Site Characterization
BIA School Tanks Site
Hazard ID 3782
Chefornak, Alaska

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Submitted To:
Alaska Department of Environmental Conservation
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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AK	Alaska Method
bgs	Below ground surface
BIA	Bureau of Indian Affairs
BTEX	Benzene, toluene, ethylbenzene, and xylenes
COCs	Contaminants of concern
CSM	Conceptual Site Model
DRO	Diesel range organics
DQO	Data quality objective
EPA	Environmental Protection Agency
GRO	Gasoline range organics
LCS/LCSD	Laboratory control sample/laboratory control sample duplicate
LOD	Limit of detection
mg/kg	Milligrams per kilogram
MS/MSD	Matrix spike/matrix spike duplicate
PAHs	Polyaromatic hydrocarbons
PID	Photoionization detector
RFP	Request for proposal
RPD	Relative percent difference
RRO	Residual range organics
SIM	Selective Ion Monitoring
SGS	SGS North America Inc.
VI	Vapor intrusion

SITE CHARACTERIZATION
CHEFORNAK FORMER BIA SCHOOL TANKS SITE FACILITY
CHEFORNAK, ALASKA

HAZARD ID 3782

1.0 INTRODUCTION

This report presents the results of our site characterization at the Chefornak Former Bureau of Indian Affairs (BIA) School Tanks Site located in Chefornak, Alaska. The site characterization was conducted to vertically and laterally delineate the extent of existing soil contamination at two source areas located at the former school tank site and to determine if corrective action is necessary at either one or both of the areas.

The project tasks were conducted in accordance with our May 22, 2012 work plan, approved by Mr. Grant Lidren of Alaska Department of Environmental Conservation (ADEC) on May 30, 2012. This work was conducted under Shannon & Wilson's ADEC Hazardous Substance Spill Prevention and Cleanup Term Contract 18-4002-12. Notice to proceed was received on February 7, 2012, with ADEC Notice to Proceed No. 18-4002-12-039.

2.0 PROJECT DESCRIPTION AND BACKGROUND

The former BIA school is located on the south bank of the Kinia River in the Village of Chefornak as shown on Figure 1. Previous sampling activities conducted at the former school in August 2001 identified two source areas of contamination at the site, the former day tank area, located on the northeast inside corner of the generator building, and the former tank farm, located east of the generator building. A site plan showing the locations of these source areas relative to the Kinia River and buildings at the former BIA school is provided as Figure 2.

In 2001 OASIS Environmental conducted site assessment activities at the project site. Elevated concentrations of diesel range organics (DRO) were detected in the vicinity of the day tank and former tank farm areas located at the site. A sample collected from approximately 1 foot below ground surface (bgs) within the day tank area contained concentrations of 42,000 milligrams per kilogram (mg/kg) DRO and 46.6 mg/kg naphthalene, which exceed the most stringent cleanup levels listed in 18 Alaska Administrative Code (AAC) 75.341 for the under 40 inches precipitation climate zone. The DRO concentration also exceeds the ADEC's Maximum Allowable Concentration. In the tank farm area, a sample collected from about 2.5 feet bgs contained 992 mg/kg DRO, which exceeds the 18 AAC 75.341 cleanup level. According to the ADEC's December 29, 2011 Request for Proposal (RFP), the day tank and tank farm have since been relocated.

3.0 FIELD ACTIVITIES

A total of 30 hand borings were advanced at the project site in two source areas. Ten borings designated B1 through B10 were advanced adjacent to the former BIA school generator building in the day tank area and 20 hand borings designated B11 through B30 were advanced in the approximate location of the former school tank farm. The sampling activities were conducted on September 18 and 19, 2012 and were performed by an ADEC-Qualified Person as defined by 18 AAC 75.990. Photographs of field activities are included in Appendix A. Field notes of the field activities are included in Appendix B.

On September 18, 2012, Shannon & Wilson field representatives arrived at the site to advance the hand borings and collect soil samples. At the time of the visit, stained soil was observed in the vicinity of the former day tank area adjacent to the generator building, as shown in Photo 1 included in Appendix A. To the east of the generator building, the approximate location of the former tank farm area was identified (Photo 2). Sheet metal and ponded water were observed in the tank farm area (Photo 3) and portions of the timber berm were also observed along the south site of the former tank farm (Photo 4). A liner approximately 4 feet by 10 feet was observed in the northwest corner of the former tank farm area (see Figure 2). Approximately 0.5 foot of soil was observed on top of the liner and vegetation was growing in the soil.

Two work plan variances were documented during the field activities. The work plan indicated that ten hand borings were to be advanced inside the former tank farm's unlined timber berm, and ten were to be located along the outside of the berm. Due to the presence of the timber, ponded water, and sheet metal only 8 of the 10 planned borings were advanced inside the tank farm. The remaining 12 borings were advanced along the outside of the bermed area. Frozen soil was encountered in the hand borings between 2.5 and 3 feet bgs. As a result, the hand borings were advanced to approximately 3 feet bgs, instead of the 5 to 7 feet bgs indicated in the work plan.

Borings B1, B2, B7, and B8 were advanced in the stained area around the former day tank area. Borings B3 through B6, B9, and B10 were arrayed outward from the stained soil area. In the former tank farm area, Borings B11 through B15, B17 through B21, B29, and B30 were placed outside the berm. Borings B16 and B22 through B28 were positioned inside the berm spatially representative of the accessible areas of the tank farm.

Soil samples were collected at approximately 1.5 to 2 foot and 2.5 to 3 foot intervals within the day tank area and 1.5 foot and 2.5 foot intervals in the former school tank farm area. Each sample was visually classified and "screened" for volatile organic compounds using a

photoionization detector (PID) and ADEC-approved headspace screening methods. The results of the field screening and classification are included in Table 1.

Upon the completion of sampling, the hand boring cuttings were backfilled in to their individual borings with excess material spread on the ground surface near the backfilled holes. Water used to decontaminate the hand shovel was discharged to the ground surface at the site.

4.0 LABORATORY ANALYSIS

Based on the field screening results, a total of 33 soil samples including three field duplicates were collected and submitted to SGS North America, Inc. (SGS) of Anchorage, Alaska for laboratory analysis. The soil samples were analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101, DRO by AK 102, residual range organics (RRO) by AK 103, and benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) 8021B. Two samples, Sample B7-1 and Sample B25-1 were also analyzed for polynuclear aromatic hydrocarbons (PAHs) by EPA Method 8270D Selective Ion Monitoring (SIMS). The SGS laboratory report is included in Appendix C.

Under the sample numbering scheme used for this project, a typical analytical sample identification number is “17478-B1-1” for the soil samples. The ‘17478-’ portion of the ID indicates the Shannon & Wilson job number, the ‘B1’ is for the hand boring, and the ‘1’ is the sample identification number. For brevity in the text of this report, the ‘17478-’ prefix is omitted.

5.0 SUBSURFACE CONDITIONS

Both sampling sites are located within 30 feet of the Kinia River. The subsurface soil in the former day tank area generally consisted of gray to brown-gray, moist silt to approximately 3 feet bgs. Organics including roots were noted within the top 1.5 feet in Sample B5-1. In the former tank farm area the subsurface soil also generally consisted of gray moist silt. Black moist silt was noted in samples collected from borings B21 and B22. Hydrocarbons odors were noted in many of the samples collected from both areas. Frozen soil was encountered between 2.5 and 3 feet across the site. Groundwater was not encountered in the borings.

6.0 DISCUSSION OF RESULTS

The soil sample results were compared to the most stringent ADEC Method 2 cleanup levels listed in 18 AAC 75.341 (April 2012), Tables B1 and B2 for the “under 40 inch (precipitation) zone”. The applicable cleanup levels are provided in Table 2 with the summarized analytical results.

6.1 Day Tank Area

Ten analytical samples were collected from the Former BIA Schools day tank area. Concentrations of DRO were measured in each of the samples. Concentrations of DRO exceeding the ADEC Method 2 Cleanup Level of 250 mg/kg were measured in five of the samples and ranged from an estimated concentration of 6,120 mg/kg DRO in Sample B9-1 to an estimated concentration of 15,500 mg/kg DRO in Sample B8-2. Note that DRO concentrations measured in Samples B1-2 and B8-2 also exceed the ADEC's Maximum Allowable Concentration.

Concentrations of benzene exceeding the applicable cleanup level of 0.025 mg/kg were detected in Samples B1-2 (0.0358 mg/kg) and B8-2 (0.0268 mg/kg). In addition, the benzene limit of detection (LOD) for Sample B10-2 was greater than the cleanup level. Concentrations of 1-methylnaphthalene and 2-methylnaphthalene exceeding the applicable cleanup levels of 6.2 mg/kg and 6.1 mg/kg were detected in Sample B7-1.

Although the DRO concentrations remain greater than the applicable cleanup level, the maximum DRO concentration measured during the September 19, 2012 sampling effort was less than half of the maximum DRO concentration measured by OASIS Environmental in 2001. At that time DRO was detected at a concentration of 42,000 mg/kg. Concentrations of naphthalene exceeding the applicable ADEC cleanup level were also measured in soil samples collected by OASIS Environmental in 2001. Napthalene was detected in the only sample analyzed for PAHs but at a concentration less than the applicable cleanup level.

The remaining target analytes were either not detected, or were detected at concentrations less than the applicable cleanup level for the remaining samples. Note that only the sample with the highest field screening result, Sample B7-1, was analyzed for PAHs.

Borings B1, B2, B7, B8, and B9 were advanced in the area of visibly stained surface soil. The highest DRO concentrations were measured in samples collected from areas near the former tank locations, while borings advanced outside of the tanks (Borings B2 and B9) but within the stained soil area contained lower concentrations of DRO. This suggests that the contamination identified in the stained soil area has been delineated to the north and east. Due to the close proximity of the generator building, areas to the west and south could not be delineated.

6.2 Former Tank Farm Area

Twenty three soil samples, including three duplicate samples, were collected from the Former BIA School tank farm area. DRO was detected in each of the soil samples; however, 11 of the soil sample contained concentrations of DRO that exceeded the applicable ADEC cleanup level.

DRO concentrations ranged from 422 mg/kg in Sample B23-1 to 4,930 mg/kg in Sample B20-3 (duplicate of B20-2). Although not detected at concentrations greater than the LOD in the samples from the former tank farm area, the benzene LOD for Samples B16-1 and B17-1 were greater than the cleanup level. The remaining target analytes were either not detected or were detected at concentrations less than the applicable cleanup levels.

The samples containing elevated concentrations of DRO were distributed across the former tank farm area, with five of the sample collected from inside the berm area and five samples collected outside of the berm area.

6.3 Quality Assurance/Quality Control

The project laboratory follows on-going quality control procedures to evaluate conformance to applicable ADEC data quality objectives (DQOs). Internal laboratory controls to address data quality for this project include surrogate spikes, method blanks, matrix spike/matrix spike duplicates (MS/MSD), and laboratory control sample/laboratory control sample duplicates (LCS/LCSD) to determine recovery rates, precision, accuracy, and matrix bias. If a DQO was not met, the project laboratory provides a brief narrative identifying the problem in the Case Narrative of their Laboratory Report (See Appendix C).

External quality controls included four soil trip blanks that accompanied the sample containers from the laboratory to the site during sampling activities and back again to SGS. The trip blanks did not contain detectable concentrations of GRO or BTEX, indicating that the samples were not cross contaminated by these compounds during the sample handling, storage process, or testing.

Three duplicate sample sets, Samples B19-2 and B19-3, Samples B20-2 and B20-3, and Samples B27-1 and B27-3 were collected to assess sample homogeneity and analytical precision for the project. With the exception of toluene in Sample Set B19-2/B19-3 and DRO in Sample Set B20-2/B20-3, the relative percent difference (RPD) were within the DQO of 50 percent for soil. The toluene RPD for Sample Set B19-2/B19-3 was 77 percent and the DRO RPD for Sample Set B20-2/B20-3 was 60 percent. These elevated RPDs are likely due to non-homogeneous distribution of contaminants at these sample locations. The RPDs for each sample set are shown in Table 3.

Shannon & Wilson reviewed the SGS data deliverables and completed the ADEC's Laboratory Data Review Checklist, which is included in Appendix C. Based on our review, the following issues were identified:

1. Surrogate recoveries for GRO and DRO surrogates do not meet QC criteria for several samples. The affected samples are flagged in the report tables with a J and either a + or – to indicate the direction of the potential bias.

2. 8270D SIM surrogate recovery is outside of QC criteria due to sample dilution for Samples 17478-B7-1 and 17478-B25-1. The affected samples are flagged in the report tables with a J+ to indicate the concentration is potentially biased high.
3. Method Blank detection for toluene (greater than ½ the level of quantitation (LOQ), but less than the LOQ). Samples with estimated concentrations of toluene were reported as non-detect at the LOQ and flagged with a B. Samples with toluene concentrations greater than the LOQ and samples with non-detect concentrations of toluene were both considered not affected.

No other non-conformances that would adversely affected data quality or usability were found.

7.0 CONCEPTUAL SITE MODEL

A Conceptual Site Model (CSM) was prepared to identify known and potential exposure pathways associated with contaminants of concern at the Former BIA School Tanks Site. The CSM was developed in general accordance with the ADEC's Policy Guidance on Developing Conceptual Site Models (October 2010), using ADEC's CSM Human Health Graphic and Scoping Forms. Copies of the Human Health Graphic and Scoping Forms are included as Appendix D. The CSM includes a discussion of exposure routes, potential receptors, and potentially complete or complete exposure pathways.

The CSM for the Former BIA School Tanks site is based on the current site use. Potential current and future receptors include commercial or industrial site workers, visitors, trespassers, and recreational users. Potential future receptors include residents and construction workers.

Method 2 soil cleanup levels listed in Tables B1 and B2, 18 AA 75.341, were used for the CSM to assess the risk associated with the exposure pathways. The primary contaminants of concern (COCs) for this site are DRO, benzene, 1-methylnaphthalene, and 2-methylnaphthalene because these compounds were detected at concentrations greater than the ADEC Method 2 soil cleanup level. GRO, RRO, BTEX, and select PAHs are considered as secondary COCs because they were detected at the site at concentrations less than the most stringent applicable Method 2 soil cleanup levels. When concentrations are less than $1/10^{th}$ the applicable ADEC Method 2 cleanup levels for the corresponding exposure pathways, the pathway can be considered insignificant per ADEC guidance.

7.1 Soil Ingestion and Dermal Absorption of Contaminants in Soil

Both incidental soil ingestion and dermal absorption of contaminants in soil exposure pathways are complete for current and future on-site commercial workers, site visitors, trespassers and/or construction workers as well as future residents. Concentrations of DRO exceeding the ingestion and inhalation cleanup levels were measured in the soil at the site. In addition,

1-methylnaphthalene was measured at concentrations greater than 1/10th of the direct contact value for this compound. The remaining COCs were detected at concentrations less than 1/10th the applicable ADEC Method 2 cleanup levels and are considered insignificant. Incidental soil ingestion for DRO and 1 -methylnaphthalene and dermal absorption of contaminants in soil for 1-methylnaphthalene remain potentially complete exposure pathways for current and future receptors.

7.2 Groundwater Ingestion, Dermal Absorption of Contaminants in Groundwater, and Inhalation of Volatile Compounds in Tap Water

Groundwater dermal absorption and inhalation of volatile compounds in tap water are considered complete exposure pathways for current and future on-site commercial workers, site visitors, trespassers, and/or construction workers, and for future residents. Because water from the village well is reportedly used for washing and cleaning and not for drinking water, groundwater ingestion is not considered a complete pathway.

While DRO, benzene, 1–methylnaphthalene, and 2-methylnaphthalene concentrations were detected in the soil samples collected from this site at concentrations greater than the applicable migration to groundwater cleanup level, the presence of impacted groundwater has not been determined. Further investigation of this pathway would be necessary if the current land use was changed and/or prior to installation of a water well at this site. Dermal absorption and inhalation of volatile compounds in tap water remain potentially complete pathways for the future.

7.3 Outdoor Air Inhalation and Indoor Air Inhalation/Vapor Intrusion

Volatile COCs have the potential to impact receptors through outdoor air inhalation and indoor air inhalation or vapor intrusion.

The presence of DRO, GRO, RRO, benzene, 1-methylnaphthalene, and 2-methylnaphthalene concentrations in soil within the top 15 feet bgs creates a potentially complete exposure pathway for outdoor air inhalation for current and/or future site users. The DRO concentrations measured at the site exceed the outdoor inhalation value for DRO and the 1-methylnaphthalene concentration measured in Sample B7-1 is greater than 1/10th the applicable inhalation value for this compound. The remaining COCs were detected at concentrations less than 1/10th the inhalation concentrations and are considered insignificant.

Vapor intrusion (VI) is a concern for occupied buildings within 100 feet of impacted soil or groundwater. Based on the information provided in Note 3 of Appendix D of the ADEC CSM Guidance the “DEC does not require evaluation of petroleum ranges GRO, DRO, or RRO for the indoor air inhalation (vapor intrusion) pathway.” The ADEC may determine that additional

investigation of the VI pathway is required due to the concentrations of BTEX and PAHs constituents in the soil samples within the top 15 feet bgs. Benzene, toluene, ethylbenzene, xylenes were measured in Samples B1-2 from Boring B1 and B8-2, and PAHs were measured in Sample B7-1. These sample locations are within 100 feet of the existing generator building.

7.4 Dermal Absorption of Surface Water

The presence of impacted surface water has not been documented at the site; however, surface water at the site has the potential be impacted by contaminated soil documented at the site. Analytical results indicated that shallow subsurface soil samples collected exceed the ADEC migration to groundwater screening level. It is unknown if the surface water is seasonal, but it does not appear to be of sufficient volume to be used as a viable drinking water source for human consumption or for other household use (bathing/cleaning). The ingestion of surface water pathway is considered incomplete for human risk assessment purposes.

7.5 CSM Summary

Complete or potentially complete exposure pathways have been identified at the subject site. Potentially complete pathways for current and future on-site commercial workers, site visitors, trespassers, and/or construction workers, and for future residents include incidental soil ingestion, dermal absorption of contaminants in soil, groundwater ingestion, dermal absorption, inhalation of volatile compounds in tap water, inhalation of outdoor air, and inhalation of indoor air (VI).

8.0 SUMMARY AND CONCLUSIONS

Shannon & Wilson conducted a site characterization of two source areas at Chefornak Former BIA School Tank Site on September 18 and 19, 2012. The site characterization included advancing a total of thirty hand borings and collection and analyses of soil samples. The objective of the site characterization was to delineate the extent of existing contamination in the two source areas and to determine if corrective action is necessary at the site.

We completed a total of ten hand borings inside and to the north and east of the former day tank source area. Based on field screening, and analytical results, it appears that the extent of petroleum hydrocarbon contamination has been delineated to the north and east. However, based on the presence of the existing generator building, no samples were collected to the south and west. There is the potential for contamination to be present under the existing building.

Results of the soil sampling conducted in and around the former tank farm indicate that petroleum hydrocarbon contamination is present at concentrations that exceed the most stringent

ADEC soil cleanup levels. The extent of contamination has not been completely delineated around the tank farm area, but it does appear that concentrations of DRO decrease in samples collected outside of the bermed area in the southeast corner of the tank farm. The extent of contamination to the northwest, northeast, and southeast remain unknown.

We were unable to vertically define the extent of the hydrocarbon contamination because frozen soil was encountered between 2.5 and 3 feet bgs. No samples were collected beneath that depth.

Based on the presence of DRO concentrations greater than the maximum allowable concentration, it is our opinion that additional corrective actions should be conducted at the source area related to the former day tanks area. Based on the reduction of concentrations observed since the 2001 sampling efforts, natural attenuation may be a viable alternative. Further sampling is warranted for areas to the west and south if the building is removed in the future.

Both the lateral and vertical extent of contamination at the former tank farm area remains undefined. Further sampling is warranted in this area to delineate the extent of contamination before the corrective actions can be implemented in this location. Based on the concentrations measured in the soil, institutional controls for the tank farm area may be an acceptable corrective action following further delineation of the extent.

9.0 CLOSURE/LIMITATIONS

This report was prepared for the exclusive use of our client and their representatives. The findings we have presented within this report are based on the limited sampling and analyses we conducted for this project. As a result, the analyses and sampling performed can only provide you with our professional judgment as to the environmental characteristics of this site, and in no way guarantee that an agency or its staff will reach the same conclusions as Shannon & Wilson, Inc. The data presented in this report should be considered representative of the time of our site assessment. Changes due to natural forces or human activity can occur on the site. In addition, changes in government codes, regulations, or laws may occur. Because of such changes beyond our control, our observations and interpretations may need to be revised.

Shannon & Wilson has prepared the attachment in Appendix E, “Important Information About Your Geotechnical/Environmental Report,” to assist you in understanding the use and limitations of our reports.

You are advised that various state and federal agencies (ADEC, EPA, etc.) may require the reporting of this information. Shannon & Wilson does not assume the responsibility for

reporting these findings and therefore has not, and will not, disclose the results of this study except upon your authorization or as required by law.

Copies of documents that may be relied upon by our client are limited to the printed copies (also known as hard copies) that are signed or sealed by Shannon & Wilson with a wet, blue ink signature. Files provided in electronic media format are furnished solely for the convenience of the client. Any conclusion or information obtained or derived from such electronic files shall be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, or you question the authenticity of the report please contact the undersigned.

We appreciate this opportunity to be of service and your confidence in our firm. If you have questions or comments concerning this submittal, please call the undersigned at (907) 561-2120.

SHANNON & WILSON, INC.

Shayla Marshall
Senior Environmental Scientist

Stafford Glashan, P.E.
Vice President

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)	Headspace (ppm) ^	Sample Classification
Hand Borings -Day Tank Area					
B1-1	9/19/2012	Boring B1, Sample 1	0-2	240	Gray, SILT; moist; hydrocarbon odor
* B1-2	9/18/2012	Boring B1, Sample 2	2-3	250	Gray, SILT; moist; hydrocarbon odor
* B2-1	9/18/2012	Boring B2, Sample 1	0-2	190	Gray, SILT; moist; hydrocarbon odor
B2-2	9/18/2012	Boring B2, Sample 2	2-2.6	190	Gray, SILT; moist; hydrocarbon odor
* B3-1	9/18/2012	Boring B3, Sample 1	0-1.5	9.2	Brown-gray, SILT; moist; hydrocarbon odor
B3-2	9/18/2012	Boring B3, Sample 2	1.5-3	5.1	Dark gray, SILT; moist; hydrocarbon odor
* B4-1	9/18/2012	Boring B4, Sample 1	0-1.5	1.4	Gray, SILT; moist; hydrocarbon odor
B4-2	9/18/2012	Boring B4, Sample 2	1.5-3	1.1	Gray, SILT; moist; hydrocarbon odor
B5-1	9/18/2012	Boring B5, Sample 1	0-1.5	0.0	Brown, SILT; moist; scattered roots
* B5-2	9/18/2012	Boring B5, Sample 2	1.5-2.5	0.0	Gray, SILT; moist
* B6-1	9/18/2012	Boring B6, Sample 1	0-1.5	33	Gray, SILT; moist; hydrocarbon odor
B6-2	9/18/2012	Boring B6, Sample 2	1.5-2.5	8.5	Gray, SILT; moist; hydrocarbon odor
* B7-1	9/18/2012	Boring B7, Sample 1	0-1.5	290	Gray, SILT; moist; hydrocarbon odor
B7-2	9/18/2012	Boring B7, Sample 2	1.5-2.5	210	Gray-black, SILT; moist; hydrocarbon odor
B8-1	9/18/2012	Boring B8, Sample 1	0-1.5	220	Gray, SILT; moist; hydrocarbon odor
* B8-2	9/18/2012	Boring B8, Sample 2	1.5-3	280	Gray, SILT; moist; hydrocarbon odor
* B9-1	9/18/2012	Boring B9, Sample 1	0-1.5	99	Gray, SILT; moist; hydrocarbon odor
B9-2	9/18/2012	Boring B9, Sample 2	1.5-2.5	62	Gray, SILT; moist; hydrocarbon odor
B10-1	9/18/2012	Boring B10, Sample 1	0-1.5	2.9	Gray, SILT; moist
* B10-2	9/18/2012	Boring B10, Sample 2	1.5-2.5	3.1	Gray, SILT; moist
Hand Borings -Tank Farm Area					
* B11-1	9/19/2012	Boring B11, Sample 1	0-1.5	9.3	Gray, SILT; moist
B11-2	9/19/2012	Boring B11, Sample 2	1.5-3	3.4	Gray, SILT; moist
B12-1	9/19/2012	Boring B12, Sample 1	0-1.5	0.6	Gray, SILT; moist
* B12-2	9/19/2012	Boring B12, Sample 2	1.5-3	0.9	Gray, SILT; moist
* B13-1	9/19/2012	Boring B13, Sample 1	0-1.5	1.1	Gray, SILT; moist
B13-2	9/19/2012	Boring B13, Sample 2	1.5-3	0.8	Gray, SILT; moist
B14-1	9/19/2012	Boring B14, Sample 1	0-1.5	1.1	Gray, SILT; moist
* B14-2	9/19/2012	Boring B14, Sample 2	1.5-3	1.4	Gray, SILT; moist
* B15-1	9/19/2012	Boring B15, Sample 1	0-1.5	79	Gray, SILT; moist
B15-2	9/19/2012	Boring B15, Sample 2	1.5-2.5	29	Gray, SILT; moist
* B16-1	9/19/2012	Boring B16, Sample 1	0-1.5	15	Gray, SILT; moist
B16-2	9/19/2012	Boring B16, Sample 2	1.5-2.5	9.2	Gray, SILT; moist

Notes:

* = Sample analyzed by the project laboratory (See Table 2)

^ = Field screening instrument was a Thermo Environmental Instruments Organic Vapor Meter 580B photoionization detector (PID).

ppm = parts per million

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)	Headspace (ppm) ^	Sample Classification
Hand Borings - Tank Farm Area (cont.)					
* B17-1	9/19/2012	Boring B17, Sample 1	0-1.5	6.6	Gray, SILT; moist
B17-2	9/19/2012	Boring B17, Sample 2	1.5-2.5	4.0	Gray, SILT; moist
B18-1	9/19/2012	Boring B18, Sample 1	0-1.5	6.3	Black-gray, SILT; moist
* B18-2	9/19/2012	Boring B18, Sample 2	1.5-2.5	18	Gray, SILT; moist
B19-1	9/19/2012	Boring B19, Sample 1	0-1.5	5.5	Gray, SILT; moist; hydrocarbon odor
* B19-2	9/19/2012	Boring B19, Sample 2	1.5-2.5	7.5	Gray, SILT; moist; hydrocarbon odor
* B19-3	9/19/2012	Duplicate of Sample B19-2	1.5-2.5	7.3	Gray, SILT; moist; hydrocarbon odor
B20-1	9/19/2012	Boring B20, Sample 1	0-1.5	5.0	Gray, SILT; moist; hydrocarbon odor
* B20-2	9/19/2012	Boring B20, Sample 2	1.5-2.5	130	Gray, SILT; moist; hydrocarbon odor
* B20-3	9/19/2012	Duplicate of Sample B20-2	1.5-2.5	130	Gray, SILT; moist; hydrocarbon odor
B21-1	9/19/2012	Boring B21, Sample 1	0-1.5	4.4	Black, SILT; moist
* B21-2	9/19/2012	Boring B21, Sample 2	1.5-2.6	13	Black, SILT; moist
* B22-1	9/19/2012	Boring B22, Sample 1	0-1.5	35	Black, SILT; moist
B22-2	9/19/2012	Boring B22, Sample 2	1.5-2.5	11	Black, SILT; moist
* B23-1	9/19/2012	Boring B23, Sample 1	0-1.5	190	Gray, SILT; moist; hydrocarbon odor
B23-2	9/19/2012	Boring B23, Sample 2	1.5-2.5	62	Gray, SILT; moist; hydrocarbon odor
* B24-1	9/19/2012	Boring B24, Sample 1	0-1.5	89	Gray, SILT; moist; hydrocarbon odor
B24-2	9/19/2012	Boring B24, Sample 2	1.5-2.5	84	Gray, SILT; moist; hydrocarbon odor
* B25-1	9/19/2012	Boring B25, Sample 1	0-1.5	250	Gray, SILT; moist; hydrocarbon odor
B25-2	9/19/2012	Boring B25, Sample 2	1.5-2.5	92	Gray, SILT; moist; hydrocarbon odor
* B26-1	9/19/2012	Boring B26, Sample 1	0-1.5	150	Gray, SILT; moist; hydrocarbon odor
B26-2	9/19/2012	Boring B26, Sample 2	1.5-2.5	78	Gray, SILT; moist; hydrocarbon odor
* B27-1	9/19/2012	Boring B27, Sample 1	0-1.5	11	Gray, SILT; moist; hydrocarbon odor
B27-2	9/19/2012	Boring B27, Sample 2	1.5-2.5	5.6	Gray, SILT; moist; hydrocarbon odor
* B27-3	9/19/2012	Duplicate of Sample B27-1	0-1.5	11	Gray, SILT; moist; hydrocarbon odor
* B28-1	9/19/2012	Boring B28, Sample 1	0-1.5	7.0	Gray, SILT; moist; hydrocarbon odor
B28-2	9/19/2012	Boring B28, Sample 2	1.5-2.5	6.6	Gray, SILT; moist; hydrocarbon odor
* B29-1	9/19/2012	Boring B29 Sample 1	0-1.5	12	Gray, SILT; moist; hydrocarbon odor
B29-2	9/19/2012	Boring B29, Sample 2	1.5-2.5	9.7	Gray, SILT; moist; hydrocarbon odor
* B30-1	9/19/2012	Boring B30, Sample 1	0-1.5	5.5	Gray, SILT; moist
B30-2	9/19/2012	Boring B30, Sample 2	1.5-2.5	3.8	Gray, SILT; moist

Notes:

*	= Sample analyzed by the project laboratory (See Table 2)
^	= Field screening instrument was a Thermo Environmental Instruments Organic Vapor Meter 580B photoionization detector (PID).
-	= Measurement not recorded or not applicable
ppm	= parts per million

TABLE 1
SAMPLE LOCATIONS AND DESCRIPTIONS

Sample Number	Date	Sample Location (See Figure 2)	Depth (feet)	Headspace (ppm) ^	Sample Classification
Quality Control Sample					
* TB1	9/19/2012	Soil Trip Blank TB1	-	-	Ottawa sand with methanol added in the laboratory
* TB2	9/19/2012	Soil Trip Blank TB2	-	-	Ottawa sand with methanol added in the laboratory
* TB3	9/19/2012	Soil Trip Blank TB3	-	-	Ottawa sand with methanol added in the laboratory
* TB4	9/19/2012	Soil Trip Blank TB4	-	-	Ottawa sand with methanol added in the laboratory

Notes:

* = Sample analyzed by the project laboratory (See Table 2)

^ = Field screening instrument was a Thermo Environmental Instruments Organic Vapor Meter 580B photoionization detector (PID).

- = Measurement not recorded or not applicable

ppm = parts per million

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level** (mg/kg)	Sample Source, ID Number^, and Collection Depth in Feet (See Table 1, Figure 2, and Appendix C)									
			Day Tank Hand Borings									
			B1-2 2-3	B2-1 0-2	B3-1 0-1.5	B4-1 0-1.5	B5-2 1.5-2.5	B6-1 0-1.5	B7-1 0-1.5	B8-2 1.5-3	B9-1 0-1.5	B10-2 1.5-2.5
PID Headspace Reading - ppm	580B PID	-	250	190	9.2	1.4	0	33	290	280	99	3.1
Total Solids - percent	SM 20 2540G	-	62.7	61.1	64.1	67.6	65.4	66.0	61.9	60.3	68.4	59.2
Gasoline Range Organics (GRO) - mg/kg	AK 101	300	**114 J+**	**32.4**	**3.18 J**	**1.83 J**	<0.0037	**11.3**	**46.7 J+**	**161 J+**	**22.8**	**2.56 J**
Diesel Range Organics (DRO) - mg/kg	AK 102	250	**14,000 J-**	**8,380 J-**	**122**	**110**	**95.6 J**	**238**	**12,200 J-**	**15,500 J-**	**6,120 J-**	**65.9**
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	**782**	**520**	**605**	**488**	**597**	**843**	**1,060**	**838**	**613**	**652**
Aromatic Volatile Compounds												
Benzene - mg/kg	EPA 8021B	0.025	**0.0358 J+**	<0.0200	<0.0202	<0.0191	<0.0197	<0.0198	<0.0208	**0.0268 J**	<0.0165	***<0.0258***
Toluene - mg/kg	EPA 8021B	6.5	**1.63**	**0.0213 J**	**0.0252 J**	<0.0374	<0.0386	<0.0618 B	<0.0650 B	**1.62**	<0.0516 B	<0.0809 B
Ethylbenzene - mg/kg	EPA 8021B	6.9	**4.08**	**0.0426 J**	**0.0202 J**	<0.0374	<0.0386	**0.0359 J**	**0.0786**	**3.37**	**0.0387 J**	<0.0504
Xylenes - mg/kg	EPA 8021B	63	**26.4**	**4.63**	**0.277**	**0.0281 J**	<0.113	**0.179**	**4.38**	**28.4**	**2.01**	<0.147
Polyaromatic Hydrocarbons (PAHs)												
Naphthalene - mg/kg	EPA 8270C	20	-	-	-	-	-	-	**1.61 J+**	-	-	-
1-Methylnaphthalene - mg/kg	EPA 8270C	6.2	-	-	-	-	-	-	**34 J+**	-	-	-
2-Methylnaphthalene - mg/kg	EPA 8270C	6.1	-	-	-	-	-	-	**9.26 J+**	-	-	-
Fluorene - mg/kg	EPA 8270C	220	-	-	-	-	-	-	**0.841 J+**	-	-	-
Phenanthrene - mg/kg	EPA 8270C	3,000	-	-	-	-	-	-	**0.554 J+**	-	-	-
Flouranthene -mg/kg	EPA 8270C	1,400	-	-	-	-	-	-	**0.221**	-	-	-
Pyrene - mg/kg	EPA 8270C	1,000	-	-	-	-	-	-	**0.200**	-	-	-
Benzo(a)anthracene -mg/kg	EPA 8270C	3.6	-	-	-	-	-	-	**0.0278 J**	-	-	-
Chrysene -mg/kg	EPA 8270C	360	-	-	-	-	-	-	**0.0371 J**	-	-	-
Benzo(b)floranthene	EPA 8270C	4.9	-	-	-	-	-	-	**0.0175 J**	-	-	-
Other PAH analytes	EPA 8270C	Various	-	-	-	-	-	-	ND	-	-	-

Table Key on Page 4 of 4

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level** (mg/kg)	Sample Source, ID Number^, and Collection Depth in Feet (See Table 1, Figure 2, and Appendix C)									
			Tank Farm Hand Borings									
			B11-1 0-1.5	B12-2 1.5-3	B13-1 0-1.5	B14-2 1.5-3	B15-1 0-1.5	B16-1 0-1.5	B17-1 0-1.5	B18-2 1.5-2.5	B19-2 1.5-2.5	B19-3~ 1.5-2.5
PID Headspace Reading - ppm	580B PID	-	4.3	0.9	1.1	1.4	79	15	6.6	18	7.5	7.5
Total Solids - percent	SM 20 2540G	-	68.5	65.2	69.9	63.1	64.6	56.6	53.6	70.3	63.7	63.0
Gasoline Range Organics (GRO) - mg/kg	AK 101	300	**2.41 J**	<3.46	**1.71 J**	<3.98	**10.1**	**6.22 J**	**4.20 J**	<3.04	**3.08 J**	**2.22 J**
Diesel Range Organics (DRO) - mg/kg	AK 102	250	**530**	**64.6**	**138**	**62.2**	**1,530**	**1,430**	**473**	**179**	**100**	**92.6**
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	**711**	**543**	**783**	**685**	**580**	**1,530**	**1,520**	**698**	**640**	**745**
Aromatic Volatile Compounds (BTEX)												
Benzene - mg/kg	EPA 8021B	0.025	<0.0167	<0.0184	<0.0163	<0.0212	<0.0222	***<0.0250***	***<0.0292***	<0.0162	<0.0238	<0.0216
Toluene - mg/kg	EPA 8021B	6.5	<0.0326	<0.0575 B	<0.0318	<0.0665 B	<0.0434	<0.0486	**0.340**	<0.0316	**0.403**	**0.180**
Ethylbenzene - mg/kg	EPA 8021B	6.9	<0.0326	**0.0190 J**	<0.0318	<0.0414	**0.0258 J**	<0.0486	<0.0568	<0.0316	<0.0462	<0.0422
Xylenes - mg/kg	EPA 8021B	63	<0.0952	<0.105	**0.0234 J**	<0.121	**0.352**	**0.0958**	<0.166	<0.0924	<0.135	<0.123

Table Key on Page 4 of 4

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level** (mg/kg)	Sample Source, ID Number^, and Collection Depth in Feet (See Table 1, Figure 2, and Appendix C)									
			Tank Farm Hand Borings									
			B20-2 1.5-2.5	B20-3~ 1.5-2.5	B21-2 1.5-2.6	B22-1 0-1.5	B23-1 0-1.5	B24-1 0-1.5	B25-1 0-1.5	B26-1 0-1.5	B27-1 0-1.5	B27-3~ 0-1.5
PID Headspace Reading - ppm	580B PID	-	130	130	13	35	190	89	250	150	11	11
Total Solids - percent	SM 20 2540G	-	63.2	63.2	65.4	64.1	69.5	72.0	63.1	70.0	69.9	70.1
Gasoline Range Organics (GRO) - mg/kg	AK 101	300	**31.4 J+**	**32.1 J+**	**3.76 J**	**7.48**	**3.08 J**	**1.59 J**	**9.35**	**9.35**	<3.20	<2.88
Diesel Range Organics (DRO) - mg/kg	AK 102	250	**2,660**	**4,930**	**71.1**	**1,600**	**422**	**165**	**871**	**1,140**	**188**	**164**
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	**495**	**552**	**386**	**1,130**	**732**	**777**	**827**	**779**	**679**	**524**
Aromatic Volatile Compounds												
Benzene - mg/kg	EPA 8021B	0.025	<0.0214	<0.0218	<0.0197	<0.0183	<0.0153	<0.0156	<0.0206	<0.0166	<0.0171	<0.0154
Toluene - mg/kg	EPA 8021B	6.5	<0.0669 B	<0.0681 B	<0.0384	<0.0358	<0.0298	<0.0488 B	**0.0329 J**	<0.0324	<0.0334	<0.0300
Ethylbenzene - mg/kg	EPA 8021B	6.9	**0.581**	**0.574**	**0.0375 J**	<0.0358	<0.0298	<0.0304	**0.0355 J**	**0.0228 J**	<0.0334	<0.0300
Xylenes - mg/kg	EPA 8021B	63	**1.34**	**1.34**	**0.0659 J**	**0.230 J**	**0.0685 J**	**0.0225 J**	**0.828**	**0.133**	<0.0976	<0.0876
Polyaromatic Hydrocarbons (PAHs)												
Naphthalene - mg/kg	EPA 8270C	20	-	-	-	-	-	-	0.461 J+	-	-	-
1-Methylnaphthalene - mg/kg	EPA 8270C	6.2	-	-	-	-	-	-	1.27 J+	-	-	-
2-Methylnaphthalene - mg/kg	EPA 8270C	6.1	-	-	-	-	-	-	0.458 J+	-	-	-
Acenaphthene - mg/kg	EPA 8270C	180	-	-	-	-	-	-	0.847 J+	-	-	-
Fluorene - mg/kg	EPA 8270C	220	-	-	-	-	-	-	0.577 J+	-	-	-
Phenanthrene - mg/kg	EPA 8270C	3,000	-	-	-	-	-	-	1.38 J+	-	-	-
Anthracene - mg/kg	EPA 8270C	3,000	-	-	-	-	-	-	0.273 J+	-	-	-
Flouranthene -mg/kg	EPA 8270C	1,400	-	-	-	-	-	-	5.82 J+	-	-	-
Pyrene - mg/kg	EPA 8270C	1,000	-	-	-	-	-	-	4.46 J+	-	-	-
Benzo(a)anthracene -mg/kg	EPA 8270C	3.6	-	-	-	-	-	-	0.701 J+	-	-	-
Chrysene -mg/kg	EPA 8270C	360	-	-	-	-	-	-	0.798 J+	-	-	-
Benzo(b)floranthene - mg/kg	EPA 8270C	4.9	-	-	-	-	-	-	0.432 J+	-	-	-
Benzo(k)floranthene - mg/kg	EPA 8270C	49	-	-	-	-	-	-	0.155 J+	-	-	-
Benzo(a)pyrene - mg/kg	EPA 8270C	0.49	-	-	-	-	-	-	0.161 J+	-	-	-
Indeno(1,2,3-c,d)pyrene -mg/kg	EPA 8270C	4.9	-	-	-	-	-	-	0.0523 J+	-	-	-
Benzo(g,h,i)perylene -mg/kg	EPA 8270C	1,400	-	-	-	-	-	-	0.0465 J+	-	-	-
Other PAH analytes - mg/kg	EPA 8270C	Various	-	-	-	-	-	-	ND	-	-	-

Table Key on Page 4 of 4

TABLE 2
SUMMARY OF SOIL ANALYTICAL RESULTS

Parameter Tested	Method*	Cleanup Level** (mg/kg)	Sample Source, ID Number^, and Collection Depth in Feet (See Table 1, Figure 2, and Appendix C)						
			Hand Borings			Quality Control			
			B28-1 0-1.5	B29-1 0-1.5	B30-1 0-1.5	TB1 -	TB2 -	TB3 -	TB4 -
PID Headspace Reading - ppm	580B PID	-	7.0	12	5.5	-	-	-	-
Total Solids - percent	SM 20 2540G	-	63.5	69.9	60.5	-	-	-	-
Gasoline Range Organics (GRO) - mg/kg	AK 101	300	**3.10 J**	<3.12	**2.11 J**	<1.51	<1.52	<1.50	<1.51
Diesel Range Organics (DRO) - mg/kg	AK 102	250	**142**	**1,220**	**155**	-	-	-	-
Residual Range Organics (RRO) - mg/kg	AK 103	10,000	**550**	**459**	**1,090**	-	-	-	-
Aromatic Volatile Compounds									
Benzene - mg/kg	EPA 8021B	0.025	<0.0208	<0.0166	<0.0210	<0.00808	<0.00810	<0.00798	<0.00806
Toluene - mg/kg	EPA 8021B	6.5	<0.0406	<0.0324	**0.315**	<0.0157	<0.0158	<0.0156	<0.0157
Ethylbenzene - mg/kg	EPA 8021B	6.9	<0.0406	<0.0324	<0.0408	<0.0157	<0.0158	<0.0156	<0.0157
Xylenes - mg/kg	EPA 8021B	63	**0.0787 J**	<0.0948	<0.119	<0.0459	<0.0462	<0.0456	<0.0459

Notes:

* See Appendix C for compounds tested, methods, and laboratory reporting limits

** Soil cleanup level is the most stringent standard listed in Table B1 or B2, 18 AAC 75, for the "under 40 inches (precipitation) zone"

^	= Sample ID No. preceded by "17478-" on the chain of custody form
<0.00678	= Analyte not detected; laboratory limit of detection (LOD) of 0.00678 mg/kg
<0.0250	= Analyte not detected; laboratory limit of detection (LOD) exceeds applicable cleanup level
771	= Sample result is greater than the ADEC cleanup level
ppm	= Parts per million
mg/kg	= Milligram per kilogram
-	= Not applicable or sample not tested for this analyte
B	= Indicates a method blank detection, analytical result reported as non-detect at the laboratory limit of quantitation (LOQ)
J	= Result is an estimated concentration less than the LOQ
J+	= Result is an estimated concentration (biased high) due to quality control issues
J-	= Result is an estimated concentration (biased low) due to quality control issues
~	= Duplicate of preceding sample
ND	= Not detected

TABLE 3
QUALITY CONTROL DATA

Parameter	Primary Sample B19-2	Duplicate Sample B19-3	Precision (RPD)	Precision QC Limit
Total Solids - percent	63.7	63.0	1.1%	50%
Gasoline Range Organics (GRO) - mg/kg	**3.08 J**	**2.22 J**	32%	50%
Diesel Range Organics (DRO) - mg/kg	**100**	**92.6**	8%	50%
Residual Range Organics (RRO) - mg/kg	**640**	**745**	15%	50%
Aromatic Volatile Organics				
Benzene - ug/kg	<0.0238	<0.0216	NA	50%
Toluene - ug/kg	**0.403**	**0.180**	**77%**	50%
Ethylbenzene - ug/kg	<0.0462	<0.0422	NA	50%
Xylenes - ug/kg	<0.089	<0.0812	NA	50%
Parameter	**Primary Sample B20-2**	**Duplicate Sample B20-3**	**Precision (RPD)**	**Precision QC Limit**
Total Solids - percent	63.2	63.2	0%	50%
Gasoline Range Organics (GRO) - mg/kg	**31.4**	**32.1**	2%	50%
Diesel Range Organics (DRO) - mg/kg	**2,660**	**4,930**	**60%**	50%
Residual Range Organics (RRO) - mg/kg	**495**	**552**	11%	50%
Aromatic Volatile Organics				
Benzene - ug/kg	<0.0214	<0.0218	NA	50%
Toluene - ug/kg	**0.0442 J**	**0.032 J**	32%	50%
Ethylbenzene - ug/kg	**0.581**	**0.574**	1%	50%
Xylenes - ug/kg	**1.34**	**1.34**	0%	50%
Parameter	**Primary Sample B27-1**	**Duplicate Sample B27-3**	**Precision (RPD)**	**Precision QC Limit**
Total Solids - percent	69.9	70.1	0.3%	50%
Gasoline Range Organics (GRO) - mg/kg	<3.20	<2.88	NA	50%
Diesel Range Organics (DRO) - mg/kg	**188**	**164**	14%	50%
Residual Range Organics (RRO) - mg/kg	**679**	**524**	26%	50%
Aromatic Volatile Organics				
Benzene - ug/kg	<0.0171	<0.0154	NA	50%
Toluene - ug/kg	<0.0334	<0.0300	NA	50%
Ethylbenzene - ug/kg	<0.0334	<0.0300	NA	50%
Xylenes - ug/kg	<0.0642	<0.0576	NA	50%

Notes:

RPD	= Relative Percent Difference
QC	= Quality Control
mg/kg	= Milligrams per kilogram
NA	= RPD not calculated due to non-detectable results
J	= Result is an estimated concentration less than the laboratory limit of quantitation (LOQ)
<21.2	= Analyte not detected at or above the laboratory reporting limit of 21.2 mg/kg
77%	= Exceeds the QC Limits

0 0.5 1.0

Approximate Scale in Miles

Elevation in Feet
Taken From
Baird Inlet A-7
U.S. Geological Survey

N

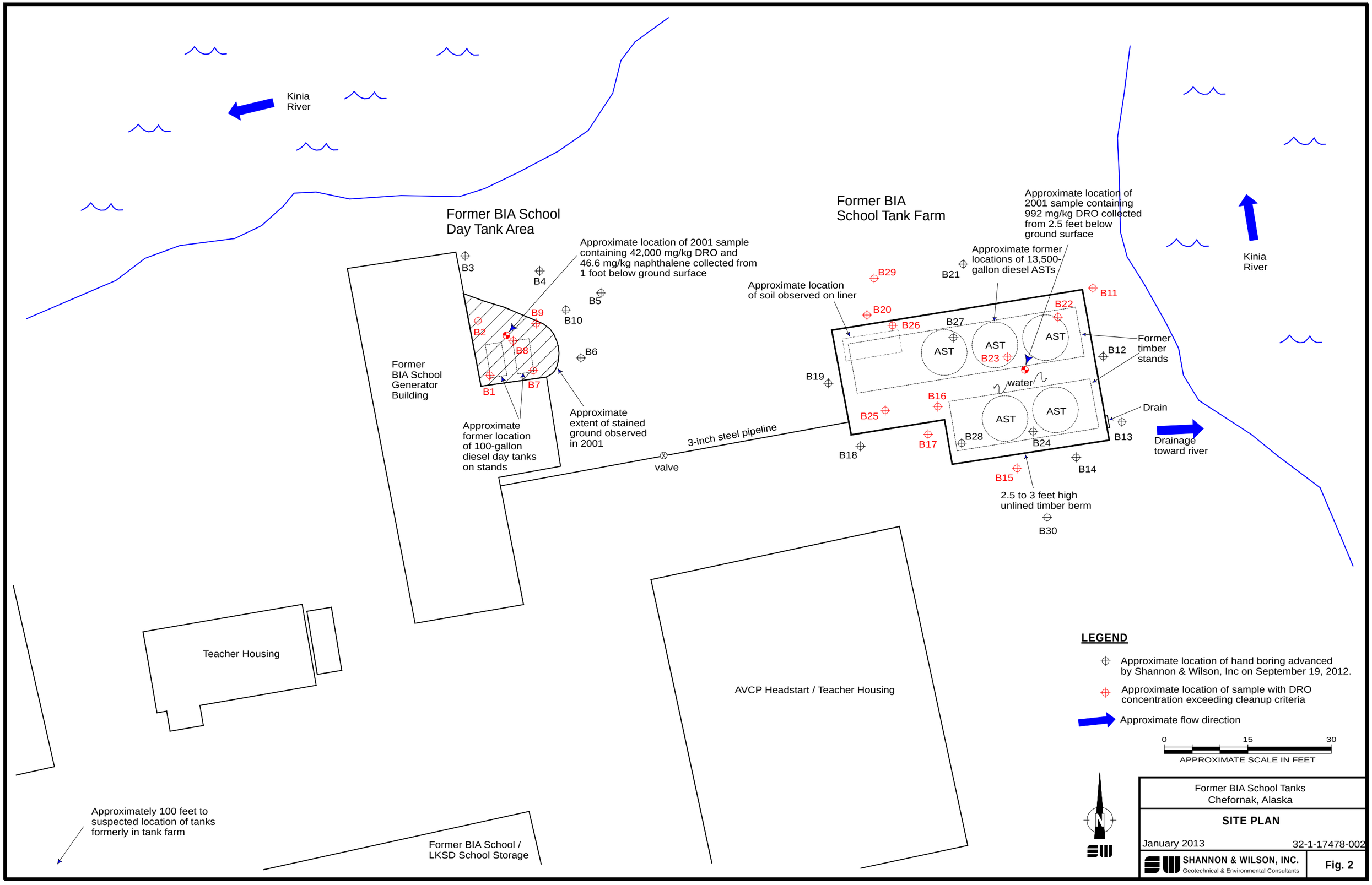
Former BIA School Tanks
Chefornak, Alaska

VICINITY MAP

January 2013 32-1-17478-002

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 1



Former BIA School Tanks
Chefornak, Alaska

SITE PLAN

January 2013 | 32-1-17478-002

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Fig. 2

APPENDIX A

SITE PHOTOGRAPHS

Photo 1: Looking southwest at the location of the former Day Tank Area adjacent to generator building. (9/19/2012)

Photo 2: Looking southeast at the location of the former Tank Farm Area. (9/19/2012)

Former BIA School Tanks Site
Chefornak, Alaska

PHOTOS 1 AND 2

January 2013 32-1-17478-002

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

Photo 3: Looking northeast at panels of sheet metal and standing water at the former Tank Farm Area (9/19/2012)

Photo 4: Looking south at the area around the east timber berm in former Tank Farm Area. (9/19/2012)

APPENDIX B

FIELD NOTES

Chefornak flights: ANC to Bethel - Alaska Air $303 each way
Full flex

Bethel to Chefornak - Alaska/Era $187 each way

Yute Air Bethel: 800-416-4198 or 543-3003

Yute Air - Chefornak (CYF) agent: George Erik 867-[illegible]

Lodging - called city 907-867-8147 to ask

Truck / 4 wheeler? rental

ANC - Bethel 6:40 am - 7:53 am ✓ Bethel - ANC 8:45 - 9:49 am

1220 pm - 133 pm 2:24 pm - 3:34 pm ✓

640 pm - 754 pm 8:40 pm - 9:56 pm

Bethel - Chef. 3163 900 - 9:44 ~~930 - 1004 am~~ ✓ BET-CYF-KPN Chef - Bethel ~~10:14 - 11:10 am~~ ✓

3161 BET-KPN-CYF

3164 1230 - 144 pm 1:49 - 2:21 pm

600 - 634 pm BET-CYF-KPN 6:44 - 7:42 pm

~~330 - 404 pm~~ ~~4:19 - 5:12 pm~~

Yute BET - CYF (Kipnuk) Mon-Sat 9:15 AM

daily 10:30 AM

" 3:30 pm

" 600 pm

Alice

Bring Water no good water - salt water intrusion

32-1-17478-001 Chefornak BIA Andrew Lee (1)

9-18-12 Tuesday

945 Check in with City & Mayor Robert Gordon
"they say no underground utilities
950 - walk site with Jacob
1010 off site to other project

9-19-12 Wed

800 prepare gear,
830 On site carry gear around buildings
weather: 40s°F cloudy, Rained last night. expect rain today on and off
Take Photos as Jacob goes back to get/shuttle more gear/coolers over

ID	Time	Waypoint	direction	what?
50	847	148	SW	generator building
51	848	148	S	" , AST stand?
52	849	148	SE	Tanks Area
53	851	149	SSE	generator building area
54	852	150	SSE	" ground surface
55	853	151	E	along pipes towards Tanks area
56	853	152	—(E)	Valve
57	855	153	S	end of pipes at tank farm area
58	855	153	E	tanks area - old tank 25' dia x 4' long
59	857	154	SE	tanks area
60	858	155	S	tanks area - timber bottom in places, ponded water
61	859	156	S	tanks area, East berm
62	901	157	W	tank area - drain location foreground
63	902	158	N	tanks area. ~~Fisher~~ boater bailing boat
64	903	159	NE	tanks area from high
65	904	159	NW	Generator Area
66	904	160	E	drain location & river
67	906	161	NE	tanks area
68	909	162	NW	Generator area ground view
69	912	163	E	Jacob going to get decon water from river
72	11:29	Bonly B2	S	Hand boring B8

915 start hand borings - Jacob on bucket auger - Andrew collect samples & log
Calibrate PID #2 to 100ppm isobutylene
1845 Done sampling. Workplan variance: collected 8 from inside former tank farm area and 12 outside instead of 10&10. Timber, wet areas & sheet metal limited access for parts of the inside tank farm area. Also wanted to investigate lateral extent of contamination after some high PIDs outside tank area
1848 GPS sample locations, fill in bore holes

photo 74 @ 19:02 liner (4x10) with soil on top ~6" w/grass growing (GPS 194).

(over)

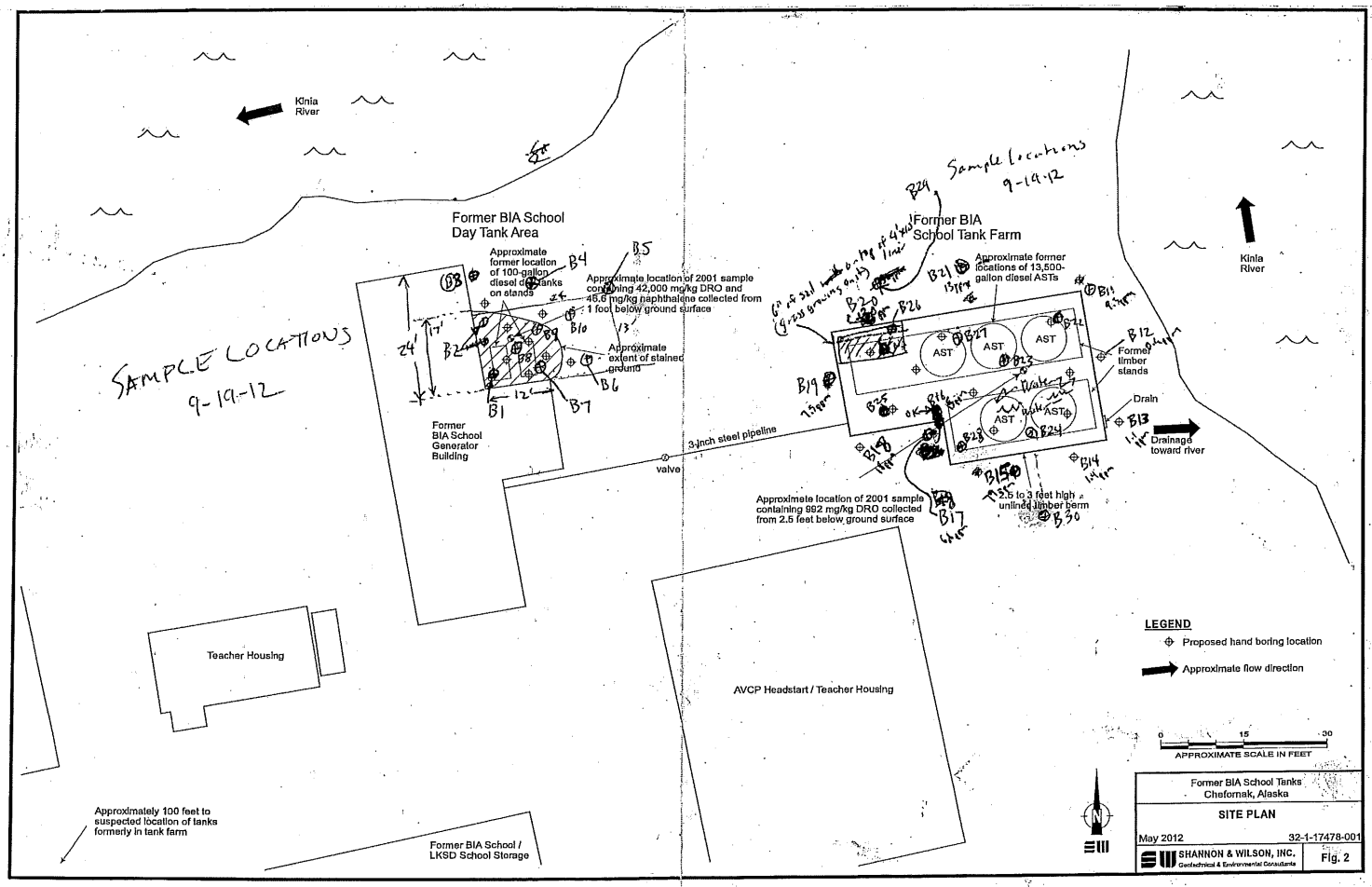
(2) 17478-001 Chefornak B/A 9-19-12 Wed. Andrew Lee

Off site 19:30 Drive / shuttle gear to QAP Camp

1940 Dinner

20:10 Arrange flights out of Chefornak, pack gear

22:35 Done for day


Kinia River
Former BIA School Day Tank Area
Approximate former location of 100-gallon diesel day tanks on stands
Approximate location of 2001 sample containing 42,000 mg/kg DRO and 45.6 mg/kg naphthalene collected from 1 foot below ground surface
Approximate extent of stained ground
SAMPLE LOCATIONS 9-19-12
Former BIA School Generator Building
3-inch steel pipeline
valve
Former BIA School Tank Farm
Sample locations 9-19-12
Approximate former locations of 13,500-gallon diesel ASTs
AST
Former timber stands
Drain
Drainage toward river
Approximate location of 2001 sample containing 992 mg/kg DRO collected from 2.5 feet below ground surface
2.5 to 3 feet high unlined timber berm
Teacher Housing
AVCP Headstart / Teacher Housing
Approximately 100 feet to suspected location of tanks formerly in tank farm
Former BIA School / LKSD School Storage
LEGEND
Proposed hand boring location
Approximate flow direction
APPROXIMATE SCALE IN FEET
Former BIA School Tanks
Chefornak, Alaska
SITE PLAN
May 2012
32-1-17478-001
SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants
Fig. 2

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

JOB NAME 17533-001 JOB NO. Chefornak Tanks
SUBJECT field DATE
BY CHK'D SHEET of

~~[illegible] Coordinate Pl[illegible] Sampling Plan~~

Notes ~~on [illegible] Project~~ on Light Plant Project

→ ~~Set~~ Collected 9 samples + 1 dup from Light Plant Area instead of 8 + 1. Remove one sample from this area prior to submitting to lab(?).

→

Notes on QAP -

→ Check on cooler - is it still in Bethel.

SAMPLE COLLECTION LOG

SHANNON & WILSON, INC

Project Number: 32-1-17478-001 Chetomak B1A Tank Farm School

Location:

Site:

Date: 9-19-12

Sampler: Andrew Lee & Jacob Tracy

Sheet Number: 2

Sample Number	Location	Sample Time	Sample Depth	Sample Type	GPS Reading*	PID Reading	Soil Classification	Analyses
B18-1		14:49	0-1.5	Soil	181	6.3	Black-Gray SILT, moist	
B18-2		14:56	1.5-2.5			18	Gray SILT, moist	
B19-1		15:08	0-1.5		182	5.5	Gray SILT, moist; HC odor	
B19-2		15:13	1.5-2.5			7.5	"	
B19-3	Duplicate of B19-2	15:18	1.5-2.5			7.5	"	
B20-1		15:35	0-1.5		183	5.0	"	
B20-2		15:40	1.5-2.5			130	"	
B20-3	Duplicate of B20-2	15:45	1.5-2.5			130	"	
B21-1		15:53	0-1.5		184	4.4	Gray SILT, moist	
B21-2		16:00	1.5-2.5			13	"	
B22-1		16:14	0-1.5		185	55	"	
B22-2		16:18	1.5-2.5			11	"	
B23-1		16:38	0-1.5		186	190	Gray SILT, moist; HC odor	
B23-2		16:45	1.5-2.5			62	"	
B23-3	Dup. of B23-2	16:50	1.5-2.5			—	"	
B24-1		16:55	0-1.5		187	89	"	
B24-2		16:58	1.5-2.5			44	"	
PAH B25-1		17:09	0-1.5		188	250	"	
B25-2		17:14	1.5-2.5			92	"	
B26-1		17:30	0-1.5		189	150	"	
B26-2		17:35	1.5-2.5			78	"	
B27-1		17:53	0-1.5		190	11	"	
B27-2		18:00	1.5-2.5			5.6	"	
B27-3	Dup of B27-1	17:57	0-1.5			11	"	
B27-4	Dup of B27-2	18:05	1.5-2.5			5.6	"	
B28-1		18:09	0-1.5		191	7.0	"	
B28-2		18:14	1.5-2.5			6.6	"	
B29-1		18:22	0-1.5		192	12	"	
B29-2		18:27	1.5-2.5			9.7	"	
B30-1		18:36	0-1.5		193	5.5	"	
B30-2		18:42	1.5-2.5			3.0		

Sample Type

ES	Environmental sample
FD	Field duplicate
FM	Field Screening
TB	Trip blank
*	GPS readings only collected from analytical sample locations

SAMPLE COLLECTION LOG

SHANNON & WILSON, INC

Project Number: 32-1-17478-001 Chefornak BIA Tanks
Date: 9-19-12
Sampler: Andrew Lee & Jacob Tracy

Location:
Site:
Sheet Number:

Sample Number	Location	Sample Time	Sample Depth	Sample Type	GPS Reading*	PID Reading	Soil Classification	Analyses
B1-1	General-use building	921	0-2'	Soil	164	240	Gray SILT; moist; HC odor	
B1-2		930	2-3'			250	" (Frozen @ 3')	
B2-1		944	0-2		165	190	Gray SILT; moist; HC odor	
B2-2		950	2-2.6			190	Gray SILT moist; HC odor frozen @ 2.6'	
B3-1		1000	0-1.5		166	9.2	Brown-Gray SILT; moist; HC odor	
B3-2		1007	1.5-3			5.1	Dark Gray SILT; moist; HC odor	
B4-1		1016	0-1.5		167	1.4	Gray SILT; moist; HC odor	
B4-2		1022	1.5-3			1.1	"	
B5-1		1031	0-1.5		168	0.0	Brown SILT; moist; with little roots/organic	
B5-2		1036	1.5-2.5			0.0	Gray SILT; moist	
B6-1		11:00	0-1.5		169	33	Gray SILT; moist; HC odor	
B6-2		11:06	1.5-2.5			8.5	Gray SILT; moist; HC odor	
B7-1		11:14	0-1.5		170	290	Gray SILT; moist; HC odor	
B7-2		11:21	1.5-2.5			210	Gray to Black SILT; moist; HC odor	
B8-1		11:28	0-1.5		171	220	Gray SILT; moist; HC odor	
B8-2		11:34	1.5-3			280	"	
B9-1		11:40	0-1.5		172	99	"	
B9-2		11:45	1.5-2.5			62	"	
B10-1		11:51	0-1.5		173	2.9	Gray SILT, moist	
B10-2		11:56	1.5-2.5			3.1	Gray SILT; moist	
B11-1	Tank Farm Area	12:49	0-1.5		174	9.3	"	
B11-2		12:56	1.5-3			3.4	"	
B12-1		13:03	0-1.5		175	0.6	"	
B12-2		13:08	1.5-3			0.9	"	
B13-1		13:13	0-1.5		176	1.1	"	
B13-2		13:20	1.5-3			0.6	"	
B14-1		13:37	0-1.5		177	1.1	"	
B14-2		13:44	1.5-3			1.4	"	
B15-1		13:50	0-1.5		178	79	"	
B15-2		13:55	1.5-2.5			29	"	
B16-1		14:15	0-1.5		179	15	"	
B16-2		14:20	1.5-2.5			9.2	"	
~~B17~~ B17-1		14:37	0-1.5		180	0.6	"	
B17-2		14:43	1.5-2.5			4.0		

Sample Type

- ES Environmental sample
- FD Field duplicate
- FM Field Screening
- TB Trip blank
- * GPS readings only collected from analytical sample locations

APPENDIX C

RESULTS OF ANALYTICAL TESTING BY

SGS NORTH AMERICA INC.

OF ANCHORAGE, ALASKA AND

ADEC LABORATORY DATA REVIEW CHECKLIST

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

Project:	32-1-17478 Chefornak BIA
Client:	Shannon & Wilson, Inc.
SGS Work Order:	1124601

Released by:

SGS North America
Environmental Services – Alaska Division
Project Manager

Steven Crupi
2012.10.16
08:08:42 -08'00'

Contents:

Client Name: Shannon & Wilson, Inc.
Project Name: 32-1-17478 Chefornak BIA
Workorder No.: 1124601

Sample Comments

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

Lab Sample ID	Sample Type	Client Sample ID
1124601001	PS	17478-B1-2

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.
AK102 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.

1124601002	PS	17478-B2-1

AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.
AK102 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.

1124601003	PS	17478-B3-1

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601004	PS	17478-B4-1

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601005	PS	17478-B5-2

AK102 - Sample was diluted due to dark color of extract; therefore the LOQ was elevated.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601006	PS	17478-B6-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601007	PS	17478-B7-1

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.
8270D SIM - Surrogate (2-fluorobiphenyl) recovery is outside of QC criteria due to sample dilution.

1124601008	PS	17478-B8-2

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.
AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.

1124601009	PS	17478-B9-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - 5a-Androstane (surrogate) recovery is outside QC criteria due to sample dilution.

1124601010	PS	17478-B10-2

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601011 PS 17478-B11-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601012 PS 17478-B12-2

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601013 PS 17478-B13-1

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601014 PS 17478-B14-2

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601015 PS 17478-B15-1

AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.

1124601016 PS 17478-B16-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601017 PS 17478-B17-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601018 PS 17478-B18-2

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601019 PS 17478-B19-2

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601020 PS 17478-B19-3

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601021 PS 17478-B20-2

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.

1124601022 PS 17478-B20-3

AK101 - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.
AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.

1124601023 PS 17478-B21-2

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601024 PS 17478-B22-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601025 PS 17478-B23-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601026 PS 17478-B24-1

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601027 PS 17478-B25-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.
8270D SIM- LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.
8270D SIM - Surrogate recovery is outside of QC criteria due to sample dilution.

1124601028 PS 17478-B26-1

AK103 - Unknown hydrocarbon with several peaks is present.
AK102 - The pattern is consistent with a weathered middle distillate.

1124601029 PS 17478-B27-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601030 PS 17478-B27-3

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601031 PS 17478-B28-1

AK102/103 - Unknown hydrocarbon with several peaks is present.

1124601032 PS 17478-B29-1

AK102 - The pattern is consistent with a weathered middle distillate.
AK103 - Unknown hydrocarbon with several peaks is present.

1124601033 PS 17478-B30-1

AK102/103 - Unknown hydrocarbon with several peaks is present.

1118225 * MB MB for HBN 1381258 [VXX/24077]

8021B - Method blank result for toluene is greater than one-half the LOQ, however less than the LOQ.

1118307 * MSD 1124569004MSD

8021B - MSD recovery for toluene does not meet QC criteria (biased high). Toluene was detected in the parent sample below the reporting limit. Refer to the LCS and LSCD for accuracy information.

1118824 * MS 1124764008MS

8270D SIM - MS recoveries for four analytes are outside of QC criteria (biased high) due to dilution. Refer to LCS for accuracy.
8270D SIM- LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

1118825 * MSD 1124764008MSD

8270D SIM - MSD recoveries for acenaphthylene, 1-methylnaphthalene and 2-methylnaphthalene are outside of QC criteria (biased high) due to dilution. Refer to LCS for accuracy.
8270D SIM- LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.

1119414 * MS 1128511003MS

8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-d14) recoveries are outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.
8270D SIM - MS/MSD recoveries for multiple analytes are outside of QC criteria due to dilution. Refer to the LCS for accuracy information.

1119415 * MSD 1128511003MSD

8270D SIM - Surrogate (2-fluorobiphenyl and terphenyl-d14) recoveries are outside of QC criteria due to sample dilution.
8270D SIM - LOQs are elevated due to sample dilution. Sample analyzed at a dilution due to matrix interference with internal standards.
8270D SIM - MS/MSD recoveries for multiple analytes are outside of QC criteria due to dilution. Refer to the LCS for accuracy information.
8270D SIM- MS/MSD RPD for fluoranthene does not meet QC criteria.

1120278 * CCV CCV for HBN 1383878 [XMS/7012]

8270D SIM - CCV recoveries for indeno[1,2,3-c,d]pyrene, dibenzo[a,h]anthracene and benzo[g,h,i]perylene do not meet QC criteria (biased high). These analytes were not reported 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.

Report of Manual Integrations

Print Date: 10/16/2012 8:01 am

Laboratory ID	Client Sample ID	Analytical Batch	Method	Analyte	Reason
1124601027	17478-B25-1	XMS7007	8270D SIMS (F	Benzo[k]fluoranthene	RP
1124601027	17478-B25-1	XMS7007	8270D SIMS (F	Naphthalene	SP

Manual Integration Reason Code Descriptions

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

All DRO/RRO analysis are integrated per SOP.

Laboratory Analytical Report

Client: **Shannon & Wilson, Inc.**
5430 Fairbanks St., Suite 3
Anchorage, AK 99518

Attn: **Haydar Turker**
T: (907)561-2120 F:(907)561-4483
HT@shanwil.com

Project: **32-1-17478 Chefornak BIA**

Workorder No.: **1124601**

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.

Steve Crupi

steven.crupi@sgs.com
Project Manager

Contents (Bookmarked in PDF):

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.

Client Name: Shannon & Wilson, Inc.
Project Name: 32-1-17478 Chefornak BIA
Workorder No.: 1124601

Analytical Methods

Method Description	Analytical Method
8270 PAH SIM Semi-Volatiles GC/MS	8270D SIMS (PAH)
AK101/8021 Combo. (S)	AK101
AK101/8021 Combo. (S)	SW8021B
Diesel/Residual Range Organics	AK102
Diesel/Residual Range Organics	AK103
Percent Solids SM2540G	SM21 2540G

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1124601001	17478-B1-2
1124601002	17478-B2-1
1124601003	17478-B3-1
1124601004	17478-B4-1
1124601005	17478-B5-2
1124601006	17478-B6-1
1124601007	17478-B7-1
1124601008	17478-B8-2
1124601009	17478-B9-1
1124601010	17478-B10-2
1124601011	17478-B11-1
1124601012	17478-B12-2
1124601013	17478-B13-1
1124601014	17478-B14-2
1124601015	17478-B15-1
1124601016	17478-B16-1
1124601017	17478-B17-1
1124601018	17478-B18-2
1124601019	17478-B19-2
1124601020	17478-B19-3
1124601021	17478-B20-2
1124601022	17478-B20-3
1124601023	17478-B21-2
1124601024	17478-B22-1
1124601025	17478-B23-1
1124601026	17478-B24-1
1124601027	17478-B25-1
1124601028	17478-B26-1
1124601029	17478-B27-1
1124601030	17478-B27-3
1124601031	17478-B28-1
1124601032	17478-B29-1
1124601033	17478-B30-1
1124601034	17478-TB1
1124601035	17478-TB2
1124601036	17478-TB3
1124601037	17478-TB4

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B1-2**

SGS Ref. #: 1124601001

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	114	mg/Kg
Benzene	35.8	ug/Kg
Toluene	1630	ug/Kg
Ethylbenzene	4080	ug/Kg
o-Xylene	14000	ug/Kg
P & M -Xylene	12400	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	14000	mg/Kg
Residual Range Organics	782	mg/Kg

Client Sample ID: **17478-B2-1**

SGS Ref. #: 1124601002

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	32.4	mg/Kg
Toluene	21.3J	ug/Kg
Ethylbenzene	42.6J	ug/Kg
o-Xylene	3980	ug/Kg
P & M -Xylene	648	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	8380	mg/Kg
Residual Range Organics	520	mg/Kg

Client Sample ID: **17478-B3-1**

SGS Ref. #: 1124601003

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.18J	mg/Kg
Toluene	25.2J	ug/Kg
Ethylbenzene	20.2J	ug/Kg
o-Xylene	184	ug/Kg
P & M -Xylene	92.7J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	122	mg/Kg
Residual Range Organics	605	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B4-1**

SGS Ref. #: 1124601004

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	1.83J	mg/Kg
o-Xylene	28.1J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	110	mg/Kg
Residual Range Organics	488	mg/Kg

Client Sample ID: **17478-B5-2**

SGS Ref. #: 1124601005

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	95.6J	mg/Kg
Residual Range Organics	597	mg/Kg

Client Sample ID: **17478-B6-1**

SGS Ref. #: 1124601006

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	11.3	mg/Kg
Toluene	35.9J	ug/Kg
Ethylbenzene	35.9J	ug/Kg
o-Xylene	75.4	ug/Kg
P & M -Xylene	104J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	238	mg/Kg
Residual Range Organics	843	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B7-1**

SGS Ref. #: 1124601007

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	46.7	mg/Kg
Toluene	22.1J	ug/Kg
Ethylbenzene	78.6	ug/Kg
o-Xylene	3760	ug/Kg
P & M -Xylene	618	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	12200	mg/Kg
Residual Range Organics	1060	mg/Kg
Polynuclear Aromatics GC/MS		
Naphthalene	1610	ug/Kg
2-Methylnaphthalene	9260	ug/Kg
1-Methylnaphthalene	34000	ug/Kg
Fluorene	841	ug/Kg
Phenanthrene	554J	ug/Kg
Fluoranthene	221	ug/Kg
Pyrene	200	ug/Kg
Benzo(a)Anthracene	27.8J	ug/Kg
Chrysene	37.1J	ug/Kg
Benzo[b]Fluoranthene	17.5J	ug/Kg

Client Sample ID: **17478-B8-2**

SGS Ref. #: 1124601008

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	161	mg/Kg
Benzene	26.8J	ug/Kg
Toluene	1620	ug/Kg
Ethylbenzene	3370	ug/Kg
o-Xylene	16000	ug/Kg
P & M -Xylene	12400	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	15500	mg/Kg
Residual Range Organics	838	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B9-1**

SGS Ref. #: 1124601009

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	22.8	mg/Kg
Toluene	31.5J	ug/Kg
Ethylbenzene	38.7J	ug/Kg
o-Xylene	1810	ug/Kg
P & M -Xylene	203	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	6120	mg/Kg
Residual Range Organics	613	mg/Kg

Client Sample ID: **17478-B10-2**

SGS Ref. #: 1124601010

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	2.56J	mg/Kg
Toluene	29.9J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	65.9	mg/Kg
Residual Range Organics	652	mg/Kg

Client Sample ID: **17478-B11-1**

SGS Ref. #: 1124601011

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	2.41J	mg/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	530	mg/Kg
Residual Range Organics	711	mg/Kg

Client Sample ID: **17478-B12-2**

SGS Ref. #: 1124601012

Parameter	Result	Units
Volatile Fuels Department		
Toluene	19.6J	ug/Kg
Ethylbenzene	19.0J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	64.6	mg/Kg
Residual Range Organics	543	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B13-1**
SGS Ref. #: 1124601013

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	1.71J	mg/Kg
o-Xylene	23.4J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	138	mg/Kg
Residual Range Organics	783	mg/Kg

Client Sample ID: **17478-B14-2**
SGS Ref. #: 1124601014

Parameter	Result	Units
Volatile Fuels Department		
Toluene	59.8J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	62.2	mg/Kg
Residual Range Organics	685	mg/Kg

Client Sample ID: **17478-B15-1**
SGS Ref. #: 1124601015

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	10.1	mg/Kg
Ethylbenzene	25.8J	ug/Kg
o-Xylene	244	ug/Kg
P & M -Xylene	108J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	1530	mg/Kg
Residual Range Organics	580	mg/Kg

Client Sample ID: **17478-B16-1**
SGS Ref. #: 1124601016

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	6.22J	mg/Kg
o-Xylene	95.8	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	1430	mg/Kg
Residual Range Organics	1530	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B17-1**
SGS Ref. #: 1124601017

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	4.20J	mg/Kg
Toluene	340	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	473	mg/Kg
Residual Range Organics	1520	mg/Kg

Client Sample ID: **17478-B18-2**
SGS Ref. #: 1124601018

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	179	mg/Kg
Residual Range Organics	698	mg/Kg

Client Sample ID: **17478-B19-2**
SGS Ref. #: 1124601019

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.08J	mg/Kg
Toluene	403	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	100	mg/Kg
Residual Range Organics	640	mg/Kg

Client Sample ID: **17478-B19-3**
SGS Ref. #: 1124601020

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	2.22J	mg/Kg
Toluene	180	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	92.6	mg/Kg
Residual Range Organics	745	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B20-2**

SGS Ref. #: 1124601021

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	31.4	mg/Kg
Toluene	44.2J	ug/Kg
Ethylbenzene	581	ug/Kg
o-Xylene	210	ug/Kg
P & M -Xylene	1130	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	2660	mg/Kg
Residual Range Organics	495	mg/Kg

Client Sample ID: **17478-B20-3**

SGS Ref. #: 1124601022

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	32.1	mg/Kg
Toluene	32.0J	ug/Kg
Ethylbenzene	574	ug/Kg
o-Xylene	213	ug/Kg
P & M -Xylene	1130	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	4930	mg/Kg
Residual Range Organics	552	mg/Kg

Client Sample ID: **17478-B21-2**

SGS Ref. #: 1124601023

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.76J	mg/Kg
Ethylbenzene	37.5J	ug/Kg
P & M -Xylene	65.9J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	71.1	mg/Kg
Residual Range Organics	386	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B22-1**

SGS Ref. #: 1124601024

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	7.48	mg/Kg
o-Xylene	171	ug/Kg
P & M -Xylene	58.5J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	1600	mg/Kg
Residual Range Organics	1130	mg/Kg

Client Sample ID: **17478-B23-1**

SGS Ref. #: 1124601025

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.08J	mg/Kg
o-Xylene	23.5J	ug/Kg
P & M -Xylene	45.0J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	422	mg/Kg
Residual Range Organics	732	mg/Kg

Client Sample ID: **17478-B24-1**

SGS Ref. #: 1124601026

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	1.59J	mg/Kg
Toluene	17.6J	ug/Kg
o-Xylene	22.5J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	165	mg/Kg
Residual Range Organics	777	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B25-1**

SGS Ref. #: 1124601027

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	9.35	mg/Kg
Toluene	32.9J	ug/Kg
Ethylbenzene	35.5J	ug/Kg
o-Xylene	534	ug/Kg
P & M -Xylene	294	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	871	mg/Kg
Residual Range Organics	827	mg/Kg
Polynuclear Aromatics GC/MS		
Naphthalene	461	ug/Kg
2-Methylnaphthalene	458	ug/Kg
1-Methylnaphthalene	1270	ug/Kg
Acenaphthene	847	ug/Kg
Fluorene	577	ug/Kg
Phenanthrene	1380	ug/Kg
Anthracene	273	ug/Kg
Fluoranthene	5820	ug/Kg
Pyrene	4460	ug/Kg
Benzo(a)Anthracene	701	ug/Kg
Chrysene	798	ug/Kg
Benzo[b]Fluoranthene	432	ug/Kg
Benzo[k]fluoranthene	155	ug/Kg
Benzo[a]pyrene	161	ug/Kg
Indeno[1,2,3-c,d] pyrene	52.3J	ug/Kg
Benzo[g,h,i]perylene	46.5J	ug/Kg

Client Sample ID: **17478-B26-1**

SGS Ref. #: 1124601028

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	9.35	mg/Kg
Ethylbenzene	22.8J	ug/Kg
o-Xylene	58.6	ug/Kg
P & M -Xylene	74.1J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	1140	mg/Kg
Residual Range Organics	779	mg/Kg

Detectable Results Summary

Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-B27-1**
SGS Ref. #: 1124601029

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	188	mg/Kg
Residual Range Organics	679	mg/Kg

Client Sample ID: **17478-B27-3**
SGS Ref. #: 1124601030

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	164	mg/Kg
Residual Range Organics	524	mg/Kg

Client Sample ID: **17478-B28-1**
SGS Ref. #: 1124601031

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.10J	mg/Kg
o-Xylene	29.3J	ug/Kg
P & M -Xylene	49.4J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	142	mg/Kg
Residual Range Organics	550	mg/Kg

Client Sample ID: **17478-B29-1**
SGS Ref. #: 1124601032

Parameter	Result	Units
Semivolatile Organic Fuels Department		
Diesel Range Organics	1220	mg/Kg
Residual Range Organics	459	mg/Kg

Client Sample ID: **17478-B30-1**
SGS Ref. #: 1124601033

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	2.11J	mg/Kg
Toluene	315	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	155	mg/Kg
Residual Range Organics	1090	mg/Kg

Client Sample ID: **17478-B1-2**
SGS Ref. #: 1124601001
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 62.7

Collection Date/Time: 09/19/12 09:30
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	35.8		32.5	10.4	ug/Kg	1	VFC11190	VXX24078	
Ethylbenzene	4080		65.1	20.3	ug/Kg	1	VFC11190	VXX24078	
Gasoline Range Organics	114		6.51	1.95	mg/Kg	1	VFC11190	VXX24078	
o-Xylene	14000		65.1	20.3	ug/Kg	1	VFC11190	VXX24078	
P & M -Xylene	12400		130	39.1	ug/Kg	1	VFC11190	VXX24078	
Toluene	1630		65.1	20.3	ug/Kg	1	VFC11190	VXX24078	
1,4-Difluorobenzene <surr>	95.6		72-119		%	1	VFC11190	VXX24078	
4-Bromofluorobenzene <surr>	283	*	50-150		%	1	VFC11190	VXX24078	

Batch Information

Analytical Batch: VFC11190
Analytical Method: AK101
Analysis Date/Time: 09/27/12 18:08
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 09:30

Initial Prep Wt./Vol.: 56.318 g
Prep Extract Vol.: 45.9907 mL
Container ID:1124601001-B
Analyst: HM

Analytical Batch: VFC11190
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 18:08
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 09:30

Initial Prep Wt./Vol.: 56.318 g
Prep Extract Vol.: 45.9907 mL
Container ID:1124601001-B
Analyst: HM

Client Sample ID: **17478-B1-2**
SGS Ref. #: 1124601001
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 62.7

Collection Date/Time: 09/19/12 09:30
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	14000		633	196	mg/Kg	20	XFC10632	XXX28112	
Residual Range Organics	782		31.7	9.81	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	0	*	50-150		%	20	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	76.7		50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 00:15
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.212 g
Prep Extract Vol.: 1 mL
Container ID:1124601001-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 01:14
Dilution Factor: 20

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.212 g
Prep Extract Vol.: 1 mL
Container ID:1124601001-A
Analyst: MEM

Client Sample ID: **17478-B1-2**
SGS Ref. #: 1124601001
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 62.7

Collection Date/Time: 09/19/12 09:30
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	62.7			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601001-A
Analyst: CNP

Client Sample ID: **17478-B2-1**
SGS Ref. #: 1124601002
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.1

Collection Date/Time: 09/19/12 09:44
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	20.0 U	31.3	10.0	ug/Kg	1	VFC11190	VXX24078	
Ethylbenzene	42.6J	62.6	19.5	ug/Kg	1	VFC11190	VXX24078	
Gasoline Range Organics	32.4	6.26	1.88	mg/Kg	1	VFC11190	VXX24078	
o-Xylene	3980	62.6	19.5	ug/Kg	1	VFC11190	VXX24078	
P & M -Xylene	648	125	37.6	ug/Kg	1	VFC11190	VXX24078	
Toluene	21.3J	62.6	19.5	ug/Kg	1	VFC11190	VXX24078	
1,4-Difluorobenzene <surr>	95.9	72-119		%	1	VFC11190	VXX24078	
4-Bromofluorobenzene <surr>	110	50-150		%	1	VFC11190	VXX24078	

Batch Information

Analytical Batch: VFC11190
Analytical Method: AK101
Analysis Date/Time: 09/27/12 18:26
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 09:44

Initial Prep Wt./Vol.: 66.454 g
Prep Extract Vol.: 50.856 mL
Container ID:1124601002-B
Analyst: HM

Analytical Batch: VFC11190
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 18:26
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 09:44

Initial Prep Wt./Vol.: 66.454 g
Prep Extract Vol.: 50.856 mL
Container ID:1124601002-B
Analyst: HM

Client Sample ID: **17478-B2-1**
SGS Ref. #: 1124601002
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.1

Collection Date/Time: 09/19/12 09:44
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	8380		645	200	mg/Kg	20	XFC10632	XXX28112	
Residual Range Organics	520		32.2	9.99	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	0	*	50-150		%	20	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	72.3		50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 00:36
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.465 g
Prep Extract Vol.: 1 mL
Container ID:1124601002-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 00:43
Dilution Factor: 20

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.465 g
Prep Extract Vol.: 1 mL
Container ID:1124601002-A
Analyst: MEM

Client Sample ID: **17478-B2-1**
SGS Ref. #: 1124601002
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.1

Collection Date/Time: 09/19/12 09:44
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	61.1			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601002-A
Analyst: CNP

Client Sample ID: **17478-B3-1**
SGS Ref. #: 1124601003
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.1

Collection Date/Time: 09/19/12 10:01
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	20.2 U	31.5	10.1	ug/Kg	1	VFC11190	VXX24078	
Ethylbenzene	20.2J	63.1	19.7	ug/Kg	1	VFC11190	VXX24078	
Gasoline Range Organics	3.18J	6.31	1.89	mg/Kg	1	VFC11190	VXX24078	
o-Xylene	184	63.1	19.7	ug/Kg	1	VFC11190	VXX24078	
P & M -Xylene	92.7J	126	37.8	ug/Kg	1	VFC11190	VXX24078	
Toluene	25.2J	63.1	19.7	ug/Kg	1	VFC11190	VXX24078	
1,4-Difluorobenzene <surr>	92.4	72-119		%	1	VFC11190	VXX24078	
4-Bromofluorobenzene <surr>	108	50-150		%	1	VFC11190	VXX24078	

Batch Information

Analytical Batch: VFC11190
Analytical Method: AK101
Analysis Date/Time: 09/27/12 18:45
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 10:01

Initial Prep Wt./Vol.: 55.511 g
Prep Extract Vol.: 44.9066 mL
Container ID:1124601003-B
Analyst: HM

Analytical Batch: VFC11190
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 18:45
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 10:01

Initial Prep Wt./Vol.: 55.511 g
Prep Extract Vol.: 44.9066 mL
Container ID:1124601003-B
Analyst: HM

Client Sample ID: **17478-B3-1**
SGS Ref. #: 1124601003
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.1

Collection Date/Time: 09/19/12 10:01
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	122	30.7	9.53	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	605	30.7	9.53	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	76.6	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	81.2	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 00:46
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.439 g
Prep Extract Vol.: 1 mL
Container ID:1124601003-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 00:46
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.439 g
Prep Extract Vol.: 1 mL
Container ID:1124601003-A
Analyst: EAB

Client Sample ID: **17478-B3-1**
SGS Ref. #: 1124601003
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.1

Collection Date/Time: 09/19/12 10:01
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	64.1			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601003-A
Analyst: CNP

Client Sample ID: **17478-B4-1**
SGS Ref. #: 1124601004
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 67.6

Collection Date/Time: 09/19/12 10:16
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	19.1 U	29.9	9.57	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	37.4 U	59.8	18.7	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	1.83J	5.98	1.79	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	28.1J	59.8	18.7	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	71.8 U	120	35.9	ug/Kg	1	VFC11189	VXX24077	
Toluene	37.4 U	59.8	18.7	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	89	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	82.9	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 21:28
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 10:16

Initial Prep Wt./Vol.: 51.641 g
Prep Extract Vol.: 41.7466 mL
Container ID:1124601004-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 21:28
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 10:16

Initial Prep Wt./Vol.: 51.641 g
Prep Extract Vol.: 41.7466 mL
Container ID:1124601004-B
Analyst: HM

Client Sample ID: **17478-B4-1**
SGS Ref. #: 1124601004
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 67.6

Collection Date/Time: 09/19/12 10:16
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	110	29.1	9.03	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	488	29.1	9.03	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	81.7	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	81.8	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 01:06
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.468 g
Prep Extract Vol.: 1 mL
Container ID:1124601004-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 01:06
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.468 g
Prep Extract Vol.: 1 mL
Container ID:1124601004-A
Analyst: EAB

Client Sample ID: **17478-B4-1**
SGS Ref. #: 1124601004
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 67.6

Collection Date/Time: 09/19/12 10:16
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	67.6			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601004-A
Analyst: CNP

Client Sample ID: **17478-B5-2**
SGS Ref. #: 1124601005
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.4

Collection Date/Time: 09/19/12 10:36
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	19.7 U	30.9	9.87	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	38.6 U	61.7	19.3	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	3.70 U	6.17	1.85	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	38.6 U	61.7	19.3	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	74.0 U	123	37.0	ug/Kg	1	VFC11189	VXX24077	
Toluene	38.6 U	61.7	19.3	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	89.9	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	61.5	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 21:46
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 10:36

Initial Prep Wt./Vol.: 54.336 g
Prep Extract Vol.: 43.827 mL
Container ID:1124601005-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 21:46
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 10:36

Initial Prep Wt./Vol.: 54.336 g
Prep Extract Vol.: 43.827 mL
Container ID:1124601005-B
Analyst: HM

Client Sample ID: **17478-B5-2**
SGS Ref. #: 1124601005
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.4

Collection Date/Time: 09/19/12 10:36
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	95.6J	122	37.8	mg/Kg	4	XFC10627	XXX28112	
Residual Range Organics	597	122	37.8	mg/Kg	4	XFC10627	XXX28112	
5a Androstane <surr>	72.6	50-150		%	4	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	80.9	50-150		%	4	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 04:48
Dilution Factor: 4

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.126 g
Prep Extract Vol.: 1 mL
Container ID:1124601005-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 04:48
Dilution Factor: 4

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.126 g
Prep Extract Vol.: 1 mL
Container ID:1124601005-A
Analyst: EAB

Client Sample ID: **17478-B5-2**
SGS Ref. #: 1124601005
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.4

Collection Date/Time: 09/19/12 10:36
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	65.4			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601005-A
Analyst: CNP

Client Sample ID: **17478-B6-1**
SGS Ref. #: 1124601006
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 66.0

Collection Date/Time: 09/19/12 11:00
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	19.8 U	30.9	9.89	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	35.9J	61.8	19.3	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	11.3	6.18	1.85	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	75.4	61.8	19.3	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	104J	124	37.1	ug/Kg	1	VFC11189	VXX24077	
Toluene	35.9J	61.8	19.3	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	91.4	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	122	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 22:05
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:00

Initial Prep Wt./Vol.: 52.486 g
Prep Extract Vol.: 42.8419 mL
Container ID:1124601006-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 22:05
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:00

Initial Prep Wt./Vol.: 52.486 g
Prep Extract Vol.: 42.8419 mL
Container ID:1124601006-B
Analyst: HM

Client Sample ID: **17478-B6-1**
SGS Ref. #: 1124601006
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 66.0

Collection Date/Time: 09/19/12 11:00
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	238	30.2	9.35	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	843	30.2	9.35	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	64.8	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	72.5	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 01:16
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.14 g
Prep Extract Vol.: 1 mL
Container ID:1124601006-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 01:16
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.14 g
Prep Extract Vol.: 1 mL
Container ID:1124601006-A
Analyst: EAB

Client Sample ID: **17478-B6-1**
SGS Ref. #: 1124601006
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 66.0

Collection Date/Time: 09/19/12 11:00
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	66.0			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601006-A
Analyst: CNP

Client Sample ID: **17478-B7-1**
SGS Ref. #: 1124601007
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.9

Collection Date/Time: 09/19/12 11:14
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	20.8 U		32.5	10.4	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	78.6		65.0	20.3	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	46.7		6.50	1.95	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	3760		65.0	20.3	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	618		130	39.0	ug/Kg	1	VFC11189	VXX24077	
Toluene	22.1J		65.0	20.3	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	92		72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	175	*	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 22:23
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:14

Initial Prep Wt./Vol.: 59.103 g
Prep Extract Vol.: 47.5318 mL
Container ID:1124601007-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 22:23
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:14

Initial Prep Wt./Vol.: 59.103 g
Prep Extract Vol.: 47.5318 mL
Container ID:1124601007-B
Analyst: HM

Client Sample ID: **17478-B7-1**
SGS Ref. #: 1124601007
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.9

Collection Date/Time: 09/19/12 11:14
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	12200		643	199	mg/Kg	20	XFC10632	XXX28112	
Residual Range Organics	1060		32.2	9.97	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	0	*	50-150		%	20	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	75.7		50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 01:26
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.149 g
Prep Extract Vol.: 1 mL
Container ID:1124601007-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 01:24
Dilution Factor: 20

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.149 g
Prep Extract Vol.: 1 mL
Container ID:1124601007-A
Analyst: MEM

Client Sample ID: **17478-B7-1**
SGS Ref. #: 1124601007
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.9

Collection Date/Time: 09/19/12 11:14
Receipt Date/Time: 09/24/12 15:22

Polynuclear Aromatics GC/MS

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
1-Methylnaphthalene	34000		8040	2410	ug/Kg	1000	XMS7017	XXX28155	
2-Methylnaphthalene	9260		804	241	ug/Kg	100	XMS7013	XXX28155	
Acenaphthene	482 U		804	241	ug/Kg	100	XMS7013	XXX28155	
Acenaphthylene	482 U		804	241	ug/Kg	100	XMS7013	XXX28155	
Anthracene	482 U		804	241	ug/Kg	100	XMS7013	XXX28155	
Benzo(a)Anthracene	27.8J		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Benzo[a]pyrene	24.2 U		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Benzo[b]Fluoranthene	17.5J		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Benzo[g,h,i]perylene	24.2 U		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Benzo[k]fluoranthene	24.2 U		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Chrysene	37.1J		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Dibenzo[a,h]anthracene	24.2 U		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Fluoranthene	221		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Fluorene	841		804	241	ug/Kg	100	XMS7013	XXX28155	
Indeno[1,2,3-c,d] pyrene	24.2 U		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
Naphthalene	1610		804	241	ug/Kg	100	XMS7013	XXX28155	
Phenanthrene	554J		804	241	ug/Kg	100	XMS7013	XXX28155	
Pyrene	200		40.2	12.1	ug/Kg	5	XMS7012	XXX28155	
2-Fluorobiphenyl <surr>	165	*	45-105		%	100	XMS7013	XXX28155	
Terphenyl-d14 <surr>	85.6		30-125		%	5	XMS7012	XXX28155	

Batch Information

Analytical Batch: XMS7012
Analytical Method: 8270D SIMS (PAH)
Analysis Date/Time: 10/07/12 01:00
Dilution Factor: 5
Prep Batch: XXX28155
Prep Method: SW3550C
Prep Date/Time: 10/03/12 10:40
Initial Prep Wt./Vol.: 22.625 g
Prep Extract Vol.: 1 mL
Container ID:1124601007-A
Analyst: RTS

Analytical Batch: XMS7013
Analytical Method: 8270D SIMS (PAH)
Analysis Date/Time: 10/08/12 01:53
Dilution Factor: 100
Prep Batch: XXX28155
Prep Method: SW3550C
Prep Date/Time: 10/03/12 10:40
Initial Prep Wt./Vol.: 22.625 g
Prep Extract Vol.: 1 mL
Container ID:1124601007-A
Analyst: RTS

Analytical Batch: XMS7017
Analytical Method: 8270D SIMS (PAH)
Analysis Date/Time: 10/08/12 19:04
Dilution Factor: 1000
Prep Batch: XXX28155
Prep Method: SW3550C
Prep Date/Time: 10/03/12 10:40
Initial Prep Wt./Vol.: 22.625 g
Prep Extract Vol.: 1 mL
Container ID:1124601007-A
Analyst: RTS

Client Sample ID: **17478-B7-1**
SGS Ref. #: 1124601007
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.9

Collection Date/Time: 09/19/12 11:14
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	61.9			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601007-A
Analyst: CNP

Client Sample ID: **17478-B8-2**
SGS Ref. #: 1124601008
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 60.3

Collection Date/Time: 09/19/12 11:34
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	26.8J		39.4	12.6	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	3370		78.8	24.6	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	161		7.88	2.36	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	16000		78.8	24.6	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	12400		158	47.3	ug/Kg	1	VFC11189	VXX24077	
Toluene	1620		78.8	24.6	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	91		72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	299	*	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 22:42
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:34

Initial Prep Wt./Vol.: 45.14 g
Prep Extract Vol.: 42.9086 mL
Container ID:1124601008-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 22:42
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:34

Initial Prep Wt./Vol.: 45.14 g
Prep Extract Vol.: 42.9086 mL
Container ID:1124601008-B
Analyst: HM

Client Sample ID: **17478-B8-2**
SGS Ref. #: 1124601008
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 60.3

Collection Date/Time: 09/19/12 11:34
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	15500		658	204	mg/Kg	20	XFC10632	XXX28112	
Residual Range Organics	838		32.9	10.2	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	0	*	50-150		%	20	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	82.5		50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 01:36
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.23 g
Prep Extract Vol.: 1 mL
Container ID:1124601008-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 01:34
Dilution Factor: 20

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.23 g
Prep Extract Vol.: 1 mL
Container ID:1124601008-A
Analyst: MEM

Client Sample ID: **17478-B8-2**
SGS Ref. #: 1124601008
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 60.3

Collection Date/Time: 09/19/12 11:34
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	60.3			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL

Container ID:1124601008-A
Analyst: CNP

Client Sample ID: **17478-B9-1**
SGS Ref. #: 1124601009
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.4

Collection Date/Time: 09/19/12 11:40
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	16.5 U	25.8	8.25	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	38.7J	51.6	16.1	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	22.8	5.16	1.55	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	1810	51.6	16.1	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	203	103	30.9	ug/Kg	1	VFC11189	VXX24077	
Toluene	31.5J	51.6	16.1	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	87.5	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	137	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 00:13
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:40

Initial Prep Wt./Vol.: 64.176 g
Prep Extract Vol.: 45.2763 mL
Container ID:1124601009-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 00:13
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:40

Initial Prep Wt./Vol.: 64.176 g
Prep Extract Vol.: 45.2763 mL
Container ID:1124601009-B
Analyst: HM

Client Sample ID: **17478-B9-1**
SGS Ref. #: 1124601009
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.4

Collection Date/Time: 09/19/12 11:40
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	6120		576	178	mg/Kg	20	XFC10632	XXX28112	
Residual Range Organics	613		28.8	8.92	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	0	*	50-150		%	20	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	88.5		50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 01:56
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.478 g
Prep Extract Vol.: 1 mL
Container ID:1124601009-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 00:33
Dilution Factor: 20

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.478 g
Prep Extract Vol.: 1 mL
Container ID:1124601009-A
Analyst: MEM

Client Sample ID: **17478-B9-1**
SGS Ref. #: 1124601009
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.4

Collection Date/Time: 09/19/12 11:40
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	68.4			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601009-A
Analyst: CNP

Client Sample ID: **17478-B10-2**
SGS Ref. #: 1124601010
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 59.2

Collection Date/Time: 09/19/12 11:56
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	25.8 U	40.4	12.9	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	50.4 U	80.9	25.2	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	2.56J	8.09	2.43	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	50.4 U	80.9	25.2	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	97.0 U	162	48.5	ug/Kg	1	VFC11189	VXX24077	
Toluene	29.9J	80.9	25.2	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	92.7	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	70.5	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 00:32
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:56

Initial Prep Wt./Vol.: 45.428 g
Prep Extract Vol.: 43.5199 mL
Container ID:1124601010-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 00:32
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 11:56

Initial Prep Wt./Vol.: 45.428 g
Prep Extract Vol.: 43.5199 mL
Container ID:1124601010-B
Analyst: HM

Client Sample ID: **17478-B10-2**
SGS Ref. #: 1124601010
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 59.2

Collection Date/Time: 09/19/12 11:56
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	65.9	33.3	10.3	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	652	33.3	10.3	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	80.2	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	80.6	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 02:06
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.432 g
Prep Extract Vol.: 1 mL
Container ID:1124601010-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 02:06
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.432 g
Prep Extract Vol.: 1 mL
Container ID:1124601010-A
Analyst: EAB

Client Sample ID: **17478-B10-2**
SGS Ref. #: 1124601010
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 59.2

Collection Date/Time: 09/19/12 11:56
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	59.2			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601010-A
Analyst: CNP

Client Sample ID: **17478-B11-1**
SGS Ref. #: 1124601011
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.5

Collection Date/Time: 09/19/12 12:49
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	16.7 U	26.1	8.34	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	32.6 U	52.1	16.3	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	2.41J	5.21	1.56	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	32.6 U	52.1	16.3	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	62.6 U	104	31.3	ug/Kg	1	VFC11189	VXX24077	
Toluene	32.6 U	52.1	16.3	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	92.8	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	100	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 00:50
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 12:49

Initial Prep Wt./Vol.: 62.583 g
Prep Extract Vol.: 44.7059 mL
Container ID:1124601011-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 00:50
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 12:49

Initial Prep Wt./Vol.: 62.583 g
Prep Extract Vol.: 44.7059 mL
Container ID:1124601011-B
Analyst: HM

Client Sample ID: **17478-B11-1**
SGS Ref. #: 1124601011
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.5

Collection Date/Time: 09/19/12 12:49
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	530	29.0	9.01	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	711	29.0	9.01	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	83.1	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	90.7	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 02:17
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.147 g
Prep Extract Vol.: 1 mL
Container ID:1124601011-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 02:17
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.147 g
Prep Extract Vol.: 1 mL
Container ID:1124601011-A
Analyst: EAB

Client Sample ID: **17478-B11-1**
SGS Ref. #: 1124601011
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.5

Collection Date/Time: 09/19/12 12:49
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	68.5			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601011-A
Analyst: CNP

Client Sample ID: **17478-B12-2**
SGS Ref. #: 1124601012
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.2

Collection Date/Time: 09/19/12 13:08
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	18.4 U	28.8	9.21	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	19.0J	57.5	18.0	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	3.46 U	5.75	1.73	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	36.0 U	57.5	18.0	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	69.0 U	115	34.5	ug/Kg	1	VFC11189	VXX24077	
Toluene	19.6J	57.5	18.0	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	90	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	77.1	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 01:08
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:08

Initial Prep Wt./Vol.: 62.04 g
Prep Extract Vol.: 46.5738 mL
Container ID:1124601012-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 01:08
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:08

Initial Prep Wt./Vol.: 62.04 g
Prep Extract Vol.: 46.5738 mL
Container ID:1124601012-B
Analyst: HM

Client Sample ID: **17478-B12-2**
SGS Ref. #: 1124601012
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.2

Collection Date/Time: 09/19/12 13:08
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	64.6	30.3	9.38	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	543	30.3	9.38	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	80.5	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	81.7	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 02:27
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.405 g
Prep Extract Vol.: 1 mL
Container ID:1124601012-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 02:27
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.405 g
Prep Extract Vol.: 1 mL
Container ID:1124601012-A
Analyst: EAB

Client Sample ID: **17478-B12-2**
SGS Ref. #: 1124601012
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.2

Collection Date/Time: 09/19/12 13:08
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	65.2			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601012-A
Analyst: CNP

Client Sample ID: **17478-B13-1**
SGS Ref. #: 1124601013
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 13:13
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	16.3 U	25.5	8.15	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	31.8 U	50.9	15.9	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	1.71J	5.09	1.53	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	23.4J	50.9	15.9	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	61.2 U	102	30.6	ug/Kg	1	VFC11189	VXX24077	
Toluene	31.8 U	50.9	15.9	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	91	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	98.1	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 01:27
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:13

Initial Prep Wt./Vol.: 60.711 g
Prep Extract Vol.: 43.2487 mL
Container ID:1124601013-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 01:27
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:13

Initial Prep Wt./Vol.: 60.711 g
Prep Extract Vol.: 43.2487 mL
Container ID:1124601013-B
Analyst: HM

Client Sample ID: **17478-B13-1**
SGS Ref. #: 1124601013
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 13:13
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	138	28.4	8.81	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	783	28.4	8.81	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	84.3	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	89.8	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 02:37
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.186 g
Prep Extract Vol.: 1 mL
Container ID:1124601013-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 02:37
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.186 g
Prep Extract Vol.: 1 mL
Container ID:1124601013-A
Analyst: EAB

Client Sample ID: **17478-B13-1**
SGS Ref. #: 1124601013
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 13:13
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	69.9			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601013-A
Analyst: CNP

Client Sample ID: **17478-B14-2**
SGS Ref. #: 1124601014
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 13:44
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	21.2 U	33.2	10.6	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	41.4 U	66.5	20.7	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	3.98 U	6.65	1.99	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	41.4 U	66.5	20.7	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	79.8 U	133	39.9	ug/Kg	1	VFC11189	VXX24077	
Toluene	59.8J	66.5	20.7	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	92.1	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	79.2	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 01:45
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:44

Initial Prep Wt./Vol.: 53.121 g
Prep Extract Vol.: 44.5857 mL
Container ID:1124601014-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 01:45
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:44

Initial Prep Wt./Vol.: 53.121 g
Prep Extract Vol.: 44.5857 mL
Container ID:1124601014-B
Analyst: HM

Client Sample ID: **17478-B14-2**
SGS Ref. #: 1124601014
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 13:44
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	62.2	31.6	9.81	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	685	31.6	9.81	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	81	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	81.5	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 03:17
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.04 g
Prep Extract Vol.: 1 mL
Container ID:1124601014-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 03:17
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.04 g
Prep Extract Vol.: 1 mL
Container ID:1124601014-A
Analyst: EAB

Client Sample ID: **17478-B14-2**
SGS Ref. #: 1124601014
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 13:44
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.1			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601014-A
Analyst: CNP

Client Sample ID: **17478-B15-1**
SGS Ref. #: 1124601015
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.6

Collection Date/Time: 09/19/12 13:50
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	22.2 U	34.8	11.1	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	25.8J	69.6	21.7	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	10.1	6.96	2.09	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	244	69.6	21.7	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	108J	139	41.8	ug/Kg	1	VFC11189	VXX24077	
Toluene	43.4 U	69.6	21.7	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	91.6	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	105	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 02:03
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:50

Initial Prep Wt./Vol.: 45.811 g
Prep Extract Vol.: 41.216 mL
Container ID:1124601015-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 02:03
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 13:50

Initial Prep Wt./Vol.: 45.811 g
Prep Extract Vol.: 41.216 mL
Container ID:1124601015-B
Analyst: HM

Client Sample ID: **17478-B15-1**
SGS Ref. #: 1124601015
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.6

Collection Date/Time: 09/19/12 13:50
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	1530	122	37.8	mg/Kg	4	XFC10632	XXX28112	
Residual Range Organics	580	30.5	9.44	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	90.3	50-150		%	4	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	84.1	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 03:27
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.497 g
Prep Extract Vol.: 1 mL
Container ID:1124601015-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 03:26
Dilution Factor: 4

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.497 g
Prep Extract Vol.: 1 mL
Container ID:1124601015-A
Analyst: MEM

Client Sample ID: **17478-B15-1**
SGS Ref. #: 1124601015
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.6

Collection Date/Time: 09/19/12 13:50
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	64.6			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL

Container ID:1124601015-A
Analyst: CNP

Client Sample ID: **17478-B16-1**
SGS Ref. #: 1124601016
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 56.6

Collection Date/Time: 09/19/12 14:15
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	25.0 U	38.9	12.5	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	48.6 U	77.9	24.3	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	6.22J	7.79	2.34	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	95.8	77.9	24.3	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	93.4 U	156	46.7	ug/Kg	1	VFC11189	VXX24077	
Toluene	48.6 U	77.9	24.3	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	90.4	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	82.6	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 02:22
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 14:15

Initial Prep Wt./Vol.: 55.991 g
Prep Extract Vol.: 49.3208 mL
Container ID:1124601016-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 02:22
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 14:15

Initial Prep Wt./Vol.: 55.991 g
Prep Extract Vol.: 49.3208 mL
Container ID:1124601016-B
Analyst: HM

Client Sample ID: **17478-B16-1**
SGS Ref. #: 1124601016
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 56.6

Collection Date/Time: 09/19/12 14:15
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	1430	140	43.5	mg/Kg	4	XFC10632	XXX28112	
Residual Range Organics	1530	140	43.5	mg/Kg	4	XFC10632	XXX28112	
5a Androstane <surr>	104	50-150		%	4	XFC10632	XXX28112	
n-Triacontane-d62 <surr>	87.3	50-150		%	4	XFC10632	XXX28112	

Batch Information

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 03:36
Dilution Factor: 4

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.228 g
Prep Extract Vol.: 1 mL
Container ID:1124601016-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK103
Analysis Date/Time: 10/03/12 03:36
Dilution Factor: 4

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.228 g
Prep Extract Vol.: 1 mL
Container ID:1124601016-A
Analyst: MEM

Client Sample ID: **17478-B16-1**
SGS Ref. #: 1124601016
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 56.6

Collection Date/Time: 09/19/12 14:15
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	56.6			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601016-A
Analyst: CNP

Client Sample ID: **17478-B17-1**
SGS Ref. #: 1124601017
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 53.6

Collection Date/Time: 09/19/12 14:37
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	29.2 U	45.5	14.6	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	56.8 U	91.0	28.4	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	4.20J	9.10	2.73	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	56.8 U	91.0	28.4	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	109 U	182	54.6	ug/Kg	1	VFC11189	VXX24077	
Toluene	340	91.0	28.4	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	87.8	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	102	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 02:40
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 14:37

Initial Prep Wt./Vol.: 48.934 g
Prep Extract Vol.: 47.7179 mL
Container ID:1124601017-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 02:40
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 14:37

Initial Prep Wt./Vol.: 48.934 g
Prep Extract Vol.: 47.7179 mL
Container ID:1124601017-B
Analyst: HM

Client Sample ID: **17478-B17-1**
SGS Ref. #: 1124601017
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 53.6

Collection Date/Time: 09/19/12 14:37
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	473	37.0	11.5	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	1520	148	45.8	mg/Kg	4	XFC10632	XXX28112	
5a Androstane <surr>	74	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	94.6	50-150		%	4	XFC10632	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 03:58
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.295 g
Prep Extract Vol.: 1 mL
Container ID:1124601017-A
Analyst: EAB

Analytical Batch: XFC10632
Analytical Method: AK103
Analysis Date/Time: 10/03/12 03:46
Dilution Factor: 4

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.295 g
Prep Extract Vol.: 1 mL
Container ID:1124601017-A
Analyst: MEM

Client Sample ID: **17478-B17-1**
SGS Ref. #: 1124601017
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 53.6

Collection Date/Time: 09/19/12 14:37
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	53.6			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601017-A
Analyst: CNP

Client Sample ID: **17478-B18-2**
SGS Ref. #: 1124601018
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.3

Collection Date/Time: 09/19/12 14:56
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	16.2 U	25.3	8.11	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	31.6 U	50.7	15.8	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	3.04 U	5.07	1.52	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	31.6 U	50.7	15.8	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	60.8 U	101	30.4	ug/Kg	1	VFC11189	VXX24077	
Toluene	31.6 U	50.7	15.8	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	89.9	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	87.1	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/28/12 02:58
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 14:56

Initial Prep Wt./Vol.: 60.279 g
Prep Extract Vol.: 42.9218 mL
Container ID:1124601018-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 02:58
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 14:56

Initial Prep Wt./Vol.: 60.279 g
Prep Extract Vol.: 42.9218 mL
Container ID:1124601018-B
Analyst: HM

Client Sample ID: **17478-B18-2**
SGS Ref. #: 1124601018
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.3

Collection Date/Time: 09/19/12 14:56
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	179	28.2	8.74	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	698	28.2	8.74	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	93	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	91.3	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 04:08
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.29 g
Prep Extract Vol.: 1 mL
Container ID:1124601018-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 04:08
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.29 g
Prep Extract Vol.: 1 mL
Container ID:1124601018-A
Analyst: EAB

Client Sample ID: **17478-B18-2**
SGS Ref. #: 1124601018
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.3

Collection Date/Time: 09/19/12 14:56
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	70.3			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601018-A
Analyst: CNP

Client Sample ID: **17478-B19-2**
SGS Ref. #: 1124601019
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.7

Collection Date/Time: 09/19/12 15:13
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	23.8 U	37.1	11.9	ug/Kg	1	VFC11190	VXX24078	
Ethylbenzene	46.2 U	74.2	23.1	ug/Kg	1	VFC11190	VXX24078	
Gasoline Range Organics	3.08J	7.42	2.22	mg/Kg	1	VFC11190	VXX24078	
o-Xylene	46.2 U	74.2	23.1	ug/Kg	1	VFC11190	VXX24078	
P & M -Xylene	89.0 U	148	44.5	ug/Kg	1	VFC11190	VXX24078	
Toluene	403	74.2	23.1	ug/Kg	1	VFC11190	VXX24078	
1,4-Difluorobenzene <surr>	92.6	72-119		%	1	VFC11190	VXX24078	
4-Bromofluorobenzene <surr>	85	50-150		%	1	VFC11190	VXX24078	

Batch Information

Analytical Batch: VFC11190
Analytical Method: AK101
Analysis Date/Time: 09/27/12 19:03
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:13

Initial Prep Wt./Vol.: 42.956 g
Prep Extract Vol.: 40.5899 mL
Container ID:1124601019-B
Analyst: HM

Analytical Batch: VFC11190
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 19:03
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:13

Initial Prep Wt./Vol.: 42.956 g
Prep Extract Vol.: 40.5899 mL
Container ID:1124601019-B
Analyst: HM

Client Sample ID: **17478-B19-2**
SGS Ref. #: 1124601019
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.7

Collection Date/Time: 09/19/12 15:13
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	100	31.2	9.66	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	640	31.2	9.66	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	78.1	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	81.6	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 04:18
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.214 g
Prep Extract Vol.: 1 mL
Container ID:1124601019-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 04:18
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.214 g
Prep Extract Vol.: 1 mL
Container ID:1124601019-A
Analyst: EAB

Client Sample ID: **17478-B19-2**
SGS Ref. #: 1124601019
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.7

Collection Date/Time: 09/19/12 15:13
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.7			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601019-A
Analyst: CNP

Client Sample ID: **17478-B19-3**
SGS Ref. #: 1124601020
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.0

Collection Date/Time: 09/19/12 15:18
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	21.6 U	33.8	10.8	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	42.2 U	67.6	21.1	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	2.22J	6.76	2.03	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	42.2 U	67.6	21.1	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	81.2 U	135	40.6	ug/Kg	1	VFC11189	VXX24077	
Toluene	180	67.6	21.1	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	90.2	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	78.8	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 19:56
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:18

Initial Prep Wt./Vol.: 51.818 g
Prep Extract Vol.: 44.154 mL
Container ID:1124601020-B
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 19:56
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:18

Initial Prep Wt./Vol.: 51.818 g
Prep Extract Vol.: 44.154 mL
Container ID:1124601020-B
Analyst: HM

Client Sample ID: **17478-B19-3**
SGS Ref. #: 1124601020
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.0

Collection Date/Time: 09/19/12 15:18
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	92.6	31.3	9.70	mg/Kg	1	XFC10627	XXX28112	
Residual Range Organics	745	31.3	9.70	mg/Kg	1	XFC10627	XXX28112	
5a Androstane <surr>	84.4	50-150		%	1	XFC10627	XXX28112	
n-Triacontane-d62 <surr>	88.3	50-150		%	1	XFC10627	XXX28112	

Batch Information

Analytical Batch: XFC10627
Analytical Method: AK102
Analysis Date/Time: 09/30/12 04:28
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.419 g
Prep Extract Vol.: 1 mL
Container ID:1124601020-A
Analyst: EAB

Analytical Batch: XFC10627
Analytical Method: AK103
Analysis Date/Time: 09/30/12 04:28
Dilution Factor: 1

Prep Batch: XXX28112
Prep Method: SW3550C
Prep Date/Time: 09/28/12 15:25

Initial Prep Wt./Vol.: 30.419 g
Prep Extract Vol.: 1 mL
Container ID:1124601020-A
Analyst: EAB

Client Sample ID: **17478-B19-3**
SGS Ref. #: 1124601020
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.0

Collection Date/Time: 09/19/12 15:18
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.0			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601020-A
Analyst: CNP

Client Sample ID: **17478-B20-2**
SGS Ref. #: 1124601021
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.2

Collection Date/Time: 09/19/12 15:40
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	21.4 U		33.5	10.7	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	581		66.9	20.9	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	31.4		6.69	2.01	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	210		66.9	20.9	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	1130		134	40.2	ug/Kg	1	VFC11193	VXX24084	
Toluene	44.2J		66.9	20.9	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	91.2		72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	168	*	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 01:01
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:40

Initial Prep Wt./Vol.: 52.283 g
Prep Extract Vol.: 44.2395 mL
Container ID:1124601021-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 01:01
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:40

Initial Prep Wt./Vol.: 52.283 g
Prep Extract Vol.: 44.2395 mL
Container ID:1124601021-B
Analyst: HM

Client Sample ID: **17478-B20-2**
SGS Ref. #: 1124601021
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.2

Collection Date/Time: 09/19/12 15:40
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	2660	126	39.0	mg/Kg	4	XFC10632	XXX28117	
Residual Range Organics	495	31.4	9.75	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	92	50-150		%	4	XFC10632	XXX28117	
n-Triacontane-d62 <surr>	69.9	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 14:41
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.198 g
Prep Extract Vol.: 1 mL
Container ID:1124601021-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 05:38
Dilution Factor: 4

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.198 g
Prep Extract Vol.: 1 mL
Container ID:1124601021-A
Analyst: MEM

Client Sample ID: **17478-B20-2**
SGS Ref. #: 1124601021
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.2

Collection Date/Time: 09/19/12 15:40
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.2			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601021-A
Analyst: CNP

Client Sample ID: **17478-B20-3**
SGS Ref. #: 1124601022
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.2

Collection Date/Time: 09/19/12 15:45
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	21.8 U		34.1	10.9	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	574		68.1	21.3	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	32.1		6.81	2.04	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	213		68.1	21.3	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	1130		136	40.9	ug/Kg	1	VFC11193	VXX24084	
Toluene	32.0J		68.1	21.3	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	92.8		72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	165	*	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 04:23
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:45

Initial Prep Wt./Vol.: 50.669 g
Prep Extract Vol.: 43.6394 mL
Container ID:1124601022-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 04:23
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 15:45

Initial Prep Wt./Vol.: 50.669 g
Prep Extract Vol.: 43.6394 mL
Container ID:1124601022-B
Analyst: HM

Client Sample ID: **17478-B20-3**
SGS Ref. #: 1124601022
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.2

Collection Date/Time: 09/19/12 15:45
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	4930	315	97.6	mg/Kg	10	XFC10632	XXX28117	
Residual Range Organics	552	31.5	9.76	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	88.1	50-150		%	10	XFC10632	XXX28117	
n-Triacontane-d62 <surr>	85.1	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 14:51
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.152 g
Prep Extract Vol.: 1 mL
Container ID:1124601022-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 06:08
Dilution Factor: 10

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.152 g
Prep Extract Vol.: 1 mL
Container ID:1124601022-A
Analyst: MEM

Client Sample ID: **17478-B20-3**
SGS Ref. #: 1124601022
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.2

Collection Date/Time: 09/19/12 15:45
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.2			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL

Container ID:1124601022-A
Analyst: CNP

Client Sample ID: **17478-B21-2**
SGS Ref. #: 1124601023
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.4

Collection Date/Time: 09/19/12 16:00
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	19.7 U	30.8	9.85	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	37.5J	61.5	19.2	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	3.76J	6.15	1.85	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	38.4 U	61.5	19.2	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	65.9J	123	36.9	ug/Kg	1	VFC11193	VXX24084	
Toluene	38.4 U	61.5	19.2	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	89.6	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	82.3	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/28/12 22:16
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:00

Initial Prep Wt./Vol.: 54.421 g
Prep Extract Vol.: 43.8206 mL
Container ID:1124601023-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 22:16
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:00

Initial Prep Wt./Vol.: 54.421 g
Prep Extract Vol.: 43.8206 mL
Container ID:1124601023-B
Analyst: HM

Client Sample ID: **17478-B21-2**
SGS Ref. #: 1124601023
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.4

Collection Date/Time: 09/19/12 16:00
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	71.1	30.4	9.44	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	386	30.4	9.44	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	81.3	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	81.3	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 15:01
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.132 g
Prep Extract Vol.: 1 mL
Container ID:1124601023-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 15:01
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.132 g
Prep Extract Vol.: 1 mL
Container ID:1124601023-A
Analyst: MEM

Client Sample ID: **17478-B21-2**
SGS Ref. #: 1124601023
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 65.4

Collection Date/Time: 09/19/12 16:00
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	65.4			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601023-A
Analyst: CNP

Client Sample ID: **17478-B22-1**
SGS Ref. #: 1124601024
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.1

Collection Date/Time: 09/19/12 16:14
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	18.3 U	28.7	9.17	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	35.8 U	57.3	17.9	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	7.48	5.73	1.72	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	171	57.3	17.9	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	58.5J	115	34.4	ug/Kg	1	VFC11193	VXX24084	
Toluene	35.8 U	57.3	17.9	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	90.1	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	105	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/28/12 22:34
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:14

Initial Prep Wt./Vol.: 66.454 g
Prep Extract Vol.: 48.8483 mL
Container ID:1124601024-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 22:34
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:14

Initial Prep Wt./Vol.: 66.454 g
Prep Extract Vol.: 48.8483 mL
Container ID:1124601024-B
Analyst: HM

Client Sample ID: **17478-B22-1**
SGS Ref. #: 1124601024
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.1

Collection Date/Time: 09/19/12 16:14
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	1600	124	38.5	mg/Kg	4	XFC10632	XXX28117	
Residual Range Organics	1130	124	38.5	mg/Kg	4	XFC10632	XXX28117	
5a Androstane <surr>	88.8	50-150		%	4	XFC10632	XXX28117	
n-Triacontane-d62 <surr>	112	50-150		%	4	XFC10632	XXX28117	

Batch Information

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 02:35
Dilution Factor: 4

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.16 g
Prep Extract Vol.: 1 mL
Container ID:1124601024-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK103
Analysis Date/Time: 10/03/12 02:35
Dilution Factor: 4

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.16 g
Prep Extract Vol.: 1 mL
Container ID:1124601024-A
Analyst: MEM

Client Sample ID: **17478-B22-1**
SGS Ref. #: 1124601024
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 64.1

Collection Date/Time: 09/19/12 16:14
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	64.1			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601024-A
Analyst: CNP

Client Sample ID: **17478-B23-1**
SGS Ref. #: 1124601025
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.5

Collection Date/Time: 09/19/12 16:38
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	15.3 U	23.9	7.66	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	29.8 U	47.9	14.9	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	3.08J	4.79	1.44	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	23.5J	47.9	14.9	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	45.0J	95.8	28.7	ug/Kg	1	VFC11193	VXX24084	
Toluene	29.8 U	47.9	14.9	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	89.6	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	92.8	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/28/12 22:53
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:38

Initial Prep Wt./Vol.: 69.21 g
Prep Extract Vol.: 46.0885 mL
Container ID:1124601025-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 22:53
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:38

Initial Prep Wt./Vol.: 69.21 g
Prep Extract Vol.: 46.0885 mL
Container ID:1124601025-B
Analyst: HM

Client Sample ID: **17478-B23-1**
SGS Ref. #: 1124601025
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.5

Collection Date/Time: 09/19/12 16:38
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	422	28.4	8.82	mg/Kg	1	XFC10632	XXX28117	
Residual Range Organics	732	28.4	8.82	mg/Kg	1	XFC10632	XXX28117	
5a Androstane <surr>	87.4	50-150		%	1	XFC10632	XXX28117	
n-Triacontane-d62 <surr>	103	50-150		%	1	XFC10632	XXX28117	

Batch Information

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/02/12 22:01
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.344 g
Prep Extract Vol.: 1 mL
Container ID:1124601025-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK103
Analysis Date/Time: 10/02/12 22:01
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.344 g
Prep Extract Vol.: 1 mL
Container ID:1124601025-A
Analyst: MEM

Client Sample ID: **17478-B23-1**
SGS Ref. #: 1124601025
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.5

Collection Date/Time: 09/19/12 16:38
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	69.5			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601025-A
Analyst: CNP

Client Sample ID: **17478-B24-1**
SGS Ref. #: 1124601026
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.0

Collection Date/Time: 09/19/12 16:55
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	15.6 U	24.4	7.81	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	30.4 U	48.8	15.2	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	1.59J	4.88	1.46	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	22.5J	48.8	15.2	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	58.6 U	97.6	29.3	ug/Kg	1	VFC11193	VXX24084	
Toluene	17.6J	48.8	15.2	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	89.8	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	84.4	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/28/12 23:11
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:55

Initial Prep Wt./Vol.: 59.065 g
Prep Extract Vol.: 41.5281 mL
Container ID:1124601026-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 23:11
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 16:55

Initial Prep Wt./Vol.: 59.065 g
Prep Extract Vol.: 41.5281 mL
Container ID:1124601026-B
Analyst: HM

Client Sample ID: **17478-B24-1**
SGS Ref. #: 1124601026
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.0

Collection Date/Time: 09/19/12 16:55
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	165	27.5	8.53	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	777	27.5	8.53	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	71.5	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	78.2	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 15:32
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.276 g
Prep Extract Vol.: 1 mL
Container ID:1124601026-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 15:32
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.276 g
Prep Extract Vol.: 1 mL
Container ID:1124601026-A
Analyst: MEM

Client Sample ID: **17478-B24-1**
SGS Ref. #: 1124601026
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.0

Collection Date/Time: 09/19/12 16:55
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	72.0			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601026-A
Analyst: CNP

Client Sample ID: **17478-B25-1**
SGS Ref. #: 1124601027
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 17:09
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	20.6 U	32.3	10.3	ug/Kg	1	VFC11201	VXX24098	
Ethylbenzene	35.5J	64.5	20.1	ug/Kg	1	VFC11201	VXX24098	
Gasoline Range Organics	9.35	6.45	1.94	mg/Kg	1	VFC11201	VXX24098	
o-Xylene	534	64.5	20.1	ug/Kg	1	VFC11201	VXX24098	
P & M -Xylene	294	129	38.7	ug/Kg	1	VFC11201	VXX24098	
Toluene	32.9J	64.5	20.1	ug/Kg	1	VFC11201	VXX24098	
1,4-Difluorobenzene <surr>	91.7	72-119		%	1	VFC11201	VXX24098	
4-Bromofluorobenzene <surr>	95.4	50-150		%	1	VFC11201	VXX24098	

Batch Information

Analytical Batch: VFC11201
Analytical Method: AK101
Analysis Date/Time: 10/02/12 18:13
Dilution Factor: 1

Prep Batch: VXX24098
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:09

Initial Prep Wt./Vol.: 56.013 g
Prep Extract Vol.: 45.6452 mL
Container ID:1124601027-B
Analyst: HM

Analytical Batch: VFC11201
Analytical Method: SW8021B
Analysis Date/Time: 10/02/12 18:13
Dilution Factor: 1

Prep Batch: VXX24098
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:09

Initial Prep Wt./Vol.: 56.013 g
Prep Extract Vol.: 45.6452 mL
Container ID:1124601027-B
Analyst: HM

Client Sample ID: **17478-B25-1**
SGS Ref. #: 1124601027
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 17:09
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	871	31.4	9.73	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	827	31.4	9.73	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	67.1	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	68.8	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 15:42
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.281 g
Prep Extract Vol.: 1 mL
Container ID:1124601027-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 15:42
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.281 g
Prep Extract Vol.: 1 mL
Container ID:1124601027-A
Analyst: MEM

Client Sample ID: **17478-B25-1**
SGS Ref. #: 1124601027
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 17:09
Receipt Date/Time: 09/24/12 15:22

Polynuclear Aromatics GC/MS

Parameter	Result		LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
1-Methylnaphthalene	1270		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
2-Methylnaphthalene	458		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Acenaphthene	847		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Acenaphthylene	47.0 U		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Anthracene	273		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Benzo(a)Anthracene	701		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Benzo[a]pyrene	161		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Benzo[b]Fluoranthene	432		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Benzo[g,h,i]perylene	46.5J		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Benzo[k]fluoranthene	155		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Chrysene	798		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Dibenzo[a,h]anthracene	47.0 U		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Fluoranthene	5820		782	235	ug/Kg	100	XMS7008	XXX28135	
Fluorene	577		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Indeno[1,2,3-c,d] pyrene	52.3J		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Naphthalene	461		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Phenanthrene	1380		78.2	23.5	ug/Kg	10	XMS7007	XXX28135	
Pyrene	4460		782	235	ug/Kg	100	XMS7008	XXX28135	
2-Fluorobiphenyl <surr>	107	*	45-105		%	10	XMS7007	XXX28135	
Terphenyl-d14 <surr>	127	*	30-125		%	10	XMS7007	XXX28135	

Batch Information

Analytical Batch: XMS7007
Analytical Method: 8270D SIMS (PAH)
Analysis Date/Time: 10/04/12 08:15
Dilution Factor: 10

Prep Batch: XXX28135
Prep Method: SW3550C
Prep Date/Time: 10/01/12 14:00

Initial Prep Wt./Vol.: 22.774 g
Prep Extract Vol.: 1 mL
Container ID:1124601027-A
Analyst: RTS

Analytical Batch: XMS7008
Analytical Method: 8270D SIMS (PAH)
Analysis Date/Time: 10/05/12 13:36
Dilution Factor: 100

Prep Batch: XXX28135
Prep Method: SW3550C
Prep Date/Time: 10/01/12 14:00

Initial Prep Wt./Vol.: 22.774 g
Prep Extract Vol.: 1 mL
Container ID:1124601027-A
Analyst: RTS

Client Sample ID: **17478-B25-1**
SGS Ref. #: 1124601027
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.1

Collection Date/Time: 09/19/12 17:09
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.1			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601027-A
Analyst: CNP

Client Sample ID: **17478-B26-1**
SGS Ref. #: 1124601028
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.0

Collection Date/Time: 09/19/12 17:30
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	16.6 U	25.9	8.29	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	22.8J	51.8	16.2	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	9.35	5.18	1.55	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	58.6	51.8	16.2	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	74.1J	104	31.1	ug/Kg	1	VFC11193	VXX24084	
Toluene	32.4 U	51.8	16.2	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	91.9	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	94.9	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/28/12 23:29
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:30

Initial Prep Wt./Vol.: 58.847 g
Prep Extract Vol.: 42.6748 mL
Container ID:1124601028-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 23:29
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:30

Initial Prep Wt./Vol.: 58.847 g
Prep Extract Vol.: 42.6748 mL
Container ID:1124601028-B
Analyst: HM

Client Sample ID: **17478-B26-1**
SGS Ref. #: 1124601028
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.0

Collection Date/Time: 09/19/12 17:30
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	1140	113	35.1	mg/Kg	4	XFC10632	XXX28117	
Residual Range Organics	779	28.3	8.77	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	81.5	50-150		%	4	XFC10632	XXX28117	
n-Triacontane-d62 <surr>	85.6	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 16:02
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.305 g
Prep Extract Vol.: 1 mL
Container ID:1124601028-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 05:28
Dilution Factor: 4

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.305 g
Prep Extract Vol.: 1 mL
Container ID:1124601028-A
Analyst: MEM

Client Sample ID: **17478-B26-1**
SGS Ref. #: 1124601028
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.0

Collection Date/Time: 09/19/12 17:30
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	70.0			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601028-A
Analyst: CNP

Client Sample ID: **17478-B27-1**
SGS Ref. #: 1124601029
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 17:53
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	17.1 U	26.7	8.56	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	33.4 U	53.5	16.7	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	3.20 U	5.35	1.60	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	33.4 U	53.5	16.7	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	64.2 U	107	32.1	ug/Kg	1	VFC11193	VXX24084	
Toluene	33.4 U	53.5	16.7	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	90.3	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	85.1	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 01:38
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:53

Initial Prep Wt./Vol.: 55.99 g
Prep Extract Vol.: 41.8589 mL
Container ID:1124601029-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 01:38
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:53

Initial Prep Wt./Vol.: 55.99 g
Prep Extract Vol.: 41.8589 mL
Container ID:1124601029-B
Analyst: HM

Client Sample ID: **17478-B27-1**
SGS Ref. #: 1124601029
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 17:53
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	188	28.4	8.80	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	679	28.4	8.80	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	76.1	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	81.3	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 16:12
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.235 g
Prep Extract Vol.: 1 mL
Container ID:1124601029-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 16:12
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.235 g
Prep Extract Vol.: 1 mL
Container ID:1124601029-A
Analyst: MEM

Client Sample ID: **17478-B27-1**
SGS Ref. #: 1124601029
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 17:53
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	69.9			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601029-A
Analyst: CNP

Client Sample ID: **17478-B27-3**
SGS Ref. #: 1124601030
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.1

Collection Date/Time: 09/19/12 17:57
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	15.4 U	24.0	7.68	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	30.0 U	48.0	15.0	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	2.88 U	4.80	1.44	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	30.0 U	48.0	15.0	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	57.6 U	96.0	28.8	ug/Kg	1	VFC11193	VXX24084	
Toluene	30.0 U	48.0	15.0	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	89.1	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	91	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 01:56
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:57

Initial Prep Wt./Vol.: 66.824 g
Prep Extract Vol.: 44.9812 mL
Container ID:1124601030-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 01:56
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 17:57

Initial Prep Wt./Vol.: 66.824 g
Prep Extract Vol.: 44.9812 mL
Container ID:1124601030-B
Analyst: HM

Client Sample ID: **17478-B27-3**
SGS Ref. #: 1124601030
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.1

Collection Date/Time: 09/19/12 17:57
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	164	28.4	8.80	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	524	28.4	8.80	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	58.7	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	63.9	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 16:23
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.136 g
Prep Extract Vol.: 1 mL
Container ID:1124601030-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 16:23
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.136 g
Prep Extract Vol.: 1 mL
Container ID:1124601030-A
Analyst: MEM

Client Sample ID: **17478-B27-3**
SGS Ref. #: 1124601030
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 70.1

Collection Date/Time: 09/19/12 17:57
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	70.1			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601030-A
Analyst: CNP

Client Sample ID: **17478-B28-1**
SGS Ref. #: 1124601031
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.5

Collection Date/Time: 09/19/12 18:09
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	20.8 U	32.5	10.4	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	40.6 U	65.0	20.3	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	3.10J	6.50	1.95	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	29.3J	65.0	20.3	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	49.4J	130	39.0	ug/Kg	1	VFC11193	VXX24084	
Toluene	40.6 U	65.0	20.3	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	90.9	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	90.7	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 02:15
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 18:09

Initial Prep Wt./Vol.: 54.104 g
Prep Extract Vol.: 44.7254 mL
Container ID:1124601031-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 02:15
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 18:09

Initial Prep Wt./Vol.: 54.104 g
Prep Extract Vol.: 44.7254 mL
Container ID:1124601031-B
Analyst: HM

Client Sample ID: **17478-B28-1**
SGS Ref. #: 1124601031
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.5

Collection Date/Time: 09/19/12 18:09
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	142	31.2	9.68	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	550	31.2	9.68	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	77	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	70.6	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 16:43
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.235 g
Prep Extract Vol.: 1 mL
Container ID:1124601031-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 16:43
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.235 g
Prep Extract Vol.: 1 mL
Container ID:1124601031-A
Analyst: MEM

Client Sample ID: **17478-B28-1**
SGS Ref. #: 1124601031
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 63.5

Collection Date/Time: 09/19/12 18:09
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	63.5			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601031-A
Analyst: CNP

Client Sample ID: **17478-B29-1**
SGS Ref. #: 1124601032
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 18:22
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	16.6 U	26.0	8.32	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	32.4 U	52.0	16.2	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	3.12 U	5.20	1.56	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	32.4 U	52.0	16.2	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	62.4 U	104	31.2	ug/Kg	1	VFC11193	VXX24084	
Toluene	32.4 U	52.0	16.2	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	88.8	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	86.1	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 02:33
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 18:22

Initial Prep Wt./Vol.: 58.779 g
Prep Extract Vol.: 42.7179 mL
Container ID:1124601032-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 02:33
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 18:22

Initial Prep Wt./Vol.: 58.779 g
Prep Extract Vol.: 42.7179 mL
Container ID:1124601032-B
Analyst: HM

Client Sample ID: **17478-B29-1**
SGS Ref. #: 1124601032
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 18:22
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	1220	114	35.5	mg/Kg	4	XFC10632	XXX28117	
Residual Range Organics	459	114	35.5	mg/Kg	4	XFC10632	XXX28117	
5a Androstane <surr>	72.8	50-150		%	4	XFC10632	XXX28117	
n-Triacontane-d62 <surr>	78.1	50-150		%	4	XFC10632	XXX28117	

Batch Information

Analytical Batch: XFC10632
Analytical Method: AK102
Analysis Date/Time: 10/03/12 05:18
Dilution Factor: 4

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.007 g
Prep Extract Vol.: 1 mL
Container ID:1124601032-A
Analyst: MEM

Analytical Batch: XFC10632
Analytical Method: AK103
Analysis Date/Time: 10/03/12 05:18
Dilution Factor: 4

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.007 g
Prep Extract Vol.: 1 mL
Container ID:1124601032-A
Analyst: MEM

Client Sample ID: **17478-B29-1**
SGS Ref. #: 1124601032
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 69.9

Collection Date/Time: 09/19/12 18:22
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	69.9			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601032-A
Analyst: CNP

Client Sample ID: **17478-B30-1**
SGS Ref. #: 1124601033
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 60.5

Collection Date/Time: 09/19/12 18:36
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	21.0 U	32.7	10.5	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	40.8 U	65.4	20.4	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	2.11J	6.54	1.96	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	40.8 U	65.4	20.4	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	78.4 U	131	39.2	ug/Kg	1	VFC11193	VXX24084	
Toluene	315	65.4	20.4	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	89.2	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	100	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/28/12 20:44
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 18:36

Initial Prep Wt./Vol.: 63.062 g
Prep Extract Vol.: 49.9121 mL
Container ID:1124601033-B
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/28/12 20:44
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 18:36

Initial Prep Wt./Vol.: 63.062 g
Prep Extract Vol.: 49.9121 mL
Container ID:1124601033-B
Analyst: HM

Client Sample ID: **17478-B30-1**
SGS Ref. #: 1124601033
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 60.5

Collection Date/Time: 09/19/12 18:36
Receipt Date/Time: 09/24/12 15:22

Semivolatile Organic Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	155	32.7	10.1	mg/Kg	1	XFC10629	XXX28117	
Residual Range Organics	1090	32.7	10.1	mg/Kg	1	XFC10629	XXX28117	
5a Androstane <surr>	67.5	50-150		%	1	XFC10629	XXX28117	
n-Triacontane-d62 <surr>	72.5	50-150		%	1	XFC10629	XXX28117	

Batch Information

Analytical Batch: XFC10629
Analytical Method: AK102
Analysis Date/Time: 10/01/12 17:03
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.319 g
Prep Extract Vol.: 1 mL
Container ID:1124601033-A
Analyst: MEM

Analytical Batch: XFC10629
Analytical Method: AK103
Analysis Date/Time: 10/01/12 17:03
Dilution Factor: 1

Prep Batch: XXX28117
Prep Method: SW3550C
Prep Date/Time: 09/28/12 20:00

Initial Prep Wt./Vol.: 30.319 g
Prep Extract Vol.: 1 mL
Container ID:1124601033-A
Analyst: MEM

Client Sample ID: **17478-B30-1**
SGS Ref. #: 1124601033
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)
Percent Solids: 60.5

Collection Date/Time: 09/19/12 18:36
Receipt Date/Time: 09/24/12 15:22

Solids

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	60.5			%	1	SPT8813		

Batch Information

Analytical Batch: SPT8813
Analytical Method: SM21 2540G
Analysis Date/Time: 09/26/12 21:58
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1124601033-A
Analyst: CNP

Shannon & Wilson, Inc. Print Date: 10/16/2012 8:01 am

Client Sample ID: **17478-TB1**
SGS Ref. #: 1124601034
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)

Collection Date/Time: 09/19/12 08:00
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	8.08 U	12.6	4.04	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	15.7 U	25.2	7.87	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	1.51 U	2.52	0.757	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	15.7 U	25.2	7.87	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	30.2 U	50.5	15.1	ug/Kg	1	VFC11193	VXX24084	
Toluene	15.7 U	25.2	7.87	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	89.8	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	90.1	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 00:06
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 49.527 g
Prep Extract Vol.: 25 mL
Container ID:1124601034-A
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 00:06
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 49.527 g
Prep Extract Vol.: 25 mL
Container ID:1124601034-A
Analyst: HM

Client Sample ID: **17478-TB2**
SGS Ref. #: 1124601035
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)

Collection Date/Time: 09/19/12 08:00
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	8.10 U	12.6	4.05	ug/Kg	1	VFC11193	VXX24084	
Ethylbenzene	15.8 U	25.3	7.89	ug/Kg	1	VFC11193	VXX24084	
Gasoline Range Organics	1.52 U	2.53	0.759	mg/Kg	1	VFC11193	VXX24084	
o-Xylene	15.8 U	25.3	7.89	ug/Kg	1	VFC11193	VXX24084	
P & M -Xylene	30.4 U	50.6	15.2	ug/Kg	1	VFC11193	VXX24084	
Toluene	15.8 U	25.3	7.89	ug/Kg	1	VFC11193	VXX24084	
1,4-Difluorobenzene <surr>	90.5	72-119		%	1	VFC11193	VXX24084	
4-Bromofluorobenzene <surr>	89.4	50-150		%	1	VFC11193	VXX24084	

Batch Information

Analytical Batch: VFC11193
Analytical Method: AK101
Analysis Date/Time: 09/29/12 05:00
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 49.43 g
Prep Extract Vol.: 25 mL
Container ID:1124601035-A
Analyst: HM

Analytical Batch: VFC11193
Analytical Method: SW8021B
Analysis Date/Time: 09/29/12 05:00
Dilution Factor: 1

Prep Batch: VXX24084
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 49.43 g
Prep Extract Vol.: 25 mL
Container ID:1124601035-A
Analyst: HM

Client Sample ID: **17478-TB3**
SGS Ref. #: 1124601036
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)

Collection Date/Time: 09/19/12 08:00
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	7.98 U	12.5	3.99	ug/Kg	1	VFC11189	VXX24077	
Ethylbenzene	15.6 U	25.0	7.79	ug/Kg	1	VFC11189	VXX24077	
Gasoline Range Organics	1.50 U	2.50	0.749	mg/Kg	1	VFC11189	VXX24077	
o-Xylene	15.6 U	25.0	7.79	ug/Kg	1	VFC11189	VXX24077	
P & M -Xylene	30.0 U	49.9	15.0	ug/Kg	1	VFC11189	VXX24077	
Toluene	15.6 U	25.0	7.79	ug/Kg	1	VFC11189	VXX24077	
1,4-Difluorobenzene <surr>	91.3	72-119		%	1	VFC11189	VXX24077	
4-Bromofluorobenzene <surr>	93.2	50-150		%	1	VFC11189	VXX24077	

Batch Information

Analytical Batch: VFC11189
Analytical Method: AK101
Analysis Date/Time: 09/27/12 23:18
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 50.092 g
Prep Extract Vol.: 25 mL
Container ID:1124601036-A
Analyst: HM

Analytical Batch: VFC11189
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 23:18
Dilution Factor: 1

Prep Batch: VXX24077
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 50.092 g
Prep Extract Vol.: 25 mL
Container ID:1124601036-A
Analyst: HM

Client Sample ID: **17478-TB4**
SGS Ref. #: 1124601037
Project ID: 32-1-17478 Chefornak BIA
Matrix: Soil/Solid (dry weight)

Collection Date/Time: 09/19/12 08:00
Receipt Date/Time: 09/24/12 15:22

Volatile Fuels Department

Parameter	Result	LOQ/CL	DL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Benzene	8.06 U	12.6	4.03	ug/Kg	1	VFC11190	VXX24078	
Ethylbenzene	15.7 U	25.2	7.86	ug/Kg	1	VFC11190	VXX24078	
Gasoline Range Organics	1.51 U	2.52	0.756	mg/Kg	1	VFC11190	VXX24078	
o-Xylene	15.7 U	25.2	7.86	ug/Kg	1	VFC11190	VXX24078	
P & M -Xylene	30.2 U	50.4	15.1	ug/Kg	1	VFC11190	VXX24078	
Toluene	15.7 U	25.2	7.86	ug/Kg	1	VFC11190	VXX24078	
1,4-Difluorobenzene <surr>	92.6	72-119		%	1	VFC11190	VXX24078	
4-Bromofluorobenzene <surr>	106	50-150		%	1	VFC11190	VXX24078	

Batch Information

Analytical Batch: VFC11190
Analytical Method: AK101
Analysis Date/Time: 09/27/12 19:40
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 49.591 g
Prep Extract Vol.: 25 mL
Container ID:1124601037-A
Analyst: HM

Analytical Batch: VFC11190
Analytical Method: SW8021B
Analysis Date/Time: 09/27/12 19:40
Dilution Factor: 1

Prep Batch: VXX24078
Prep Method: SW5035A
Prep Date/Time: 09/19/12 08:00

Initial Prep Wt./Vol.: 49.591 g
Prep Extract Vol.: 25 mL
Container ID:1124601037-A
Analyst: HM

SGS Ref.#	1117915	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep**	**Batch**	
Project Name/#	32-1-17478 Chefornak BIA			**Method**	
Matrix	Soil/Solid (dry weight)			**Date**	

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601019, 1124601020, 1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601027, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Solids					
Total Solids	100			%	09/26/12
Batch	SPT8813				
Method	SM21 2540G				
Instrument					

SGS Ref.#	1118225	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	VXX24077	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW5035A	
Matrix	Soil/Solid (dry weight)		**Date**	09/27/2012	

QC results affect the following production samples:

1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601020, 1124601036

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	1.50 U	2.50	0.750	mg/Kg	09/27/12
Surrogates					
4-Bromofluorobenzene <surr>	104	50-150		%	09/27/12
Batch VFC11189					
Method AK101					
Instrument Agilent 7890A PID/FID					
Benzene	8.00 U	12.5	4.00	ug/Kg	09/27/12
Ethylbenzene	8.50J	25.0	7.80	ug/Kg	09/27/12
o-Xylene	15.6 U	25.0	7.80	ug/Kg	09/27/12
P & M -Xylene	16.0J	50.0	15.0	ug/Kg	09/27/12
Toluene	15.0J	25.0	7.80	ug/Kg	09/27/12
Surrogates					
1,4-Difluorobenzene <surr>	89.4	72-119		%	09/27/12
Batch VFC11189					
Method SW8021B					
Instrument Agilent 7890A PID/FID					

SGS Ref.#	1118269	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	VXX24078	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW5035A	
Matrix	Soil/Solid (dry weight)		**Date**	09/27/2012	

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601019, 1124601037

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	1.50 U	2.50	0.750	mg/Kg	09/27/12
Surrogates					
4-Bromofluorobenzene <surr>	103	50-150		%	09/27/12
Batch VFC11190					
Method AK101					
Instrument Agilent 7890 PID/FID					
Benzene	8.00 U	12.5	4.00	ug/Kg	09/27/12
Ethylbenzene	15.6 U	25.0	7.80	ug/Kg	09/27/12
o-Xylene	15.6 U	25.0	7.80	ug/Kg	09/27/12
P & M -Xylene	30.0 U	50.0	15.0	ug/Kg	09/27/12
Toluene	9.50J	25.0	7.80	ug/Kg	09/27/12
Surrogates					
1,4-Difluorobenzene <surr>	92.3	72-119		%	09/27/12
Batch VFC11190					
Method SW8021B					
Instrument Agilent 7890 PID/FID					

SGS Ref.#	1118478	Method Blank	**Printed Date/Time**		10/16/2012 8:01
Client Name	Shannon & Wilson, Inc.		**Prep**	**Batch**	XXX28112
Project Name/#	32-1-17478 Chefornak BIA			**Method**	SW3550C
Matrix	Soil/Solid (dry weight)			**Date**	09/28/2012

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601019, 1124601020

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	12.4 U	20.0	6.20	mg/Kg	09/29/12
Surrogates					
5a Androstane <surr>	85.4	60-120		%	09/29/12
Batch XFC10627					
Method AK102					
Instrument HP 6890 Series II FID SV D R					
Residual Range Organics	12.4 U	20.0	6.20	mg/Kg	09/29/12
Surrogates					
n-Triacontane-d62 <surr>	83.5	60-120		%	09/29/12
Batch XFC10627					
Method AK103					
Instrument HP 6890 Series II FID SV D R					

SGS Ref.#	1118536	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	XXX28117	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	09/28/2012	

QC results affect the following production samples:

1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601027, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	12.4 U	20.0	6.20	mg/Kg	10/01/12
Surrogates					
5a Androstane <surr>	71.4	60-120		%	10/01/12
Batch XFC10629					
Method AK102					
Instrument HP 6890 Series II FID SV D R					
Residual Range Organics	12.4 U	20.0	6.20	mg/Kg	10/01/12
Surrogates					
n-Triacontane-d62 <surr>	65.6	60-120		%	10/01/12
Batch XFC10629					
Method AK103					
Instrument HP 6890 Series II FID SV D R					

SGS Ref.#	1118569	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	VXX24084	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW5035A	
Matrix	Soil/Solid (dry weight)		**Date**	09/28/2012	

QC results affect the following production samples:

1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033, 1124601034, 1124601035

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	1.50 U	2.50	0.750	mg/Kg	09/28/12
Surrogates					
4-Bromofluorobenzene <surr>	103	50-150		%	09/28/12
Batch VFC11193					
Method AK101					
Instrument Agilent 7890A PID/FID					
Benzene	8.00 U	12.5	4.00	ug/Kg	09/28/12
Ethylbenzene	8.75J	25.0	7.80	ug/Kg	09/28/12
o-Xylene	15.6 U	25.0	7.80	ug/Kg	09/28/12
P & M -Xylene	15.0J	50.0	15.0	ug/Kg	09/28/12
Toluene	15.5J	25.0	7.80	ug/Kg	09/28/12
Surrogates					
1,4-Difluorobenzene <surr>	88.9	72-119		%	09/28/12
Batch VFC11193					
Method SW8021B					
Instrument Agilent 7890A PID/FID					

SGS Ref.#	1118822	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	XXX28135	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	10/01/2012	

QC results affect the following production samples:

1124601027

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Polynuclear Aromatics GC/MS					
1-Methylnaphthalene	3.00 U	5.00	1.50	ug/Kg	10/01/12
2-Methylnaphthalene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Acenaphthene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Acenaphthylene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Anthracene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Benzo(a)Anthracene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Benzo[a]pyrene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Benzo[b]Fluoranthene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Benzo[g,h,i]perylene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Benzo[k]fluoranthene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Chrysene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Dibenzo[a,h]anthracene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Fluoranthene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Fluorene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Indeno[1,2,3-c,d] pyrene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Naphthalene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Phenanthrene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Pyrene	3.00 U	5.00	1.50	ug/Kg	10/01/12
Surrogates					
2-Fluorobiphenyl <surr>	89.7	45-105		%	10/01/12
Terphenyl-d14 <surr>	106	30-125		%	10/01/12

Batch	XMS6998
Method	8270D SIMS (PAH)
Instrument	HP 6890 Series II MS2 SVOA

SGS Ref.#	1119333	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	VXX24098	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW5035A	
Matrix	Soil/Solid (dry weight)		**Date**	10/02/2012	

QC results affect the following production samples:

1124601027

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	1.50 U	2.50	0.750	mg/Kg	10/02/12
Surrogates					
4-Bromofluorobenzene <surr>	93.3	50-150		%	10/02/12
Batch VFC11201					
Method AK101					
Instrument Agilent 7890 PID/FID					
Benzene	8.00 U	12.5	4.00	ug/Kg	10/02/12
Ethylbenzene	15.6 U	25.0	7.80	ug/Kg	10/02/12
o-Xylene	15.6 U	25.0	7.80	ug/Kg	10/02/12
P & M -Xylene	30.0 U	50.0	15.0	ug/Kg	10/02/12
Toluene	8.75J	25.0	7.80	ug/Kg	10/02/12
Surrogates					
1,4-Difluorobenzene <surr>	92.2	72-119		%	10/02/12
Batch VFC11201					
Method SW8021B					
Instrument Agilent 7890 PID/FID					

SGS Ref.#	1119412	Method Blank	**Printed Date/Time**	10/16/2012	8:01
Client Name	Shannon & Wilson, Inc.		**Prep** **Batch**	XXX28155	
Project Name/#	32-1-17478 Chefornak BIA		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	10/03/2012	

QC results affect the following production samples:

1124601007

Parameter	Results	LOQ/CL	DL	Units	Analysis Date
Polynuclear Aromatics GC/MS					
1-Methylnaphthalene	3.00 U	5.00	1.50	ug/Kg	10/06/12
2-Methylnaphthalene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Acenaphthene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Acenaphthylene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Anthracene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Benzo(a)Anthracene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Benzo[a]pyrene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Benzo[b]Fluoranthene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Benzo[g,h,i]perylene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Benzo[k]fluoranthene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Chrysene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Dibenzo[a,h]anthracene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Fluoranthene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Fluorene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Indeno[1,2,3-c,d] pyrene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Naphthalene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Phenanthrene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Pyrene	3.00 U	5.00	1.50	ug/Kg	10/06/12
Surrogates					
2-Fluorobiphenyl <surr>	74.4	45-105		%	10/06/12
Terphenyl-d14 <surr>	104	30-125		%	10/06/12

Batch	XMS7009
Method	8270D SIMS (PAH)
Instrument	HP 6890 Series II MS2 SVOA

SGS Ref.#	1117916	Duplicate	**Printed Date/Time**	10/16/2012 8:01
Client Name	Shannon & Wilson, Inc.		**Prep**	**Batch**
Project Name/#	32-1-17478 Chefornak BIA			**Method**
				Date
Original	1124640001			
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601019, 1124601020, 1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601027, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	92.5	92.4	%	0	(< 15)	09/26/2012

Batch SPT8813
Method SM21 2540G
Instrument

SGS Ref.#	1118226 Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118227 Lab Control Sample Duplicate	**Prep**	**Batch**	VXX24077
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/27/2012
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601020, 1124601036

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1260	101	(75-125)			1250 ug/Kg	09/27/2012
	LCSD	1200	96		5	(< 20)	1250 ug/Kg	09/27/2012
Ethylbenzene	LCS	1300	104	(75-125)			1250 ug/Kg	09/27/2012
	LCSD	1230	98		5	(< 20)	1250 ug/Kg	09/27/2012
o-Xylene	LCS	1280	103	(75-125)			1250 ug/Kg	09/27/2012
	LCSD	1220	97		6	(< 20)	1250 ug/Kg	09/27/2012
P & M -Xylene	LCS	2620	105	(80-125)			2500 ug/Kg	09/27/2012
	LCSD	2470	99		6	(< 20)	2500 ug/Kg	09/27/2012
Toluene	LCS	1310	105	(70-125)			1250 ug/Kg	09/27/2012
	LCSD	1240	99		6	(< 20)	1250 ug/Kg	09/27/2012
Surrogates								
1,4-Difluorobenzene <surr>	LCS		91	(72-119)				09/27/2012
	LCSD		90		1			09/27/2012

Batch	VFC11189
Method	SW8021B
Instrument	Agilent 7890A PID/FID

SGS Ref.#	1118228	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118229	Lab Control Sample Duplicate	**Prep** **Batch**	VXX24077	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/27/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601020, 1124601036

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	10.1	101	(60-120)			10.0 mg/Kg	09/27/2012
	LCSD	10.2	102		1	(< 20)	10.0 mg/Kg	09/28/2012
Surrogates								
4-Bromofluorobenzene <surr>	LCS		107	(50-150)				09/27/2012
	LCSD		106		1			09/28/2012

Batch	VFC11189
Method	AK101
Instrument	Agilent 7890A PID/FID

SGS Ref.#	1118270	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118271	Lab Control Sample Duplicate	**Prep Batch**	VXX24078	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/27/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601019, 1124601037

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1380	111	(75-125)			1250 ug/Kg	09/27/2012
	LCSD	1360	109		2	(< 20)	1250 ug/Kg	09/27/2012
Ethylbenzene	LCS	1350	108	(75-125)			1250 ug/Kg	09/27/2012
	LCSD	1320	106		3	(< 20)	1250 ug/Kg	09/27/2012
o-Xylene	LCS	1290	103	(75-125)			1250 ug/Kg	09/27/2012
	LCSD	1260	101		2	(< 20)	1250 ug/Kg	09/27/2012
P & M -Xylene	LCS	2620	105	(80-125)			2500 ug/Kg	09/27/2012
	LCSD	2560	102		3	(< 20)	2500 ug/Kg	09/27/2012
Toluene	LCS	1370	110	(70-125)			1250 ug/Kg	09/27/2012
	LCSD	1340	107		2	(< 20)	1250 ug/Kg	09/27/2012
Surrogates								
1,4-Difluorobenzene <surr>	LCS		97	(72-119)				09/27/2012
	LCSD		97		0			09/27/2012

Batch	VFC11190
Method	SW8021B
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1118272	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118273	Lab Control Sample Duplicate	**Prep** **Batch**	VXX24078	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/27/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601019, 1124601037

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	10.5	105	(60-120)			10.0 mg/Kg	09/27/2012
	LCSD	9.91	99		6	(< 20)	10.0 mg/Kg	09/27/2012
Surrogates								
4-Bromofluorobenzene <surr>	LCS		102	(50-150)				09/27/2012
	LCSD		104		2			09/27/2012

Batch	VFC11190
Method	AK101
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1118479	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118480	Lab Control Sample Duplicate	**Prep** **Batch**	XXX28112	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/28/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601019, 1124601020

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	148	89	(75-125)			167 mg/Kg	09/29/2012
	LCSD	144	86		3	(< 20)	167 mg/Kg	09/30/2012
Surrogates								
5a Androstane <surr>	LCS		90	(60-120)				09/29/2012
	LCSD		85		6			09/30/2012

Batch XFC10627
Method AK102
Instrument HP 6890 Series II FID SV D R

Residual Range Organics	LCS	161	97	(60-120)			167 mg/Kg	09/29/2012
	LCSD	152	91		5	(< 20)	167 mg/Kg	09/30/2012
Surrogates								
n-Triacontane-d62 <surr>	LCS		79	(60-120)				09/29/2012
	LCSD		76		5			09/30/2012

Batch XFC10627
Method AK103
Instrument HP 6890 Series II FID SV D R

SGS Ref.#	1118537	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118538	Lab Control Sample Duplicate	**Prep** **Batch**	XXX28117	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/28/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601027, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	157	94	(75-125)			167 mg/Kg	10/01/2012
	LCSD	154	92		2	(< 20)	167 mg/Kg	10/01/2012
Surrogates								
5a Androstane <surr>	LCS		98	(60-120)				10/01/2012
	LCSD		95		3			10/01/2012

Batch XFC10629
Method AK102
Instrument HP 6890 Series II FID SV D R

Residual Range Organics	LCS	171	103	(60-120)			167 mg/Kg	10/01/2012
	LCSD	166	100		3	(< 20)	167 mg/Kg	10/01/2012
Surrogates								
n-Triacontane-d62 <surr>	LCS		87	(60-120)				10/01/2012
	LCSD		84		4			10/01/2012

Batch XFC10629
Method AK103
Instrument HP 6890 Series II FID SV D R

SGS Ref.#	1118570	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118571	Lab Control Sample Duplicate	**Prep** **Batch**	VXX24084	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/28/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033, 1124601034, 1124601035

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1250	100	(75-125)			1250 ug/Kg	09/28/2012
	LCSD	1190	95		5	(< 20)	1250 ug/Kg	09/28/2012
Ethylbenzene	LCS	1240	99	(75-125)			1250 ug/Kg	09/28/2012
	LCSD	1240	99		0	(< 20)	1250 ug/Kg	09/28/2012
o-Xylene	LCS	1240	99	(75-125)			1250 ug/Kg	09/28/2012
	LCSD	1230	98		1	(< 20)	1250 ug/Kg	09/28/2012
P & M -Xylene	LCS	2520	101	(80-125)			2500 ug/Kg	09/28/2012
	LCSD	2480	99		1	(< 20)	2500 ug/Kg	09/28/2012
Toluene	LCS	1250	100	(70-125)			1250 ug/Kg	09/28/2012
	LCSD	1250	100		0	(< 20)	1250 ug/Kg	09/28/2012
Surrogates								
1,4-Difluorobenzene <surr>	LCS		93	(72-119)				09/28/2012
	LCSD		90		3			09/28/2012

Batch	VFC11193
Method	SW8021B
Instrument	Agilent 7890A PID/FID

SGS Ref.#	1118572	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1118573	Lab Control Sample Duplicate	**Prep** **Batch**	VXX24084	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	09/28/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033, 1124601034, 1124601035

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	9.32	93	(60-120)			10.0 mg/Kg	09/28/2012
	LCSD	9.12	91		2	(< 20)	10.0 mg/Kg	09/28/2012
Surrogates								
4-Bromofluorobenzene <surr>	LCS		105	(50-150)				09/28/2012
	LCSD		105		0			09/28/2012

Batch	VFC11193
Method	AK101
Instrument	Agilent 7890A PID/FID

SGS Ref.#	1118823 Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01	
		Prep	**Batch**	XXX28135	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	10/01/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601027

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

Polynuclear Aromatics GC/MS

SGS Ref.#	1118823 Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
		Prep Batch	XXX28135	
Client Name	Shannon & Wilson, Inc.	**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA	**Date**	10/01/2012	
Matrix	Soil/Solid (dry weight)			

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS								
1-Methylnaphthalene	LCS	19.8	89	(44-107)			22.2 ug/Kg	10/01/2012
2-Methylnaphthalene	LCS	17.7	80	(45-105)			22.2 ug/Kg	10/01/2012
Acenaphthene	LCS	19.7	89	(45-110)			22.2 ug/Kg	10/01/2012
Acenaphthylene	LCS	20.0	90	(45-105)			22.2 ug/Kg	10/01/2012
Anthracene	LCS	17.8	80	(55-105)			22.2 ug/Kg	10/01/2012
Benzo(a)Anthracene	LCS	22.8	103	(50-110)			22.2 ug/Kg	10/01/2012
Benzo[a]pyrene	LCS	18.5	83	(50-110)			22.2 ug/Kg	10/01/2012
Benzo[b]Fluoranthene	LCS	23.6	106	(45-115)			22.2 ug/Kg	10/01/2012
Benzo[g,h,i]perylene	LCS	22.9	103	(40-125)			22.2 ug/Kg	10/01/2012
Benzo[k]fluoranthene	LCS	22.1	100	(45-125)			22.2 ug/Kg	10/01/2012
Chrysene	LCS	22.5	101	(55-110)			22.2 ug/Kg	10/01/2012
Dibenzo[a,h]anthracene	LCS	22.8	103	(40-125)			22.2 ug/Kg	10/01/2012
Fluoranthene	LCS	24.0	108	(55-115)			22.2 ug/Kg	10/01/2012
Fluorene	LCS	20.3	92	(50-110)			22.2 ug/Kg	10/01/2012
Indeno[1,2,3-c,d] pyrene	LCS	23.2	104	(40-120)			22.2 ug/Kg	10/01/2012
Naphthalene	LCS	18.7	84	(40-105)			22.2 ug/Kg	10/01/2012
Phenanthrene	LCS	19.7	89	(50-110)			22.2 ug/Kg	10/01/2012
Pyrene	LCS	23.2	105	(45-125)			22.2 ug/Kg	10/01/2012
Surrogates								
2-Fluorobiphenyl <surr>	LCS		87	(45-105)				10/01/2012
Terphenyl-d14 <surr>	LCS		106	(30-125)				10/01/2012

SGS Ref.#	1118823 Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01	
		Prep	**Batch**	XXX28135	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	10/01/2012	
Matrix	Soil/Solid (dry weight)				

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

Polynuclear Aromatics GC/MS

Batch	XMS6998
Method	8270D SIMS (PAH)
Instrument	HP 6890 Series II MS2 SVOA

SGS Ref.#	1119334	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1119335	Lab Control Sample Duplicate	**Prep** **Batch**	VXX24098	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	10/02/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601027

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1390	111	(75-125)			1250 ug/Kg	10/02/2012
	LCSD	1310	105		6	(< 20)	1250 ug/Kg	10/02/2012
Ethylbenzene	LCS	1310	105	(75-125)			1250 ug/Kg	10/02/2012
	LCSD	1230	98		6	(< 20)	1250 ug/Kg	10/02/2012
o-Xylene	LCS	1250	100	(75-125)			1250 ug/Kg	10/02/2012
	LCSD	1170	94		6	(< 20)	1250 ug/Kg	10/02/2012
P & M -Xylene	LCS	2520	101	(80-125)			2500 ug/Kg	10/02/2012
	LCSD	2370	95		6	(< 20)	2500 ug/Kg	10/02/2012
Toluene	LCS	1350	108	(70-125)			1250 ug/Kg	10/02/2012
	LCSD	1270	102		6	(< 20)	1250 ug/Kg	10/02/2012
Surrogates								
1,4-Difluorobenzene <surr>	LCS		97	(72-119)				10/02/2012
	LCSD		96		1			10/02/2012

Batch	VFC11201
Method	SW8021B
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1119336	Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
	1119337	Lab Control Sample Duplicate	**Prep** **Batch**	VXX24098	
Client Name	Shannon & Wilson, Inc.		**Method**	SW5035A	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	10/02/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601027

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	8.84	88	(60-120)			10.0 mg/Kg	10/02/2012
	LCSD	8.94	89		1	(< 20)	10.0 mg/Kg	10/02/2012
Surrogates								
4-Bromofluorobenzene <surr>	LCS		91	(50-150)				10/02/2012
	LCSD		98		8			10/02/2012

Batch	VFC11201
Method	AK101
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1119413 Lab Control Sample	**Printed Date/Time**		10/16/2012	8:01
		Prep	**Batch**	XXX28155	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	10/03/2012	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601007

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

Polynuclear Aromatics GC/MS

SGS Ref.#	1119413 Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01
		Prep Batch	XXX28155	
Client Name	Shannon & Wilson, Inc.	**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA	**Date**	10/03/2012	
Matrix	Soil/Solid (dry weight)			

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS								
1-Methylnaphthalene	LCS	19.9	90	(44-107)			22.2 ug/Kg	10/06/2012
2-Methylnaphthalene	LCS	18.4	83	(45-105)			22.2 ug/Kg	10/06/2012
Acenaphthene	LCS	17.1	77	(45-110)			22.2 ug/Kg	10/06/2012
Acenaphthylene	LCS	16.3	73	(45-105)			22.2 ug/Kg	10/06/2012
Anthracene	LCS	17.1	77	(55-105)			22.2 ug/Kg	10/06/2012
Benzo(a)Anthracene	LCS	21.1	95	(50-110)			22.2 ug/Kg	10/06/2012
Benzo[a]pyrene	LCS	18.0	81	(50-110)			22.2 ug/Kg	10/06/2012
Benzo[b]Fluoranthene	LCS	22.6	102	(45-115)			22.2 ug/Kg	10/06/2012
Benzo[g,h,i]perylene	LCS	24.1	108	(40-125)			22.2 ug/Kg	10/06/2012
Benzo[k]fluoranthene	LCS	22.8	103	(45-125)			22.2 ug/Kg	10/06/2012
Chrysene	LCS	21.9	98	(55-110)			22.2 ug/Kg	10/06/2012
Dibenzo[a,h]anthracene	LCS	21.5	97	(40-125)			22.2 ug/Kg	10/06/2012
Fluoranthene	LCS	21.8	98	(55-115)			22.2 ug/Kg	10/06/2012
Fluorene	LCS	18.0	81	(50-110)			22.2 ug/Kg	10/06/2012
Indeno[1,2,3-c,d] pyrene	LCS	23.0	103	(40-120)			22.2 ug/Kg	10/06/2012
Naphthalene	LCS	19.5	88	(40-105)			22.2 ug/Kg	10/06/2012
Phenanthrene	LCS	19.0	86	(50-110)			22.2 ug/Kg	10/06/2012
Pyrene	LCS	21.1	95	(45-125)			22.2 ug/Kg	10/06/2012
Surrogates								
2-Fluorobiphenyl <surr>	LCS		81	(45-105)				10/06/2012
Terphenyl-d14 <surr>	LCS		104	(30-125)				10/06/2012

SGS Ref.#	1119413 Lab Control Sample	**Printed Date/Time**	10/16/2012	8:01	
		Prep	**Batch**	XXX28155	
Client Name	Shannon & Wilson, Inc.		**Method**	SW3550C	
Project Name/#	32-1-17478 Chefornak BIA		**Date**	10/03/2012	
Matrix	Soil/Solid (dry weight)				

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

Polynuclear Aromatics GC/MS

Batch	XMS7009
Method	8270D SIMS (PAH)
Instrument	HP 6890 Series II MS2 SVOA

SGS Ref.#	1118241	Matrix Spike	**Printed Date/Time**		10/16/2012 8:01
	1118242	Matrix Spike Duplicate	**Prep**	**Batch**	VXX24077
				Method	AK101 Extraction (S)
				Date	09/27/2012
Original	1124601020				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601004, 1124601005, 1124601006, 1124601007, 1124601008, 1124601009, 1124601010, 1124601011, 1124601012, 1124601013, 1124601014, 1124601015, 1124601016, 1124601017, 1124601018, 1124601020, 1124601036

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Fuels Department											
Benzene		MS	(21.6) U	1952	102	(75-125)			1921	ug/Kg	09/27/2012
		MSD		1968	103		1	(< 20)	1921	ug/Kg	09/27/2012
Ethylbenzene		MS	(42.2) U	2000	104	(75-125)			1921	ug/Kg	09/27/2012
		MSD		2000	104		0	(< 20)	1921	ug/Kg	09/27/2012
o-Xylene		MS	(42.2) U	1968	103	(75-125)			1921	ug/Kg	09/27/2012
		MSD		1984	103		0	(< 20)	1921	ug/Kg	09/27/2012
P & M -Xylene		MS	(81.2) U	4032	105	(80-125)			3825	ug/Kg	09/27/2012
		MSD		4032	105		0	(< 20)	3825	ug/Kg	09/27/2012
Toluene		MS	180	2095	100	(70-125)			1921	ug/Kg	09/27/2012
		MSD		2079	99		1	(< 20)	1921	ug/Kg	09/27/2012
Surrogates											
1,4-Difluorobenzene <surr>		MS		1730	91	(72-119)					09/27/2012
		MSD		1762	92		1				09/27/2012

Batch	VFC11189
Method	SW8021B
Instrument	Agilent 7890A PID/FID

SGS Ref.#	1118306	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1118307	Matrix Spike Duplicate	**Prep** **Batch**	VXX24078	
			Method	AK101 Extraction (S)	
			Date	09/27/2012	
Original	1124569004				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601001, 1124601002, 1124601003, 1124601019, 1124601037

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Fuels Department											
Benzene		MS	(29.2) U	3381	111	(75-125)			3045	ug/Kg	09/27/2012
		MSD		3670	120		8	(< 20)	3045	ug/Kg	09/27/2012
Ethylbenzene		MS	40.1J	3285	106	(75-125)			3045	ug/Kg	09/27/2012
		MSD		3381	110		3	(< 20)	3045	ug/Kg	09/27/2012
o-Xylene		MS	116	3301	104	(75-125)			3045	ug/Kg	09/27/2012
		MSD		3510	111		6	(< 20)	3045	ug/Kg	09/27/2012
P & M -Xylene		MS	89.2J	6378	103	(80-125)			6106	ug/Kg	09/27/2012
		MSD		6859	111		7	(< 20)	6106	ug/Kg	09/27/2012
Toluene		MS	54.6J	3381	109	(70-125)			3045	ug/Kg	09/27/2012
		MSD		4103	133*		19	(< 20)	3045	ug/Kg	09/27/2012
Surrogates											
1,4-Difluorobenzene <surr>		MS		2949	97	(72-119)					09/27/2012
		MSD		2981	98		1				09/27/2012

Batch	VFC11190
Method	SW8021B
Instrument	Agilent 7890 PID/FID

SGS Ref.#	1118574	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1118575	Matrix Spike Duplicate	**Prep** **Batch**	VXX24084	
			Method	AK101 Extraction (S)	
			Date	09/28/2012	
Original	1124601033				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601021, 1124601022, 1124601023, 1124601024, 1124601025, 1124601026, 1124601028, 1124601029, 1124601030, 1124601031, 1124601032, 1124601033, 1124601034, 1124601035

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Fuels Department											
Benzene		MS	(21.0) U	1636	100	(75-125)			1638	ug/Kg	09/28/2012
		MSD		1736	106		6	(< 20)	1638	ug/Kg	09/28/2012
Ethylbenzene		MS	(40.8) U	1686	103	(75-125)			1638	ug/Kg	09/28/2012
		MSD		1702	104		1	(< 20)	1638	ug/Kg	09/28/2012
o-Xylene		MS	(40.8) U	1669	102	(75-125)			1638	ug/Kg	09/28/2012
		MSD		1686	103		2	(< 20)	1638	ug/Kg	09/28/2012
P & M -Xylene		MS	(78.4) U	3372	103	(80-125)			3273	ug/Kg	09/28/2012
		MSD		3455	105		2	(< 20)	3273	ug/Kg	09/28/2012
Toluene		MS	315	1835	93	(70-125)			1638	ug/Kg	09/28/2012
		MSD		1851	94		1	(< 20)	1638	ug/Kg	09/28/2012
Surrogates											
1,4-Difluorobenzene <surr>		MS		1484	91	(72-119)					09/28/2012
		MSD		1521	93		2				09/28/2012

Batch	VFC11193
Method	SW8021B
Instrument	Agilent 7890A PID/FID

SGS Ref.#	1118824	Matrix Spike	**Printed Date/Time**		10/16/2012 8:01
	1118825	Matrix Spike Duplicate	**Prep**	**Batch**	XXX28135
				Method	Sonication Extraction Soil 8270
				Date	10/01/2012
Original	1124764008				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601027

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date

Polynuclear Aromatics GC/MS

SGS Ref.#	1118824	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1118825	Matrix Spike Duplicate	**Prep** **Batch**	XXX28135	
			Method	Sonication Extraction Soil 8270	
			Date	10/01/2012	
Original	1124764008				
Matrix	Soil/Solid (dry weight)				

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
1-Methylnaphthalene	MS	(31.4) U	30.6	132*	(44-107)			23.3 ug/Kg	10/02/2012
	MSD		26.7	114*		14	(< 30)	23.4 ug/Kg	10/02/2012
2-Methylnaphthalene	MS	(31.4) U	27.6	119*	(45-105)			23.3 ug/Kg	10/02/2012
	MSD		24.8	106*		10	(< 30)	23.4 ug/Kg	10/02/2012
Acenaphthene	MS	(31.4) U	22.7	98	(45-110)			23.3 ug/Kg	10/02/2012
	MSD		20.4	87		11	(< 30)	23.4 ug/Kg	10/02/2012
Acenaphthylene	MS	(31.4) U	32.0	138*	(45-105)			23.3 ug/Kg	10/02/2012
	MSD		25.4	108*		23	(< 30)	23.4 ug/Kg	10/02/2012
Anthracene	MS	(31.4) U	19.5	84	(55-105)			23.3 ug/Kg	10/02/2012
	MSD		17.2	74		12	(< 30)	23.4 ug/Kg	10/02/2012
Benzo(a)Anthracene	MS	(31.4) U	22.0	95	(50-110)			23.3 ug/Kg	10/02/2012
	MSD		19.2	82		14	(< 30)	23.4 ug/Kg	10/02/2012
Benzo[a]pyrene	MS	(31.4) U	20.0	86	(50-110)			23.3 ug/Kg	10/02/2012
	MSD		17.9	76		11	(< 30)	23.4 ug/Kg	10/02/2012
Benzo[b]Fluoranthene	MS	(31.4) U	22.0	95	(45-115)			23.3 ug/Kg	10/02/2012
	MSD		19.5	83		12	(< 30)	23.4 ug/Kg	10/02/2012
Benzo[g,h,i]perylene	MS	(31.4) U	21.5	93	(40-125)			23.3 ug/Kg	10/02/2012
	MSD		19.1	82		12	(< 30)	23.4 ug/Kg	10/02/2012
Benzo[k]fluoranthene	MS	(31.4) U	20.2	87	(45-125)			23.3 ug/Kg	10/02/2012
	MSD		17.9	77		12	(< 30)	23.4 ug/Kg	10/02/2012
Chrysene	MS	(31.4) U	21.1	91	(55-110)			23.3 ug/Kg	10/02/2012
	MSD		18.2	78		15	(< 30)	23.4 ug/Kg	10/02/2012
Dibenzo[a,h]anthracene	MS	(31.4) U	20.8	90	(40-125)			23.3 ug/Kg	10/02/2012
	MSD		19.2	82		9	(< 30)	23.4 ug/Kg	10/02/2012
Fluoranthene	MS	(31.4) U	21.4	92	(55-115)			23.3 ug/Kg	10/02/2012
	MSD		19.4	83		10	(< 30)	23.4 ug/Kg	10/02/2012
Fluorene	MS	(31.4) U	22.4	96	(50-110)			23.3 ug/Kg	10/02/2012
	MSD		20.5	88		9	(< 30)	23.4 ug/Kg	10/02/2012
Indeno[1,2,3-c,d] pyrene	MS	(31.4) U	21.6	93	(40-120)			23.3 ug/Kg	10/02/2012
	MSD		18.6	80		15	(< 30)	23.4 ug/Kg	10/02/2012
Naphthalene	MS	(31.4) U	25.8	111*	(40-105)			23.3 ug/Kg	10/02/2012
	MSD		23.5	100		9	(< 30)	23.4 ug/Kg	10/02/2012
Phenanthrene	MS	(31.4) U	22.9	99	(50-110)			23.3 ug/Kg	10/02/2012
	MSD		21.2	90		8	(< 30)	23.4 ug/Kg	10/02/2012
Pyrene	MS	(31.4) U	21.7	94	(45-125)			23.3 ug/Kg	10/02/2012
	MSD		19.1	81		13	(< 30)	23.4 ug/Kg	10/02/2012
Surrogates									
2-Fluorobiphenyl <surr>	MS		19.4	83	(45-105)				10/02/2012
	MSD		19.2	82		1			10/02/2012
Terphenyl-d14 <surr>	MS		22.7	98	(30-125)				10/02/2012

SGS Ref.#	1118824	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1118825	Matrix Spike Duplicate	**Prep** **Batch**	XXX28135	
			Method	Sonication Extraction Soil 8270	
			Date	10/01/2012	
Original	1124764008				
Matrix	Soil/Solid (dry weight)				

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
		MSD	18.6	80		20			10/02/2012

Batch	XMS6998
Method	8270D SIMS (PAH)
Instrument	HP 6890 Series II MS2 SVOA

SGS Ref.#	1119338	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1119339	Matrix Spike Duplicate	**Prep** **Batch**	VXX24098	
			Method	AK101 Extraction (S)	
			Date	10/02/2012	
Original	1124655001				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601027

Parameter	Qualifiers		Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount		Analysis Date
Volatile Fuels Department											
Benzene		MS	(11.5) U	799	107	(75-125)			745	ug/Kg	10/02/2012
		MSD		810	109		1	(< 20)	745	ug/Kg	10/02/2012
Ethylbenzene		MS	(23.0) U	728	98	(75-125)			745	ug/Kg	10/02/2012
		MSD		737	99		1	(< 20)	745	ug/Kg	10/02/2012
o-Xylene		MS	(23.0) U	702	92	(75-125)			745	ug/Kg	10/02/2012
		MSD		709	93		1	(< 20)	745	ug/Kg	10/02/2012
P & M -Xylene		MS	(46.0) U	1407	94	(80-125)			1488	ug/Kg	10/02/2012
		MSD		1430	95		1	(< 20)	1488	ug/Kg	10/02/2012
Toluene		MS	(23.0) U	779	105	(70-125)			745	ug/Kg	10/02/2012
		MSD		788	106		1	(< 20)	745	ug/Kg	10/02/2012
Surrogates											
1,4-Difluorobenzene <surr>		MS		715	96	(72-119)					10/02/2012
		MSD		715	96		0				10/02/2012

Batch VFC11201
Method SW8021B
Instrument Agilent 7890 PID/FID

SGS Ref.#	1119414	Matrix Spike	**Printed Date/Time**		10/16/2012 8:01
	1119415	Matrix Spike Duplicate	**Prep**	**Batch**	XXX28155
				Method	Sonication Extraction Soil 8270
				Date	10/03/2012
Original	1128511003				
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1124601007

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date

Polynuclear Aromatics GC/MS

SGS Ref.#	1119414	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1119415	Matrix Spike Duplicate	**Prep** **Batch**	XXX28155	
			Method	Sonication Extraction Soil 8270	
			Date	10/03/2012	
Original	1128511003				
Matrix	Soil/Solid (dry weight)				

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
1-Methylnaphthalene	MS	12400	15206	12,300*	(44-107)			23.0 ug/Kg	10/09/2012
	MSD		13622	5,340*		11	(< 30)	23.4 ug/Kg	10/09/2012
2-Methylnaphthalene	MS	13700	15312	6,850*	(45-105)			23.0 ug/Kg	10/09/2012
	MSD		15628	8,200*		2	(< 30)	23.4 ug/Kg	10/09/2012
Acenaphthene	MS	(314) U	314U	0*	(45-110)			23.0 ug/Kg	10/07/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/07/2012
Acenaphthylene	MS	(314) U	314U	0*	(45-105)			23.0 ug/Kg	10/07/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/07/2012
Anthracene	MS	(314) U	314U	0*	(55-105)			23.0 ug/Kg	10/07/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/07/2012
Benzo(a)Anthracene	MS	(314) U	314U	0*	(50-110)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Benzo[a]pyrene	MS	(314) U	314U	0*	(50-110)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Benzo[b]Fluoranthene	MS	(314) U	314U	0*	(45-115)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Benzo[g,h,i]perylene	MS	(314) U	314U	0*	(40-125)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Benzo[k]fluoranthene	MS	(314) U	314U	0*	(45-125)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Chrysene	MS	744	665	-340*	(55-110)			23.0 ug/Kg	10/08/2012
	MSD		814	301*		20	(< 30)	23.4 ug/Kg	10/08/2012
Dibenzo[a,h]anthracene	MS	(314) U	314U	0*	(40-125)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Fluoranthene	MS	(314) U	294	1,280*	(55-115)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Fluorene	MS	1140	1362	963*	(50-110)			23.0 ug/Kg	10/07/2012
	MSD		1235	428*		9	(< 30)	23.4 ug/Kg	10/07/2012
Indeno[1,2,3-c,d] pyrene	MS	(314) U	314U	0*	(40-120)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Naphthalene	MS	7760	9187	6,230*	(40-105)			23.0 ug/Kg	10/07/2012
	MSD		9081	5,650*		1	(< 30)	23.4 ug/Kg	10/07/2012
Phenanthrene	MS	2680	3200	2,220*	(50-110)			23.0 ug/Kg	10/07/2012
	MSD		2936	1,080*		8	(< 30)	23.4 ug/Kg	10/07/2012
Pyrene	MS	(314) U	314U	0*	(45-125)			23.0 ug/Kg	10/08/2012
	MSD		314U	0*		0	(< 30)	23.4 ug/Kg	10/08/2012
Surrogates									
2-Fluorobiphenyl <surr>	MS		38.6	168*	(45-105)				10/07/2012
	MSD		28.7	123*		29			10/07/2012
Terphenyl-d14 <surr>	MS		0.00U	0*	(30-125)				10/08/2012

SGS Ref.#	1119414	Matrix Spike	**Printed Date/Time**	10/16/2012	8:01
	1119415	Matrix Spike Duplicate	**Prep** **Batch**	XXX28155	
			Method	Sonication Extraction Soil 8270	
			Date	10/03/2012	
Original	1128511003				
Matrix	Soil/Solid (dry weight)				

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
		MSD	180	765*		200			10/08/2012

Batch	XMS7017
Method	8270D SIMS (PAH)
Instrument	HP 6890/5973 MS SVQA

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CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn: Steve [illegible]

1124601

Analysis Parameters/Sam
(include prese

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO / BTEX (MEOH) AK101 / 8021B	DRO/RRO AK102 / AK103	PAH 8270D					Total No. of Conta.	Remarks/Matrix
17478-B1-2	(1) A-B	9:30	9-19-12		X	X	X						2	Soil
17478-B2-1	(2) A-B	9:44	↓		X	X	X						2	↓
17478-B3-1	(3) A-B	10:01			X	X	X						2	
17478-B4-1	(4) A-B	10:16			X	X	X						2	
17478-B5-2	(5) A-B	10:36			X	X	X						2	
17478-B6-1	(6) A-B	11:00			X	X	X						2	
17478-B7-1	(7) A-B	11:14			X	X	X	X					2	
17478-B8-2	(8) A-B	11:34			X	X	X						2	
17478-B9-1	(9) A-B	11:40			X	X	X						2	
17478-B10-2	(10) A-B	11:56	↓		X	X	X						2	↓

Project Information	Sample Receipt	
Project Number: 32-1-17478	Total Number of Containers	
Project Name: Chefornak BIA	COC Seals/Intact? Y/N/NA	
Contact: Shayla Marshall / Andrew Lee	Received Good Cond./Cold	
Ongoing Project? Yes ☒ No ☐	Delivery Method:	
Sampler: Andrew Lee	(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	standard
Special Instructions:	ADEC Level II deliverables

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Andrew Lee Time: 15:22	Signature: Time:	Signature: Time:
Printed Name: Andrew Lee Date: 9-24-12	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: [illegible] Time: 1522
Printed Name: Date:	Printed Name: Date:	Printed Name: Annette Woodard Date: 9/24/12
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

1.7 13, 3.1 203, 2.7 202, 3.7.203.

No. 28965

SHANNON & WILSON, INC.
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CHAIN-OF-CUSTODY RECORD

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Richland, WA 99352
(509) 946-6309

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO/BTEX (MeOH) AK101/8021B	DRO/RRO AK102/AK103					Total Number of Containers	Remarks/Matrix
17478-B11-1	(11) A-B	12:49	9-19-12		X	X	X					2	Soil
17478-B12-2	(12) A-B	13:08	↓		X	X	X					2	↓
17478-B13-1	(13) A-B	13:13			X	X	X					2	
17478-B14-2	(14) A-B	13:44			X	X	X					2	
17478-B15-1	(15) A-B	13:50			X	X	X					2	
17478-B16-1	(16) A-B	14:15			X	X	X					2	
17478-B17-1	(17) A-B	14:37			X	X	X					2	
17478-B18-2	(18) A-B	14:56			X	X	X					2	
17478-B19-2	(19) A-B	15:13			X	X	X					2	
17478-B19-3	(20) A-B	15:18	↓		X	X	X					2	↓

Project Information	Sample Receipt	
Project Number: 32-1-17478	Total Number of Containers	
Project Name: Chefornak BIA	COC Seals/Intact? Y/N/NA	
Contact: Shayla Marshall/Andrew Lee	Received Good Cond./Cold	
Ongoing Project? Yes ☒ No ☐	Delivery Method:	
Sampler: Andrew Lee	(attach shipping bill, if any)	

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	ADEC Level II deliverables

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Andrew Lee Time: 15:22	Signature: Time:	Signature: Time:
Printed Name: Andrew Lee Date: 9-24-12	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 9/24/12
Printed Name: Date:	Printed Name: Date:	Printed Name: Annette Weaver Date: 1522
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 29982

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CHAIN-OF-CUSTODY RECORD

Page 3 of 4

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Richland, WA 99352
(509) 946-6309

Analysis Parameters/Sample Container Description
(include preservat

1124601

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO / BTEX (MEDIA) AK101/8021B	DRO/RRO AK102/AK103	PAH 8270D					# of Cont.	Remarks/Matrix
17478-B20-2	(21) A-B	15:40	9-19-12		X	X	X						2	Soil
17478-B20-3	(22) A-B	15:45			X	X	X						2	
17478-B21-2	(23) A-B	16:00			X	X	X						2	
17478-B22-1	(24) A-B	16:14			X	X	X						2	
17478-B23-1	(25) A-B	16:38			X	X	X						2	
17478-B24-1	(26) A-B	16:55			X	X	X						2	
17478-B25-1	(27) A-B	17:09			X	X	X	X					2	
17478-B26-1	(28) A-B	17:30			X	X	X						2	
17478-B27-1	(29) A-B	17:53			X	X	X						2	
17478-B27-3	(30) A-B	17:57			X	X	X						2	

Project Information	Sample Receipt
Project Number: 321-17478	Total Number of Containers
Project Name: Chetomak B1A	COC Seals/Intact? Y/N/NA
Contact: Shayla Marshall/Andrew Lee	Received Good Cond./Cold
Ongoing Project? Yes ☒ No ☐	Delivery Method:
Sampler: Andrew Lee	(attach shipping bill, if any)

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	ADEC Level II deliverables

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Andrew Lee Time: 15:22	Signature: Time:	Signature: Time:
Printed Name: Andrew Lee Date: 9-24-12	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 1520
Printed Name: Date:	Printed Name: Date:	Printed Name: Annette Woodcock Date: 9/24/12
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 29983

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CHAIN-OF-CUSTODY RECORD

Laboratory SGS
Attn: Steve Crupi

1124601

Analysis Parameters/Sample Container Description
(include presen

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	GRO/BTEX (MEOH) AK101/8021B	DRO/RRO AK102/AK103						s/Matrix
17478-B28-1	(31) A-B	18:09	9-19-12		X	X	X					2	Soil
17478-B29-1	(32) A-B	18:22	↓		X	X	X					2	↓
17478-B30-1	(33) A-B	18:36			X	X	X					2	↓
17478-TB1	(34) A	8:00				X						1	trip blank Samples B1-B9
17478-TB2	(35) A	8:00				X						1	Samples B10-B17
17478-TB3	(36) A	8:00				X						1	Samples B18-B24
17478-TB4	(37) A	8:00	↓			X						1	Samples B25-B30

Project Information	Sample Receipt
Project Number: 32-1-17478	Total Number of Containers
Project Name: Chefornak B1A	COC Seals/Intact? Y/N/NA
Contact: Shayla Marshall / Andrew Lee	Received Good Cond./Cold
Ongoing Project? Yes ☒ No ☐	Delivery Method:
Sampler: Andrew Lee	(attach shipping bill, if any)

Instructions

Requested Turnaround Time: Standard

Special Instructions: ADEC Level II deliverables

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Andrew Lee Time: 15:22	Signature: Time:	Signature: Time:
Printed Name: Andrew Lee Date: 9-24-12	Printed Name: Date:	Printed Name: Date:
Company: Shannon & Wilson	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature: Time:	Signature: Time:	Signature: Time: 1522
Printed Name: Date:	Printed Name: Date:	Printed Name: Amelie Woodard Date: 9/24/12
Company:	Company:	Company: SGS

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 29984

SGS

1124601
SGS WO#

SAMPLE RECEIPT FORM

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 @ 1.7 w/ Therm.ID: 13 Cooler ID: 2 @ 3.1 w/ Therm.ID: 203 Cooler ID: 3 @ 2.7 w/ Therm.ID: 202 Cooler ID: 4 @ 3.7 w/ Therm.ID: 203 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 ABN/ tracking # See Attached or N/A Yes No N/A	
→ For samples received with payment, note amount ($) and cash / check / CC **(circle one)** or note: N/A → For samples **received in FBKS**, ANCH staff will verify all criteria are reviewed. SRF Initiated by: N/A		
Were samples received within hold time? *Note: Refer to form F-083 "Sample Guide" for hold time information.* 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 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:	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?	Yes No N/A Yes No N/A	Samples 1-9 came w/TB 34A
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	10-17 came w/TB 35A 18-26 came w/TB 36A
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	27-33A w/TB 37A
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	
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?***	Yes No N/A	Peer Reviewed by: N/A

Additional notes (if applicable):

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

LABORATORY DATA REVIEW CHECKLIST

CS Report Name: Site Characterization, BIA School Tanks Site, Chefornak, Alaska
Date: December 2012
Laboratory Report Date: October 16, 2012
Consultant Firm: Shannon & Wilson, Inc.

Completed by: Amanda Compton
Title: Environmental Scientist

Laboratory Name: SGS Environmental Services, Inc.
Work Order Number: 1124601

ADEC File No.: 2408.38.008
(**NOTE**: ***NA*** = not applicable; Text in *italics* added by Shannon & Wilson, Inc.)

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses? **Yes / No**
Comments:

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?
NA **/ Yes / No**
Comments:

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?
Yes / No
Comments**:**

b. Correct analyses requested? **Yes / No**
Comments**:**

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
Yes / No
Comments: *Temperature blank for Cooler 1 = 1.7° C. Temperature blanks for Coolers 2-4 = 3.1, 2.7 and 3.7 respectively.*

b. Sample preservation acceptable - acidified waters, Methanol-preserved VOC soil (GRO, BTEX, VOCs, etc.)? ***NA*** **/ Yes / No**
Comments:

c. Sample condition documented - broken, leaking (soil MeOH), zero headspace (VOC vials)? **Yes / No**
Comments: *No problems noted.*

d. If there were any discrepancies, were they documented (e.g., incorrect sample containers/preservation, sample temperatures outside range, insufficient sample size, missing samples)? ***NA*** **/ Yes / No**
Comments: *Cooler 1 had a temperature blank below desired range.*

e. Data quality or usability affected? Explain. ***NA***
Comments: *Nine project samples were associated with the temperature blank that was below range. No ice formation was observed in the sample jars, and the samples arrived in good condition. The data quality/usability should not be affected.*

4. Case Narrative

a. Present and understandable? **Yes / No**
Comments:

b. Discrepancies, errors or QC failures noted by the lab? ***None Noted*** **/ Yes**
Comments: *Numerous QC failures were noted by the lab, including:*

1. *Surrogate recoveries for GRO and DRO surrogates do not meet QC criteria for several samples (see Section 6c).*
2. *8270D SIM surrogate recovery is outside of QC criteria due to sample dilution for Samples 17478-B7-1 and 17478-B25-1.*
3. *Method Blank detection for toluene (greater than ½ the LOQ, but less than the LOQ).*
4. *MS/MSD % R for several analytes were outside QC criteria*
5. *The CCV recoveries of three PAH analytes were biased high.*

c. Were corrective actions documented? ***None Noted*** **/ Yes**
Comments:

d. What is the effect on data quality/usability, according to the case narrative?
Comments: *The case narrative does not comment on the data quality/usability; however, the Case Narrative notes that several surrogate recoveries were due to sample dilutions and that the LCS/LCSD should be used for accuracy in place of the MS/MSD.*

5. Sample Results

a. Correct analyses performed/reported as requested on COC? **Yes / No**
Comments:

b. All applicable holding times met? **Yes / No**
Comments:

c. All soils reported on a dry-weight basis? ***NA*** **/ Yes / No**
Comments:

d. Are the reported LOQs less than the Cleanup Level or the minimum required detection level for the project? **Yes / No**
Comments: *The benzene LODs for Samples B16-1 and B17-1 are greater than or equal to the applicable benzene cleanup level.*

e. Data quality or usability affected? Explain. ***NA***
Comments: *The laboratory is capable of detecting estimated concentrations of benzene down to the DL (which were less than the applicable cleanup levels for Samples B16-1 and B17-1); however, in the event that no detectable concentrations are identified the result is reported at the LOD (calculated as 2x the DL). Therefore, although the LODs are greater than the applicable cleanup level, the data quality/usability should not be affected as the effective detection limits are less than the applicable cleanup level.*

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis, and 20 samples?
Yes / No
Comments:

ii. All method blank results less than LOQ? **Yes / No**
Comments: *Two method blanks contained estimated concentrations of toluene that were greater than ½ the LOQ.*

iii. If above LOQ, what samples are affected? ***NA***
Comments: *The method blanks with estimated toluene concentrations are associated with Samples B4-1, B5-2, B6-1, B7-1, B8-2, B9-1, B10-2, B11-1, B12-2, B13-1, B14-1, B15-1, B16-1, B17-1, B18-2, B19-3, B20-2, B20-3, B21-2, B22-1, B23-1, B24-1, B26-1, B27-1, B27-3, B28-1, B29-1, B30-1, TB1, TB2, and TB3.*

iv. Do the affected sample(s) have data flags? ***NA*** **/ Yes / No**
Comments: *Samples with estimated concentrations of toluene were reported as non-detect at the LOQ and flagged with a B. Samples with toluene concentrations greater than the LOQ and samples with non-detect concentrations of toluene were both considered not affected.*

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments: *The data are not flagged in the laboratory report, but are flagged in the report tables.*

v. Data quality or usability affected? Explain. ***NA***
Comments: *The toluene detections in the method blank to do not adversely affect the quality or usability of the data, however select results are flagged to reflect the blank detection.*

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) ***N/A*** **/ Yes / No**
Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples? ***N/A*** **/ Yes / No**
Comments:

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 (RPDs) 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: *The case narrative reports several MS/MSD RPDs that do not meet QC criteria, however the MS/MSD samples were not samples from this project.*

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

vi. Do the affected samples(s) have data flags? ***NA*** **/ Yes / No**
Comments:

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

vii. Data quality or usability affected? Explain.
Comments: *The LCS/LCSD results meet QC criteria, the data quality/usability should not be affected.*

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses, field, QC and laboratory samples? ***NA*** **/ 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) ***NA*** **/ Yes / No**
Comments:

1. *The GRO surrogate recoveries in Project Samples B1-2, B7-1, B8-2, B20-2, and B20-3 are biased high.*
2. *The DRO surrogate recoveries in Project Samples B1-2, B2-1, B7-1, B8-2, and B9-1 are biased low.*
3. *The PAH surrogate recoveries in Project Samples B7-1 and B25-1 are biased high.*
4. *The PAH surrogate recoveries are outside QC criteria for one MS/MSD sample set (not samples from this project).*

iii. Do the sample results with failed surrogate recoveries have data flags? ***NA*** **/ Yes / No**
Comments: *The failed surrogates are flagged but the associated results are not flagged in the laboratory report. The results with failed surrogate recoveries are flagged in the report tables.*

If so, are the data flags clearly defined? ***NA*** **/ Yes / No**
Comments:

iv. Data quality or usability affected? Explain.
Comments: *The data quality/usability is not affected:*

1. *The case narrative states that the GRO surrogate recovery discrepancies are due to hydrocarbon interference; the associated sample results are less than the applicable cleanup level and are flagged as estimates.*
2. *The case narrative states that the DRO surrogate recovery discrepancies are due to sample dilution; the associated sample results are greater than the applicable cleanup level and are flagged as estimates.*
3. *The case narrative states that the project sample PAH surrogate recovery discrepancies are due to sample dilution; the associated sample results are less than the applicable cleanup levels, the results are flagged as estimates.*
4. *The case narrative states that the MS/MSD PAH surrogate recovery discrepancies are due to sample dilution; the MS/MSD sample is not from this project – the LCS/LCSD is used for accuracy.*

d. Trip Blank - Volatile analyses only (GRO, BTEX, VOCs, etc.) [soil and water]

i. One trip blank reported per matrix, analysis and cooler? ***NA*** **/ Yes / No**
Comments:

ii. Is the cooler used to transport the trip blank and volatile samples clearly indicated on the COC? ***NA*** **/ Yes / No** (if no explain): *Page 4 of the COC indicates what trip blanks are associated with what samples.*

iii. All results less than LOQ? ***NA*** **/ Yes / No**
Comments:

iv. If above LOQ, what samples are affected? ***NA***
Comments**:**

v. Data quality or usability affected? Explain. ***NA***
Comments:

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
Yes / No
Comments: *Sample duplicate sets include: B19-2/B19-3, B20-2/B20-3, and B27-1/B27-3*

ii. Were the field duplicates submitted blind to the lab? ***NA*** **/ Yes / No**
Comments:

iii. Precision – All relative percent differences (RPDs) less than specified DQOs? (Recommended: 30% for water, 50% for soil) ***NA*** **/ Yes / No**
Comments: *The RPD for toluene for Sample Set B19-2/B19-3 was 77% and the DRO RPD for Sample Set B20-2/B20-3 was 60%. The remaining RPDs were within range.*

iv. Data quality or usability affected? Explain.
Comments: *The elevated RPDs are likely due to non-homogeneous distribution of contaminants in the soil, the toluene results are less than the applicable cleanup level and the DRO results are greater than the applicable cleanup level. The data quality/usability should not be affected.*

f. Decontamination or Equipment Blank (if not applicable, a comment stating why must be entered below)
Comments: *No decontamination or equipment blank submitted due to the use of disposable sampling equipment, per the ADEC-approved work plan.*

i. All results less than PQL? ***NA*** **/ Yes / No**
Comments:

ii. If results are above PQL, what samples are affected? ***NA***
Comments:

iii. Data quality or usability affected? Explain. ***NA***
Comments:

7. <u>Other Data Flags/Qualifiers (ACOE, AFCEE, Lab-specific, etc.)</u>

a. Are they defined and appropriate? ***NA*** **/ Yes / No**
Comments: *Lab-specific qualifiers are defined on Page 7.*

APPENDIX D

CONCEPTUAL SITE MODEL

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Former BIA School Tanks Site, Chefornak, Alaska
Hazard ID 3782

Completed By: Shannon & Wilson, Inc.
Date Completed: November 29, 2012

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

(1)
Check the media that could be directly affected by the release.

(2)
For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.

Media / Transport Mechanisms

☑ Surface Soil (0-2 ft bgs)
- Direct release to surface soil — *check soil*
- ☑ *Migration to subsurface* — *check soil*
- ☑ *Migration to groundwater* — *check groundwater*
- ☑ *Volatilization* — *check air*
- ☐ *Runoff or erosion* — *check surface water*
- ☑ *Uptake by plants or animals* — *check biota*
- ☐ *Other (list):*

☑ Subsurface Soil (2-15 ft bgs)
- Direct release to subsurface soil — *check soil*
- ☑ *Migration to groundwater* — *check groundwater*
- ☑ *Volatilization* — *check air*
- ☑ *Uptake by plants or animals* — *check biota*
- ☐ *Other (list):*

☑ Ground-water
- Direct release to groundwater — *check groundwater*
- ☑ *Volatilization* — *check air*
- ☐ *Flow to surface water body* — *check surface water*
- ☐ *Flow to sediment* — *check sediment*
- ☐ *Uptake by plants or animals* — *check biota*
- ☐ *Other (list):*

☑ Surface Water
- Direct release to surface water — *check surface water*
- ☐ *Volatilization* — *check air*
- ☐ *Sedimentation* — *check sediment*
- ☐ *Uptake by plants or animals* — *check biota*
- ☐ *Other (list):*

☐ Sediment
- Direct release to sediment — *check sediment*
- ☐ *Resuspension, runoff, or erosion* — *check surface water*
- ☐ *Uptake by plants or animals* — *check biota*
- ☐ *Other (list):*

(3)
Check all exposure media identified in (2).

(4)
*Check all pathways that could be complete. The pathways identified in this column **must** agree with Sections 2 and 3 of the Human Health CSM Scoping Form.*

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.

Exposure Media / Exposure Pathway/Route / Current & Future Receptors

Exposure Media	Exposure Pathway/Route	Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ soil	☑ Incidental Soil Ingestion	F	C/F	C/F	F			
	☑ Dermal Absorption of Contaminants from Soil	F	C/F	C/F	F			
	☐ Inhalation of Fugitive Dust							
☑ groundwater	☐ Ingestion of Groundwater							
	☑ Dermal Absorption of Contaminants in Groundwater	F	F	F	F			
	☑ Inhalation of Volatile Compounds in Tap Water	F	F	F	F			
☑ air	☑ Inhalation of Outdoor Air	F	C/F	C/F	F			
	☑ Inhalation of Indoor Air	F	C/F	C/F	F			
	☐ Inhalation of Fugitive Dust							
☑ surface water	☐ Ingestion of Surface Water							
	☐ Dermal Absorption of Contaminants in Surface Water							
	☐ Inhalation of Volatile Compounds in Tap Water							
☐ sediment	☐ Direct Contact with Sediment							
☑ biota	☑ Ingestion of Wild or Farmed Foods	I	I	I	I			

Revised, 10/01/2010

Print Form

Human Health Conceptual Site Model
Scoping Form

Site Name: Former BIA School Tanks Site , Chefornak, Alaska

File Number: Hazard ID 3782

Completed by: Shannon & Wilson, Inc.

Introduction

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

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

1. General Information:

Sources *(check potential sources at the site)*

- ☐ USTs
- ☒ ASTs
- ☐ Dispensers/fuel loading racks
- ☐ Drums
- ☐ Vehicles
- ☐ Landfills
- ☐ Transformers
- ☐ Other:

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

- ☒ Spills
- ☒ Leaks
- ☐ Direct discharge
- ☐ Burning
- ☐ Other:

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

- ☒ Surface soil (0-2 feet bgs*)
- ☒ Subsurface soil (>2 feet bgs)
- ☒ Air
- ☐ Sediment
- ☒ Groundwater
- ☒ Surface water
- ☐ Biota
- ☐ Other:

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

- ☒ Residents (adult or child)
- ☒ Commercial or industrial worker
- ☒ Construction worker
- ☐ Subsistence harvester (i.e. gathers wild foods)
- ☐ Subsistence consumer (i.e. eats wild foods)
- ☒ Site visitor
- ☒ Trespasser
- ☒ Recreational user
- ☐ Farmer
- ☐ Other:

* bgs - below ground surface

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

a) Direct Contact -

1. Incidental Soil Ingestion

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

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

Comments:

2. Dermal Absorption of Contaminants from Soil

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

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

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

Comments:

b) Ingestion -

1. Ingestion of Groundwater

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

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

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

Comments:

Community well is not used for drinking water purposes due to high salinity; groundwater from the project site is not anticipated to be used for a future drinking water source.

2. Ingestion of Surface Water

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

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

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

Comments:

Surface water was observed at the time of our site visit. It is unknown if the surface water is seasonable, but it does not appear to be of sufficient volume to be used as a viable drinking water source for human consumption. Surface water was not sampled as part of this investigation.

3. Ingestion of Wild and Farmed Foods

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

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

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

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

Comments:

Fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and indo(1,2,3-c,d)pyrene were detected at the site at concentrations less than 1/10 the applicable cleanup levels.

c) Inhalation-

1. Inhalation of Outdoor Air

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

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

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

Comments:

Diesel range organics are present in the soil at the site.

2. Inhalation of Indoor Air

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

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

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

Comments:

Benzene detected in the soil at the site.

Per ADEC Guidance Document - Note #3 to Appendix D indicates that "DEC does not require evaluation of petroleum ranges of GRO, DRO, or RRO for the indoor air inhalation (vapor intrusion) pathway."

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

Dermal Exposure to Contaminants in Groundwater and Surface Water

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

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

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

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

Comments:

The presence of impacted groundwater is unknown at this site; however, if drinking water wells were installed in the future at this site or if land use changes further investigation of this pathway would be warranted.

Inhalation of Volatile Compounds in Tap Water

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

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

Generally, DEC groundwater cleanup levels in 18 AAC 75, Table C, are assumed to be protective of this pathway.

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

Comments:

The presence of impacted groundwater is unknown at this site; however, if drinking water wells were installed in the future at this site or if land use changes further investigation of this pathway would be warranted.

Inhalation of Fugitive Dust

Inhalation of fugitive dust may be a complete pathway if:

- Nonvolatile compounds are found in the top 2 centimeters of soil. The top 2 centimeters of soil are likely to be dispersed in the wind as dust particles.
- Dust particles are less than 10 micrometers (Particulate Matter - PM_{10}). Particles of this size are called respirable particles and can reach the pulmonary parts of the lungs when inhaled.
- Chromium is present in soil that can be dispersed as dust particles of any size.

Generally, DEC direct contact soil cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway because it is assumed most dust particles are incidentally ingested instead of inhaled to the lower lungs. The inhalation pathway only needs to be evaluated when very small dust particles are present (e.g., along a dirt roadway or where dusts are a nuisance). This is not true in the case of chromium. Site specific cleanup levels will need to be calculated in the event that inhalation of dust containing chromium is a complete pathway at a site.

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

Comments:

Direct Contact with Sediment

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

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

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

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

Comments:

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

APPENDIX A

BIOACCUMULATIVE COMPOUNDS OF POTENTIAL CONCERN

Organic compounds are identified as bioaccumulative if they have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5. Inorganic compounds are identified as bioaccumulative if they are listed as such by EPA (2000). Those compounds in Table B-1 of 18 AAC 75.341 that are bioaccumulative, based on the definition above, are listed below.

Aldrin	DDT	Lead
Arsenic	Dibenzo(a,h)anthracene	Mercury
Benzo(a)anthracene	Dieldrin	Methoxychlor
Benzo(a)pyrene	Dioxin	Nickel
Benzo(b)fluoranthene	Endrin	PCBs
Benzo(k)fluoranthene	Fluoranthene	
Cadmium	Heptachlor	Pyrene
Chlordane	Heptachlor epoxide	Selenium
Chrysene	Hexachlorobenzene	Silver
Copper	Hexachlorocyclopentadiene	Toxaphene
DDD	Indeno(1,2,3-c,d)pyrene	Zinc
DDE		

Because BCF values can relatively easily be measured or estimated, the BCF is frequently used to determine the potential for a chemical to bioaccumulate. A compound with a BCF greather than 1,000 is considered to bioaccumulate in tissue (EPA 2004b).

For inorganic compounds, the BCF approach has not been shown to be effective in estimating the compound's ability to bioaccumulate. Information available, either through scientific literature or site-specific data, regarding the bioaccumulative potential of an inorganic site contaminant should be used to determine if the pathway is complete.

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000).

The list was developed by including organic compounds that either have a BCF equal to or greater than 1,000 or a log K_{ow} greater than 3.5 and inorganic compounds that are listed by the United States Environmental Protection Agency (EPA) as being bioaccumulative (EPA 2000). The BCF can also be estimated from a chemical's physical and chemical properties. A chemical's octanol-water partitioning coefficient (K_{ow}) along with defined regression equations can be used to estimate the BCF. EPA's Persistent, Bioaccumulative, and Toxic (PBT) Profiler (EPA 2004) can be used to estimate the BCF using the K_{ow} and linear regressions presented by Meylan et al. (1996). The PBT Profiler is located at http://www.pbtprofiler.net/. For compounds not found in the PBT Profiler, DEC recommends using a log K_{ow} greater than 3.5 to determine if a compound is bioaccumulative.

APPENDIX B

VOLATILE COMPOUNDS OF POTENTIAL CONCERN

A chemical is identified here as sufficiently volatile and toxic for further evaluation if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater, the molecular weight is less than 200 g/mole (EPA 2004a), and the vapor concentration of the pure component posed an incremental lifetime cancer risk greater than 10^{-6} or a non-cancer hazard quotient of 0.1, or other available scientific data indicates the chemical should be considered a volatile. Chemicals that are solid at typical soil temperatures and do not sublime are generally not considered volatile.

Acetone	Mercury (elemental)
Benzene	Methyl bromide (Bromomethane)
Bis(2-chloroethyl)ether	Methyl chloride (Chloromethane)
Bromodichloromethane	Methyl ethyl ketone (MEK)
Bromoform	Methyl isobutyl ketone (MIBK)
n-Butylbenzene	Methylene bromide
sec-Butylbenzene	Methylene chloride
tert-Buytlbenzene	**1-Methylnaphthalene**
Carbon disulfide	**2-Methylnaphthalene**
Carbon tetrachloride	Methyl *tert*-butyl ether (MTBE)
Chlorobenzene	**Naphthalene**
Chlorodibromomethane (Dibromochloromethane)	Nitrobenzene
Chloroethane	n-Nitrosodimethylamine
Chloroform	**n-Propylbenzene**
2-Chlorophenol	**Styrene**
1,2-Dichlorobenzene	1,1,2,2-Tetrachlorethane
1,3-Dichlorobenzene	Tetrachloroethylene (PCE)
1,4-Dichlorobenzene	**Toluene**

Dichlorodifluoromethane	1,2,4-Trichlorobenzene
1,1-Dichloroethane	1,1,1-Trichloroethane
1,2-Dichloroethane	1,1,2-Trichloroethane
1,1-Dichloroethylene	Trichloroethane
cis-1,2-Dichloroethylene	2,4,6-Trichlorophenol
trans-1,2-Dichloroethylene	1,2,3-Trichloropropane
1,2-Dichloropropane	1,1,2-Trichloro-1,2,2-trifluoroethane (Freon-113)
1,3-Dichloropropane	Trichlorofluoromethane (Freon-11)
Ethylbenzene	**1,2,4-Trimethylbenzene**
Ethylene dibromide (1,2-Dibromoethane)	**1,3,5-Trimethylbenzene**
Hexachlorobenzene	Vinyl acetate
Hexachloro-1,3-butadiene	Vinyl chloride (Chloroethene)
Hexachlorocyclopentadiene	**Xylenes (total)**
Hexachloroethane	GRO (see note 3 below)
Hydrazine	DRO (see note 3 below)
Isopropylbenzene (Cumene)	RRO (see note 3 below)

Notes:

1. Bolded chemicals should be investigated as volatile compounds when petroleum is present. If fuel containing additives (e.g., 1,2-dichloroethane, ethylene dibromide, methyl *tert*-butyl ether) were spilled, these chemicals should also be investigated.
2. If a chemical is not on this list, and not in Tables B of 18 AAC 75.345, the chemical has not been evaluated for volatility. Contact the ADEC risk assessor to determine if the chemical is volatile.
3. At this time, ADEC does not require evaluation of petroleum ranges GRO, DRO, or RRO for the indoor air inhalation (vapor intrusion) pathway.

APPENDIX E

IMPORTANT INFORMATION ABOUT

YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

Important Information About Your Geotechnical/Environmental Report

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors, which were considered in the development of the report, have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland