30.8	103	(65-135)			30 ug/L	04/09/2012
	LCSD	31.3	104		1	(< 20)	30 ug/L	04/09/2012
tert-Butylbenzene	LCS	32.9	110	(70-130)			30 ug/L	04/09/2012
	LCSD	33.2	111		1	(< 20)	30 ug/L	04/09/2012
Tetrachloroethene	LCS	31.5	105	(45-150)			30 ug/L	04/09/2012
	LCSD	31.8	106		1	(< 20)	30 ug/L	04/09/2012
Toluene	LCS	30.3	101	(75-120)			30 ug/L	04/09/2012
	LCSD	30.8	103		2	(< 20)	30 ug/L	04/09/2012
trans-1,2-Dichloroethene	LCS	30.2	101	(60-140)			30 ug/L	04/09/2012
	LCSD	31.7	106		5	(< 20)	30 ug/L	04/09/2012
trans-1,3-Dichloropropene	LCS	32.4	108	(55-140)			30 ug/L	04/09/2012
	LCSD	32.9	110		1	(< 20)	30 ug/L	04/09/2012
Trichloroethene	LCS	31.7	106	(70-125)			30 ug/L	04/09/2012
	LCSD	32.7	109		3	(< 20)	30 ug/L	04/09/2012
Trichlorofluoromethane	LCS	33.8	113	(60-145)			30 ug/L	04/09/2012
	LCSD	33.4	111		1	(< 20)	30 ug/L	04/09/2012
Vinyl chloride	LCS	31.8	106	(50-145)			30 ug/L	04/09/2012
	LCSD	33.4	111		5	(< 20)	30 ug/L	04/09/2012
Xylenes (total)	LCS	97.4	108	(80-120)			90 ug/L	04/09/2012
	LCSD	98.3	109		1	(< 20)	90 ug/L	04/09/2012
Surrogates								
1,2-Dichloroethane-D4 <surr>	LCS		101	(70-120)				04/09/2012
	LCSD		102		1			04/09/2012
4-Bromofluorobenzene <surr>	LCS		102	(75-120)				04/09/2012
	LCSD		100		2			04/09/2012
Toluene-d8 <surr>	LCS		101	(85-120)				04/09/2012
	LCSD		101		0			04/09/2012

SGS Ref.#	1081690	Lab Control Sample	**Printed Date/Time**	08/07/2012	10:19
	1081691	Lab Control Sample Duplicate	**Prep Batch**	VXX23380	
Client Name	Nortech		**Method**	SW5030B	
Project Name/#	CM I 10-1088		**Date**	04/09/2012	
Matrix	Water (Surface, Eff., Ground)				

Parameter	QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date

Volatile Gas Chromatography/Mass Spectroscopy

Batch	VMS12763
Method	SW8260B
Instrument	HP 5890 Series II MS3 VNA

SGS

SGS CHAIN [illegible]D

1127647

Locations Nationwide
• Alaska • Maryland
• New Jersey • New York
• North Carolina • Indiana
• West Virginia • Kentucky
www.us.sgs.com

(1)

CLIENT: Nortech

CONTACT: Andy Croan PHONE NO: 907-452-5688

PROJECT NAME: CM1 PROJECT/ PWSID/ PERMIT#: 10-1088

REPORTS TO: EMAIL: acroan@nortechengr.com

INVOICE TO: 2400 College Rd. Fairbanks, AK QUOTE #: P.O. #:

SGS Reference #:

page 1 of 1

(2)

RESERVED for lab use	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used	Analysis Required (3) DRO/RRO 1021103	VOCs 8260	REMARKS/ LOC ID
(1) A-C	MW 21	3-27-12	1455	W				X	X	
(2) A-C	DUP-1	3-27-12	1400	W				X	X	
(3) A-C	TB A								X	
	~~TB B~~ JD									

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
for Andy Croan	3-27-12	1640	3-27-12 1640
Relinquished By: (2)	Date	Time	Received By:
	3-28-12	1400	
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:
	3/29/12	0930	

(4)

DOD Project? YES NO

Cooler ID _____

Data Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:

Temperature Blank °C: 4.1, 5.5

ID ID or Ambient [ ]

(See attached Sample Receipt Form)

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

(See attached Sample Receipt Form)

SGS

SAMPLE RECEIPT FORM

1127647

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location, if applicable. COC accompanied samples?	Yes No ~~N/A~~ ~~Yes~~ No N/A	
Temperature blank compliant* (i.e., 0-6°C after correction factor)? ** Note: Exemption permitted for chilled samples collected less than 8 hours ago.* Cooler ID: 1 @ 4.1 w/ Therm.ID: 109 Cooler ID: 2 @ 5.5 w/ Therm.ID: 109 Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ Cooler ID: _____ @ _____ w/ Therm.ID: _____ ***Note: If non-compliant, use form FS-0029 to document affected samples/analyses.*** If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all sample containers ice free?**	~~Yes~~ No N/A Yes No ~~N/A~~	
Delivery method (specify all that apply): ~~Client~~ USPS Alert Courier Road Runner AK Air Lynden Carlile ERA PenAir FedEx UPS NAC Other: → *For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?*	Note airbill/tracking # See Attached or N/A Yes No ~~N/A~~	
→ For samples received with payment, note amount ($) and cash / check / CC (circle one). → For samples received in FBKS, ANCH staff will verify all criteria are reviewed.	SRF Initiated by: JD ~~N/A~~ N/A	
Do samples **match COC*** (i.e., sample IDs, dates/times collected)? ** Note: Exemption permitted if times differ <1hr; in which case, use times on COC.* Were analyses requested unambiguous?	~~Yes~~ No N/A ~~Yes~~ No N/A	
Were samples in **good condition** (no leaks/cracks/breakage)? Packing material used (specify all that apply): ~~Bubble Wrap~~ Separate plastic bags Vermiculite Other: Cubies	~~Yes~~ No N/A	
Were all VOA vials **free of headspace** (i.e., bubbles ≤6 mm)? Were all soil VOAs **field extracted** with MeOH+BFB? Were the bottles provided by SGS? (Note apparent exceptions.)	Yes No N/A Yes No ~~N/A~~ ~~Yes~~ No N/A	
Were **proper containers** (type/mass/volume/preservative*) used? ** Note: Exemption permitted for waters to be analyzed for metals.* Were **Trip Blanks** (i.e., VOAs, LL-Hg) in cooler with samples?	~~Yes~~ No N/A ~~Yes~~ No N/A	
For **special handling** (e.g., "MI" or foreign soils, lab filter, limited volume, Ref Lab), were bottles/paperwork flagged (e.g., sticker)?	Yes No ~~N/A~~	added 2mL of HCl to
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was **pH verified and compliant**? If pH was adjusted, were bottles flagged (i.e., stickers)?	~~Yes~~ No N/A ~~Yes~~ No N/A	1,2 D~E LW1503140780B pH Complied
For **RUSH/SHORT Hold Time** or **site-specific QC** (e.g., BMS/BMSD/BDUP) samples, were the COC & bottles flagged (e.g., stickers) accordingly? For RUSH/SHORT HT, was email sent?	Yes No ~~N/A~~	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	Yes No ~~N/A~~	SRF Completed by: PM = N/A
Was **PEER REVIEW** of ***sample numbering/labeling*** completed (i.e., compare WO# on containers to COC, unique lab ID on each container, LIMS container labels used?) Was selection of ***"Bill to"*** client **PEER REVIEW**ed?	Yes ~~No~~ N/A Yes No ~~N/A~~	Peer Reviewed by: Metrics:

Additional notes (if applicable):
*Work was split into 2 different WOs after it was turned in. New COC filled out by Jen Dawkins, per Andy Croan. -JBD-

Note to Client: *Any "no" circled above indicates non-compliance with standard procedures and may impact data quality.*

SGS

1127647

SAMPLE RECEIPT FORM FOR TRANSFERS

Note: This form is to be completed by Anchorage Sample Receiving staff for all shipments received at SGS-Anchorage from SGS-Fairbanks.

Were samples received numbered with all criteria on Sample Receipt Form F0004 documented by Fairbanks Sample Receiving staff? If "No," ***Anchorage Sample Receiving staff must complete the receiving process & document pH verification, sample condition, etc. on the SRF initiated by Fairbanks staff*** (attached).	Yes (No) N/A	Use space below for additional notes…

Review Criteria:	Condition:	Comments/Action Taken:
Were **custody seals** intact? Note # & location:	(Yes) No N/A	1F, 1B
COC accompanied samples?	(Yes) No N/A	
Temperature blank compliant (i.e., 0-6°C after correction factor)? Cooler ID: 1 @ 2.1 w/ Therm.ID: 70	(Yes) No N/A	
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Cooler ID: _____ @ _____ w/ Therm.ID: _____		
Note: If non-compliant, use form FS-0029 to document affected samples/analyses. If samples are received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP** will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled." **If temperature(s) <0°C, were all containers ice free?**	Yes No (N/A)	
Delivery method: (Lynden) Other:		
Completed by:		

Laboratory Data Review Checklist

Completed By:

Peter Beardsley

Title:

Environmental Engineer

Date:

7/5/2019

CS Report Name:

March 2012 Groundwater Sampling Results

Report Date:

July 12, 2019

Consultant Firm:

NORTECH, Inc

Laboratory Name:

SGS

Laboratory Report Number:

1127647

ADEC File Number:

102.38.144

Hazard Identification Number:

1127647

1. Laboratory

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

   ◉ Yes ○ No Comments:

SGS Anchorage

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

   ◉ Yes ○ No Comments:

Not Applicable

2. Chain of Custody (CoC)

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

   ◉ Yes ○ No Comments:

New COC created by Jen Dawkins of SGS based on correspondence by sampler (Andrew Croan). No issues resulting.

   b. Correct Analyses requested?

   ◉ Yes ○ No Comments:

NA

3. Laboratory Sample Receipt Documentation

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

   ◉ Yes ○ No Comments:

NA

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

   ◉ Yes ○ No Comments:

2ml HCl added to jars D&E of both samples (DRO), samples delivered to lab within 3 hours of collection

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

   ◉ Yes ○ No Comments:

NA

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 Comments:

HCl added to reduce pH of jars D&E (DRO)

e. Data quality or usability affected?

Comments:

DRO could be biased low. However, the samples were placed chilled immediately after collection and the pH was corrected less than 3 hours after collection so the potential for volatile loss is considered minimal. DRO is above the cleanup level and this limited potential for a low bias does not impact a potential decision about the site. The data considered usable as presented.

4. Case Narrative

a. Present and understandable?

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

c. Were all corrective actions documented?

◉ Yes ○ No Comments:

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

Comments:

Case narrative incorrectly states that AK101/8021 results could be biased low due to elevated pH at delivery. AK101/8021 results not reported. AK102/AK103 samples required pH at time of delivery. The potential impact of the low bias is discussed above. This error in the case narrative does not impact the usability of the data.

5. Samples Results

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

◉ Yes ○ No Comments:

8021 initially run, 8260 requested within hold time

b. All applicable holding times met?

◉ Yes ○ No Comments:

c. All soils reported on a dry weight basis?

◉ Yes ○ No Comments:

NA, no soil samples

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

○ Yes ◉ No Comments:

Multiple VOCs were reported as non-detect and had LOQs above the ADEC pre-2017 cleanup levels. The LOQ issue was not reanalyzed for the current cleanup levels. The lab recognized that the dilution of the sample had raised the LOQs and indicated that "the samples could not be reanalyzed due to limited volume," which is probably related to the initial incorrect 8021 analysis being run.

Compounds that had an LOQ above the cleanup level were then evaluated to the Limit of Detection (LOD). Detections between the LOD and LOQ are flagged as estimated (j-flagged), however the laboratory has indicated in multiple discussions that concentrations above the LOD are true detections. ***NORTECH*** treats any j-flagged detection as a reportable result and any result less than the LOD as a true non-detect. Using this evaluation criteria, the only COC that has an LOD above the cleanup level is trichloroethene (TCE). Therefore, the results do not provide "definitive proof" that the TCE concentration is below the cleanup level.

e. Data quality or usability affected?

○ Yes ◉ No Comments:

TCE has been detected below the ADEC cleanup level during previous sampling events and in the soil remaining in place. At least three sampling events with TCE below the cleanup level are recommended to remove TCE (and other chlorinated VOCs) from the COC list for the site. The data is usable as presented in the report.

6. <u>QC Samples</u>

a. Method Blank

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

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

iii. If above LOQ, what samples are affected?

Comments:

NA, none

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

◉ Yes ○ No Comments:

NA, none

v. Data quality or usability affected?

Comments:

Data not affected

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

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

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

NA, no metals/inorganics

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

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

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

Comments:

NA, none

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

◉ Yes ○ No Comments:

NA, none

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

Comments:

No

c. Surrogates – Organics Only

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

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

Case narrative indicates that surrogate recover for one surrogate in the IB is biased high, however narrative indicates that all other surrogates and batch QC are within criteria.

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

◉ Yes ○ No Comments:

iv. Data quality or usability affected?

Comments:

No, all other QC criteria are acceptable

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

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

◉ Yes ○ No Comments:

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

◉ Yes ○ No Comments:

iii. All results less than LOQ?

◉ Yes ○ No Comments:

iv. If above LOQ, what samples are affected?

Comments:

No, none

v. Data quality or usability affected?

Comments:

No

e. Field Duplicate

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

◉ Yes ○ No Comments:

ii. Submitted blind to lab?

◉ Yes ○ No Comments:

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☉ Yes ○ No Comments:

<30%

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

Comments:

No

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

○ Yes ○ No ☉ Not Applicable

Disposable equipment used

i. All results less than LOQ?

☉ Yes ○ No Comments:

NA, none

ii. If above LOQ, what samples are affected?

Comments:

NA, none

iii. Data quality or usability affected?

Comments:

No

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

a. Defined and appropriate?

☉ Yes ○ No Comments:

NA, none