OLD HIGH SCHOOL TANK FARM
SITE CHARACTERIZATION REPORT
AKIAK, ALASKA

Prepared for:

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CONTAMINATED SITES PROGRAM

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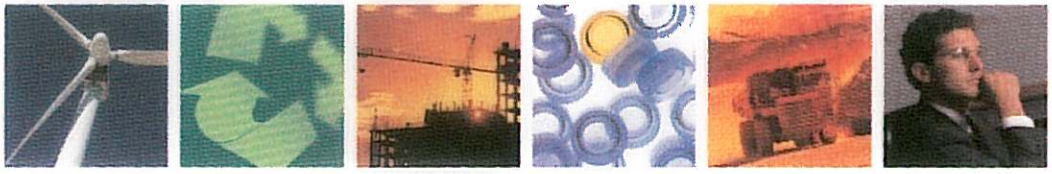

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AKIAK, ALASKA

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This document has been prepared by SLR International Corp (SLR). The material and data in this report was prepared under the supervision and direction of the undersigned.

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ACRONYMS

ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
°C	degrees Celsius
COC	chain-of-custody
CSM	conceptual site model
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
GRO	gasoline range organics
mg/kg	milligrams per kilogram
PAH	polynuclear aromatic hydrocarbons
PID	photoionization detector
ppm	parts per million
QA	quality assurance
QAR	quality assurance review
QC	quality control
SLR	SLR International Corp

SUMMARY

SLR International Corp (SLR) is pleased to submit this site characterization report to the Alaska Department of Environmental Conservation (ADEC) for the Old High School Tank Farm site in Akiak, Alaska. The Old High School Tank Farm (the Site) is located approximately 700 feet west of the Kuskokwim River.

The objective of the 2009 site characterization was to identify and delineate the extent of potential petroleum contamination at the Site and to determine whether contamination at this Site could be posing a risk to human receptors. To meet these objectives, SLR guided the advancement of one test pit and 15 hand auger borings in the vicinity of the Old High School Tank Farm.

Analytical results from 2009 indicate that petroleum hydrocarbon-contaminated soil is present at the Site with concentrations of gasoline range organics, diesel range organics, benzene, toluene, ethylbenzene, xylenes, 1-methylnaphthalene, and 2-methylnaphthalene, above ADEC Method Two soil cleanup levels. It is estimated that approximately 69 cubic yards of impacted soil is present at the Site. It appears that impacted soils are limited to the south side of the tank farm in the vicinity of SB-10 and SB-14 where the former dispenser was located. No further soil characterization is recommended at this time. Additional delineation under the existing tank farm or remediation of impacted soils near SB-10 and SB-14 should wait until the tanks are no longer in use and have been removed from the Site to allow access to the entire area.

The findings of the human health conceptual site model indicate that there are six complete exposure pathways to potential receptors, which include: residents, construction workers, site visitors, trespassers, recreational users, and subsistence harvesters and consumers. The six complete exposure pathways are: 1) incidental soil ingestion, 2) dermal absorption of contaminants from soil, 3) ingestion of ground water, 4) inhalation of outdoor air, 5) ingestion of surface water, and 6) ingestion of wild foods.

If ground water will be assessed, mobilization of a drill rig is recommended. The depth to ground water at the Site is greater than 12 feet below ground surface (bgs). However, SLR does not recommend ground water characterization at this time based on the presence of an existing community drinking water supply, which makes the risk of ingesting potentially impacted ground water originating from the Site low.

The greatest risk to human receptors at this time would be via exposure through incidental soil ingestion, dermal absorption of contaminants from soil, and the inhalation of outdoor air. Risks associated with these pathways could be reduced by excavating impacted soil between 0 and 2 feet bgs, where human receptors are more likely to come into contact. The estimated in-place volume of impacted soil between 0 and 2 feet bgs at the Site is 24 cubic yards.

1 INTRODUCTION

The Alaska Department of Environmental Conservation (ADEC) contracted SLR International Corp (SLR) to perform site characterization activities at the Old High School Tank Farm (referred to as the Site) in Akiak, Alaska in 2009.

1.1 Physical Setting

Akiak lies on the north bank of the Kuskokwim River, approximately 42 miles northeast of Bethel, Alaska (Figure 1).

The Old High School Tank Farm is located in the central portion of Akiak, approximately 700 feet west of the Kuskokwim River. The location of the tank farm is shown on Figure 2.

1.1.1 Regional and Local Geology

Akiak is located in the Yukon-Kuskokwim Delta area, which is comprised largely of Quaternary alluvial deposits which have been built up through the slow accumulation of sand and silt deposited by the Yukon and Kuskokwim rivers. Most of the region is flat with a few feet of elevation marking the boundaries of major drainages and much of the surface is covered with water.

Two wells were drilled in the vicinity of the Water Treatment Plant in Akiak; Well No. 3 in 2001 and Well No. 5 in 2002. The wells were drilled to total depths of 170 feet below ground surface (bgs) and 211 feet bgs respectively, with screens installed from 145.1 to 155.52 feet bgs in Well No. 3, and 169.65 to 174.65 feet bgs and 194.65 to 199.65 feet bgs in Well No. 5. Based on the drilling logs, the lithology in this area consists of peat to approximately 3 feet bgs, underlain by silty sand (may be frozen at shallow depths depending on the time of year) to at least 140 feet bgs. Below 140 feet bgs, silty sand, gravel, and clay layers are all present. Wet and heaving sand was observed in Well No. 3 at 59 feet bgs. Wet silty sand was not observed until 83 feet bgs in Well No. 5. Water-bearing sands were first encountered at 140 feet in Well No. 3 and 170 feet in Well No. 5. The static water levels in the wells were measured at 16.5 feet and 22.3 feet bgs, respectively.

Soil observed in the vicinity of the Old High School Tank Farm in 2009 consisted primarily of silt and organics at the surface underlain by mostly fine grained sand. Organic material included significant wood debris (Appendix B, Photographs 9 and 10).

1.1.2 Regional and Local Climate

The nearest weather station is located at the Bethel Airport, approximately 42 miles from Akiak. The average annual precipitation is 17.28 inches and the average annual snowfall is 55.3 inches (WRCC, 2009).

1.2 Purpose/Objective

The purpose of this project was to identify and delineate the extent of potential petroleum contamination at the Old High School Tank Farm and to determine whether contamination at this property could be posing a risk through completed exposure pathways to human receptors.

In order to do this, SLR performed the following tasks:

- Advanced test pits and hand auger borings to determine the nature and extent of potential soil contaminated with petroleum hydrocarbons.
- Attempted to install temporary drive point wells to determine ground water quality.
- Assessed risk to human receptors through a conceptual site model (CSM).
- Documented the findings of this characterization in a report.

2 BACKGROUND AND REGULATORY CRITERIA

This section describes background information and applicable regulatory criteria for the Site.

2.1 Site Background

During a 2000 site visit by Ecology and Environment, Inc., stained and darkened soil and sand bags were noted within the bermed containment area at the tank farm. Soil was collected from nine locations and field screened using heated headspace with a photoionization detector (PID). PID readings ranged from 9.9 parts per million (ppm) to greater than 2,000 ppm with the highest field screening result at the gasoline fuel dispensing pump. One analytical soil sample was collected from 1 foot bgs adjacent to the gasoline fuel dispensing pump on the west side of the tank farm. Gasoline range organics (GRO); diesel range organics (DRO); and benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds were all detected at concentrations above ADEC Method Two soil cleanup levels. Maximum concentrations of GRO and DRO were 9,100 milligrams per kilogram (mg/kg) and 4,300 mg/kg, respectively. The extent of contamination was unknown at the conclusion of the 2000 site work (E&E., 2000).

In September 2009, the Old High School Tank Farm was observed in similar condition to the 2000 site visit as described by Ecology and Environment, Inc. (2000) with a few exceptions described below. The tank farm consists of eight vertical, welded steel, single wall tanks with removable tops. The tanks have a total capacity of 54,000 gallons with individual aboveground storage tank (AST) capacities ranging from 5,000 to 9,750 gallons. The ASTs are supported on 12-by-12-inch timbers with 2-by-14-inch planking inside a 2-foot high gravel dike with liner.

During the September 2009 initial site visit, eight tanks were observed in the Old High School Tank Farm; five were upright and three were toppled as a result of flooding of the Kuskokwim River in spring 2009. Of the eight tanks, two are currently in use, according to maintenance personnel associated with the Akiak schools, and another three were reportedly in operational condition (Figure 3). The tank farm is fenced, but not secure (i.e. no locks), and has a lined and bermed containment. The liner appeared in good condition where exposed and holds water. Sheen was noted on the water in the containment area in three locations. A summary of SLR's observations during this visit are provided in Appendix A.

2.2 Regulatory Criteria

ADEC soil cleanup levels specified in Title 18 of the Alaska Administrative Code, Chapter 75 of the *Oil and Other Hazardous Substances Pollution Control* in Tables B1 and B2, ADEC Method Two, for the under 40-inch zone (ADEC, 2008) are applicable for the Site. The most stringent of the soil cleanup levels will be used; the soil cleanup levels for the compounds of interest are listed below.

- GRO, 300 mg/kg (migration to ground water)

- DRO, 250 mg/kg (migration to ground water)
- Benzene, 0.025 mg/kg (migration to ground water)
- Toluene, 6.5 mg/kg (migration to ground water)
- Ethylbenzene, 6.9 mg/kg (migration to ground water)
- Xylenes (total), 63 mg/kg (outdoor inhalation, migration to ground water)

Cleanup levels for individual polynuclear aromatic hydrocarbons (PAHs) are not presented here due to the large number of compounds, but the same method was used to determine appropriate cleanup levels for compounds that were detected.

3 SITE CHARACTERIZATION ACTIVITIES

The 2009 site activities conducted by SLR are described in detail below. All work was performed in accordance with SLR's ADEC-approved work plan unless otherwise noted (SLR, 2009).

An initial site visit was completed on September 28 and September 29, 2009 and site characterization activities were performed between October 26, 2009 and October 30, 2009 in conjunction with work at the Old Elementary School Tank Farm.

Appendix B contains a photographic log showing selected photographs from the 2009 site activities. Field notes documenting site work are provided in Appendix C. A detailed drawing of the Old High School Tank Farm is provided as Figure 3.

3.1 Interviews, Site Reconnaissance, and Utility Locates

Prior to the initiation of subsurface work, the Alaska Dig Line was contacted and a representative from United Utilities conducted a site visit and determined that United Utilities and GCI had no underground utilities within the proposed site characterization area. SLR also interviewed other individuals familiar with the Site (maintenance personnel for the Akiak school and the City of Akiak utility representative) to determine the location of other infrastructure, such as the water line, leach fields, and fuel lines which would prohibit site characterization activities in those areas. In addition, drawings were reviewed with maintenance personnel for the Akiak school for the location and presence of possible underground lines near the Old High School Tank Farm. No subsurface work was conducted in the vicinity of the buried fuel line leading to the new high school because it was not satisfactorily located (approximate location shown on Figure 3 for reference only). In addition, as shown on Figure 3, other obstructions including aboveground fuel lines, boardwalks, water and sewage piping, and buildings prohibited the excavation of test pits on the north and east sides of the tank farm.

3.2 Subsurface Soil Investigation

Sampling, soil-logging, and all documentation during 2009 site characterization activities were performed by qualified field staff. Initial subsurface investigation areas were selected based upon previous investigation at the Site and the current configuration of the tank farm and associated piping (i.e., locations adjacent to probable sources of leaks). Additional locations were selected based on olfactory observations and field screening results at these locations. SLR field personnel were not fully able to delineate the extent of the contamination at the Old High School Tank Farm. Ground water was not encountered during subsurface soil investigation activities.

Test pit and hand auger boring locations were recorded in the World Geodetic System of 1984 using a global positioning system receiver. Geographic coordinates for these points are presented in Table 1.

3.2.1 Soil Borings

SLR conducted the majority of the site characterization of subsurface soils via hand auger because access restrictions (i.e., aboveground fuel lines, boardwalks, water and sewage piping, buildings and an underground fuel line) prohibited the advancement of test pits on three of the four sides of the tank farm (Figure 3). Fifteen soil borings (SB-1 through SB-15) were advanced at the Site in a methodical manner to delineate the extent and magnitude of petroleum hydrocarbon-impacted soil at the Site. Soil boring locations are presented on Figure 3.

Initial hand auguring locations across the Site were selected as described in Section 3.2. If field screening results or olfactory indicated soil samples were suspected to contain contaminants at concentrations above ADEC Method Two soil cleanup levels, additional borings were hand augured in the vicinity following a step-out procedure until soil containing contaminant concentrations below ADEC Method Two cleanup levels was indicated.

Soil samples were collected from the hand auger bucket at regular intervals (approximately every 2 feet). Field screening and soil analytical sampling are discussed in Sections 3.2.3 and 3.2.4 of this report.

3.2.2 Test Pits

SLR directed the advancement of a single test pit, using a John Deere 310A backhoe, in the vicinity of the Old High School Tank Farm, to delineate the extent of contamination vertically near SB-10 through SB-14. The test pit was advanced to a depth of 8 feet bgs instead of 15 feet bgs as stated in SLR's ADEC-approved work plan (2009), because this was the maximum digging depth of the John Deere 310A backhoe. The work plan assumed use of a John Deere 160C excavator capable of digging to approximately 15 feet bgs; however, this backhoe experienced a mechanical failure shortly after its arrival on site. SLR personnel spoke with the ADEC project manager and received approval to delineate impacted soil using equipment available in Akiak (John Deere 310A backhoe and a hand auger brought by SLR).

Soil descriptions were recorded for TP-1 and samples were collected from the excavator bucket at regular intervals (approximately every 2 feet); soil descriptions are noted in the field logbook, which provided as Appendix C. Field screening and soil analytical sampling are discussed in the following sections.

3.2.3 Field Screening

Heated headspace screening was performed by placing a representative sample of soil in a resealable plastic bag and placing it inside a house near a heater for a sufficient time to raise the soil temperature to at least 40 degrees Fahrenheit. After warming, the sealed soil sample was agitated (shaken) for 15 to 20 seconds, after which a PID probe was inserted into the bag and the highest reading recorded. Field screening results are discussed in Section 4.

3.2.4 Analytical Sampling

Thirty-nine soil analytical samples, plus four duplicates, were collected based on field screening results and sample location; analytical samples were not collected from the field screening

sample bags. Samples were collected in an appropriate manner to document contaminant concentrations at key locations and also provide vertical contaminant information; as such, no samples were analyzed from some locations while in others up to three analytical samples were collected from different depths within a location. Generally, shallower samples were collected to assess risk to human receptors in near surface soils while deeper samples were collected in an effort to verify if contamination was present at concentrations above soil cleanup levels at depth. Analytical samples were also collected from areas suspected of having the highest levels of petroleum hydrocarbon impact to document maximum contaminant concentrations. Analytical results are discussed in Section 4.2.

The analytical soil samples were selectively analyzed by the following methods:

- GRO using Alaska Method 101 (all samples);
- DRO using Alaska Method 102 (all samples);
- BTEX using U.S. Environmental Protection Agency (EPA) Method 8021B (all samples); and
- PAHs, for ADEC-priority compounds only, using EPA Method 8270C with selective ion monitoring (selected samples, two primary locations plus one duplicate).

Samples for PAH analysis were selected from locations exhibiting the highest field screening results and/or locations closest to potential human receptors.

The analytical soil samples were handled in accordance with the Quality Assurance (QA) and Quality Control (QC) procedures described in Section 3.5 of this report.

3.3 Temporary Drive Point Well Installation

According to the work plan (SLR, 2009), up to three temporary drive point wells were to be installed, if feasible. However, no drive points were installed in 2009. A pilot hole was drilled using a power auger to a depth of 12 feet bgs; further advancement with the power auger was not feasible without overexerting the drill. Once the pilot hole was drilled, SLR attempted to advance a temporary drive point well with a slide hammer. Refusal was encountered at 12 feet bgs with the drive point. No ground water was observed visually or measured using a handheld water level meter. One additional attempt at drive point installation was made at the Old Elementary School Tank Farm; refusal was encountered there at 14 feet bgs and no further attempts were made. No existing monitoring wells or supply wells are located on the property; consequently, no ground water samples were collected from the Site.

3.4 Drinking Water and Surface Water Sampling

During the initial site visit, SLR inquired about individual wells within the community of Akiak. Although 14 private wells may have been used historically, only two active private wells were identified. The nearest well is located in a household just over 500 feet from the Site (Figure 2). Because of the distance from the Site to the nearest well, no drinking water samples were collected as part of the 2009 site characterization activities.

SLR personnel traversed the bank of the Kuskokwim River downgradient of the Site and no indications of petroleum hydrocarbon contamination related to the Site were observed. Consequently, no surface water samples were collected.

3.5 Quality Assurance and Quality Control

QA and QC procedures were maintained throughout sampling activities. QA measures included adherence to the project work plan (when feasible), sampling protocols, and proper sample handling. Samples were placed in a cooler after collection, and sample and cooler temperatures were maintained at approximately 4 degrees Celsius (°C) (plus or minus 2°C) throughout transport to the laboratory. Samples were handled and transported in a manner that maintained sample integrity and did not exceed specified holding times. Each sample was documented on the chain of custody (COC), and the samples were hand delivered to SGS Environmental Services, Inc. in Anchorage, a DEC-approved laboratory, under COC procedures.

QC measures included collecting duplicate samples at a frequency of 10 percent for each analytical method, with a minimum of one duplicate sample collected for each method. Trip blanks accompanied like-sample bottles and were analyzed for volatile constituents (GRO and BTEX). All trip blanks were documented on the project COCs. SLR personnel completed a DEC laboratory data review checklist for each analytical report in accordance with ADEC guidance (ADEC, 2009) and performed a QA review (QAR) on the analytical data. The QAR, checklist, and the laboratory analytical report are included in Appendix D.

With the exception of benzene, the data were judged acceptable for use. Some of the benzene data can be used without qualification however, data from nine samples failed to meet project data quality objectives because of elevated laboratory method reporting limits above the ADEC Method Two soil cleanup level where it cannot be confirmed if these results are below the cleanup level for benzene. This issue is discussed in further detail in the QAR (Appendix D).

3.6 Waste Management

Investigation derived waste was kept to a minimum during site characterization activities.

Soil excavated during the site characterization was returned to the location from which it originated and disposable sampling equipment was disposed of at the local landfill.

4 FIELD SCREENING AND ANALYTICAL RESULTS

The site characterization field screening and analytical results are described below. Field screening results are presented on Table 2 and analytical results and corresponding field screening results are presented on Table 3. SLR's QAR, ADEC laboratory data review checklist, and the laboratory analytical report are included as Appendix D.

4.1 Field Screening Results

Heated headspace results ranged from 0.0 ppm to 1,835 ppm. Elevated results (i.e., greater than 100 ppm) were observed in SB-10 (Table 2). Visual and olfactory observations were also noted throughout site characterization activities; these indicators of contamination generally coincided with elevated PID results.

Soil field screening results are summarized in Table 2. Soil screening results associated with samples submitted for laboratory analyses are also presented on Table 3.

4.2 Laboratory Analytical Results

Laboratory analytical results indicate that GRO, DRO, BTEX, 1-methylnaphthalene, and 2-methylnaphthalene, were detected in soil at concentrations above ADEC Method Two soil cleanup levels. The only locations containing concentrations of contaminants above cleanup levels are SB-10 (GRO, DRO, BTEX, 1-methylnaphthalene, and 2-methylnaphthalene) and SB-14 (xylenes). The results for each of these analytes are discussed in detail below.

Two soil samples, including one duplicate, collected from SB-10 (HS-4 and HS-5 [duplicate] at 1.5 to 2.0 feet bgs) contained concentrations of GRO above the cleanup level of 300 mg/kg, with concentrations of 3,530 mg/kg and 3,870 mg/kg, respectively. These samples also had concentrations of DRO above the ADEC Method Two soil cleanup level with a maximum detected concentration of 2,690 mg/kg. Benzene was detected above the migration to ground water cleanup level of 0.025 mg/kg in these two soil samples from SB-10, at a maximum detected concentration of 0.501 mg/kg. The laboratory method reporting limits for nine samples were above the ADEC Method Two soil cleanup level of 0.025 mg/kg for benzene because of matrix interference (Appendix D). Consequently, it cannot be confirmed these results are below the cleanup level for benzene. Samples with elevated method reporting limits for benzene were collected from SB-2, SB-5, SB-8, SB-11, SB-14, SB-15, and TP-1 (Figure 3). With the exception of SB-14, no analytes from these locations were detected at concentrations above ADEC Method Two soil cleanup levels (Table 3).

Toluene was detected at a concentration above the cleanup level in the duplicate sample from 1.5 feet bgs from SB-10, at a concentration of 12.5 mg/kg. Ethylbenzene was also detected above the ADEC Method Two cleanup level in the duplicate sample from SB-10 at a concentration of 8.5 mg/kg. Xylenes were detected above ADEC Method Two soil cleanup level in three samples,

including one duplicate, at concentrations between 156.4 mg/kg (SB-14), and 1,388 mg/kg (SB-10).

Eleven PAH compounds were detected including 1-methylnaphthalene, 2-methylnaphthalene, benzo[a]anthracene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene. One soil sample and the duplicate from SB-10, collected from 1.5 to 2 feet bgs, contained concentrations of PAHs above their respective ADEC Method Two soil cleanup levels; 1-methylnaphthalene, and 2-methylnaphthalene were detected at concentrations of 12.3 mg/kg and 18.3 mg/kg, respectively. No other PAHs were detected above cleanup levels.

Soil analytical results are presented in Table 3. Soil with confirmed contaminant concentrations above ADEC Method Two soil cleanup levels is limited to SB-10 and SB-14 (Figure 3).

4.3 Estimated Volume of Contaminated Soil

Using current field screening and analytical sample results, two locations were identified with soil contamination (GRO, DRO, BTEX, 1-methylnaphthalene, and 2-methylnaphthalene) at concentrations above ADEC Method Two soil cleanup levels. These locations are SB-10 and SB-14 (Figure 3); the only analyte above ADEC cleanup levels in SB-14 was total xylenes. At each of these locations, field screening and analytical results from different depths were compiled and used to estimate the vertical extent (thickness) of contaminated soil exceeding ADEC cleanup levels at the specific location. Estimated thicknesses at each location are as follows; depths below 5 feet bgs were extrapolated by assuming a linear decrease in contaminant concentrations with depth:

- SB-10: 0 to 6 feet (6 feet thick)
- SB-14: 0 to 3 feet (3 feet thick)

For estimating purposes, the locations with elevated benzene method reporting limits where no other analytes were detected above cleanup levels, are assumed to be not detected at or above ADEC Method Two soil cleanup levels.

To estimate the lateral impacted area, a point half way between a location with soil contamination above ADEC cleanup levels and a non-contaminated soil sample location was selected for borings or test pits closest to SB-10 and SB-14. For sides where contamination was not closely bounded, the lateral distance obtained from the nearest borings or test pits was assumed to be approximately equal. The estimated area of remaining contamination roughly corresponds to the old dispenser area (Figure 3). The overall impacted area was estimated at 317.6 square feet; 298 square feet near SB-10 and 19.6 square feet near SB-14. For estimating purposes, the larger area near SB-10 was assumed to have a contaminant thickness of 6 feet, and the smaller area near SB-14 was assumed to have a contaminant thickness of 3 feet. Taking into account the total area, the estimated in-place volume of contaminated soil on site is 69 cubic yards.

Soil most likely to come into contact with human receptors is located between 0 and 2 feet bgs. The estimated in-place volume of impacted soil in this zone is 24 cubic yards.

The estimated in-place volume of contaminated soil is based on available data and the assumptions described above, and it does not cover areas not investigated during the 2009 site characterization due to access restrictions as shown on Figure 3 and described in Sections 3.1 and 3.2 of this report.

5 CONCEPTUAL SITE MODEL

This CSM was developed to qualitatively assess the risk of exposure to potential human receptors from contaminants in soil at the Site. This CSM is based on information from a 2000 site visit (E&E, 2000) and information gathered during SLR's site visits in 2009 and describes the potential exposure scenarios for current and potential future site receptors. This CSM was prepared in accordance with the ADEC *Draft Guidance on Developing Conceptual Site Models* (ADEC, 2005) using the ADEC Draft Human Health CSM Scoping Form, which is included in Appendix E. The ADEC Draft Human Health CSM Diagram was used to summarize the results of the scoping form, and is also included in Appendix E.

All soil cleanup levels referenced in this CSM are ADEC Method Two soil cleanup levels as described in Section 2.2 of this report.

5.1 Impacted Media

Impacted media at the Site are the environmental compartments into which a contaminant is directly released (ADEC, 2005). Field screening and analytical results from the 2009 site characterization report (described in the preceding sections), were compiled and reviewed in order to identify media that have been impacted as a result of site activities. Field screening and analytical data used to support this CSM are presented in Tables 2 and 3. Additionally, data from previous investigations (E&E, 2000) was used to support this CSM.

All media are discussed in the subsequent sections with respect to whether or not they are impacted.

5.1.1 Surface Soil

Surface soil is defined as the interval from 0 feet to 2 feet bgs (ADEC, 2005). A release or discharge associated with the ASTs and associated piping would directly affect surface soil and therefore, for this CSM, surface soil is considered an impacted medium.

In 2000, nine field screening samples were collected from the surface soil interval and analyzed via the heated headspace method using a PID. PID readings ranged from 9.9 ppm to greater than 2,000 ppm, with two results above 1,000 ppm. The maximum PID reading was taken from 1 foot bgs adjacent to the gasoline fuel dispensing pump on the west side of the tank farm. One analytical sample was also collected from this location and analyzed for GRO, DRO, and BTEX. Concentrations of GRO, DRO, and BTEX were all above ADEC Method Two soil cleanup levels. Maximum detected concentrations of GRO and DRO were 9,100 mg/kg and 4,300 mg/kg, respectively (E&E, 2000).

Sixteen field screening samples were collected from the surface soil interval in 2009 for heated headspace analysis using a PID. Field screening results ranged from 0.0 ppm to 1,835 ppm with

two results greater than 1,000 ppm (Table 2). Thirteen analytical samples (including two duplicates) were also collected from the surface soil interval in 2009 and analyzed for GRO, DRO, and BTEX. Three samples (including one duplicate) were also analyzed for PAHs. Analytical results indicated that GRO, DRO, and BTEX are all present at concentrations above ADEC Method Two soil cleanup levels. Maximum detected concentrations for these compounds are 3,870 mg/kg, 2,690 mg/kg, 0.0501 mg/kg, 12.5 mg/kg, 8.5 mg/kg, and 1,388 mg/kg, respectively. Benzene was not detected at concentrations above laboratory detection limits in 11 samples; however, the laboratory detection limits were above the ADEC Method Two soil cleanup level of 0.025 mg/kg in 8 of these samples. Eleven PAHs (1-methylnaphthalene, 2-methylnaphthalene, anthracene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene) were detected. Maximum detected concentrations of 1-methylnaphthalene (12.3 mg/kg) and 2-methylnaphthalene (18.3 mg/kg) were above their respective ADEC Method Two soil cleanup levels of 6.3 mg/kg and 6.1 mg/kg. All other detected PAHs were below cleanup levels (Table 3).

5.1.2 Subsurface Soil

Subsurface soil is defined as the interval from 2 feet to 15 feet bgs (ADEC, 2005); soil below 15 feet bgs is not considered in this CSM because it is below the depth interval considered for direct contact by human receptors. Subsurface soil contamination has been documented at this Site and thus, subsurface soil is considered an impacted medium for this CSM.

No samples were collected from the subsurface interval in 2000.

Twenty six field screening samples were collected from the subsurface soil interval in 2009 for heated headspace analysis using a PID. Field screening results ranged from 0.0 ppm to 68.4 ppm (Table 2). Five analytical samples were also collected from this interval in 2009 and analyzed for GRO, DRO, and BTEX. GRO was detected in four samples at concentrations up to 95.8 mg/kg, which is below the ADEC Method Two soil cleanup level of 300 mg/kg. DRO was detected in two samples at estimated concentrations between 7.29 mg/kg and 83.2 mg/kg, also below the ADEC Method Two soil cleanup level of 250 mg/kg. Benzene was the only BTEX compound present at concentrations above ADEC Method Two soil cleanup levels; the maximum detected concentration of benzene was 0.145 mg/kg. Benzene was also not detected at concentrations above laboratory detection limits in 15 samples, with 9 samples having laboratory detection limits above the ADEC Method Two soil cleanup level of 0.025 mg/kg.

5.1.3 Ground Water

Previous activity at the Site would likely have resulted in impact to the immediate vicinity of the ASTs and associated piping and thus soil, rather than ground water, would have been the receiving medium. As such, for this CSM, ground water is not considered an impacted medium, but will be considered as an exposure medium; exposure media are described in further detail in Section 5.2.

During the 2009 site characterization activities, SLR did not encounter ground water between 0 foot and 12 feet bgs at the Site. Attempts to auger holes and install temporary drive point wells encountered refusal at 12 feet bgs.

Ground water is utilized as a drinking water source within the community of Akiak. Two houses reportedly have their own wells (the closest is just over 500 feet from the Site) and the City of Akiak has up to five wells near the Water Plant (approximately 1,250 feet from the Site), which supply the community. Two supply wells are located in the vicinity of the Water Treatment Plant in Akiak, as described in Section 1.1.2 and shown on Figure 2. The most recent volatile organic compound sample collected on September 21, 2009 from the community drinking water supply did not contain any analytes at concentrations above laboratory method reporting limits.

5.1.4 Surface Water

Previous activity at the Site would likely have resulted in impact to the immediate vicinity of ASTs and associated piping and thus soil, rather than surface water, would have been the receiving medium. For this CSM, surface water is not considered an impacted medium. Surface water is, however, considered an exposure medium based on the potential for overland or subsurface migration of contaminants to surface water.

The nearest surface water body to the Site is the Kuskokwim River, which is located approximately 700 feet east of the Site. The Kuskokwim River is subject to flooding, with recorded events in 1920, 1964, 1971, 1982, 1984, 1987, and 1988 (USACE, 2009), increasing the risk of overland migration of contaminants from the Site. Flood information available from USACE (2009) is only updated through 1998; significant flooding occurred in spring 2009.

As discussed in Section 3.4, SLR personnel traversed the bank of the Kuskokwim River downgradient of the Site and did not observe any indications of petroleum hydrocarbon contamination related to the Site. No prior surface water samples from the Site have been identified.

5.1.5 Sediment

A release at the Site would not directly affect sediments associated with nearby surface water for the same reasons as discussed above. Therefore, for this CSM, sediment is not considered an impacted medium.

No sediment samples were collected during the current investigation, nor were previous sediment samples identified from a review of historical site information.

5.2 Transport Mechanisms and Exposure Media

Transport mechanisms are the pathways through which contaminants may move from impacted media to other exposure media. Exposure media are the media to which contaminants are released or transported that may result in exposure by human receptors to the contaminants. Six transport mechanisms were identified at the Site, all from soil, including direct release to surface soil, migration or leaching to subsurface soil, migration or leaching to ground water, volatilization, runoff or erosion, and uptake by plants and animals. Based on the impacted media and transport mechanisms, five exposure media (soil, ground water, air, surface water, and biota) are present. Possible transport mechanisms and exposure media are depicted on the ADEC Draft Human Health CSM Diagram (Appendix E).

5.3 Exposure Pathways

Each potential exposure pathway was evaluated using the ADEC Draft Human Health CSM Scoping Form (Appendix E). Based on this evaluation, six potentially complete exposure pathways were identified. These pathways include incidental soil ingestion, dermal absorption of contaminants from soil, ingestion of ground water, inhalation of outdoor air, ingestion of surface water, and ingestion of wild foods. A description of potentially complete and incomplete exposure pathways is provided in the following sections.

5.3.1 Potentially Complete Exposure Pathways

The direct contact exposure pathway via incidental soil ingestion is considered potentially complete because soil contamination exists between 0 feet and 15 feet bgs and the Site may be used by human receptors.

The dermal absorption of contaminants from soil exposure pathway is considered potentially complete because 11 PAHs, which can permeate the skin, have been detected at the Site. PAHs detected at the Site include 1-methylnaphthalene, 2-methylnaphthalene, anthracene, benzo[b]fluoranthene, benzo[g,h,i]perylene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, and pyrene.

The ingestion of ground water exposure pathway is considered potentially complete because contaminants have the potential to migrate to ground water and the future use of ground water for drinking water at the Site has not been eliminated by ADEC per 18 AAC 75.350. However, the availability of a community drinking water source limits its potential usage.

The inhalation of outdoor air exposure pathway is considered complete because of the presence of volatile contaminants (GRO, DRO, BTEX, anthracene, fluorene, naphthalene, and pyrene) in soil between 0 feet and 15 feet bgs and the use of the property by human receptors.

The ingestion of surface water pathway is considered potentially complete. The Site has the potential to flood, resulting in overland migration of contaminants, and the Kuskokwim River is used for subsistence fishing and recreational activities which may result in incidental ingestion of surface water.

The ingestion of wild foods exposure pathway is considered potentially complete because of contamination present in the top 6 feet of soil, where it is available for uptake, and the proximity of the Site to potential subsistence hunting and gathering areas. In addition, four PAHs (benzo[b]fluoranthene, chrysene, fluoranthene, and pyrene) which have the potential to bioaccumulate have been detected at the Site.

5.3.2 Incomplete Exposure Pathways

The remaining exposure pathways were concluded to be incomplete based on site data, features, or other pertinent information in accordance with the ADEC Draft Human Health CSM Scoping Form (Appendix E). The incomplete pathways are discussed briefly here.

The inhalation of indoor air pathway is not considered complete because buildings in Akiak are located on pilings, which eliminates any preferential or direct pathways for soil contaminant vapors to migrate into indoor air. Any soil contaminant vapors would be released into outdoor air making the inhalation of indoor pathway incomplete.

The dermal exposure to contaminants in ground water and surface water pathways, and the inhalation of volatile compounds in household water pathway, do not require further evaluation (and are thus considered incomplete) because ADEC water quality standards are being applied as cleanup levels at the Site.

The inhalation of fugitive dust exposure pathway is not considered complete because ADEC soil ingestion cleanup levels, which are being applied at the Site, are protective of this pathway for all analytes except chromium. Based on historical site use information, chromium is not considered a potential contaminant of concern at the Site.

The direct contact with sediment pathway is not considered complete because ADEC soil ingestion cleanup levels are assumed to also be protective of this pathway. In addition, sediment is not considered an exposure medium.

5.4 Current and Future Receptors

As discussed in Section 2.1, the Site is an active tank farm, and access to the Site is not restricted. The planned future use of the Site is unknown. Based on the current usage, surrounding features, and potential future usage of the Site, the following human receptors are considered to be potentially exposed to site contaminants:

- Construction workers (future);
- Site visitors, trespassers, or recreational users (current and future); and,
- Subsistence harvesters and consumers (current and future).

In addition, since the future usage of the Site is unknown, residents are included as potential future receptors.

6 CONCLUSIONS AND RECOMMENDATIONS

Analytical results from 2009 indicate that petroleum hydrocarbon-contaminated soil is present at the Old High School Tank Farm with concentrations of GRO, DRO, BTEX, 1-methylnaphthalene, and 2-methylnaphthalene above ADEC Method Two soil cleanup levels. Impacted soils are limited to the south side of the tank farm in the vicinity of SB-10 and SB-14 (Figure 3). The contamination is primarily from near surface to 4 feet bgs and shallow ground water was not found in a boring advanced to 12 feet bgs.

Based on an evaluation of field screening results and analytical results relative to location and depth, the estimated maximum volume of impacted soil was determined. The estimated in-place volume of impacted soil above ADEC Method Two soil cleanup levels is 69 cubic yards. However, in order to remove all contaminated soil, fencing, and berms, a portion of the tank farm may have to be removed. The full extent of impact north of SB-10 and SB-14 was not fully defined due to the presence of the tank farm containment. The full extent of impact south of SB-10 and SB-14 was not fully defined due to the presence of vegetation (i.e., trees) and a road. The estimated in-place volume of contaminated soil is based on available data, and it does not cover areas not investigated during the 2009 site characterization due to access restrictions, as shown on Figure 3 and described in Sections 3.1 and 3.2 of this report.

The findings of the human health CSM indicate that there are six complete exposure pathways to potential receptors, which include: potential future residents, construction workers, site visitors, trespassers, recreational users, and subsistence harvesters and consumers. The six complete exposure pathways are: 1) incidental soil ingestion, 2) dermal absorption of contaminants from soil, 3) ingestion of ground water, 4) inhalation of outdoor air, 5) ingestion of surface water, and 6) ingestion of wild foods.

No further action is recommended at this time. Additional assessment, once the tank farm has been decommissioned and the ASTs and associate piping have been removed, may aid in determining a more accurate volume of petroleum hydrocarbon-impacted soil prior to a removal action. Additionally, if ADEC would like to assess potential impact to ground water, mobilization of a drill rig is recommended. Based on the presence of a community drinking water supply, the distance to the nearest water well from the Site, and the shallow extent of contamination, the risk of ingesting potentially impacted ground water originating from the Site is considered to be low.

The greatest risk to human receptors at this time, as demonstrated by the CSM, would be via exposure through incidental soil ingestion, dermal absorption of contaminants from soil, and the inhalation of outdoor air. Risks associated with these pathways could be reduced by excavating impacted soil between 0 and 2 feet bgs where human receptors are more likely to come into contact. The estimated in-place volume of impacted soil between 0 and 2 feet bgs at the Site is 24 cubic yards.

Exposure can be limited within the fenced area by locking the tank area to control access, as required by EPA's spill prevention, control, and countermeasure rule (40 CFR 112).

7 REFERENCES

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LIMITATIONS

This document was prepared upon request of the Alaska Department of Environmental Conservation (ADEC). No other party should rely on the information contained herein without prior written consent of SLR International Corp (SLR) and ADEC. This report is solely for the use and information of our client.

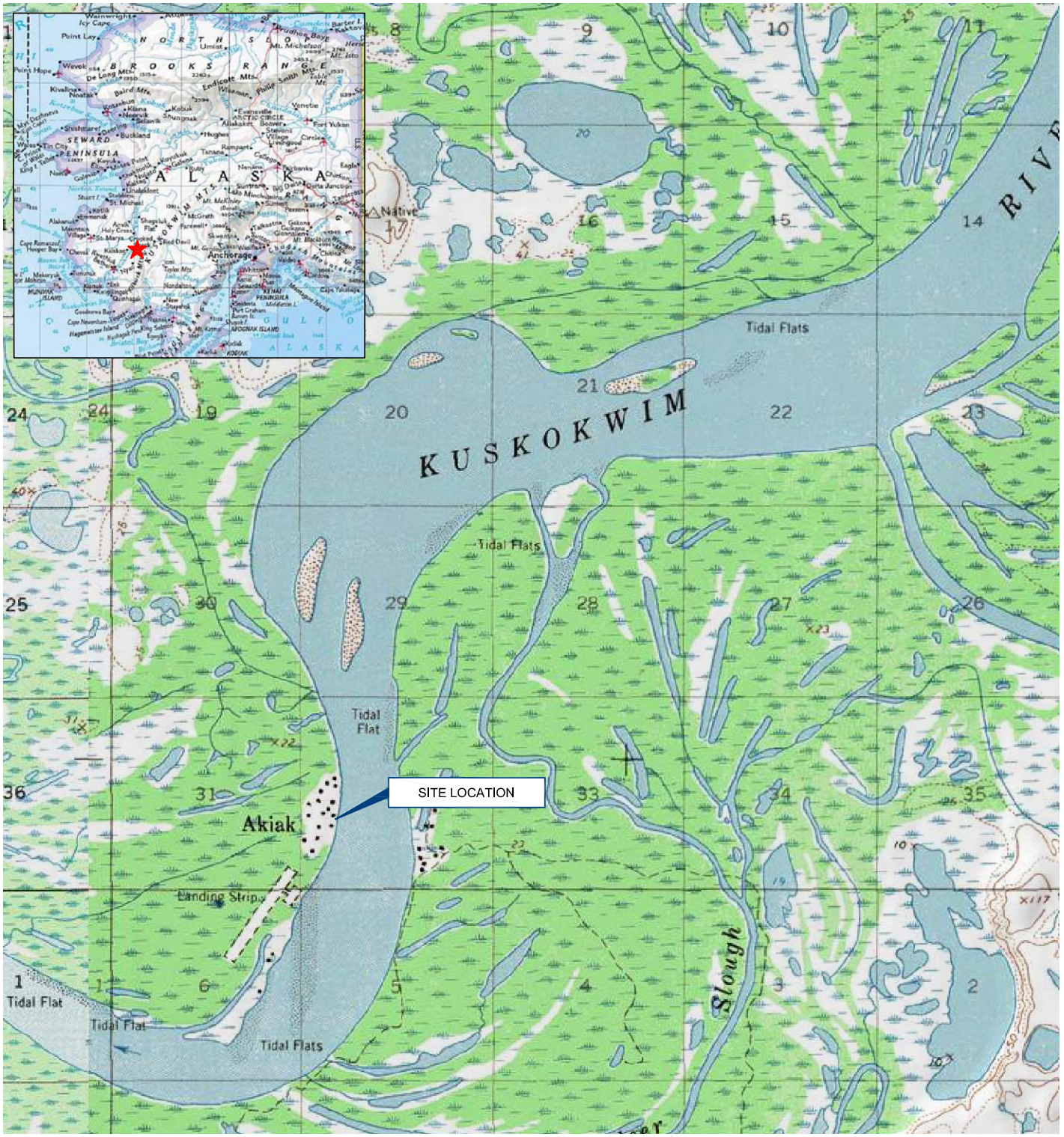
The services described in this report were performed consistent with generally accepted professional consulting principles and practices and with the terms of the agreement with our client. No other warranty, express or implied, is made.

Recommendations and opinions contained in this report are based on conditions existing when services were performed. These recommendations and opinions are intended only for our client's use. SLR is not responsible for the impacts of any changes in environmental standards, regulations, or practices that may have been implemented subsequent to performance of services.

SLR does not warrant the accuracy of conclusions, recommendations, and interpretations in this report that are based in part on information contained in other documents, as cited in the text. Therefore, this report is also subject to the limitations of the cited documents.

Environmental conditions may exist at a site that cannot be identified by visual observation. No investigation is thorough enough to exclude the presence of hazardous materials at a given site. Although every effort will be made to identify such materials, no guarantee of the absence of hazardous materials on the site should be made if hazardous conditions have not been identified during the investigation.

FIGURES



REFERENCED FROM : TOPO!® ©2003 NATIONAL GEOGRAPHIC

N

SCALE: 1" = 0.75mi

WHEN PLOTTED AT 8.5 x 11 PAGE SIZE

0 0.75 1.50 2.25mi

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SLR

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Report OLD HIGH SCHOOL TANK FARM SITE CHARACTERIZATION REPORT AKIAK, ALASKA

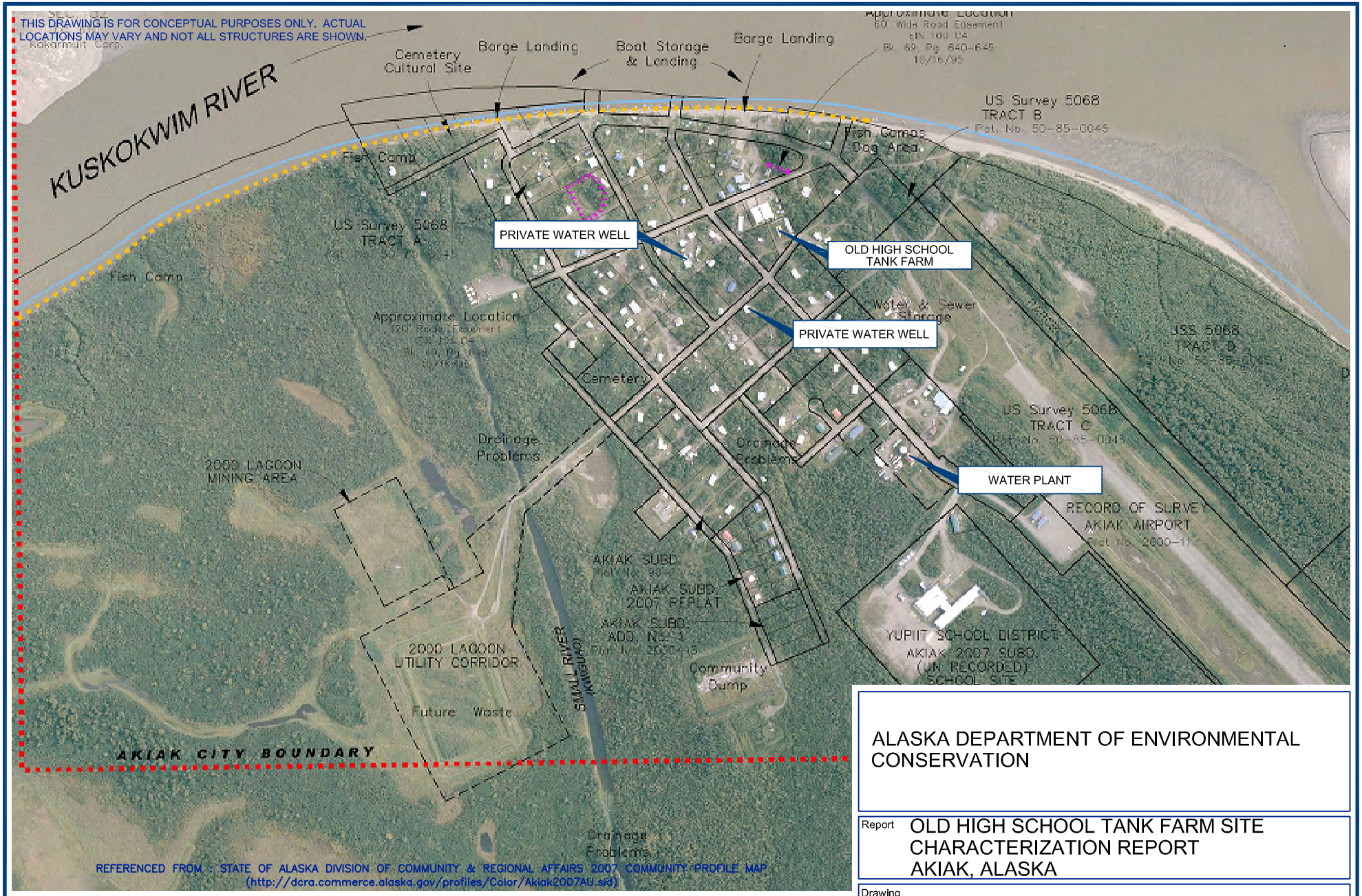
Drawing SITE LOCATION MAP

Date November 16, 2009

Scale 1" = 0.75mi

Project No. 005.0065.09017

Fig. No. 1



SLR

SCALE: 1" = 700'
WHEN PLOTTED AT 8.5 x 11 PAGE SIZE
0 700 1400' 2100'

N

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Report: OLD HIGH SCHOOL TANK FARM SITE CHARACTERIZATION REPORT AKIAK, ALASKA

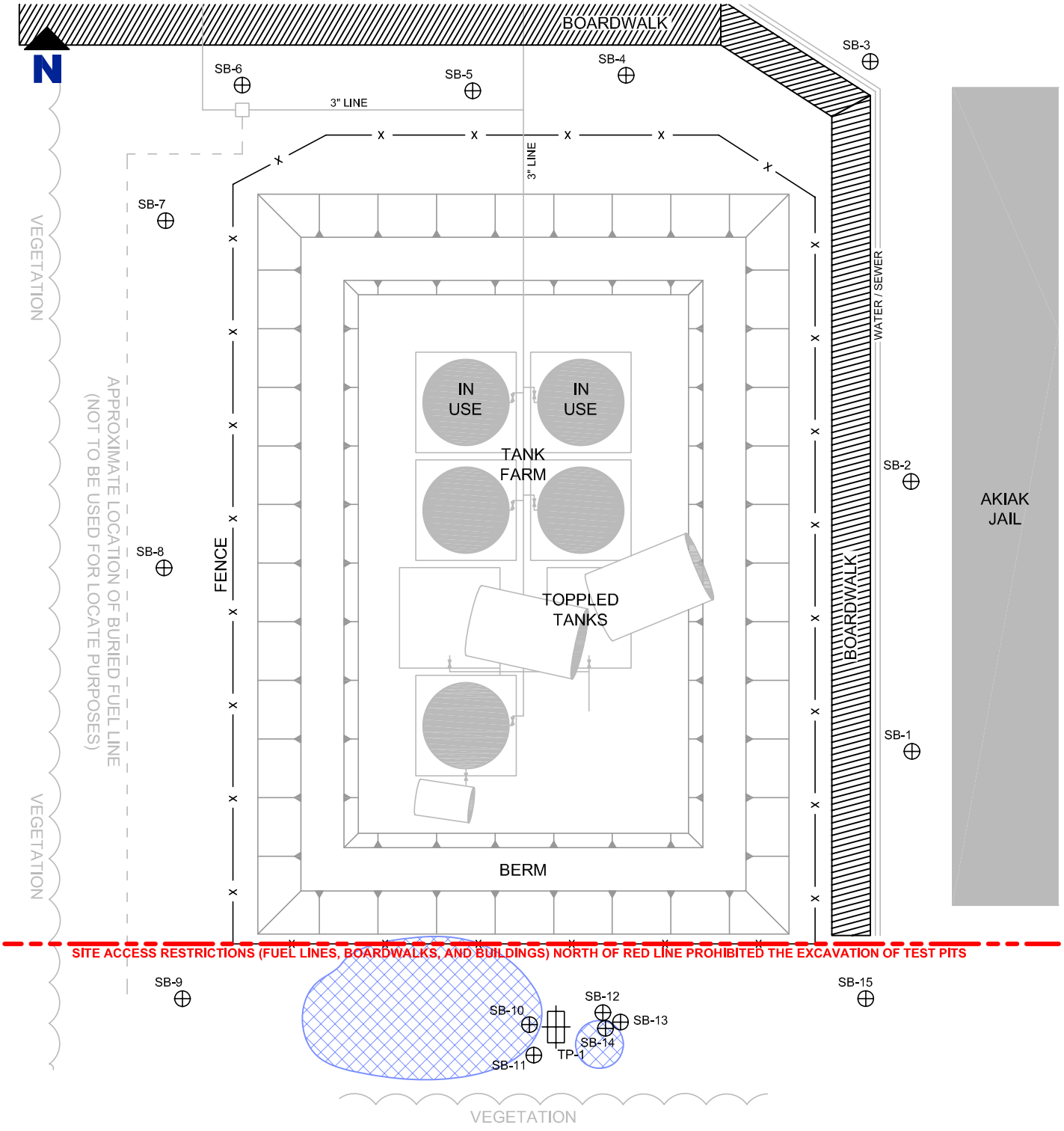
Drawing: SITE VICINITY MAP

Date: September 11, 2009

Project No.: 005.0065.09017

Fig. No.: 2

Scale: 1" = 700'



Legend

SB-2 — SOIL BORING LOCATION

TP-1 — TEST PIT LOCATION

ESTIMATED EXTENT OF SOIL WITH CONTAMINANT CONCENTRATIONS ABOVE ADEC METHOD TWO SOIL CLEANUP LEVELS

SCALE: 1" = 15 Feet
WHEN PLOTTED AT 8.5 x 11 PAGE SIZE

0 15' 30' 45'

SLR

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ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Report: OLD HIGH SCHOOL TANK FARM SITE CHARACTERIZATION REPORT
AKIAK, ALASKA

Drawing: HIGH SCHOOL TANK FARM DETAIL

Date: November 16, 2009

Scale: 1" = 15 Feet

Project No.: 005.0065.09017

Fig. No.: 3

TABLES

TABLE 1
Geographic Coordinates
Old High School Tank Farm
Site Characterization Report
Akiak, Alaska

Sample Type	Sample Location	Latitude[1] (Degrees, Minutes, Seconds)	Longitude[1] (Degrees, Minutes, Seconds)
Hand Auger Borings	SB-1	N 60° 54' 34.2"	W 161° 13' 08.5"
	SB-2	N 60° 54' 34.3"	W 161° 13' 07.8"
	SB-3	N 60° 54' 34.4"	W 161° 13' 07.0"
	SB-4	N 60° 54' 34.8"	W 161° 13' 07.3"
	SB-5	N 60° 54' 34.8"	W 161° 13' 07.3"
	SB-6	N 60° 54' 35.1"	W 161° 13' 07.0"
	SB-7	N 60° 54' 35.1"	W 161° 13' 08.1"
	SB-8	N 60° 54' 35.6"	W 161° 13' 06.3"
	SB-9	N 60° 54' 34.8"	W 161° 13' 09.9"
	SB-10	N 60° 54' 34.4"	W 161° 13' 09.4"
	SB-11	N 60° 54' 34.4"	W 161° 13' 09.3"
	SB-12	N 60° 54' 34.4"	W 161° 13' 08.9"
	SB-13	N 60° 54' 34.4"	W 161° 13' 09.0"
	SB-14	N 60° 54' 34.3"	W 161° 13' 08.9"
	SB-15	N 60° 54' 34.1"	W 161° 13' 08.6"
Test Pit	TP-1	N 60° 54' 34.3"	W 161° 13' 09.2"

Notes:
[1]Datum is WGS 84

TABLE 2
Soil Heated Headspace Field Screening Results
Old High School Tank Farm
Site Characterization Report
Akiak, Alaska

Sample Location	Sample Depth (feet bgs)	PID Result (ppm)
SB-1	0.5 - 1	0.0
	2 - 2.5	0.0
	4.5 - 5	0.0
SB-2	1 - 1.5	0.0*
	2.5 - 3	0.0
SB-3	1 - 1.5	0.0
	2 -2.5	0.0
	4.5 - 5	0.0
SB-4	1 - 1.5	0.0
	2.5 - 3	0.0
	4.5 - 5	0.0
SB-5	0.5 - 1	0.0*
	2.5 - 3	0.0
	4.5 - 5	0.0
SB-6	1 - 1.5	0.0*
	2.5 - 3	0.0
	4.5 - 5	0.0
SB-7	1 - 1.5	0.0
	2.5 - 3	0.0
	4.5 - 5	0.2*
SB-8	0.5 - 1	0.5*
	2.5 - 3	0.6
	4.5 - 5	0.6
SB-9	0.5 - 1	4.5*
	2 - 2.5	1.7
	4.5 - 5	4.5
SB-10	0 - 0.5	1,501
	1.5 - 2	1,835*
	2.5 - 3	36.0
	4.5 - 5	20.9*
SB-11	0 - 0.5	1.0*
SB-13	0 - 0.5	5.2*
	2 - 2.5	1.2
	4.5 - 5	0.6
SB-14	0 - 0.5	13.9
SB-15	1.5 - 2	0.9*
	2.5 - 3	1.0
	4.5 - 5	1.0
TP-1	1	20.9*
	3	68.4*
	5	13.5
	7	3.1*

Note:
Asterick (*) denotes an analytical sample was collected from the same interval

Abbreviations:
bgs - below ground surface
PID - photoionization detector
ppm - parts per million

TABLE 3
Soil Anaytical Results
Old High School Tank Farm
Site Characterization Report
Akiak, Alaska

Sample Location	Sample Identification	Date Sampled	Sample Depth (feet bgs)	PID Heated Headspace (ppm)	GRO AK 101	DRO AK 102	BTEX - EPA Method 8021B				PAH-EPA Method 8270D									PAH-EPA Method 8270D	
							Benzene	Toluene	Ethylbenzene	Xylenes (total)	1-Methylnaphthalene	2-Methylnaphthalene	Anthracene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Chyrsene	Fluoranthene	Fluorene	Naphthalene	Phenanthrene	Pyrene
DEC Cleanup Levels					**300**	**250**	**0.025**	**6.5**	**6.9**	**63**	**6.3**	**6.1**	**3,000**	**4.9**	**1,400**	**360**	**1,400**	**220**	**20**	**3,000**	**1,000**
SB-2	HS-15	10/29/2009	1 - 1.5	0.0	4.59 J	17.4 J	**ND [0.0338]**	ND [0.135]	ND [0.135]	1.828	--	--	--	--	--	--	--	--	--	--	--
SB-5	HS-1	10/29/2009	0.5 - 1	0.0	ND [5.11]	20.6 J	**ND [0.0256]**	ND [0.102]	ND [0.102]	0.1383 J	--	--	--	--	--	--	--	--	--	--	--
SB-6	HS-2	10/29/2009	1.5 -1	0.0	ND [4.89]	10.8 J	ND [0.0244]	ND [0.0978]	ND [0.0978]	0.0474 J	--	--	--	--	--	--	--	--	--	--	--
SB-7	HS-18	10/29/2009	4.5 - 5	0.2	8.38	ND [21.3]	ND [0.0194]	0.0249 J	ND [0.0777]	2.648	--	--	--	--	--	--	--	--	--	--	--
SB-8	HS-19	10/29/2009	0.5 - 1	0.5	3.04 J	20.4 J	**ND [0.0302]**	ND [0.121]	ND [0.121]	1.157	--	--	--	--	--	--	--	--	--	--	--
SB-9	HS-3	10/29/2009	0.5 - 1	4.5	ND [3.59]	ND [20.7]	ND [0.0179]	ND [0.0717]	ND [0.0717]	0.0968 J	--	--	--	--	--	--	--	--	--	--	--
SB-10	HS-4	10/29/2009	1.5 - 2	**1,835**	**3,530**	**2,530**	**0.269 J**	6.3	5.82	**1,281**	**8.75**	**12.4**	ND [0.296]	ND [0.296]	ND [0.296]	ND [0.296]	ND [0.296]	0.468	11.3	0.815	ND [0.296]
	HS-5 (DUP)	10/29/2009	1.5 - 2	**1,835**	**3,870**	**2,690**	**0.501**	**12.5**	**8.5**	**1,388**	**12.3**	**18.3**	ND [0.315]	ND [0.315]	ND [0.315]	ND [0.315]	ND [0.315]	0.802	19.8	1.14	0.111 J
	HS-6	10/29/2009	4.5 - 5	20.9	6.26	7.29 J	**0.145**	0.534	0.095 J	1.584	--	--	--	--	--	--	--	--	--	--	--
SB-11	HS-20	10/29/2009	0 - 0.5	1.0	3.09 J	8.38 J	ND [0.0216]	0.0388 J	ND [0.0863]	1.213	--	--	--	--	--	--	--	--	--	--	--
SB-13	HS-7	10/29/2009	0 - 0.5	5.2	5.1 J	48.4	**ND [0.0402]**	ND [0.161]	ND [0.161]	1.198	--	--	--	--	--	--	--	--	--	--	--
	HS-8	10/29/2009	4.5 - 5	0.6	2.24 J	ND [21.1]	ND [0.0212]	0.0374 J	ND [0.085]	0.388	--	--	--	--	--	--	--	--	--	--	--
SB-14	HS-9	10/29/2009	0 - 0.5	13.9	159	163	**ND [0.04]**	0.527	0.251	**156.4**	--	--	--	--	--	--	--	--	--	--	--
SB-15	HS-21	10/29/2009	0.5 - 1	0.9	4.9 J	63.4	**ND [0.058]**	ND [0.232]	ND [0.232]	1.637	--	--	--	--	--	--	--	--	--	--	--
TP-1	HS-10	10/29/2009	1	20.9	5.69 J	91	**ND [0.0312]**	0.0991 J	ND [0.125]	0.6	0.00487 J	0.00805	0.00305 J	0.00536 J	0.00201 J	0.0036 J	0.00216 J	ND [0.00607]	0.0106	0.00204 J	0.0133
	HS-11 (DUP)	10/29/2009	1	20.9	5.16 J	88.6	**ND [0.0339]**	0.0685 J	ND [0.136]	0.445	--	--	--	--	--	--	--	--	--	--	--
	HS-13	10/29/2009	3	68.4	95.8	83.2 J	**ND [0.0503]**	2.93	0.336	32.2	--	--	--	--	--	--	--	--	--	--	--
	HS-12	10/29/2009	7	3.1	ND [4.62]	ND [21]	ND [0.0231]	0.0504 J	ND [0.0925]	0.1129 J	--	--	--	--	--	--	--	--	--	--	--

Notes:

All results are presented in mg/kg, unless otherwise specified

Bold text indicates results exceed DEC regulatory criteria

PAHs not presented in this table are all not detected

Abbreviations:

-- - not analyzed
DEC- Alaska Department of Environmental Conservation
AK - Alaska Method
bgs - below ground surface
BTEX - benzene, toulene, ethylbenzene, and xylenes
DRO - diesel range organics
DUP- dupilcate of preceeding sample
EPA - U.S. Environmental Protection Agency
J - estimated value
GRO - gasoline range organics
mg/kg - milligrams per kilogram
MRL - method reporting limit
ND - not detected at or above method reporting limit [MRL]
PAH - polynuclear aromatic hydrocarbons
PID - photoionization detector
ppm - parts per million

APPENDIX A

2009 SLR INITIAL SITE VISIT REPORT

SLR Initial Site Visit Report

The initial site visit was completed on September 28 and September 29, 2009. All four sites (Old High School Tank Farm, Old Elementary School Tank Farm, Old Power Plant and Tank Farm, and the Old Corporation Tank Farm [not part of current scope but visited at minimal cost at the request of ADEC] were visited. A brief description and a few photos are included below.

During the initial visit the location of water supply wells near the three investigation sites was investigated. The only known private well in Akiak was at a residence located more than 500 feet from any of the tank farms. No permission forms were distributed and no drinking water sampling is anticipated based on this finding.

The backhoe excavator (a John Deere 160C) was observed to start and operate with no indication of leaks. Individuals with knowledge regarding fuel lines, electrical lines, and telephone lines were also contacted. Most fuel lines are above ground, but one at each of the old school tank farms will need to be located prior to test pitting. The majority of electrical lines in the community are also above ground, but some buried lines may exist around the old schools. The phone lines are reportedly not underground near the old school tank farms. The future usage of the old school tank farms is unknown to SLR. The utility locate service will be contacted for utility locates in addition to assistance from the community prior to the site investigation.

Old High School Tank Farm

Eight tanks were observed in the Old High School Tank Farm; five were upright and three were toppled. Of the eight tanks, two are currently in use (supply nearby teacher housing), and another three were reportedly in operational condition (two upright and one lying down). The tank farm is fenced, but not secure (i.e. no locks), and has a lined and bermed containment. The liner appeared in good condition where exposed and holds water. Sheen was noted on the water in the containment area in three locations. The tanks sit on wooden platforms inside the containment. Access for test pitting is limited on two sides of the tank farm due to wooden walkways, new sewer/water pipes, and nearby buildings. One buried fuel line exists in the area limiting access on a third side.

Old High School Tank Farm

Limited access for test pitting near Old High School Tank Farm

Old Elementary School Tank Farm

Two tanks were observed in the Old Elementary School Tank Farm; both were upright. These tanks are both currently in use and supply a nearby house, the Hut (Boys and Girls Club), and teacher housing. The tank farm is inside a fence, but not secure (i.e. no locks), and has a lined and bermed containment. The liner appeared in good condition and holds water. The tanks sit on wooden platforms inside the containment. Access for test pitting around this area appears good, but we will need to confirm the location of one fuel line and that no other utilities in the area are buried.

Old Elementary School Tank Farm

Old Power Plant and Tank Farm

The Old Power Plant consists of a single building that was impacted by flooding in 2009. Outside the building a transformer, an old generator, and other debris were observed. Stressed vegetation was noted behind the building, but there was no sign of the drums reported in previous investigations. The building contained two generators, two transformers, at least four batteries, approximately 70 five-gallon buckets containing motor oil or like items. The floor of the building is heavily stained. The two tanks associated with the Old Power Plant were lying down outside their containment. The containment appeared to have been damaged in the flood. One of the tanks may contain a small amount of fuel. No visible soil staining was noted.

Inside Old Power Plant Building


Old City Tank Farm

Old Corporation Tank Farm

The Old Corporation Tank Farm was also visited as a courtesy. The tanks have been removed from the bermed area and are reportedly at the dump. The liner of this tank farm has been damaged and a small amount of water was present inside the lined and diked containment, although the water level was less than previously observed by the community (leaking?). Sheen was observed on the water within the diked area.

Liner damage at Old Corporation Tank Farm

Old Corporation Tank Farm with Kuskokwim River in background

APPENDIX B

PHOTOGRAPH LOG

AKIAK OLD HIGH SCHOOL TANK FARM
PHOTOGRAPHIC LOG

Photograph 1:
Old High School Tank Farm as observed during the September 2009 Site Visit. Out of the eight tanks located in the tank farm, three were no longer standing.

Photograph 2:
Above ground piping within the diked area; all threaded piping was reportedly replaced with welded piping approximately eight years ago.

Photograph 3:
Ponded water on the liner inside the diked area at the Old High School Tank Farm as observed in September 2009. Sheen was noted on the water in three locations during the Site Visit.

Photograph 4:
Hand augering adjacent to the Old High School Tank Farm.

Photograph 5:
Limited access on this side of the tank farm prohibited use of the backhoe for site characterization activities. Soil boring SB-2 is visible in the middle of the frame and SB-1 is adjacent to the SLR field geologist seen here.

Photograph 6:
Soil boring SB-5 was advanced adjacent to a pipe valve. No signs of contamination were observed in this boring.

Photograph 7:
Soil borings SB-6 and SB-7 (left to right) are visible here. SB-6 was advanced adjacent to the pipeline junctions and SB-7 was advanced on the side of the tank farm where a buried active fuel line exists (prohibiting the use of the backhoe). No signs of contamination were observed in either boring.

Photograph 8:
Soil borings SB-10 through SB-14 were advanced in the vicinity of the old dispenser. Refusal was hit multiple times in the area due to the presence of roots and wood debris. A strong (paint thinner like) odor was noted in this area.

Photograph 9:
Advancing Test Pit 1 in the old dispenser area; wood debris is visible in the soil pile in the bottom left corner of this photograph.

Photograph 10:
Stump removed during advancement of Test Pit 1.

Photograph 11:
Attempting to advance auger for installing drive point wells at the site; maximum depth reached at this site with the power auger was 12 feet. A drive point was advanced to 14 feet before refusal. No water was indicated in the top 14 feet.

Photograph 12:
Removing auger flights from pilot hole; the only way to remove the auger flights was to twist them out using a pipe wrench.

APPENDIX C

FIELD NOTES

Akiak Combined Tank Farm Site Characterization

"Rite in the Rain"®
ALL-WEATHER
JOURNAL
No. 391

Old Power Plant and Tank Farm
005.0065.09015

Elementary School Former Tank Farm
005.0065.09016

Former High School Tank Farm
005.0065.09017

INCH

"Rite in the Rain®"
ALL-WEATHER WRITING PAPER

Name SLR International Corp

Address 4601 Business Park Blvd., Suite K42
Anchorage, Alaska 99503

Phone 907-222-1112

Project Akiak Tank Farm Site Characterization

CONTENTS

Sept. 28, 2009 C. Bentz

0930 depart office for airport; check in for flight to Bethel

1415 arrive in Aklak; meet Sammy Jackson and Susan Jasper (IGAP Assistant)

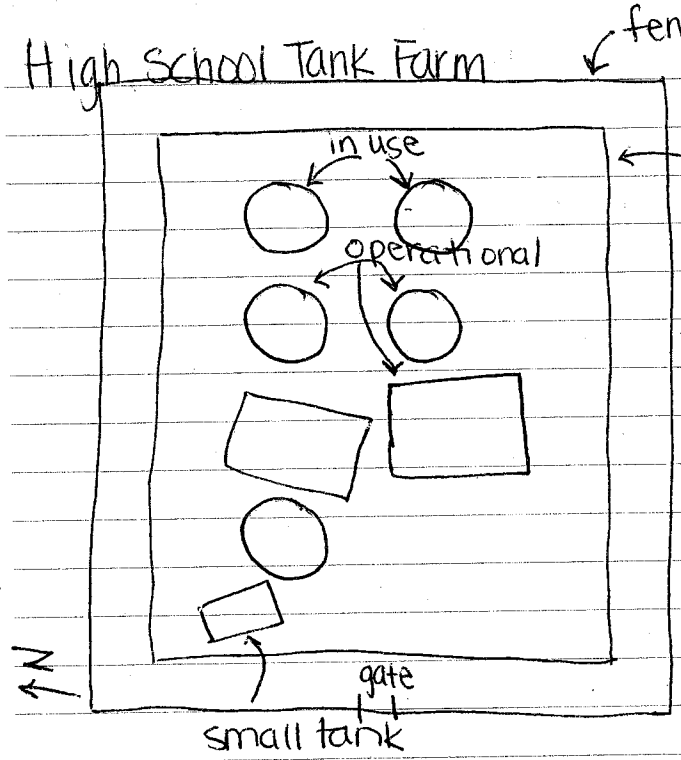
meet Sheila (clerk) Williams indicated most wells have been decommissioned or are no longer in use

1446 at Old High School Tank Farm two tanks in front still used; another couple are operational but not in use – no current plans to use more than the two tanks; no buried utilies inside fence – buried fuel lines along the road; water from new system for teacher housing (per Earnest)

Photos 100-0001 to 100-0017

C. Bentz 9/28/09

High School Tank Farm



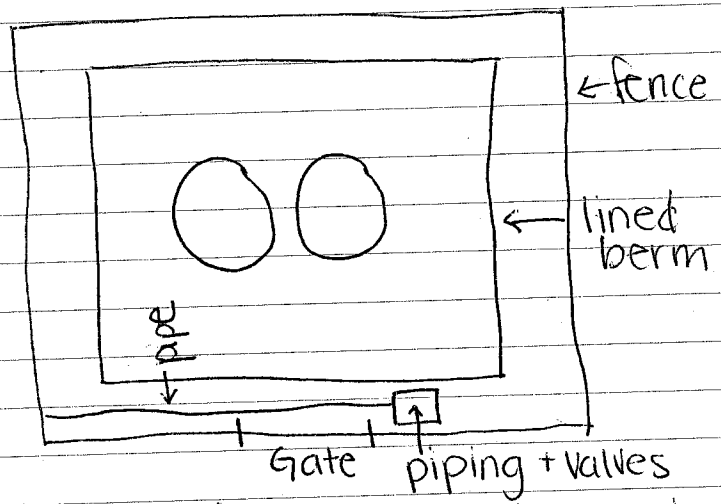
ponded water w/ sheen observed in several locations; fuel odor; lots of vegetation; liner appears to hold water

C. Bentz 9/28/09

Sept. 28, 2009 C. Bentz

1512 At Old Elementary School Tank Farm

Photos 100-0018 to 100-0033



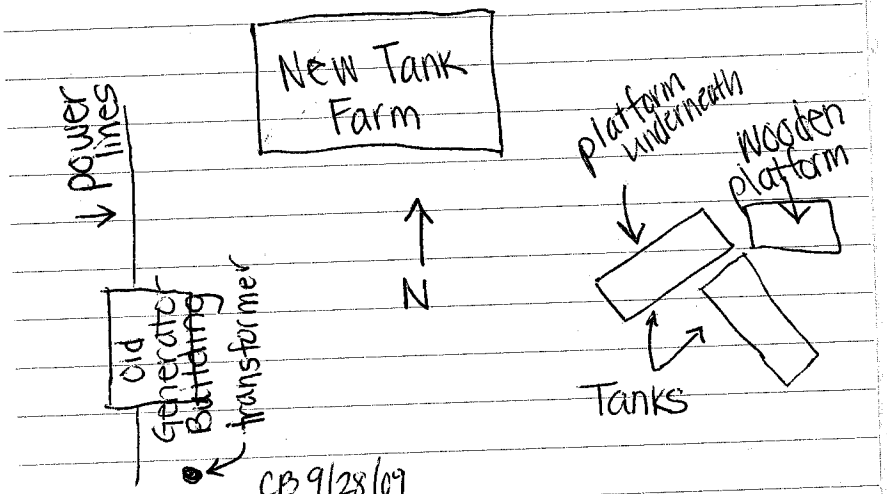
tanks still in use, liner in good condition; few holes; vegetation growing; liner appears to hold water

-no room inside fenced area for test pits near offices/housing

C. Bentz 9/28/09

Sept. 28, 2009 C. Bentz

1528 At Old Generator Bldg. + Tank Farm



CB 9/28/09

Photos 100-0034 to 100-0044

Old Tank Farm (City)

Still liner present - one tank may still contain fuel (small amount); no visible soil staining

old generator in brush

Photo 100-0045 old generator in brush drum next to old generator bldg. ~2/3 full

stressed vegetation on back side

oil stained wood (backside of bldg.)

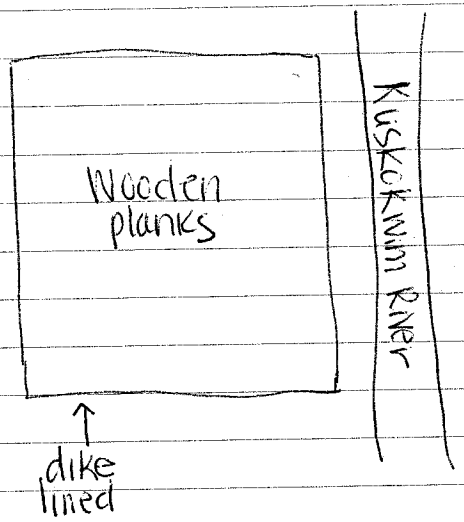
Photos 100-0046 to 100-0070 @ old generator building (outside and inside)

C. Bentz 9/28/09

Sept. 28, 2009 C. Bentz

Inside old generator bldg.
- 2 generators
- 2 transformers
- at least 4 batteries
- ~70 5-gallon buckets motor oil

floor is black where visible
used sorbents
Water mark ~2' (visible on buckets)
1601 At Old Corporation Tank Farm —
2 tanks are now at the dump



liner appears to hold water; Sheen on water
Sammy indicated used to be more water-leaking, liner in poor condition in places

C. Bentz 9/28/09

Sept. 28, 2009 C. Bentz

Photos 100-0071 to 100-0084
City of Akiak = power = above ground
Phone = Unicom / GCI
Water / Sewer = Akiak Native Community = Underground
Fuel lines = mostly above ground
1650 Call M. Rieser about schedule + update on findings so far
- possible dates = week of 10/12 or 10/26

Backhoe = John Deere 160C LC
was used for water / sewer project
~2' bucket
1717 backhoe starts and operates; no obvious leaks
1730 set-up to stay @ school (in library); end of day.

C. Bentz 9/28/09

Sept. 29, 2009 C. Bentz

0830 at school waiting for Sammy; review list of things to look at during site visit and background information

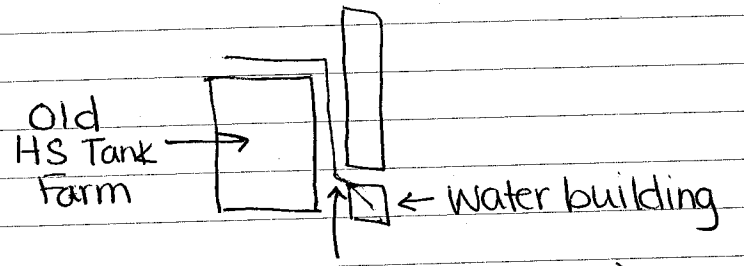
0905 meet Sammy + Susan → head to office; run into GCI guy - he says there are some buried lines near old school (Franklin Lot) looking @ map - no buried cables (phone) near tank farms

1015 meet w/ Adam with City of Akiak says there may be some buried electrical near old school → most electrical is above ground
- barges - at least once/year
- fuel line under road to new school

1120 meet w/ Nathan Williams - look @ maps/drawings of fuel lines, then revisit sites (old elementary and high school tank farms) to look @ lines - one buried line by old high school tank farm - Nathan will review SKW drawing before we come back

C. Bentz 9/29/09

Sept. 29, 2009 C. Bentz



maybe new bulk tank to replace it - talk to Tom Jacobs 695-5629

CB 9/29/09

fuel lines from old elementary school to neighboring building are above ground - should be visible

CB 9/29/09

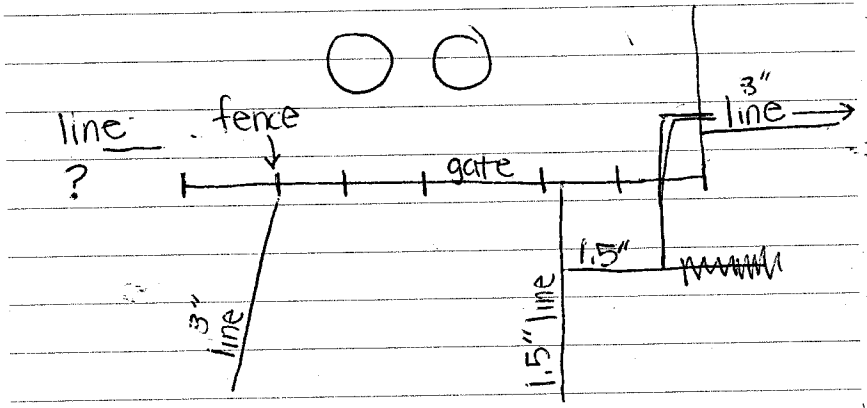
fuel lines ~~from old~~ to new high school are buried

CB 9/29/09

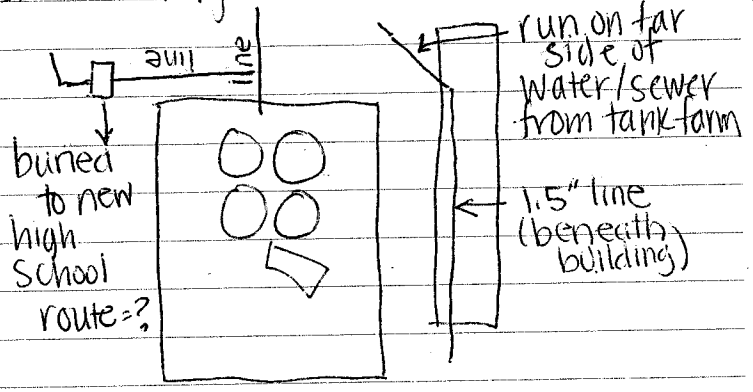
C. Bentz 9/29/09

Sept. 29, 2009 C. Bentz

Revisit Old Elementary Tank Farm
W/ Nathan Williams → look @ fuel lines



Revisit Old High School Tank Farm



1321 Check on flight schedule — flight due @ 1400.
1405 depart Akiak

C. Bentz, 9/29/09

Sept. 29, 2009 C. Bentz

Interviews -
Samuel Jasper - Old Power Plant
Tom Jacobs - school tank farm plans

Others??
Sammy Jackson e-mail address:
mkc.akiak@live.com

cb 9/29/09

1515 Arrive in Bethel; locate bag that never made it; check in for flight to Anchorage
1600 board flight for Anchorage - via Saint Marys and Aniak
1848 arrive in Anchorage
1915 have luggage and car; end of day.

C. Bentz 9/29/09

October 1, 2009 C. Bentz

1050 call Alaska Digline for Utility Locate Request - have until 10/16 to comply - member utilities include: GCI and United Utilities
ticket # 400660 - Old HS Tank Farm
ticket # 400662 - old ES Tank Farm

October 19, 2009

1637 Contact Alaska Digline @ 1-800-478-3121 to check status on locates
1712 message from Michelle @ Alaska Digline - direct line = 334-1401; she left a message w/ united + is trying to get contact info. for GCI in Bethel → she will try again tomorrow (10/20) morning.

October 20, 2009

0821 message from Russ McDonald @ united Utilities - never got locate requested for AKIAK - can call him at 543-2300 or Jay at 545-4840
0844 recieve call from Michelle @ Alaska Digline. She is still trying to get a hold of GCI in Bethel regarding locate. She talked with Daniel Albright with United about

C. Bentz 10/20/09

Oct 20, 2009 C. Bentz

locate. He said it was okay for me to contact him directly at 543-7513. She relayed that he is responsible for Akiak locates, knows where the site are, but was pretty sure locate had not been done.
0849 called Daniel Albright; no answer - left message
0854 recieve call from Daniel Albnte w/ United - he knows there are buried cables in the area + it will take at least one day to do the locate (onsite). He indicated that the locate would be complete before the weekend is out. He also indicated it is windy + snow is in the forecast. He provided his e-mail address for me to send the locate request to (dalbnte@uui.-alaska.com)
0906 e-mailed Daniel utility locate request information
0914 leave message for Russ McDonald letting him know we have coordinated locate through Daniel Albnte.

C. Bentz 10/20/09

October 20, 2009 C. Bentz

0927 recieved call from Daniel Albrite @ United Utilities - he will have a crew go to site CB 10/20/09 - asked a few questions about locate specifics, which I answered.

1427 recieved message from Michelle at the Alaska Dig line saying she spoke with Robert who indicated that Daniel should be able to help us with any GCI lines that may be out there, but he did not believe there were any.

October 23, 2009

1043 recieve call from Daniel Albrite - clear to dig @ Old High School Tank Farm - no lines within 20' of fence in any direction

1050 recieve second call from Daniel - clear to dig @ Old Elementary School Tank Farm - no lines within 20' of fence in any direction; also indicated it was cold + there was a couple inches of snow on the ground.

Utilities are clear - need to locate last two fuel lines

C. Bentz 10/23/09

October 25, 2009

1915 Calibrate MiniRae Lite - C. Bentz
S/N 590-000209
fresh air calibration = 0.0 ppm
100 ppm isobutylene = 100.0 ppm
lot# 08-3557 exp. 3/15/10

CB ~~8/25/~~ 10/25/09
CB 10/25/09

October 26, 2009 C. Bentz A. Nash

0515 C. Bentz @ Diamond Airport Parking → get on shuttle for terminal

0530 checked in @ AK Airlines for flight to Bethel (scheduled departure at 0700)

0800 arrive in Bethel; get gear and ride to Frontier → check in for flight - scheduled departure = 1300

Stanley, Chris or John @ Frontier 543-3825 Freight - call with freight + authorize payment via credit card

1044 C. Bentz departs Bethel for Akiak; procured seat on earlier flight; A. Nash in Bethel until scheduled departure @ 1300.

1058 C. Bentz arrives in Akiak; meet Sheila @ airport

C. Bentz
A. Nash

October 26, 2009

1120 Stop at post office and pick up equipment

1136 unload gear @ VPSO housing

CB 10/26/09

1153 back @ VPSO housing; have ATV; go through gear + prep. to work

1415 A. Nash arrives in Akiak; head to Old High School Tank Farm + Old Elementary School Tank Farm to locate fuel lines

1619 Walk down to Kuskokwim River – no sign of contamination; unable to decipher edge of river – ice on edge of river; return to VPSO housing to continue prep. work for tommorow sampling

1738 end of day. Plan to start test pitting on 10/27/09.

C. Bentz 10/27/09

C. Bentz
A. Nash

October 27, 2009

0830 Begin prep work for test pitting at the old Elementary School; review plans + discuss safety

0930 head to Old Elementary School Tank Farm – no excavator or operator

0957 @ village office; check in with Sheila – Sammy is still sick (C. Bentz left message on cell phone @ 0905); she will try to find the heavy equipment operator; return to ES tank farm

1014 back @ ES tank farm – look @ 3" fuel line extending to the Kuskokwim – no threaded joints

1025 advance SB-1 (hand auger boring)

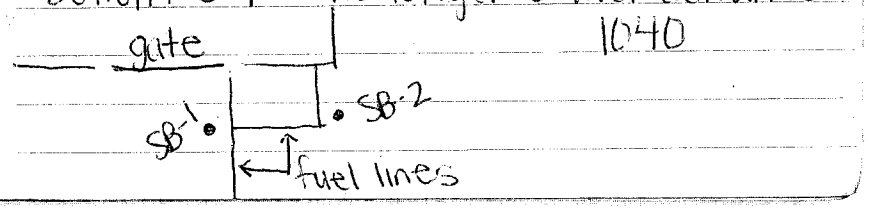
0-1 Sand – brown, well graded, with silt + organics – fuel odor noted @ 0.5'

1-4 Same as above except ~~more~~ fine grained sand (not well graded) rest of description is same → fuel odor observed through out

CB 10/27/09

bottom @ 4' – no longer could advance

1040



C. Bentz
A. Nash

October 27, 2009

1040 start advancing SB-2

SB-2 Sand w/ silt - brown, mostly fine sand, silt; slight fuel odor @ 4.5'
4.5-5' = silty sand

boring done @ 5' (extent of hand auger)

1057 receive call from Sheila - excavator will be here in about 30-45 minutes; backfilled both borings; decide on test pit locations and continue to look at fuel lines while waiting for excavator

1156 read PID headspace for soil samples collected this morning

Sample	ambient	PID
SB-1 ~~0.5~~-1	0.1 ppm	309.7 ppm
~~SB-1 1-1.5~~ CB 10/27/09		
SB-1 2-2.5	0.4 ppm	344.6 ppm*
SB-1 3.5-4	0.4 ppm	116.5 ppm*
SB-2 ~~3-3.5~~ 1-1.5 CB 10/27/09	0.5 ppm	3.6 ppm*
SB-2 4.5-5	0.4 ppm	0.6 ppm
SB-2 3-3.5	0.6 ppm	5.0 ppm

1219 return back to site (Old Elementary School Tank Farm) - excavator is making its way down the road

1230 excavator onsite - go over safety w/ Norman, Loit and sampling plan

C. Bentz 10/27/09

C. Bentz
A. Nash

October 27, 2009

recd 0 ambient air reading = 0.2; ambient air in cab = 0.2 ppm

1240 stop test pitting excavator over heating - leaking coolant - test pit 1 @ 4' - did not get sample @ 2'

1258 have applied sorbent pads; still leaking - attempt to call Mike Rieser - cannot reach - try Carl Benson - talk to him about situation - he will try Mike on his cell every ½ hour

1316 attempt to call DEC PM Grant 269-8685 - updated him on the situation - he stated that he understands that things happen + wants to be kept in the loop - he will be in the office until 1530 - leave message if gone. At a minimum he wants to get something out of it.

- Continue to work on excavator (no longer leaking)
- Backfill test pit by hand

1408 still working on excavator - spill was glycol - water pump is out - ceased - excavator is out of commission

1418 excavator left site - operator

C. Bentz 10/27/09

C. Bentz
A. Nash

October 27, 2009

took used absorbents - bagged impacted snow

1430 arrive @ village office and check in with Sheila on what options we may have:

- another loader/backhoe in town - can only go 6-8 feet owned by city of Akiak - may be available

1457 try to call Mike - update him on current situation

1521 read PID

Sample	ambient	PID
TP-1 4'	0.0 ppm	1.6 ppm

1523 check on power source near Old Elementary School Tank Farm

1535 start trying to drill pilot/test hole w/ power auger @ Old Elementary School Tank Farm

1625 able to advance to 14.5' with power auger - hole did not really stay open - will attempt to install a drive point

1708 drive point refusal at 11'; no water - remove top 5' section + flag

C. Bentz 10/27/09

C. Bentz
A. Nash

October 27, 2009

area around it until we can determine if there are any other alternatives for advancing drive point or removing it

1735 all gear cleaned up and returned to house; handle samples

Sample Log -

SB-1 2'-2.5 = ES-1 @ 1030
SB-1 3.5-4.0 = ES-2 @ 1034
SB-2 1-1.5 = ES-3 @ 1042
duplicate of SB-1 2-2.5 = ES-4 @ 1047

analyses ES-1 + ES-4 for GRO/BTEX, DRO, and PAHs
ES-2 and ES-3 for GRO/BTEX + DRO

1813 done for now - still need to talk to Mike + leave msg for Grant

2000 call Mike - give him update on drive points + unknown city backhoe status - agrees with leaving drive point attempted today in the ground → drive points are mostly likely out - need to touch base tomorrow morning once we know status of city backhoe

C. Bentz 10/27/09

22

C. Bentz
A. Nash

October 27, 2009

2026 Call + leave message for Grant; end of day.

C. Beutz 10/27/09

C. Bentz 23
A. Nash

October 28, 2009

0830 recieve call from Mike about status - we update him on obsenations that city backhoe may not have windows - still not sure if it is available or operable

0835 start walking to village office

0840 recieve call from Mike - if no windows need to do air monitoring every 15 minutes at excavation - if higher than action level stop work and leave area until air monitoring readings are acceptable

0850 at village office - check in with Sheila - they will resume work on the excavator when daylight - still don't know about city backhoe; wait at village office for Sammy Jackson

0905 Sammy in office - check in with him - they will need to work on small backhoe before could test pit - Check in on buried lines at old High School Tank Farm - set up appt. to meet w/ Sam Jasper tomorrow @ 9am

C. Beutz, 10/28/09 CB 10/28/09

C. Bentz
A. Nash

October 28, 2009

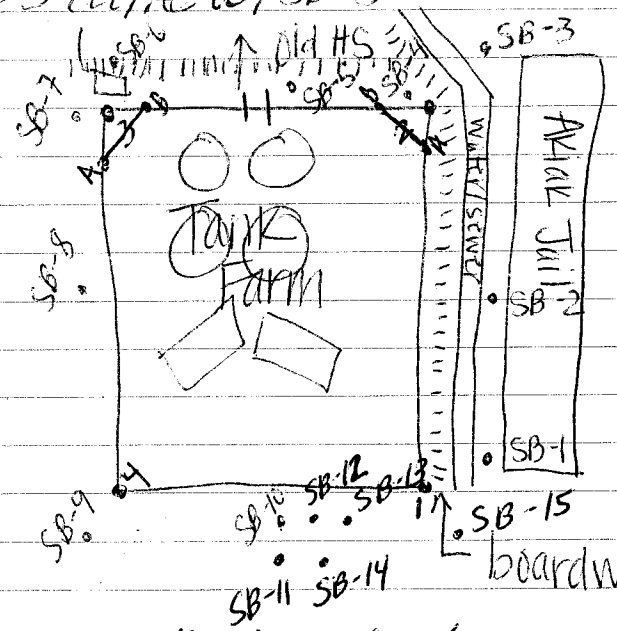
0919 head back to VPSO housing; call Mike on way back to house
- conference in Grant
work with what we can while we ~~were~~ are out here - hand auger and attempt to do another drive point CB 10/28/09
0948 get gear + sampling equipment together to hand auger @ high school / tank farm
0952 safety tailgate CB 10/28/09
1000 recieve call from ~~Eainer~~ Ernie - he will meet us @ the old High School / Tank Farm
1009 start hand augering SB-1
ambient PID = 0.1 ppm
1026 done hand augering SB-1
0-1 silt and organics, dark brown no odor
1-5 sand, mostly fine grained, brown no odor
- Meet w/ Ernie - all fuel lines are welded, ~~joints~~ CB 10/28/09 joints - changed 8 years ago. Buried line runs down center of road - not 10' of

C. Bentz 10/28/09

C. Bentz
A. Nash

October 28, 2009

clearance on either side
1030 start hand augering SB-2 @ HS Tank Farm
0-1': mostly silt and organic soil (gray silt)
1-1.5' " " " " " no odor
2-5' sand, brown, mostly fine grained, no odor
1041 move to SB-3
0-2 silt w/ organics + sand, no odor
2-5 sand, brown, mostly fine grained, no odor
1053 done w/ SB-3



C. Bentz 10/28/09

C. Bentz
A Nash

October 28, 2009

1102 Begin hand augering SB-4
1105 Collect SB-4 1.0'-1.5'
silt w/ sand & organics
1110 Collect SB-4 2.5-3.0'
fine sand
1115 Collect SB-4 4.5-5.0'
fine sand
1120 begin hand augering SB-5
0-1 silt with sand, trace-little organics, no odor
continues to 2.5'
2.5'-5' sand, brown, mostly fine grained, no odor
-adjacent to valve
1128 move to SB-6 near pipe junction
0-1 silt w/sand & organics, brown
1-5 sand, brown, mostly fine grained, no odor
1140 start at SB-7
0-0.25 organic
0.25-5 sand, brown, mostly fine grained with silt, no odor
1157 start at SB-8
0-5-1 sand w/silt & organics, no odor

C. Bentz 10/28/09

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1-5 sand, grayish brown, mostly fine grained sand, no odor
1212 break for lunch
1242 resume working - read PIDs

Sample	ambient	PID
SB-1 0.5-1'	0.0 ppm	0.0 ppm
SB-1 2-2.5'	0.0 ppm	0.0 ppm
SB-1 4.5-5'	0.0 ppm	0.0 ppm
SB-2 1-1.5'	0.0 ppm	0.0 ppm
SB-2 2.5-3'	0.0 ppm	0.0 ppm
~~SB-2 4.5-5'~~		CB 10/28/09
SB-3 1-1.5'	0.0ppm	0.0ppm
SB-3 2-2.5'	0.0ppm	0.0ppm
SB-3 4.5-5'	0.0ppm	0.0ppm
SB-4 1-1.5'	0.0ppm	0.0ppm
SB-4 2.5-3'	0.0ppm	0.0ppm
SB-4 4.5-5'	0.0ppm	0.0ppm
SB-5 0.5-1'	0.0 ppm	0.0 ppm
SB-5 2.5-3'	0.0 ppm	0.0 ppm
SB-5 4.5-5'	0.0 ppm	0.0 ppm
SB-6 1-1.5'	0.0 ppm	0.0 ppm
SB-6 2.5-3'	0.0 ppm	0.0 ppm
~~SB-7~~ SB-6 4.5-5'	0.0 ppm	0.0 ppm
~~SB-7~~ 1-1.5'	0.0 ppm	0.0 ppm
SB-7 2.5-3'	0.0 ppm	0.0 ppm

C. Bentz 10/28/09

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sample	ambient	PID
SB-7 4.5-5'	0.0 ppm	0.2 ppm
SB-8 0.5-1'	0.0 ppm	0.5 ppm
SB-8 2.5-3'	0.0 ppm	0.6 ppm
SB-8 4.5-5'	0.0 ppm	0.6 ppm

1255 call Mike w/update; still no word on excavator
weather = overcast, 30s — same as 10/27/09
1323 done w/PID readings, talk to Sammy - still no word on equipment, ok to use power @ Akiak Jail
1330 start SB-9
0.5-5' Sand, brown, mostly fine grained, no odor
1337 done @ SB-9, move to SB-10
0-2' mostly fine grained sand w/ silt, trace, organics, strong odor
refusal @ 2'; move over ~6" → refusal @ 2'; move over ~1' → odor much less than 1st two holes (slight odor)
1354 step out ~2' away from fence to advance SB-11 SB-10 +

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SB-11 0-2 sand, brown, mostly fine, no odor; refusal @ 2' due to tree root
move 2' from SB-10 towards Akiak jail → frozen soil; move only 1' from SB-10 in direction of Akiak Jail - still smells (strong odor)
move 6' from SB-10 toward Akiak Jail (area in between is frozen)
advance SB-12 - refusal @ 6" still strong odor - no sample collected; move another 2' and advance SB-13
0-5' sand and organic matter (wood), no odor, dark brown
1423 begin advancing SB-14, 1' further from fence than SB-12
SB-14 refusal @ ~0.5'; sand w/ silt + organics, strong non-fuel odor
1430 Begin advancing SB-15
0-2' sand w/silt and organics, dark brown, no odor
2-5' Sand, brown, mostly fine grained, no odor
1447 done w/ soil borings @ Old

C. Bentz 10/28/09

C. Bentz, A. Nash

October 28, 2009

High School Tank farm; re-equip to attempt installing drive points

1520 begin attempt to install drive point by advancing power auger through boring SB-1 (A. Nash); C. Bentz photographs site + GPS + measures boring locations

1533 advanced to 12' with power auger – maximum extent – anything over would over exert drill and we would have to use a bent auger rod

1549 Curt shows up w/ backhoe – ask to meet him tomorrow ~~(10/29/09)~~ (10/29/09) at 1000 am at Old Elementary School Tank Farm CB 10/28/09

1600 refusal w/ drive point @ ~14'; no water

1625 update call w/ Mike

1654 cleaned up site; return to VPSO housing to read final PIDs and do sample management

End of day.

C. Bentz 10/28/09

C. Bentz, A. Nash

October 28, 2009

Measurements

Location	Location	Distance
SB-15	Corner 1	7.8'
SB-14	"	23.6'
SB-13	"	21.9'
SB-12	"	23.3'
SB-11	"	31.6'
SB-10	"	31.0'
SB-1	"	22.5'
SB-2	"	49.3'
SB-1	Corner 2A	58.6'
SB-2	"	31.4'
SB-3	"	15.3'
Corner 1	Corner 2A	78°
Corner 2A	Corner 3B	12'
SB-3	Corner 2B	17.6'
SB-4	"	11.5'
SB-5	"	26.1'
Corner 2B	Corner 3B	41'
Corner 3B	Corner 3A	11.0'
SB-4	Corner 3B	31.9'
SB-5	"	16.0'
SB-6	"	10.2'
SB-7	"	19.1'
SB-6	Corner 3A	10.4'

C. Bentz 10/28/09

October 28, 2009 — C. Bentz, A. Nash

Location	Location	Distance
SB-7	Corner 3A	8.0'
SB-8	"	40.7'
Corner 3A	Corner 4	79.3'
SB-9	Corner 3A	85.2'
SB-8	Corner 4	39.9'
SB-9	"	7.8'
SB-10	"	32.1'
SB-11	"	33.5'
SB-12	"	39.3'
SB-13	"	41.3'
SB-14	"	39.9'
Corner 4	Corner 1	60.8'
SB-15	Corner 4	66.3'

Read PID – heated headspace

sample	ambient	PID
SB-9 0.5-1	0.0 ppm	4.5 ppm
SB-9 2-2.5	0.0 ppm	1.7 ppm
SB-9 4.5-5	0.0 ppm	4.5 ppm
SB-10 0-0.5	0.0 ppm	1501 ppm
SB-10 1.5-2	0.7 ppm	1835 ppm
SB-10 2.5-3	0.7 ppm	36.0 ppm
SB-10 4.5-5	0.5 ppm	20.9 ppm
SB-11 0.5-1	0.2 ppm	1.0 ppm
SB-13 0-0.5	0.2 ppm	5.2 ppm

C. Bentz 10/28/09

October 28, 2009 — C. Bentz, A. Nash

Sample	ambient	PID
SB-13 2-2.5	0.2 ppm	1.2 ppm
SB13 4.5-5	0.2 ppm	0.6 ppm
SB-14 0-0.5	0.1 ppm	13.9 ppm
SB-15 1.5-2	0.1 ppm	0.9 ppm
SB-15 2.5-3	0.1 ppm	1.0 ppm
SB-15 4.5-5	0.1 ppm	1.0 ppm

CB 10/28/09

Analytical Sample Summary

SB-5 0.5-1 = HS-1 @1122
SB-6 1-1.5 = HS-2 @1131
SB-9 0.5-1 = HS-3 @1332
SB-10 1.5-2 = HS-4 @1345
SB-10 4.5-5 = HS-6 @1352
SB-13 0-0.5 = HS-7 @1410
SB-13 4.5-5 = HS-8 @1418
SB-14 0-0.5 = HS-9 @1425
duplicate of SB-10 1.5-2 = HS-5 @1349

all samples for GRO/BTEX + DRO
HS-4 and HS-5 also for PAHs

C. Bentz 10/28/09

C. Bentz
A. Nash

October 28, 2009

Photo Log - Old HS Tank Farm

100-0001 hand augering @ SB-2
100-0002 " " "
100-0003 SB-1 location
100-0004 hand augering @ SB-4
100-0005 pipe joint near SB-5
100-0006 " " " "
100-0007 SB-6 location near valves
100-0008 SB-9 location
100-0009 SB-10 - SB-14 location
100-0010 " " " "
100-0011 SB-9 location
100-0012 SB-8 location
100-0013 SB-7 and SB-6 location
100-0014 ~~SB 10/28/09~~ SB-7 location
100-0015 SB-6 location
100-0016 SB-5 location
100-0017 SB-4 location
100-0018 SB-3 location
100-0019 SB-2 and SB-1 location
100-0020 power augering
100-0021 " " "
100-0022 removing auger pipe w/ wrench

C. Bentz 10/28/09

C. Bentz
A. Nash

October 29, 2009

0830 begin prep work for sampling today @ Old Elementary School Tank Farm and preparations for demobe
0847 head to Village office
- fax off figure
- check in w/ Sammy to coordinate shipping equipment to Anchorage on afternoon flight
0929 call Mike Rieser + conference in Grant to update on site work
- test pit @ old High School Tank Farm in old dispenser area
- indicated have not encountered water down to 14'
0951 off phone - gather sampling equipment and head to Old Elementary Tank Farm
1020 no backhoe - return to VPSO housing to pack stuff for shipment
Weather = clear, 20s
1037 run into Carl - it will be about 1100 for the backhoe
1040 recieve call from Sammy → need to call frontier about freight →

C. Bentz 10/29/09

C. Bentz
A. Nash

October 29, 2009

to be shipped out today.
1059 should be able to get some stuff on afternoon flight today - Sammy will come get us and the gear this afternoon
1108 no backhoe - return all PID soil to old High School and pull out stakes
1125 still no backhoe; call Mike with update
1200 backhoe arrives; brief operator on site health + safety plan; air monitoring, etc.
1205 Conduct air monitoring w/PID ambient = 0.0 ppm over Test Pit 1 + in operator breathing zone
1211 air monitoring = 0.0 ppm
Soil in TP-1 is brown silty sand; sand is mostly fine grained to 4'
1218 air monitoring = 0.0 ppm
TP-1 @ 6' = sand, fine grained, brown
TD = 8' @ bottom same as 6'; no odor observed
Backfill TP-1.

C. Bentz 10/29/09

C. Bentz
A. Nash

October 29, 2009

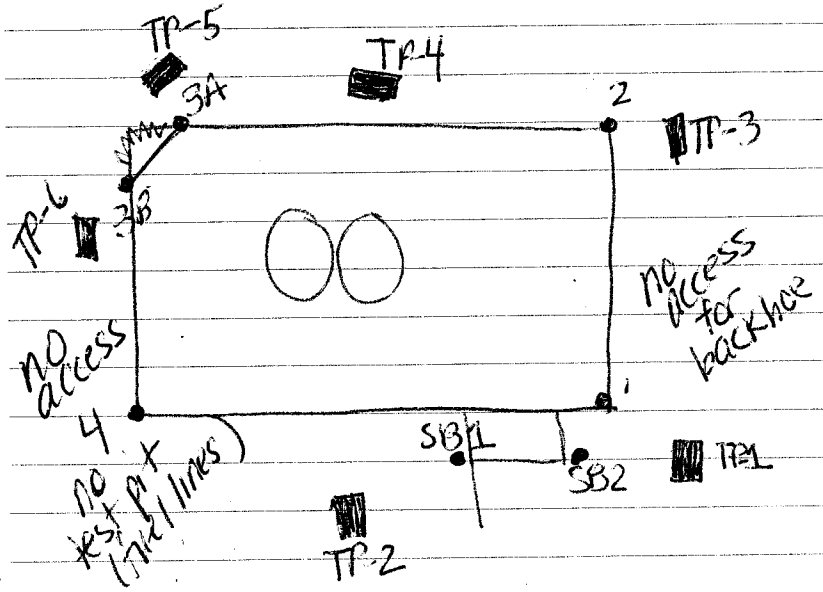
air monitoring

time	reading	action
1243	0.0 ppm	none
1248	1.6 ppm	none
1253	0.6 ppm	none
1257	0.4 ppm	none
1328	0.4 ppm	none
1332	0.6 ppm	none
1335	0.8 ppm	none
1337	0.5 ppm	none
1354	0.1 ppm	none
1357	0.1 ppm	none
1402	0.1 ppm	none
1423	0.2 ppm	none
1425	0.2 ppm	none
1427	0.2 ppm	none
1429	0.4 ppm	none
1442	0.3 ppm	none
1444	0.2 ppm	none
1447	0.1 ppm	none
1512	0.2 ppm	none
1515	0.6 ppm	none
1522	0.9 ppm	none
1526	0.7 ppm	none

C. Bentz 10/29/09

C. Bentz
A. Nish

October 29, 2009
Old Elementary School Tank Farm



1238 begin TP-2
@ 1' Sand with silt, brown, mostly fine grained, no odor
@ 3' Same as above except strong odor
@ 5' same as 3' except gray
@ 8' " " " " "
1259 begin backfilling TP-2
1325 begin TP-3
@ 2' Sand w/ silt, brown, no odor
Same to 8' - TD

C. Bentz 10/29/09

C. Bentz
A. Nish

October 29, 2009
1339 Start backfilling TP-3
1353 Start TP-4
@ 2' Sand w/ silt, brown, mostly fine grained, no odor
@ 4' - 8' Sand, brown, mostly fine grained, no odor
1404 Start backfilling TP-4
1421 Start TP-5
@ 2' Sand w/ silt, brown, mostly fine grained, no odor
@ 4' + 6' + 8' except no silt
1431 begin backfilling TP-5
@ 2' sand w/ silt, brown, mostly fine grained, no odor
@ 4' same except no silt
@ 6' " " " "
1508 backhoe arrives @ Old High School Tank Farm
TP-1 covered between SB-10/SB-11 and SB-12/SB-14
- Sand w/ organics, lots of wood 1st 4'; less wood after 4'; sand is fine grained; strong paint thinner-like odor; hard digging
1523 begin backfilling TP-1

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1537 backhoe departs
Return to Old Elementary School
Tank Farm to attempt to hand auger + take measurements
1624 return to VPSO housing – made multiple unsuccessful attempts to hand auger @ Old Elementary School – ground frozen @ surface
1626 call Mike Rieser w/ update
1640 call Sammy – check in with status of this + coordinate stuff for tomorrow.
1649 read PIDs + do sample Management + paperwork
1709 pid readings not consistent; re-calibrate PID + re-read headspace results for TP1 2' through 6'
zero cal. reading = 0.0 ppm
100 ppm isobutylene = 100.2 ppm
Continue paperwork, sample, management and demobe prep.

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TP-6	Corner 3B	8'
TP-5	" "	20'
TP-5	Corner 3A	19'
TP-6	"	17'
Corner 3A	Corner 3B	9.5'
Corner 3A	Corner 2	51'
TP-4	"	32'
TP-4	Corner 3A	21'
TP-3	Corner 2	9'
Corner 1	"	52'
TP-1	"	58'
TP-3	"	50.6'
TP-1	Corner 1	10'
SB-2	"	6.4'
SB-1	"	16.4'
TP-2	"	32'
Corner 4	"	62'
TP-2	Corner 4	37'
SB-1	"	46.2'
SB-2	"	58.1'
TP-1	"	69.8'

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C. Bentz
A. Nash

October 29, 2009

Heated Head Space - Elementary School

Sample	ambient	PID
TP-1 2'	0.4 ppm	21.1 ppm
4'	0.4 ppm	7.7 ppm
6'	0.4 ppm	~~14.7~~ AN 10/29/09
~~8'~~	CB 10/29/09	
TP-1 2'	0.2 ~~0.3~~ CB 10/29/09 ppm	8.4 ppm
TP-1 4'	0.0 ppm	7.1 ppm
TP-1 6'	0.0 ppm	8.6 ppm
TP-1 8'	0.3 ppm	12.2 ppm
TP-3 2'	0.3 ppm	26.7 ppm
TP-3 4'	0.3 ppm	5.5 ppm
TP-3 6'	0.3 ppm	10.2 ppm
TP-3 8'	0.1 ppm	25.3 ppm
TP-4 2'	0.4 ppm	7.4 ppm
TP-4 4'	0.3 ppm	8.7 ppm
TP-4 7'	0.3 ppm	9.6 ppm
TP-4 8'	0.2 ppm	8.9 ppm
TP-5 2'	0.2 ppm	6.7 ppm
TP-5 4'	0.2 ppm	8.7 ppm
TP-5 6'	0.3 ppm	6.5 ppm
TP-5 8'	0.3 ppm	5.3 ppm
TP-6 2'	0.3 ppm	11.0 ppm
TP-6 4'	0.3 ppm	9.8 ppm
TP-6 6'	0.3 ppm	6.5 ppm

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Heated Headspace - Elementary School

Sample	ambient	PID
TP-2 1'	0.2 ppm	12.2 ppm
TP-2 3'	0.4 ppm	1803 ppm
TP-2 5'	1.4 ppm	1291 ppm
TP-2 8'	1.7 ppm	1236 ppm

Heated Headspace - High School

Sample	ambient	PID
TP-1 1'	1.6 ppm	20.9 ppm
TP-1 3'	1.4 ppm	68.4 ppm
TP-1 5'	1.0 ~~1.4~~ CB 10/29/09 ppm	13.5 ppm
TP-1 7'	1.1 ppm	3.1 ppm

Photo Log 10/29/09

100-0029 Test Pitting TP-1 @ ES
100-0030 Test Pit TP-2 @ ES
100-0031 " " "
100-0032 Test Pit TP-4 @ ES
100-0033 Sampling from bucket @ ES
100-0034 Wood dug @ TP-1 @ HS
100-0035 TP-1 @ HS
100-0036 Stump removed from TP-1 @ HS
100-0037 TP-1 @ ES, SB-2 also visible
100-0038 SB-2 and SB-1 @ ES
100-0039 TP-2 @ ES
100-0040 " "

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100-0041 TP-3 @ ES
100-0042 " "
100-0043 TP-4 @ ES
100-0044 TP-4 and TP-5 @ ES
100-0045 TP-5 @ ES
100-0046 " "
100-0047 TP-5 and TP-6 @ ES
100-0048 TP-6 @ ES

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Analytical Sample Log - ES 10/29/09

TP-2 @ 3' = ES-5 @ 1248
TP-2 @ 8' = ES-~~7~~6 @ 1257 CB 10/29/09
TP-1 @ 2' = ES-8 @ 1211
TP-3 @ 2' = ES-9 @ 1328
TP-3 @ 8' = ES-10 @ 1337
TP-4 @ 8' = ES-11 @ 1402
TP-5 @ 4' = ES-12 @ 1425
TP-6 @ 2' = ES-13 @ 1442
~~SB-1 @ 0.5-1' = ES-14 @~~ CB 10/29/09
TP-2 @ ~~8~~ 1' = ES-14 @ 1243 CB 10/29/09
TP-1 @ 8' = ES-15 @ 1221
TP-3 @ 4' = ES-16 @ 1332
TP-4 @ 2' = ES-17 @ 1354
TP-5 @ 8' = ES-18 @ 1429
TP-6 @ 6' = ES-19 @ 1447

HOLD

Analytical Sample Log - HS 10/29/09

TP-1 @ ~~2~~ 1' = HS-10 @ 1512 CB 10/29/09
TP-1 @ 7' = HS-12 @ 1526
TP-1 @ 3' = HS-13 @ 1515
SB-1 @ 0.5-1' = HS-14 @ 1101
SB-2 @ 1-1.5' = HS-15 @ 1032
SB-3 @ 4.5-5' = HS-16 @ 1051
SB-4 @ 2.5-3' = HS-17 @ 1110
SB-7 @ 4.5-5' = HS-18 @ 1147

HOLD; SB = 10/28/09

C. Bentz 10/29/09

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October 29, 2009

Analytical sample log 10/28/09 HS

SB-8 @ 0.5-1' = HS-19 @ 1158
SB-11 @ 0.5-1' = HS-20 @ 1356
SB-15 @ 1.5-2' = HS-21 @ 1440

Duplicates =
ES-6 @ 1253 ; dup of ES-5
(TP-2 @ 3')
HS-11 @ 1513 ; dup of HS-10
(TP-1 @ 1')

C. Bentz 10/29/09

C. Bentz
A. Nash

October 30, 2009

0825 call Mike Rieser – no one available for call; head to village office
Not able to ship on this mornings flight – full w/ passengers
one option =
543-3652 Arctic Transportation Services
easiest option to charter plane on Frontier – chartered @ 1230pm – changed to 215pm AK Airlines flight
1024 conference call w/ Mike and Grant
Unable to interview Sam Jasper or Sheila Williams today
1038 conference call w/ Sonja Benson and Mike Rieser – backhaul options??
1056 head out to do site walks w/ video commentary
1156 done w/ video site walks; get call from Frontier – will be here in 20 minutes
travel to Bethel → Anchorage

C. Bentz 10/30/09

APPENDIX D

QUALITY ASSURANCE REVIEW, ADEC CHECKLIST, AND LABORATORY ANALYTICAL DATA REPORT

LABORATORY DATA
QUALITY ASSURANCE SUMMARY

ADEC AKIAK HIGH SCHOOL FORMER TANK FARM

ADEC Contaminated Site Number 2402.38.003
SLR Project Number 005.0065.09017

This report summarizes a review of analytical results for work order number 1096017 for samples collected on 10/28/09 and 10/29/09. Samples were collected by SLR International Corp (SLR), and submitted to SGS North America Inc. (SGS), Alaska. Samples were analyzed for the following parameters:

- Diesel Range Organics (DRO), using AK Method 102
- Gasoline Range Organics (GRO), using AK Method 101
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX), using EPA Method 8021B
- Polynuclear Aromatics (PAHs), using EPA Method 8270D SIMS
- Percent Solids, using Standard Method (SM) 2540G

Quality Assurance Program

A quality assurance (QA) program was followed that addressed project administration, sampling protocols, data review, and data QA. Sample QA was provided by SLR through strict adherence to sampling protocols. Chain-of-custody (COC) procedures were followed as an integral part of the QA program.

Data validation consisted of the following:

- Verifying that quality control (QC) blanks were properly prepared, identified, and analyzed.
- Reviewing COC records for completeness, signatures, and dates.
- Verifying that surrogate analyses (when applicable) are within recovery acceptance limits.
- Verifying that Laboratory Control Samples (LCS) and Laboratory Control Sample Duplicates (LCSD) are within recovery acceptance limits.
- Reviewing the Continuing Calibration Verification (CCV) recoveries are within recovery acceptance levels.

- Evaluating the result RPD between original and duplicate (QC) samples.

- Providing an overall assessment of laboratory data quality and qualifying sample results if necessary.

Data Qualifications

The comments presented in this report refer to the field procedures and the laboratory's performance in meeting the QC specifications. The sample results were reviewed using the following documents:

- ADEC, 18 AAC 75 Oil and Other Hazardous Substances Pollution Control (ADEC, Revised as of October 9, 2008).

- ADEC, 18 AAC 70 Water Quality Standards (ADEC, as amended through September 19, 2009).

- ADEC, Underground Storage Tanks Procedure Manual Guidance for Treatment of Petroleum – Contaminated Soil and Water and Standard Sampling Procedures (ADEC, November 2002).

- ADEC, Technical Memorandum – 06-002, Environmental Laboratory Data and Quality Assurance Requirements (ADEC, March 2009).

- EPA Document 530/SW-846, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods, fourth edition (EPA, November 1991).

- EPA Document 540//R-94/012, EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA, February 1994).

Data Validation

Data Package

The data package was checked for transcription errors, omissions, or other anomalies. The COC did not list the analytical methods to be used; however, the correct analytical methods were used by the laboratory as intended by SLR. There were no issues with regards to the data package for work order 1096017.

Holding Times and Preservation

Samples were appropriately preserved upon collection and were submitted to SGS. Sample analyses were conducted within holding time criteria. No issues were noted in regard to sample preservation.

Laboratory Method Blanks

Laboratory method blanks were analyzed at the appropriate frequencies. Three analytes were detected in method blanks at or above the method reporting limits (MRLs). The three analytes detected above the MRL are: Naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene. The associated field samples are HS-4, HS-5 and HS-10. According to the laboratory, results for all associated field samples are valid because the sample results are 10 times higher than the method blank contamination, (per the SGS QAPP) and therefore the data is valid.

Trip Blanks

One trip blank was submitted to the laboratory for analysis. One cooler was used to transport all samples and therefore the samples collected for volatile analysis and the trip blank were contained in the same cooler. Three analytes were detected above the Method Detection Limit (MDL), and below the Practical Quantitation Limit (PQL) in the trip blank. Sample results are not affected because the results of the trip blank are considered estimates.

Surrogate Recovery Results

Surrogate analysis was performed at the required frequencies, and the results were within EPA and SGS percent recovery acceptance limits except as noted below.

- The 4-Bromofluorobenzene surrogate recovery using AK Method 101 and EPA Method 8021B was outside of QC goals (biased high) due to hydrocarbon interference. Associated samples are HS-4, HS-5 and HS-9. GRO and BTEX were detected above the PQL in the associated samples (except for HS-9, GRO only); however, according to the laboratory since the QC failure was due to hydrocarbon interference, the sample results should be unaffected.

Continuing Calibration Verification

Continuing calibration verifications (CCV) were performed at the required frequencies, and percent recoveries were within EPA and SGS percent recovery acceptance limits.

Field Duplicates

Nineteen primary field samples were submitted for the project. Two duplicate soil samples were collected and submitted to the laboratory blind. The field duplicate samples are in compliance with regulatory requirements because a minimum of one per every ten field samples for each matrix, for each target analyte was achieved.

The following field duplicates were collected:

- HS-5 is the duplicate sample for primary field sample HS-4.
- HS-11 is the duplicate sample for primary field sample HS-10.

For analytes detected above the PQL, duplicate/parent relative percent differences (RPD) are summarized below. For analytes with one sample result as ND, the PQL was used for calculation purposes.

RELATIVE PERCENT DIFFERENCES		
Parent sample (Duplicate sample)	**Analyte**	**RPD (%)**
HS-4 (HS-5)	GRO	9.19
HS-4 (HS-5)	DRO	6.13
HS-4 (HS-5)	Naphthalene	54.66
HS-4 (HS-5)	Benzene**	**60.26
HS-4 (HS-5)	Toluene	65.96
HS-4 (HS-5)	Ethybenzene	37.43
HS-4 (HS-5)	Fluorene	52.60
HS-4 (HS-5)	Phenanthrene	33.25
HS-4 (HS-5)	1-Methylnaphthalene	33.73
HS-4 (HS-5)	2-Methylnaphthalene	38.44
HS-4 (HS-5)	Pyrene***	***90.91
HS-4 (HS-5)	o-Xylene	9.055
HS-4 (HS-5)	P & M Xylene	7.38
HS-4 (HS-5)	Total Solids	7.53
HS-10 (HS-11)	GRO*	*9.77
HS-10 (HS-11)	DRO	2.67
HS-10 (HS-11)	Toluene*	*36.52
HS-10 (HS-11)	o-Xylene	26.39
HS-10 (HS-11)	P & M Xylene	31.25
HS-10 (HS-11)	Total Solids	1.34

* Both sample results are estimates (below PQL)

** Analyte detected above the PQL in only one sample

*** One sample result is an estimate (below PQL), and the other is ND

Three analytes are not in compliance with the required 50% RPD for field duplicates and their parent samples. Naphthalene, Toluene and Fluorene did not meet field precision requirements of 50% RPD for parent sample ES-4 and duplicate sample HS-5. Analytes with both sample results of ND are not included in the table.

According to the ADEC UST Procedures Manual (ADEC, 2002), samples failing field precision is not a specified reason why samples would be considered invalid or unusable, therefore sample results not meeting field precision requirements are considered valid for the intended uses of these results. Data qualifiers may be added to the parent sample (HS-4) results for Naphthalene, Toluene and Fluorene if this is determined necessary by the ADEC project manager.

Laboratory Control Samples/Laboratory Control Duplicate Samples

Laboratory Control Samples (LCS) and Laboratory Control Duplicate Samples (LCSD) were analyzed at the appropriate frequencies and all LCS/LCSD results met percent recovery acceptance limits except as noted below.

- LCS recovery for Naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene using EPA Method 8270D SIMS was outside of the acceptable QC criteria (biased high). The

samples were re-extracted outside of the holding time and results were confirmed. The original results are reported. Associated samples are HS-1, HS-2, HS-3, HS-7, HS-8, HS-9, HS-15, HS-19, HS-20 and HS-21. HS-1, HS-2, HS-3, HS-7, HS-9, HS-15, HS-19, HS-20 and HS-21sample results are ND for the three analytes in question and therefore the results are unaffected. HS-4, HS-5, HS-10 sample results may be biased high for the analytes in question because the analytes were detected above the PQL for these samples.

Laboratory Duplicate Samples

One laboratory duplicate was analyzed for Total Solids using SM 20 2540G. The laboratory duplicate results were within RPD limits.

Matrix Spike/Matrix Spike Duplicate Samples

Matrix Spike (MS)/ Matrix Spike Duplicate (MSD) samples were analyzed at the appropriate frequencies and results exceeded percent recovery limits for all MS/MSD analytes using EPA Method 8270D. Results of this QC failure affected samples HS-4, HS-5 and HS-10. According to the laboratory, the MS/MSD recoveries did not meet QC criteria for multiple analytes due to sample dilution.

Reporting Limits

Method reporting limits (MRLs) were compared to applicable cleanup levels for the site. The analytes with results of ND had MRLs below applicable cleanup levels, with exceptions noted below.

- Samples HS-15, HS-1, HS-19, HS-7, HS-9, HS-21, HS-10, HS-11 and HS-13 were ND for Benzene using EPA Method 8021B. The Benzene PQLs for these samples were higher than the applicable cleanup level for the site, and are therefore considered above site cleanup levels. According to the laboratory, the reason for elevated PQLs is matrix interference.

Overall Assessment

According to the laboratory and SLR, this data is judged acceptable for use except for the Benzene results with PQLs elevated above the benzene cleanup level, as detailed in the Reporting Limits section.

Precision, Accuracy, and Completeness

- Precision: Precision goals were met except as noted in the Field Duplicates section.
- Accuracy: Accuracy goals were met except as noted in the LCS/LCSD, MS/MSD and Surrogate Recovery Section.
- Completeness: Completeness goals were met.
- Sensitivity: Sensitivity goals were met except as noted in the Reporting Limits and Method Blank section.

Laboratory Data Review Checklist

Completed by: Kirsten Hoppe

Title: Geologist

Date: 2/1/2010

CS Report Name: ADEC Akiak High School Former Tank Farm

Report Date: 12/3/09 (revised)

Consultant Firm: SLR International Corp.

Laboratory Name: SGS North America Inc.

Laboratory Report Number: 1096017

ADEC File Number: 2402.38.003

ADEC RecKey Number: NA

1. Laboratory

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

   ☑ Yes ☐ No Comments:

   SGS North America Inc.

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

   ☑ Yes ☐ No Comments:

   NA

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:

Cooler: 2.0 degrees C
Temp blank: 2.3 degrees C

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

☑ Yes ☐ No Comments:

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

☑ Yes ☐ No Comments:

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

☑ Yes ☐ No Comments:

Nothing needed to be noted.

e. Data quality or usability affected? Explain.

Comments:

Data quality was not affected.

4. Case Narrative

a. Present and understandable?

☑ Yes ☐ No Comments:

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

☑ Yes ☐ No Comments:

c. Were all corrective actions documented?

☑ Yes ☐ No Comments:

The revised laboratory report documented corrective actions taken for Method Blank contamination.

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

Comments:

Data quality and usability varied depending on the sample and the QC results. The detailed explanations are found within the Sample results section and the QC Samples sections below.

5. Samples Results

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

☑ Yes ☐ No Comments:

b. All applicable holding times met?

☑ Yes ☐ No Comments:

Some samples were re-analyzed outside of the holding time, however, the results were confirmed and the original results within the holding time were the ones that were reported.

c. All soils reported on a dry weight basis?

☑ Yes ☐ No Comments:

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

☐ Yes ☑ No Comments:

Samples HS-15, HS-1, HS-19, HS-7, HS-9, HS-21, HS-10, HS-11 and HS-13 were ND for Benzene using EPA Method 8021B. The Benzene PQLs for these samples were higher than the applicable cleanup level for the site, and are therefore considered above site cleanup levels. According to the laboratory, the reason for elevated PQLs is matrix interference.

e. Data quality or usability affected?

Comments:

Samples HS-15, HS-1, HS-19, HS-7, HS-9, HS-21, HS-10, HS-11 and HS-13 are considered above the site cleanup level for Benzene. The Benzene results for these samples are not acceptable for the intended use.

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 PQL?

☐ Yes ☒ No Comments:

Laboratory method blanks were analyzed at the appropriate frequencies. Three analytes were detected in method blanks at or above the method reporting limits (MRLs). The three analytes detected above the MRL are: Naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene. The associated field samples are HS-4, HS-5 and HS-10. According to the laboratory, results for all associated field samples are valid because the sample results are x10 higher than the method blank contamination, (per the SGS QAPP) and therefore the data is valid.

iii. If above PQL, what samples are affected?

Comments:

The associated field samples are HS-4, HS-5 and HS-10.

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

☒ Yes ☐ No Comments:

v. Data quality or usability affected? Explain.

Comments:

According to the laboratory, results for all associated field samples are valid because the sample results are x10 higher than the method blank contamination, (per the SGS QAPP) and therefore the data is valid

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

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

☒ Yes ☐ No Comments:

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

☒ Yes ☐ No Comments:

NA

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:

LCS recovery for Naphthalene, 1-Methylnaphthalene and 2-Methylnaphthalene using EPA Method 8270D SIMS was outside of the acceptable QC criteria (biased high). The samples were re-extracted outside of the holding time and results were confirmed. The original results are reported. Associated samples are HS-1, HS-2, HS-3, HS-7, HS-8, HS-9, HS-15, HS-19, HS-20 and HS-21. HS-1, HS-2, HS-3, HS-7, HS-9, HS-15, HS-19, HS-20 and HS-21sample results are ND for the three analytes in question and therefore the results are unaffected. HS-4, HS-5, HS-10 sample results may be biased high for the analytes in question because the analytes were detected above the PQL for these samples.

MS/MSD samples were analyzed at the appropriate frequencies and results exceeded percent recovery limits for all MS/MSD analytes using EPA Method 8270D. Results of this QC failure affected samples HS-4, HS-5 and HS-10. According to the laboratory, the MS/MSD recoveries did not meet QC criteria for multiple analytes due to sample dilution.

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

☒ Yes ☐ No Comments:

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

Comments:

LCS failure: Associated samples are HS-1, HS-2, HS-3, HS-7, HS-8, HS-9, HS-15, HS-19, HS-20 and HS-21. HS-1, HS-2, HS-3, HS-7, HS-9, HS-15, HS-19, HS-20 and HS-21sample results are ND for the three analytes in question and therefore the results are unaffected. HS-4, HS-5, HS-10 sample results may be biased high for the analytes in question because the analytes were detected above the PQL for these samples.

MS/MSD failure: Results of this QC failure affected samples HS-4, HS-5 and HS-10. According to the laboratory, the MS/MSD recoveries did not meet QC criteria for multiple analytes due to sample dilution.

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

☒ Yes ☐ No Comments:

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

Comments:

HS-4, HS-5, HS-10 sample results may be biased high for the analytes in question because the analytes were detected above the PQL for these samples.

c. Surrogates – Organics Only

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

☑ Yes ☐ No Comments:

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

☐ Yes ☑ No Comments:

4-Bromofluorobenzene surrogate recovery using AK Method 101 and EPA Method 8021B was outside of QC goals (biased high) due to hydrocarbon interference. Associated samples are HS-4, HS-5 and HS-9. GRO and BTEX were detected above the PQL in the associated samples (except for HS-9, GRO only); however, according to the laboratory since the QC failure was due to hydrocarbon interference, the sample results should be unaffected.

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

☑ Yes ☐ No Comments:

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

Comments:

Associated samples are HS-4, HS-5 and HS-9. GRO and BTEX were detected above the PQL in the associated samples (except for HS-9, GRO only); however, according to the laboratory since the QC failure was due to hydrocarbon interference, the sample results should be unaffected.

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

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

☑ Yes ☐ No Comments:

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

☐ Yes ☐ No Comments:

One trip blank was submitted to the laboratory for analysis. One cooler was used to transport all samples and therefore the samples collected for volatile analysis and the trip blank were contained in the same cooler.

iii. All results less than PQL?

☐ Yes ☒ No Comments:

Three analytes were detected above the Method Detection Limit (MDL), and below the Practical Quantitation Limit (PQL) in the trip blank. Sample results are not affected because the results of the trip blank are considered estimates.

iv. If above PQL, what samples are affected?

Comments:

NA.

v. Data quality or usability affected? Explain.

Comments:

None.

e. Field Duplicate

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

☒ Yes ☐ No Comments:

Nineteen primary field samples were submitted for the project. Two duplicate soil samples were collected and submitted to the laboratory blind. The field duplicate samples are in compliance with regulatory requirements because a minimum of one per every ten field samples for each matrix, for each target analyte was achieved.

ii. Submitted blind to lab?

☒ Yes ☐ No Comments:

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

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

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☐ Yes ☒ No Comments:

Three analytes are not in compliance with the required 50% RPD for field duplicates and their parent samples. Naphthalene, Toluene and Fluorene did not meet field precision requirements of 50% RPD for parent sample HS-4 and duplicate sample HS-5.

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

Comments:

According to the ADEC UST Procedures Manual (ADEC, 2002), samples failing field precision is not a specified reason why samples would be considered invalid or unusable, therefore sample results not meeting field precision requirements are considered valid for the intended uses of these results. Data qualifiers may be added to the parent sample (HS-4) results for Naphthalene, Toluene and Fluorene if this is determined necessary by the ADEC project manager.

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

☐ Yes ☐ No ☒ Not Applicable

i. All results less than PQL?

☐ Yes ☐ No Comments:

NA-Disposable sampling equipment was used.

ii. If above PQL, what samples are affected?

Comments:

NA

iii. Data quality or usability affected? Explain.

Comments:

NA

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

a. Defined and appropriate?

☒ Yes ☐ No Comments:

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

Project:	Akiak Old High School Tank Far
Client:	SLR Alaska-Anchorage
SGS Work Order:	1096017

Released by:

SGS North America
Alaska Division Project Manager

Jennifer Serna
2009.12.03 15:48:55 -09'00'

Contents:

Note:
Unless otherwise noted, all quality assurance/quality control criteria is in compliance with the standards set forth by the proper regulatory authority, the SGS Quality Assurance Program Plan, and the National Environmental Accreditation Conference.

Case Narrative

Customer: SLRANCH SLR Alaska-Anchorage

Project: 1096017 Akiak Old High School Tank Far

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

Revised Report - Case Narrative revised per client's request.

1096017004 PS HS-4

AK102 - The pattern is consistent with a weathered gasoline.

AK101/8021B - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.

8270D SIM - Multiple analytes detected above the PQL in the MB. The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - LCS recovery is outside of QC criteria for multiple analytes (bias high). The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - Elevated PQLs due to matrix interference with internal standards.

1096017005 PS HS-5

AK102 - The pattern is consistent with a weathered gasoline.

AK101/8021B - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.

8270D SIM - LCS recovery is outside of QC criteria for multiple analytes (bias high). The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - Multiple analytes detected above the PQL in the MB. The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - Elevated PQLs due to matrix interference with internal standards.

1096017007 PS HS-7

AK102 - Unknown hydrocarbon with several peaks is present.

1096017009 PS HS-9

AK101/8021B - BFB (surrogate) recovery does not meet QC criteria (biased high) due to hydrocarbon interference.

AK102 - Unknown hydrocarbon with several peaks is present.

1096017010 PS HS-10

AK102 - Unknown hydrocarbon with several peaks is present.

8270D SIM - Multiple analytes detected above the PQL in the MB. The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - LCS recovery is outside of QC criteria for multiple analytes (bias high). The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

1096017011 PS HS-11

AK102 - The pattern is consistent with a weathered middle distillate.

1096017013 PS HS-13

AK102 - Sample was diluted due to dark color of extract;therefore the PQL was elevated.

1096017018 PS HS-18

AK101/8021B - Sample was analyzed for benzene, toluene, and ethylbenzene out side of hold for confirmation.

AK101/8021B - Sample was analyzed for p,m and o-xylene and GRO were analyzed outside of hold time due to carryover.

1096017021 PS HS-21

AK102 - Unknown hydrocarbon with several peaks is present.

Case Narrative

Customer: SLRANCH SLR Alaska-Anchorage

Project: 1096017 Akiak Old High School Tank Far

938099 MS 1096016005MS

8270D SIM - Multiple analytes detected above the PQL in the MB.

8270D SIM - LCS recovery is outside of QC criteria for multiple analytes (bias high). The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - Elevated PQLs due to matrix interference with internal standards.

8270D SIM - MS recovery does not meet QC criteria for multiple analytes due to sample dilution.

938100 MSD 1096016005MSD

8270D SIM - Multiple analytes detected above the PQL in the MB.

8270D SIM - LCS recovery is outside of QC criteria for multiple analytes (bias high). The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

8270D SIM - Elevated PQLs due to matrix interference with internal standards.

8270D SIM - MS recovery does not meet QC criteria for multiple analytes due to sample dilution.

938097 MB XXX/21996]

8270D SIM - Multiple analytes detected above the PQL in the MB. The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

938162 MB VXX/20243]

8021B/AK101 - MB results for benzene and p,m-xylene are less than the PQL but greater than one half the PQL.

938098 LCS XXX/21996]

8270D SIM - LCS recovery is outside of QC criteria for multiple analytes (bias high). The associated samples were re-extracted outside of hold time, with qualifying QC and confirming results; therefore, original results within hold times were posted.

Report of Manual Integrations

Print Date: 12/3/2009 3:23 pm

Laboratory ID	Client Sample ID	Analytical Batch	Method	Analyte	Reason
1096016005	LABREFQC	XMS5198	8270D SIMS	Benzo[b]Fluoranthene	SP
1096016005	LABREFQC	XMS5198	8270D SIMS	Benzo[k]fluoranthene	SP
938099	ES-5(1096016005MS)	XMS5198	8270D SIMS	Benzo[k]fluoranthene	PNF
938100	ES-5(1096016005MSD)	XMS5198	8270D SIMS	Benzo[k]fluoranthene	PNF

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.

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Laboratory Analytical Report

Client: **SLR Alaska-Anchorage**
4601 Business Park Blvd K42
Anchorage, AK 99503

Attn: **Mike Rieser**
T: (907)222-1112 F:(907)222-1113
MRIESER@SLRCORP.COM

Project: **Akiak Old High School Tank Far**

Workorder No.: **1096017**

Certification:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, other than the conditions noted on the sample data sheet(s) and/or the 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.

Heidi Geri

Project Manager

SGS North America
Alaska Division Project Manager

Jennifer Serna
2009.12.03
15:48:44 -09'00'

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Print Date: 12/3/2009

Enclosed are the analytical results associated with this workorder.

As required by the state of Alaska and the USEPA, a formal Quality Assurance/Quality Control Program is maintained by SGS. A copy of our Quality Assurance Plan (QAP), which outlines this program is available at your request.

The Laboratory certification numbers are AK971-05 (DW), UTS-005 (CS) and AK00971 (Micro) for ADEC and AK100001 for NELAP (RCRA methods: 1020A, 1311, 6010B, 7470A, 7471A, 9040B, 9045C, 9056, 9060, 8015B, 8021B, 8081A/8082, 8260B, 8270C).

Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP, the National Environmental Laboratory Accreditation Program and, when applicable, other regulatory authorities.

If you have any questions regarding this report or if we can be of any assistance, please contact your SGS Project Manager at 907-562-2343. All work is being provided under SGS general terms and conditions (http://www.sgs.com/terms_and_conditions.htm)

The following descriptors may be found on your report which will serve to further qualify the data.

MDL	Method Detection Limit
PQL	Practical Quantitation Limit (reporting limit).
CL	Control Limit
U	Indicates the analyte was analyzed for but not detected.
F	Indicates value that is greater than or equal to the MDL.
J	The quantitation is an estimation.
ND	Indicates the analyte is not detected
B	Indicates the analyte is found in a blank associated with the sample.
*	The analyte has exceeded allowable regulatory or control limits.
D	The analyte concentration is the result of dilution.
GT	Greater Than
LT	Less Than
Q	QC parameter out of acceptance range.
M	A matrix effect was present.
E	The analyte result is above the calibrated range.
R	Rejected
DF	Analytical Dilution Factor
JL	The analyte was positively identified, but the quantitation is a low estimation.
<Surr>	Surrogate QC spiked standard
<Surr/IS>	Surrogate / Internal Standard QC spiked standard
QC	Quality Control
QA	Quality Assurance
MB	Method Blank
LCS (D)	Laboratory Control Sample (Duplicate)
MS(D)	Matrix Spike (Duplicate)
BMS(D)	Site Specific Matrix Spike (Duplicate)
RPD	Relative Percent Difference
ICV	Initial Calibration Verification
CCV	Continuous Calibration Verification
MSA	Method of Standard Addition

Notes: Soil samples are reported on a dry weight basis unless otherwise specified
All DRO/RRO analyses are integrated per SOP.

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Client Name: SLR Alaska-Anchorage
Project Name: Akiak Old High School Tank Far
Workorder No.: 1096017

Analytical Methods

Method Description	Analytical Method
8270 PAH SIM Semi-Volatiles GC/MS	8270D SIMS
AK101/8021 Combo. (S)	AK101
AK101/8021 Combo. (S)	AK101 8021B
AK101/8021 Combo. (S)	SW8021B
Diesel Range Organics (S)	AK102
Percent Solids SM2540G	SM20 2540G

Sample ID Cross Reference

Lab Sample ID	Client Sample ID
1096017001	HS-1
1096017002	HS-2
1096017003	HS-3
1096017004	HS-4
1096017005	HS-5
1096017006	HS-6
1096017007	HS-7
1096017008	HS-8
1096017009	HS-9
1096017010	HS-10
1096017011	HS-11
1096017012	HS-12
1096017013	HS-13
1096017014	HS-14
1096017015	HS-15
1096017016	HS-16
1096017017	HS-17
1096017018	HS-18
1096017019	HS-19
1096017020	HS-20
1096017021	HS-21
1096017022	HS-TB

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Detectable Results Summary

Print Date: 12/3/2009 3:23 pm

Client Sample ID: **HS-1**
SGS Ref. #: 1096017001

Parameter	Result	Units
Volatile Fuels Department		
o-Xylene	37.3 J	ug/Kg
P & M -Xylene	101 J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	20.6 J	mg/Kg

Client Sample ID: **HS-2**
SGS Ref. #: 1096017002

Parameter	Result	Units
Volatile Fuels Department		
P & M -Xylene	47.4 J	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	10.8 J	mg/Kg

Client Sample ID: **HS-3**
SGS Ref. #: 1096017003

Parameter	Result	Units
Volatile Fuels Department		
o-Xylene	25.8 J	ug/Kg
P & M -Xylene	71.0 J	ug/Kg

Client Sample ID: **HS-4**
SGS Ref. #: 1096017004

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3530	mg/Kg
Benzene	269 J	ug/Kg
Toluene	6300	ug/Kg
Ethylbenzene	5820	ug/Kg
o-Xylene	485000	ug/Kg
P & M -Xylene	796000	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	2530	mg/Kg
Polynuclear Aromatics GC/MS		
Fluorene	468	ug/Kg
Phenanthrene	815	ug/Kg
Naphthalene	11300	ug/Kg
1-Methylnaphthalene	8750	ug/Kg
2-Methylnaphthalene	12400	ug/Kg

Detectable Results Summary

Print Date: 12/3/2009 3:23 pm

Client Sample ID: **HS-5**
SGS Ref. #: 1096017005

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3870	mg/Kg
Benzene	501	ug/Kg
Toluene	12500	ug/Kg
Ethylbenzene	8500	ug/Kg
o-Xylene	531000	ug/Kg
P & M -Xylene	857000	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	2690	mg/Kg
Polynuclear Aromatics GC/MS		
Fluorene	802	ug/Kg
Phenanthrene	1140	ug/Kg
Pyrene	111 J	ug/Kg
Naphthalene	19800	ug/Kg
1-Methylnaphthalene	12300	ug/Kg
2-Methylnaphthalene	18300	ug/Kg

Client Sample ID: **HS-6**
SGS Ref. #: 1096017006

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	6.26	mg/Kg
Benzene	145	ug/Kg
Toluene	534	ug/Kg
Ethylbenzene	95.0 J	ug/Kg
o-Xylene	514	ug/Kg
P & M -Xylene	1070	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	7.29 J	mg/Kg

Client Sample ID: **HS-7**
SGS Ref. #: 1096017007

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	5.10J	mg/Kg
o-Xylene	380	ug/Kg
P & M -Xylene	818	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	48.4	mg/Kg

Detectable Results Summary

Print Date: 12/3/2009 3:23 pm

Client Sample ID: **HS-8**
SGS Ref. #: 1096017008

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	2.24J	mg/Kg
Toluene	37.4 J	ug/Kg
o-Xylene	160	ug/Kg
P & M -Xylene	228	ug/Kg

Client Sample ID: **HS-9**
SGS Ref. #: 1096017009

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	159	mg/Kg
Toluene	527	ug/Kg
Ethylbenzene	251	ug/Kg
o-Xylene	139000	ug/Kg
P & M -Xylene	17400	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	163	mg/Kg

Client Sample ID: **HS-10**
SGS Ref. #: 1096017010

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	5.69J	mg/Kg
Toluene	99.1 J	ug/Kg
o-Xylene	193	ug/Kg
P & M -Xylene	407	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	91.0	mg/Kg
Polynuclear Aromatics GC/MS		
Phenanthrene	2.04 J	ug/Kg
Anthracene	3.05 J	ug/Kg
Fluoranthene	2.16 J	ug/Kg
Pyrene	13.3	ug/Kg
Chrysene	3.60 J	ug/Kg
Benzo[b]Fluoranthene	5.36 J	ug/Kg
Benzo[g,h,i]perylene	2.01 J	ug/Kg
Naphthalene	10.6	ug/Kg
1-Methylnaphthalene	4.87 J	ug/Kg
2-Methylnaphthalene	8.05	ug/Kg

Detectable Results Summary

Print Date: 12/3/2009 3:23 pm

Client Sample ID: **HS-11**
SGS Ref. #: 1096017011

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	5.16J	mg/Kg
Toluene	68.5 J	ug/Kg
o-Xylene	148	ug/Kg
P & M -Xylene	297	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	88.6	mg/Kg

Client Sample ID: **HS-12**
SGS Ref. #: 1096017012

Parameter	Result	Units
Volatile Fuels Department		
Toluene	50.4 J	ug/Kg
o-Xylene	39.8 J	ug/Kg
P & M -Xylene	73.1 J	ug/Kg

Client Sample ID: **HS-13**
SGS Ref. #: 1096017013

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	95.8	mg/Kg
Toluene	2930	ug/Kg
Ethylbenzene	336	ug/Kg
o-Xylene	10300	ug/Kg
P & M -Xylene	21900	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	83.2 J	mg/Kg

Client Sample ID: **HS-15**
SGS Ref. #: 1096017015

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	4.59J	mg/Kg
o-Xylene	588	ug/Kg
P & M -Xylene	1240	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	17.4 J	mg/Kg

Client Sample ID: **HS-18**
SGS Ref. #: 1096017018

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	8.38	mg/Kg
Toluene	24.9 J	ug/Kg
o-Xylene	968	ug/Kg
P & M -Xylene	1680	ug/Kg

Detectable Results Summary

Print Date: 12/3/2009 3:23 pm

Client Sample ID: **HS-19**
SGS Ref. #: 1096017019

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.04J	mg/Kg
o-Xylene	284	ug/Kg
P & M -Xylene	873	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	20.4 J	mg/Kg

Client Sample ID: **HS-20**
SGS Ref. #: 1096017020

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	3.09J	mg/Kg
Toluene	38.8 J	ug/Kg
o-Xylene	330	ug/Kg
P & M -Xylene	883	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	8.38 J	mg/Kg

Client Sample ID: **HS-21**
SGS Ref. #: 1096017021

Parameter	Result	Units
Volatile Fuels Department		
Gasoline Range Organics	4.90J	mg/Kg
o-Xylene	417	ug/Kg
P & M -Xylene	1220	ug/Kg
Semivolatile Organic Fuels Department		
Diesel Range Organics	63.4	mg/Kg

Client Sample ID: **HS-TB**
SGS Ref. #: 1096017022

Parameter	Result	Units
Volatile Fuels Department		
Toluene	16.3 J	ug/Kg
o-Xylene	15.5 J	ug/Kg
P & M -Xylene	40.1 J	ug/Kg

Client Sample ID: **HS-1**
SGS Ref. #: 1096017001
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.2

Collection Date/Time: 10/28/09 11:22
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	ND	5.11	1.53	mg/Kg	1	VFC9751		
Benzene	ND	25.6	8.18	ug/Kg	1	VFC9751		
Toluene	ND	102	30.7	ug/Kg	1	VFC9751		
Ethylbenzene	ND	102	30.7	ug/Kg	1	VFC9751		
o-Xylene	37.3 J	102	30.7	ug/Kg	1	VFC9751		
P & M -Xylene	101 J	102	30.7	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	77.1	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.2	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 20:34
Dilution Factor: 1
Initial Prep Wt./Vol.: 42.922 g
Container ID:1096017001-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 20:34
Dilution Factor: 1
Initial Prep Wt./Vol.: 42.922 g
Container ID:1096017001-A
Analyst: KPW

Client Sample ID: **HS-1**
SGS Ref. #: 1096017001
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.2

Collection Date/Time: 10/28/09 11:22
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	20.6 J	25.4	7.88	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	98.6	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 14:05
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.154 g
Prep Extract Vol.: 1 mL
Container ID:1096017001-B
Analyst: HM

Client Sample ID: **HS-1**
SGS Ref. #: 1096017001
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.2

Collection Date/Time: 10/28/09 11:22
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	78.2			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017001-B
Analyst: KAN

Client Sample ID: **HS-2**
SGS Ref. #: 1096017002
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 85.8

Collection Date/Time: 10/28/09 11:31
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	ND	4.89	1.47	mg/Kg	1	VFC9751		
Benzene	ND	24.4	7.82	ug/Kg	1	VFC9751		
Toluene	ND	97.8	29.3	ug/Kg	1	VFC9751		
Ethylbenzene	ND	97.8	29.3	ug/Kg	1	VFC9751		
o-Xylene	ND	97.8	29.3	ug/Kg	1	VFC9751		
P & M -Xylene	47.4 J	97.8	29.3	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	76.9	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.2	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 20:53
Dilution Factor: 1
Initial Prep Wt./Vol.: 35.913 g
Container ID:1096017002-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 20:53
Dilution Factor: 1
Initial Prep Wt./Vol.: 35.913 g
Container ID:1096017002-A
Analyst: KPW

Client Sample ID: **HS-2**
SGS Ref. #: 1096017002
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 85.8

Collection Date/Time: 10/28/09 11:31
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	10.8 J	23.1	7.17	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	97.3	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 14:25
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.238 g
Prep Extract Vol.: 1 mL
Container ID:1096017002-B
Analyst: HM

Client Sample ID: **HS-2**
SGS Ref. #: 1096017002
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 85.8

Collection Date/Time: 10/28/09 11:31
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	85.8			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017002-B
Analyst: KAN

Client Sample ID: **HS-3**
SGS Ref. #: 1096017003
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 95.7

Collection Date/Time: 10/28/09 13:32
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	ND	3.59	1.08	mg/Kg	1	VFC9751		
Benzene	ND	17.9	5.74	ug/Kg	1	VFC9751		
Toluene	ND	71.7	21.5	ug/Kg	1	VFC9751		
Ethylbenzene	ND	71.7	21.5	ug/Kg	1	VFC9751		
o-Xylene	25.8 J	71.7	21.5	ug/Kg	1	VFC9751		
P & M -Xylene	71.0 J	71.7	21.5	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	76.5	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.6	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 21:13
Dilution Factor: 1
Initial Prep Wt./Vol.: 38.819 g
Container ID:1096017003-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 21:13
Dilution Factor: 1
Initial Prep Wt./Vol.: 38.819 g
Container ID:1096017003-A
Analyst: KPW

Client Sample ID: **HS-3**
SGS Ref. #: 1096017003
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 95.7

Collection Date/Time: 10/28/09 13:32
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	20.7	6.43	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	91.4	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 14:46
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.221 g
Prep Extract Vol.: 1 mL
Container ID:1096017003-B
Analyst: HM

Client Sample ID: **HS-3**
SGS Ref. #: 1096017003
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 95.7

Collection Date/Time: 10/28/09 13:32
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	95.7			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017003-B
Analyst: KAN

Client Sample ID: **HS-4**
SGS Ref. #: 1096017004
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.1

Collection Date/Time: 10/28/09 13:45
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result		PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	3530		560	168	mg/Kg	100	VFC9756		
Benzene	269 J		280	89.6	ug/Kg	10	VFC9754		
Toluene	6300		1120	336	ug/Kg	10	VFC9754		
Ethylbenzene	5820		1120	336	ug/Kg	10	VFC9754		
o-Xylene	485000		11200	3360	ug/Kg	100	VFC9756		
P & M -Xylene	796000		11200	3360	ug/Kg	100	VFC9756		
4-Bromofluorobenzene <surr>	2420	*	50-150		%	100	VFC9756		
1,4-Difluorobenzene <surr>	99.5		80-120		%	10	VFC9754		

Batch Information

Analytical Batch: VFC9754
Analytical Method: SW8021B
Analysis Date/Time: 11/08/09 19:01
Dilution Factor: 10
Initial Prep Wt./Vol.: 31.901 g
Container ID:1096017004-A
Analyst: KPW

Analytical Batch: VFC9756
Analytical Method: AK101
Analysis Date/Time: 11/11/09 03:25
Dilution Factor: 100
Initial Prep Wt./Vol.: 31.901 g
Container ID:1096017004-A
Analyst: KPW

Analytical Batch: VFC9756
Analytical Method: SW8021B
Analysis Date/Time: 11/11/09 03:25
Dilution Factor: 100
Initial Prep Wt./Vol.: 31.901 g
Container ID:1096017004-A
Analyst: KPW

Client Sample ID: **HS-4**
SGS Ref. #: 1096017004
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.1

Collection Date/Time: 10/28/09 13:45
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	2530	92.8	28.8	mg/Kg	4	XFC9021	XXX21959	
5a Androstane <surr>	94.3	50-150		%	4	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 19:54
Dilution Factor: 4

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.735 g
Prep Extract Vol.: 1 mL
Container ID:1096017004-B
Analyst: HM

Client Sample ID: **HS-4**
SGS Ref. #: 1096017004
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.1

Collection Date/Time: 10/28/09 13:45
Receipt Date/Time: 10/30/09 16:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Acenaphthene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Fluorene	468	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Phenanthrene	815	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Anthracene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Fluoranthene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Pyrene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Benzo(a)Anthracene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Chrysene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Benzo[b]Fluoranthene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Benzo[k]fluoranthene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Benzo[a]pyrene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Indeno[1,2,3-c,d] pyrene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Dibenzo[a,h]anthracene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Benzo[g,h,i]perylene	ND	296	88.9	ug/Kg	50	XMS5198	XXX21996	
Naphthalene	11300	2960	889	ug/Kg	500	XMS5208	XXX21996	
1-Methylnaphthalene	8750	2960	889	ug/Kg	500	XMS5208	XXX21996	
2-Methylnaphthalene	12400	2960	889	ug/Kg	500	XMS5208	XXX21996	
Terphenyl-d14 <surr>	86.9	30-125		%	50	XMS5198	XXX21996	

Batch Information

Analytical Batch: XMS5198
Analytical Method: 8270D SIMS
Analysis Date/Time: 11/15/09 06:03
Dilution Factor: 50
Prep Batch: XXX21996
Prep Method: SW3550C
Prep Date/Time: 11/10/09 10:25
Initial Prep Wt./Vol.: 22.569 g
Prep Extract Vol.: 1 mL
Container ID:1096017004-B
Analyst: JDH

Analytical Batch: XMS5208
Analytical Method: 8270D SIMS
Analysis Date/Time: 11/21/09 10:43
Dilution Factor: 500
Prep Batch: XXX21996
Prep Method: SW3550C
Prep Date/Time: 11/10/09 10:25
Initial Prep Wt./Vol.: 22.569 g
Prep Extract Vol.: 1 mL
Container ID:1096017004-B
Analyst: JDH

Client Sample ID: **HS-4**
SGS Ref. #: 1096017004
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 84.1

Collection Date/Time: 10/28/09 13:45
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	84.1			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017004-B
Analyst: KAN

Client Sample ID: **HS-5**
SGS Ref. #: 1096017005
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.0

Collection Date/Time: 10/28/09 13:49
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result		PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	3870		755	227	mg/Kg	100	VFC9756		
Benzene	501		378	121	ug/Kg	10	VFC9754		
Toluene	12500		1510	453	ug/Kg	10	VFC9754		
Ethylbenzene	8500		1510	453	ug/Kg	10	VFC9754		
o-Xylene	531000		15100	4530	ug/Kg	100	VFC9756		
P & M -Xylene	857000		15100	4530	ug/Kg	100	VFC9756		
4-Bromofluorobenzene <surr>	1990	*	50-150		%	100	VFC9756		
1,4-Difluorobenzene <surr>	104		80-120		%	10	VFC9754		

Batch Information

Analytical Batch: VFC9754
Analytical Method: SW8021B
Analysis Date/Time: 11/08/09 19:23
Dilution Factor: 10
Initial Prep Wt./Vol.: 26.087 g
Container ID:1096017005-A
Analyst: KPW

Analytical Batch: VFC9756
Analytical Method: AK101
Analysis Date/Time: 11/11/09 03:44
Dilution Factor: 100
Initial Prep Wt./Vol.: 26.087 g
Container ID:1096017005-A
Analyst: KPW

Analytical Batch: VFC9756
Analytical Method: SW8021B
Analysis Date/Time: 11/11/09 03:44
Dilution Factor: 100
Initial Prep Wt./Vol.: 26.087 g
Container ID:1096017005-A
Analyst: KPW

Client Sample ID: **HS-5**
SGS Ref. #: 1096017005
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.0

Collection Date/Time: 10/28/09 13:49
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	2690	101	31.4	mg/Kg	4	XFC9021	XXX21959	
5a Androstane <surr>	90.2	50-150		%	4	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 20:15
Dilution Factor: 4

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.386 g
Prep Extract Vol.: 1 mL
Container ID:1096017005-B
Analyst: HM

Client Sample ID: **HS-5**
SGS Ref. #: 1096017005
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.0

Collection Date/Time: 10/28/09 13:49
Receipt Date/Time: 10/30/09 16:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Acenaphthene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Fluorene	802	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Phenanthrene	1140	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Anthracene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Fluoranthene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Pyrene	111 J	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Benzo(a)Anthracene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Chrysene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Benzo[b]Fluoranthene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Benzo[k]fluoranthene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Benzo[a]pyrene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Indeno[1,2,3-c,d] pyrene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Dibenzo[a,h]anthracene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Benzo[g,h,i]perylene	ND	315	94.5	ug/Kg	50	XMS5198	XXX21996	
Naphthalene	19800	1260	378	ug/Kg	200	XMS5208	XXX21996	
1-Methylnaphthalene	12300	1260	378	ug/Kg	200	XMS5208	XXX21996	
2-Methylnaphthalene	18300	1260	378	ug/Kg	200	XMS5208	XXX21996	
Terphenyl-d14 <surr>	91.4	30-125		%	50	XMS5198	XXX21996	

Batch Information

Analytical Batch: XMS5198
Analytical Method: 8270D SIMS
Analysis Date/Time: 11/15/09 06:36
Dilution Factor: 50
Prep Batch: XXX21996
Prep Method: SW3550C
Prep Date/Time: 11/10/09 10:25
Initial Prep Wt./Vol.: 22.894 g
Prep Extract Vol.: 1 mL
Container ID:1096017005-B
Analyst: JDH

Analytical Batch: XMS5208
Analytical Method: 8270D SIMS
Analysis Date/Time: 11/21/09 11:16
Dilution Factor: 200
Prep Batch: XXX21996
Prep Method: SW3550C
Prep Date/Time: 11/10/09 10:25
Initial Prep Wt./Vol.: 22.894 g
Prep Extract Vol.: 1 mL
Container ID:1096017005-B
Analyst: JDH

Client Sample ID: **HS-5**
SGS Ref. #: 1096017005
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.0

Collection Date/Time: 10/28/09 13:49
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	78.0			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017005-B
Analyst: KAN

Client Sample ID: **HS-6**
SGS Ref. #: 1096017006
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.4

Collection Date/Time: 10/28/09 13:52
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	6.26	5.16	1.55	mg/Kg	1	VFC9751		
Benzene	145	25.8	8.26	ug/Kg	1	VFC9751		
Toluene	534	103	31.0	ug/Kg	1	VFC9751		
Ethylbenzene	95.0 J	103	31.0	ug/Kg	1	VFC9751		
o-Xylene	514	103	31.0	ug/Kg	1	VFC9751		
P & M -Xylene	1070	103	31.0	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	81.1	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	92.3	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/07/09 02:43
Dilution Factor: 1
Initial Prep Wt./Vol.: 28.45 g
Container ID:1096017006-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/07/09 02:43
Dilution Factor: 1
Initial Prep Wt./Vol.: 28.45 g
Container ID:1096017006-A
Analyst: KPW

Client Sample ID: **HS-6**
SGS Ref. #: 1096017006
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.4

Collection Date/Time: 10/28/09 13:52
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	7.29 J	21.2	6.58	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	96.2	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 16:29
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.584 g
Prep Extract Vol.: 1 mL
Container ID:1096017006-B
Analyst: HM

Client Sample ID: **HS-6**
SGS Ref. #: 1096017006
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.4

Collection Date/Time: 10/28/09 13:52
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	92.4			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017006-B
Analyst: KAN

Client Sample ID: **HS-7**
SGS Ref. #: 1096017007
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 77.1

Collection Date/Time: 10/28/09 14:10
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	5.10J	8.04	2.41	mg/Kg	1	VFC9751		
Benzene	ND	40.2	12.9	ug/Kg	1	VFC9751		
Toluene	ND	161	48.3	ug/Kg	1	VFC9751		
Ethylbenzene	ND	161	48.3	ug/Kg	1	VFC9751		
o-Xylene	380	161	48.3	ug/Kg	1	VFC9751		
P & M -Xylene	818	161	48.3	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	84.9	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.1	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 23:48
Dilution Factor: 1
Initial Prep Wt./Vol.: 24.73 g
Container ID:1096017007-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 23:48
Dilution Factor: 1
Initial Prep Wt./Vol.: 24.73 g
Container ID:1096017007-A
Analyst: KPW

Client Sample ID: **HS-7**
SGS Ref. #: 1096017007
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 77.1

Collection Date/Time: 10/28/09 14:10
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	48.4	25.3	7.85	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	93.3	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 16:49
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.752 g
Prep Extract Vol.: 1 mL
Container ID:1096017007-B
Analyst: HM

Client Sample ID: **HS-7**
SGS Ref. #: 1096017007
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 77.1

Collection Date/Time: 10/28/09 14:10
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	77.1			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017007-B
Analyst: KAN

Client Sample ID: **HS-8**
SGS Ref. #: 1096017008
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.4

Collection Date/Time: 10/28/09 14:18
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	2.24J	4.25	1.27	mg/Kg	1	VFC9751		
Benzene	ND	21.2	6.80	ug/Kg	1	VFC9751		
Toluene	37.4 J	85.0	25.5	ug/Kg	1	VFC9751		
Ethylbenzene	ND	85.0	25.5	ug/Kg	1	VFC9751		
o-Xylene	160	85.0	25.5	ug/Kg	1	VFC9751		
P & M -Xylene	228	85.0	25.5	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	82.6	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	92.9	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 23:29
Dilution Factor: 1
Initial Prep Wt./Vol.: 34.339 g
Container ID:1096017008-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 23:29
Dilution Factor: 1
Initial Prep Wt./Vol.: 34.339 g
Container ID:1096017008-A
Analyst: KPW

Client Sample ID: **HS-8**
SGS Ref. #: 1096017008
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.4

Collection Date/Time: 10/28/09 14:18
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	21.1	6.55	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	95.9	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 17:10
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.392 g
Prep Extract Vol.: 1 mL
Container ID:1096017008-B
Analyst: HM

Client Sample ID: **HS-8**
SGS Ref. #: 1096017008
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.4

Collection Date/Time: 10/28/09 14:18
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	93.4			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017008-B
Analyst: KAN

Client Sample ID: **HS-9**
SGS Ref. #: 1096017009
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 77.0

Collection Date/Time: 10/28/09 14:25
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result		PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	159		8.00	2.40	mg/Kg	1	VFC9751		
Benzene	ND		40.0	12.8	ug/Kg	1	VFC9751		
Toluene	527		160	48.0	ug/Kg	1	VFC9751		
Ethylbenzene	251		160	48.0	ug/Kg	1	VFC9751		
o-Xylene	139000		1600	480	ug/Kg	10	VFC9754		
P & M -Xylene	17400		160	48.0	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	215	*	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	90.9		80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 23:09
Dilution Factor: 1
Initial Prep Wt./Vol.: 24.971 g
Container ID:1096017009-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 23:09
Dilution Factor: 1
Initial Prep Wt./Vol.: 24.971 g
Container ID:1096017009-A
Analyst: KPW

Analytical Batch: VFC9754
Analytical Method: SW8021B
Analysis Date/Time: 11/08/09 18:38
Dilution Factor: 10
Initial Prep Wt./Vol.: 24.971 g
Container ID:1096017009-A
Analyst: KPW

Client Sample ID: **HS-9**
SGS Ref. #: 1096017009
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 77.0

Collection Date/Time: 10/28/09 14:25
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	163	25.7	7.98	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	93.3	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 17:30
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.286 g
Prep Extract Vol.: 1 mL
Container ID:1096017009-B
Analyst: HM

Client Sample ID: **HS-9**
SGS Ref. #: 1096017009
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 77.0

Collection Date/Time: 10/28/09 14:25
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	77.0			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017009-B
Analyst: KAN

Client Sample ID: **HS-10**
SGS Ref. #: 1096017010
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.8

Collection Date/Time: 10/29/09 15:12
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	5.69J	6.23	1.87	mg/Kg	1	VFC9760		
Benzene	ND	31.2	9.97	ug/Kg	1	VFC9760		
Toluene	99.1 J	125	37.4	ug/Kg	1	VFC9760		
Ethylbenzene	ND	125	37.4	ug/Kg	1	VFC9760		
o-Xylene	193	125	37.4	ug/Kg	1	VFC9760		
P & M -Xylene	407	125	37.4	ug/Kg	1	VFC9760		
4-Bromofluorobenzene <surr>	98.2	50-150		%	1	VFC9760		
1,4-Difluorobenzene <surr>	92.5	80-120		%	1	VFC9760		

Batch Information

Analytical Batch: VFC9760
Analytical Method: AK101
Analysis Date/Time: 11/11/09 23:37
Dilution Factor: 1
Initial Prep Wt./Vol.: 29.887 g
Container ID:1096017010-A
Analyst: HM

Analytical Batch: VFC9760
Analytical Method: SW8021B
Analysis Date/Time: 11/11/09 23:37
Dilution Factor: 1
Initial Prep Wt./Vol.: 29.887 g
Container ID:1096017010-A
Analyst: HM

Client Sample ID: **HS-10**
SGS Ref. #: 1096017010
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.8

Collection Date/Time: 10/29/09 15:12
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	91.0	24.2	7.52	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	90.2	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 17:51
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.267 g
Prep Extract Vol.: 1 mL
Container ID:1096017010-B
Analyst: HM

Client Sample ID: **HS-10**
SGS Ref. #: 1096017010
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.8

Collection Date/Time: 10/29/09 15:12
Receipt Date/Time: 10/30/09 16:20

Polynuclear Aromatics GC/MS

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Acenaphthylene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Acenaphthene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Fluorene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Phenanthrene	2.04 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Anthracene	3.05 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Fluoranthene	2.16 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Pyrene	13.3	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Benzo(a)Anthracene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Chrysene	3.60 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Benzo[b]Fluoranthene	5.36 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Benzo[k]fluoranthene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Benzo[a]pyrene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Indeno[1,2,3-c,d] pyrene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Dibenzo[a,h]anthracene	ND	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Benzo[g,h,i]perylene	2.01 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Naphthalene	10.6	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
1-Methylnaphthalene	4.87 J	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
2-Methylnaphthalene	8.05	6.07	1.82	ug/Kg	1	XMS5208	XXX21996	
Terphenyl-d14 <surr>	89.4	30-125		%	1	XMS5208	XXX21996	

Batch Information

Analytical Batch: XMS5208
Analytical Method: 8270D SIMS
Analysis Date/Time: 11/21/09 11:48
Dilution Factor: 1

Prep Batch: XXX21996
Prep Method: SW3550C
Prep Date/Time: 11/10/09 10:25

Initial Prep Wt./Vol.: 22.653 g
Prep Extract Vol.: 1 mL
Container ID:1096017010-B
Analyst: JDH

Client Sample ID: **HS-10**
SGS Ref. #: 1096017010
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 81.8

Collection Date/Time: 10/29/09 15:12
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	81.8			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017010-B
Analyst: KAN

Client Sample ID: **HS-11**
SGS Ref. #: 1096017011
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 82.9

Collection Date/Time: 10/29/09 15:13
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	5.16J	6.79	2.04	mg/Kg	1	VFC9760		
Benzene	ND	33.9	10.9	ug/Kg	1	VFC9760		
Toluene	68.5 J	136	40.7	ug/Kg	1	VFC9760		
Ethylbenzene	ND	136	40.7	ug/Kg	1	VFC9760		
o-Xylene	148	136	40.7	ug/Kg	1	VFC9760		
P & M -Xylene	297	136	40.7	ug/Kg	1	VFC9760		
4-Bromofluorobenzene <surr>	95.5	50-150		%	1	VFC9760		
1,4-Difluorobenzene <surr>	92.6	80-120		%	1	VFC9760		

Batch Information

Analytical Batch: VFC9760
Analytical Method: AK101
Analysis Date/Time: 11/11/09 23:56
Dilution Factor: 1
Initial Prep Wt./Vol.: 26.22 g
Container ID:1096017011-A
Analyst: HM

Analytical Batch: VFC9760
Analytical Method: SW8021B
Analysis Date/Time: 11/11/09 23:56
Dilution Factor: 1
Initial Prep Wt./Vol.: 26.22 g
Container ID:1096017011-A
Analyst: HM

Client Sample ID: **HS-11**
SGS Ref. #: 1096017011
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 82.9

Collection Date/Time: 10/29/09 15:13
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	88.6	23.8	7.39	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	101	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 18:11
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.39 g
Prep Extract Vol.: 1 mL
Container ID:1096017011-B
Analyst: HM

Client Sample ID: **HS-11**
SGS Ref. #: 1096017011
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 82.9

Collection Date/Time: 10/29/09 15:13
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	82.9			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017011-B
Analyst: KAN

Client Sample ID: **HS-12**
SGS Ref. #: 1096017012
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.6

Collection Date/Time: 10/29/09 15:26
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	ND	4.62	1.39	mg/Kg	1	VFC9760		
Benzene	ND	23.1	7.40	ug/Kg	1	VFC9760		
Toluene	50.4 J	92.5	27.7	ug/Kg	1	VFC9760		
Ethylbenzene	ND	92.5	27.7	ug/Kg	1	VFC9760		
o-Xylene	39.8 J	92.5	27.7	ug/Kg	1	VFC9760		
P & M -Xylene	73.1 J	92.5	27.7	ug/Kg	1	VFC9760		
4-Bromofluorobenzene <surr>	89.8	50-150		%	1	VFC9760		
1,4-Difluorobenzene <surr>	92.7	80-120		%	1	VFC9760		

Batch Information

Analytical Batch: VFC9760
Analytical Method: AK101
Analysis Date/Time: 11/12/09 00:16
Dilution Factor: 1
Initial Prep Wt./Vol.: 30.424 g
Container ID:1096017012-A
Analyst: HM

Analytical Batch: VFC9760
Analytical Method: SW8021B
Analysis Date/Time: 11/12/09 00:16
Dilution Factor: 1
Initial Prep Wt./Vol.: 30.424 g
Container ID:1096017012-A
Analyst: HM

Client Sample ID: **HS-12**
SGS Ref. #: 1096017012
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.6

Collection Date/Time: 10/29/09 15:26
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	21.0	6.50	mg/Kg	1	XFC9021	XXX21959	
5a Androstane <surr>	95.8	50-150		%	1	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 18:32
Dilution Factor: 1

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.242 g
Prep Extract Vol.: 1 mL
Container ID:1096017012-B
Analyst: HM

Client Sample ID: **HS-12**
SGS Ref. #: 1096017012
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 94.6

Collection Date/Time: 10/29/09 15:26
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	94.6			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017012-B
Analyst: KAN

Client Sample ID: **HS-13**
SGS Ref. #: 1096017013
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.1

Collection Date/Time: 10/29/09 15:15
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	95.8	10.1	3.02	mg/Kg	1	VFC9760		
Benzene	ND	50.3	16.1	ug/Kg	1	VFC9760		
Toluene	2930	201	60.3	ug/Kg	1	VFC9760		
Ethylbenzene	336	201	60.3	ug/Kg	1	VFC9760		
o-Xylene	10300	201	60.3	ug/Kg	1	VFC9760		
P & M -Xylene	21900	201	60.3	ug/Kg	1	VFC9760		
4-Bromofluorobenzene <surr>	105	50-150		%	1	VFC9760		
1,4-Difluorobenzene <surr>	88.1	80-120		%	1	VFC9760		

Batch Information

Analytical Batch: VFC9760
Analytical Method: AK101
Analysis Date/Time: 11/12/09 00:35
Dilution Factor: 1
Initial Prep Wt./Vol.: 23.841 g
Container ID:1096017013-A
Analyst: HM

Analytical Batch: VFC9760
Analytical Method: SW8021B
Analysis Date/Time: 11/12/09 00:35
Dilution Factor: 1
Initial Prep Wt./Vol.: 23.841 g
Container ID:1096017013-A
Analyst: HM

Client Sample ID: **HS-13**
SGS Ref. #: 1096017013
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.1

Collection Date/Time: 10/29/09 15:15
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	83.2 J	116	36.1	mg/Kg	4	XFC9021	XXX21959	
5a Androstane <surr>	98.5	50-150		%	4	XFC9021	XXX21959	

Batch Information

Analytical Batch: XFC9021
Analytical Method: AK102
Analysis Date/Time: 11/10/09 18:53
Dilution Factor: 4

Prep Batch: XXX21959
Prep Method: SW3550C
Prep Date/Time: 11/05/09 09:10

Initial Prep Wt./Vol.: 30.316 g
Prep Extract Vol.: 1 mL
Container ID:1096017013-B
Analyst: HM

Client Sample ID: **HS-13**
SGS Ref. #: 1096017013
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 68.1

Collection Date/Time: 10/29/09 15:15
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	68.1			%	1	SPT8049		

Batch Information

Analytical Batch: SPT8049
Analytical Method: SM20 2540G
Analysis Date/Time: 10/30/09 22:00
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017013-B
Analyst: KAN

Client Sample ID: **HS-14**
SGS Ref. #: 1096017014
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 75.2

Collection Date/Time: 10/28/09 11:01
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	75.2			%	1	SPT8050		

Batch Information

Analytical Batch: SPT8050
Analytical Method: SM20 2540G
Analysis Date/Time: 11/02/09 18:15
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017014-B
Analyst: KAN

Client Sample ID: **HS-15**
SGS Ref. #: 1096017015
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.0

Collection Date/Time: 10/28/09 10:32
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	4.59J	6.75	2.03	mg/Kg	1	VFC9751		
Benzene	ND	33.8	10.8	ug/Kg	1	VFC9751		
Toluene	ND	135	40.5	ug/Kg	1	VFC9751		
Ethylbenzene	ND	135	40.5	ug/Kg	1	VFC9751		
o-Xylene	588	135	40.5	ug/Kg	1	VFC9751		
P & M -Xylene	1240	135	40.5	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	83.5	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.3	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 22:30
Dilution Factor: 1
Initial Prep Wt./Vol.: 36.113 g
Container ID:1096017015-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 22:30
Dilution Factor: 1
Initial Prep Wt./Vol.: 36.113 g
Container ID:1096017015-A
Analyst: KPW

Client Sample ID: **HS-15**
SGS Ref. #: 1096017015
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.0

Collection Date/Time: 10/28/09 10:32
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	17.4 J	27.7	8.57	mg/Kg	1	XFC9018	XXX21950	
5a Androstane <surr>	89.6	50-150		%	1	XFC9018	XXX21950	

Batch Information

Analytical Batch: XFC9018
Analytical Method: AK102
Analysis Date/Time: 11/05/09 14:47
Dilution Factor: 1

Prep Batch: XXX21950
Prep Method: SW3550C
Prep Date/Time: 11/04/09 09:30

Initial Prep Wt./Vol.: 30.131 g
Prep Extract Vol.: 1 mL
Container ID:1096017015-B
Analyst: HM

Client Sample ID: **HS-15**
SGS Ref. #: 1096017015
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 72.0

Collection Date/Time: 10/28/09 10:32
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	72.0			%	1	SPT8051		

Batch Information

Analytical Batch: SPT8051
Analytical Method: SM20 2540G
Analysis Date/Time: 11/03/09 17:10
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017015-B
Analyst: KAN

Client Sample ID: **HS-18**
SGS Ref. #: 1096017018
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.6

Collection Date/Time: 10/28/09 11:47
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	8.38	3.89	1.17	mg/Kg	1	VFC9776		
Benzene	ND	19.4	6.22	ug/Kg	1			
Toluene	24.9 J	77.7	23.3	ug/Kg	1			
Ethylbenzene	ND	77.7	23.3	ug/Kg	1			
o-Xylene	968	77.7	23.3	ug/Kg	1	VFC9776		
P & M -Xylene	1680	77.7	23.3	ug/Kg	1	VFC9776		
4-Bromofluorobenzene <surr>	105	50-150		%	1	VFC9776		
1,4-Difluorobenzene <surr>	105	80-120		%	1	VFC9776		

Batch Information

Analytical Batch:
Analytical Method: AK101 8021B
Analysis Date/Time: 11/08/09 20:07
Dilution Factor: 1
Initial Prep Wt./Vol.: 37.716 g
Container ID:1096017018-A
Analyst: KPW

Analytical Batch: VFC9776
Analytical Method: AK101
Analysis Date/Time: 11/16/09 20:12
Dilution Factor: 1
Initial Prep Wt./Vol.: 37.716 g
Container ID:1096017018-A
Analyst: KPW

Analytical Batch: VFC9776
Analytical Method: SW8021B
Analysis Date/Time: 11/16/09 20:12
Dilution Factor: 1
Initial Prep Wt./Vol.: 37.716 g
Container ID:1096017018-A
Analyst: KPW

Client Sample ID: **HS-18**
SGS Ref. #: 1096017018
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.6

Collection Date/Time: 10/28/09 11:47
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	ND	21.3	6.61	mg/Kg	1	XFC9018	XXX21950	
5a Androstane <surr>	87.8	50-150		%	1	XFC9018	XXX21950	

Batch Information

Analytical Batch: XFC9018
Analytical Method: AK102
Analysis Date/Time: 11/05/09 15:08
Dilution Factor: 1

Prep Batch: XXX21950
Prep Method: SW3550C
Prep Date/Time: 11/04/09 09:30

Initial Prep Wt./Vol.: 30.072 g
Prep Extract Vol.: 1 mL
Container ID:1096017018-B
Analyst: HM

Client Sample ID: **HS-18**
SGS Ref. #: 1096017018
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 93.6

Collection Date/Time: 10/28/09 11:47
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	93.6			%	1	SPT8051		

Batch Information

Analytical Batch: SPT8051
Analytical Method: SM20 2540G
Analysis Date/Time: 11/03/09 17:10
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017018-B
Analyst: KAN

Client Sample ID: **HS-19**
SGS Ref. #: 1096017019
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.6

Collection Date/Time: 10/28/09 11:58
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	3.04J	6.04	1.81	mg/Kg	1	VFC9751		
Benzene	ND	30.2	9.66	ug/Kg	1	VFC9751		
Toluene	ND	121	36.2	ug/Kg	1	VFC9751		
Ethylbenzene	ND	121	36.2	ug/Kg	1	VFC9751		
o-Xylene	284	121	36.2	ug/Kg	1	VFC9751		
P & M -Xylene	873	121	36.2	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	83.4	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.4	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 22:11
Dilution Factor: 1
Initial Prep Wt./Vol.: 33.982 g
Container ID:1096017019-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 22:11
Dilution Factor: 1
Initial Prep Wt./Vol.: 33.982 g
Container ID:1096017019-A
Analyst: KPW

Client Sample ID: **HS-19**
SGS Ref. #: 1096017019
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.6

Collection Date/Time: 10/28/09 11:58
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	20.4 J	25.4	7.89	mg/Kg	1	XFC9018	XXX21950	
5a Androstane <surr>	85.1	50-150		%	1	XFC9018	XXX21950	

Batch Information

Analytical Batch: XFC9018
Analytical Method: AK102
Analysis Date/Time: 11/05/09 15:28
Dilution Factor: 1

Prep Batch: XXX21950
Prep Method: SW3550C
Prep Date/Time: 11/04/09 09:30

Initial Prep Wt./Vol.: 30 g
Prep Extract Vol.: 1 mL
Container ID:1096017019-B
Analyst: HM

Client Sample ID: **HS-19**
SGS Ref. #: 1096017019
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 78.6

Collection Date/Time: 10/28/09 11:58
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	78.6			%	1	SPT8051		

Batch Information

Analytical Batch: SPT8051
Analytical Method: SM20 2540G
Analysis Date/Time: 11/03/09 17:10
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017019-B
Analyst: KAN

Client Sample ID: **HS-20**
SGS Ref. #: 1096017020
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.2

Collection Date/Time: 10/28/09 13:56
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	3.09J	4.31	1.29	mg/Kg	1	VFC9751		
Benzene	ND	21.6	6.90	ug/Kg	1	VFC9751		
Toluene	38.8 J	86.3	25.9	ug/Kg	1	VFC9751		
Ethylbenzene	ND	86.3	25.9	ug/Kg	1	VFC9751		
o-Xylene	330	86.3	25.9	ug/Kg	1	VFC9751		
P & M -Xylene	883	86.3	25.9	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	84.3	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 21:51
Dilution Factor: 1
Initial Prep Wt./Vol.: 34.859 g
Container ID:1096017020-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 21:51
Dilution Factor: 1
Initial Prep Wt./Vol.: 34.859 g
Container ID:1096017020-A
Analyst: KPW

Client Sample ID: **HS-20**
SGS Ref. #: 1096017020
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.2

Collection Date/Time: 10/28/09 13:56
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	8.38 J	21.7	6.71	mg/Kg	1	XFC9018	XXX21950	
5a Androstane <surr>	82.7	50-150		%	1	XFC9018	XXX21950	

Batch Information

Analytical Batch: XFC9018
Analytical Method: AK102
Analysis Date/Time: 11/05/09 15:49
Dilution Factor: 1

Prep Batch: XXX21950
Prep Method: SW3550C
Prep Date/Time: 11/04/09 09:30

Initial Prep Wt./Vol.: 30.053 g
Prep Extract Vol.: 1 mL
Container ID:1096017020-B
Analyst: HM

Client Sample ID: **HS-20**
SGS Ref. #: 1096017020
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 92.2

Collection Date/Time: 10/28/09 13:56
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	92.2			%	1	SPT8051		

Batch Information

Analytical Batch: SPT8051
Analytical Method: SM20 2540G
Analysis Date/Time: 11/03/09 17:10
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017020-B
Analyst: KAN

Client Sample ID: **HS-21**
SGS Ref. #: 1096017021
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.6

Collection Date/Time: 10/28/09 14:40
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	4.90J	11.6	3.48	mg/Kg	1	VFC9751		
Benzene	ND	58.0	18.6	ug/Kg	1	VFC9751		
Toluene	ND	232	69.6	ug/Kg	1	VFC9751		
Ethylbenzene	ND	232	69.6	ug/Kg	1	VFC9751		
o-Xylene	417	232	69.6	ug/Kg	1	VFC9751		
P & M -Xylene	1220	232	69.6	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	79.2	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	93.3	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/06/09 21:32
Dilution Factor: 1
Initial Prep Wt./Vol.: 23.914 g
Container ID:1096017021-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/06/09 21:32
Dilution Factor: 1
Initial Prep Wt./Vol.: 23.914 g
Container ID:1096017021-A
Analyst: KPW

Client Sample ID: **HS-21**
SGS Ref. #: 1096017021
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.6

Collection Date/Time: 10/28/09 14:40
Receipt Date/Time: 10/30/09 16:20

Semivolatile Organic Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Diesel Range Organics	63.4	32.5	10.1	mg/Kg	1	XFC9018	XXX21950	
5a Androstane <surr>	79.7	50-150		%	1	XFC9018	XXX21950	

Batch Information

Analytical Batch: XFC9018
Analytical Method: AK102
Analysis Date/Time: 11/05/09 22:02
Dilution Factor: 1

Prep Batch: XXX21950
Prep Method: SW3550C
Prep Date/Time: 11/04/09 09:30

Initial Prep Wt./Vol.: 30.007 g
Prep Extract Vol.: 1 mL
Container ID:1096017021-B
Analyst: HM

Client Sample ID: **HS-21**
SGS Ref. #: 1096017021
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)
Percent Solids: 61.6

Collection Date/Time: 10/28/09 14:40
Receipt Date/Time: 10/30/09 16:20

Solids

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Total Solids	61.6			%	1	SPT8051		

Batch Information

Analytical Batch: SPT8051
Analytical Method: SM20 2540G
Analysis Date/Time: 11/03/09 17:10
Dilution Factor: 1

Initial Prep Wt./Vol.: 1 mL
Container ID:1096017021-B
Analyst: KAN

Client Sample ID: **HS-TB**
SGS Ref. #: 1096017022
Project ID: Akiak Old High School Tank Far
Matrix: Soil/Solid (dry weight)

Collection Date/Time: 10/28/09 11:00
Receipt Date/Time: 10/30/09 16:20

Volatile Fuels Department

Parameter	Result	PQL/CL	MDL	Units	DF	Analytical Batch	Prep Batch	Qualifiers
Gasoline Range Organics	ND	2.51	0.752	mg/Kg	1	VFC9751		
Benzene	ND	12.5	4.01	ug/Kg	1	VFC9751		
Toluene	16.3 J	50.1	15.0	ug/Kg	1	VFC9751		
Ethylbenzene	ND	50.1	15.0	ug/Kg	1	VFC9751		
o-Xylene	15.5 J	50.1	15.0	ug/Kg	1	VFC9751		
P & M -Xylene	40.1 J	50.1	15.0	ug/Kg	1	VFC9751		
4-Bromofluorobenzene <surr>	82.2	50-150		%	1	VFC9751		
1,4-Difluorobenzene <surr>	92.9	80-120		%	1	VFC9751		

Batch Information

Analytical Batch: VFC9751
Analytical Method: AK101
Analysis Date/Time: 11/07/09 05:58
Dilution Factor: 1
Initial Prep Wt./Vol.: 49.871 g
Container ID:1096017022-A
Analyst: KPW

Analytical Batch: VFC9751
Analytical Method: SW8021B
Analysis Date/Time: 11/07/09 05:58
Dilution Factor: 1
Initial Prep Wt./Vol.: 49.871 g
Container ID:1096017022-A
Analyst: KPW

SGS Ref.#	936118	Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	
Project Name/#	Akiak Old High School Tank Far		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017004, 1096017005, 1096017006, 1096017007, 1096017008, 1096017009, 1096017010, 1096017011, 1096017012, 1096017013

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Solids					
Total Solids	100			%	10/30/09
Batch SPT8049					
Method SM20 2540G					
Instrument					

SGS Ref.#	936423	Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	
Project Name/#	Akiak Old High School Tank Far		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1096017014

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Solids					
Total Solids	100			%	11/02/09
Batch SPT8050					
Method SM20 2540G					
Instrument					

SGS Ref.#	936742	Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	XXX21950
Project Name/#	Akiak Old High School Tank Far		**Method**	SW3550C
Matrix	Soil/Solid (dry weight)		**Date**	11/04/2009

QC results affect the following production samples:

1096017015, 1096017018, 1096017019, 1096017020, 1096017021

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	ND	20.0	6.20	mg/Kg	11/05/09
Surrogates					
5a Androstane <surr>	85.7	60-120		%	11/05/09

Batch XFC9018
Method AK102
Instrument HP 7890A FID SV E F

SGS Ref.#	936778	Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	
Project Name/#	Akiak Old High School Tank Far		**Method**	
Matrix	Soil/Solid (dry weight)		**Date**	

QC results affect the following production samples:

1096017015, 1096017018, 1096017019, 1096017020, 1096017021

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Solids					
Total Solids	100			%	11/03/09
Batch SPT8051					
Method SM20 2540G					
Instrument					

SGS Ref.#	937152	Method Blank	**Printed Date/Time**	12/03/2009	15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	XXX21959	
Project Name/#	Akiak Old High School Tank Far		**Method**	SW3550C	
Matrix	Soil/Solid (dry weight)		**Date**	11/05/2009	

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017004, 1096017005, 1096017006, 1096017007, 1096017008, 1096017009, 1096017010, 1096017011, 1096017012, 1096017013

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Semivolatile Organic Fuels Department					
Diesel Range Organics	ND	20.0	6.20	mg/Kg	11/10/09
Surrogates					
5a Androstane <surr>	90.3	60-120		%	11/10/09

Batch XFC9021
Method AK102
Instrument HP 7890A FID SV E F

SGS Ref.#	937694 Method Blank	**Printed Date/Time**		12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep**	**Batch**	VXX20234
Project Name/#	Akiak Old High School Tank Far		**Method**	SW5035A
Matrix	Soil/Solid (dry weight)		**Date**	11/06/2009

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017007, 1096017008, 1096017009, 1096017015, 1096017019, 1096017020, 1096017021

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	ND	2.50	0.750	mg/Kg	11/06/09
Surrogates					
4-Bromofluorobenzene <surr>	107	50-150		%	11/06/09
Batch VFC9751					
Method AK101					
Instrument HP 5890 Series II PID+FID VCA					
Benzene	ND	12.5	4.00	ug/Kg	11/06/09
Toluene	ND	50.0	15.0	ug/Kg	11/06/09
Ethylbenzene	ND	50.0	15.0	ug/Kg	11/06/09
o-Xylene	ND	50.0	15.0	ug/Kg	11/06/09
P & M -Xylene	23.8 J	50.0	15.0	ug/Kg	11/06/09
Surrogates					
1,4-Difluorobenzene <surr>	94.4	80-120		%	11/06/09
Batch VFC9751					
Method SW8021B					
Instrument HP 5890 Series II PID+FID VCA					

SGS Ref.#	937703 Method Blank	**Printed Date/Time**		12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep**	**Batch**	VXX20235
Project Name/#	Akiak Old High School Tank Far		**Method**	SW5035A
Matrix	Soil/Solid (dry weight)		**Date**	11/06/2009

QC results affect the following production samples:

1096017006, 1096017022

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	ND	2.50	0.750	mg/Kg	11/07/09
Surrogates					
4-Bromofluorobenzene <surr>	112	50-150		%	11/07/09
Batch VFC9751					
Method AK101					
Instrument HP 5890 Series II PID+FID VCA					
Benzene	ND	12.5	4.00	ug/Kg	11/07/09
Toluene	ND	50.0	15.0	ug/Kg	11/07/09
Ethylbenzene	ND	50.0	15.0	ug/Kg	11/07/09
o-Xylene	ND	50.0	15.0	ug/Kg	11/07/09
P & M -Xylene	ND	50.0	15.0	ug/Kg	11/07/09
Surrogates					
1,4-Difluorobenzene <surr>	91.5	80-120		%	11/07/09
Batch VFC9751					
Method SW8021B					
Instrument HP 5890 Series II PID+FID VCA					

SGS Ref.#	938097 Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep Batch**	XXX21996
Project Name/#	Akiak Old High School Tank Far	**Method**	SW3550C
Matrix	Soil/Solid (dry weight)	**Date**	11/10/2009

QC results affect the following production samples:
1096017004, 1096017005, 1096017010

Parameter	Results		Reporting/Control Limit	MDL	Units	Analysis Date
Polynuclear Aromatics GC/MS						
Acenaphthylene	ND		5.00	1.50	ug/Kg	11/14/09
Acenaphthene	ND		5.00	1.50	ug/Kg	11/14/09
Fluorene	ND		5.00	1.50	ug/Kg	11/14/09
Phenanthrene	ND		5.00	1.50	ug/Kg	11/14/09
Anthracene	ND		5.00	1.50	ug/Kg	11/14/09
Fluoranthene	ND		5.00	1.50	ug/Kg	11/14/09
Pyrene	ND		5.00	1.50	ug/Kg	11/14/09
Benzo(a)Anthracene	ND		5.00	1.50	ug/Kg	11/14/09
Chrysene	ND		5.00	1.50	ug/Kg	11/14/09
Benzo[b]Fluoranthene	ND		5.00	1.50	ug/Kg	11/14/09
Benzo[k]fluoranthene	ND		5.00	1.50	ug/Kg	11/14/09
Benzo[a]pyrene	ND		5.00	1.50	ug/Kg	11/14/09
Indeno[1,2,3-c,d] pyrene	ND		5.00	1.50	ug/Kg	11/14/09
Dibenzo[a,h]anthracene	ND		5.00	1.50	ug/Kg	11/14/09
Benzo[g,h,i]perylene	ND		5.00	1.50	ug/Kg	11/14/09
Naphthalene	9.66	*	5.00	1.50	ug/Kg	11/14/09
1-Methylnaphthalene	7.69	*	5.00	1.50	ug/Kg	11/14/09
2-Methylnaphthalene	9.91	*	5.00	1.50	ug/Kg	11/14/09
Surrogates						
Terphenyl-d14 <surr>	91.8		30-125		%	11/14/09

Batch XMS5197
Method 8270D SIMS
Instrument HP 6890/5973 MS SVQA

SGS Ref.#	938162	Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	VXX20243
Project Name/#	Akiak Old High School Tank Far		**Method**	SW5035A
Matrix	Soil/Solid (dry weight)		**Date**	11/07/2009

QC results affect the following production samples:
1096017004, 1096017005, 1096017009, 1096017018

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Surrogates					
4-Bromofluorobenzene <surr>	94.1	50-150		%	11/08/09
Batch VFC9754					
Method AK101					
Instrument HP 5890 Series II PID+HECD VBA					
Benzene	9.18 J	12.5	4.00	ug/Kg	11/08/09
Toluene	16.8 J	50.0	15.0	ug/Kg	11/08/09
Ethylbenzene	ND	50.0	15.0	ug/Kg	11/08/09
o-Xylene	18.8 J	50.0	15.0	ug/Kg	11/08/09
Surrogates					
1,4-Difluorobenzene <surr>	109	80-120		%	11/08/09
Batch VFC9754					
Method SW8021B					
Instrument HP 5890 Series II PID+HECD VBA					

SGS Ref.#	938398 Method Blank	**Printed Date/Time**		12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep**	**Batch**	VXX20250
Project Name/#	Akiak Old High School Tank Far		**Method**	SW5035A
Matrix	Soil/Solid (dry weight)		**Date**	11/10/2009

QC results affect the following production samples:

1096017004, 1096017005

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	ND	2.50	0.750	mg/Kg	11/10/09
Surrogates					
4-Bromofluorobenzene <surr>	110	50-150		%	11/10/09
Batch VFC9756					
Method AK101					
Instrument HP 5890 Series II PID+FID VCA					
o-Xylene	ND	50.0	15.0	ug/Kg	11/10/09
P & M -Xylene	24.3 J	50.0	15.0	ug/Kg	11/10/09
Surrogates					
1,4-Difluorobenzene <surr>	93.1	80-120		%	11/10/09
Batch VFC9756					
Method SW8021B					
Instrument HP 5890 Series II PID+FID VCA					

SGS Ref.#	938585 Method Blank	**Printed Date/Time**		12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep**	**Batch**	VXX20258
Project Name/#	Akiak Old High School Tank Far		**Method**	SW5035A
Matrix	Soil/Solid (dry weight)		**Date**	11/11/2009

QC results affect the following production samples:

1096017010, 1096017011, 1096017012, 1096017013

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	ND	2.50	0.750	mg/Kg	11/11/09
Surrogates					
4-Bromofluorobenzene <surr>	111	50-150		%	11/11/09
Batch VFC9760					
Method AK101					
Instrument HP 5890 Series II PID+FID VCA					
Benzene	ND	12.5	4.00	ug/Kg	11/11/09
Toluene	ND	50.0	15.0	ug/Kg	11/11/09
Ethylbenzene	ND	50.0	15.0	ug/Kg	11/11/09
o-Xylene	ND	50.0	15.0	ug/Kg	11/11/09
P & M -Xylene	24.3 J	50.0	15.0	ug/Kg	11/11/09
Surrogates					
1,4-Difluorobenzene <surr>	93.3	80-120		%	11/11/09
Batch VFC9760					
Method SW8021B					
Instrument HP 5890 Series II PID+FID VCA					

SGS Ref.#	938874 Method Blank	**Printed Date/Time**		12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep**	**Batch**	XXX22015
Project Name/#	Akiak Old High School Tank Far		**Method**	SW3550C
Matrix	Soil/Solid (dry weight)		**Date**	11/13/2009

QC results affect the following production samples:

1096017004

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Polynuclear Aromatics GC/MS					
Acenaphthylene	ND	5.00	1.50	ug/Kg	11/15/09
Acenaphthene	ND	5.00	1.50	ug/Kg	11/15/09
Fluorene	ND	5.00	1.50	ug/Kg	11/15/09
Phenanthrene	ND	5.00	1.50	ug/Kg	11/15/09
Anthracene	ND	5.00	1.50	ug/Kg	11/15/09
Fluoranthene	ND	5.00	1.50	ug/Kg	11/15/09
Pyrene	ND	5.00	1.50	ug/Kg	11/15/09
Benzo(a)Anthracene	ND	5.00	1.50	ug/Kg	11/15/09
Chrysene	ND	5.00	1.50	ug/Kg	11/15/09
Benzo[b]Fluoranthene	ND	5.00	1.50	ug/Kg	11/15/09
Benzo[k]fluoranthene	ND	5.00	1.50	ug/Kg	11/15/09
Benzo[a]pyrene	ND	5.00	1.50	ug/Kg	11/15/09
Indeno[1,2,3-c,d] pyrene	ND	5.00	1.50	ug/Kg	11/15/09
Dibenzo[a,h]anthracene	ND	5.00	1.50	ug/Kg	11/15/09
Benzo[g,h,i]perylene	ND	5.00	1.50	ug/Kg	11/15/09
Surrogates					
Terphenyl-d14 <surr>	97.8	30-125		%	11/15/09

Batch XMS5198
Method 8270D SIMS
Instrument HP 6890/5973 MS SVQA

SGS Ref.#	939337 Method Blank	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage	**Prep Batch**	VXX20278
Project Name/#	Akiak Old High School Tank Far	**Method**	SW5035A
Matrix	Soil/Solid (dry weight)	**Date**	11/16/2009

QC results affect the following production samples:

1096017018

Parameter	Results	Reporting/Control Limit	MDL	Units	Analysis Date
Volatile Fuels Department					
Gasoline Range Organics	ND	2.50	0.750	mg/Kg	11/16/09
Surrogates					
4-Bromofluorobenzene <surr>	92.1	50-150		%	11/16/09
Batch VFC9776					
Method AK101					
Instrument HP 5890 Series II PID+HECD VBA					
o-Xylene	ND	50.0	15.0	ug/Kg	11/16/09
P & M -Xylene	ND	50.0	15.0	ug/Kg	11/16/09
Surrogates					
1,4-Difluorobenzene <surr>	103	80-120		%	11/16/09
Batch VFC9776					
Method SW8021B					
Instrument HP 5890 Series II PID+HECD VBA					

SGS Ref.#	936119	Duplicate	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	
Project Name/#	Akiak Old High School Tank Far		**Method**	
Original	1096017001		**Date**	
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017004, 1096017005, 1096017006, 1096017007, 1096017008, 1096017009, 1096017010, 1096017011, 1096017012, 1096017013

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	78.2	77.3	%	1	(< 15)	10/30/2009

Batch SPT8049
Method SM20 2540G
Instrument

SGS Ref.#	936424	Duplicate	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	
Project Name/#	Akiak Old High School Tank Far		**Method**	
Original	1096909001		**Date**	
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1096017014

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	89.6	89.9	%	0	(< 15)	11/02/2009

Batch SPT8050
Method SM20 2540G
Instrument

SGS Ref.#	936779	Duplicate	**Printed Date/Time**	12/03/2009 15:23
Client Name	SLR Alaska-Anchorage		**Prep Batch**	
Project Name/#	Akiak Old High School Tank Far		**Method**	
Original	1096045001		**Date**	
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:

1096017015, 1096017018, 1096017019, 1096017020, 1096017021

Parameter	Original Result	QC Result	Units	RPD	RPD Limits	Analysis Date
Solids						
Total Solids	90.4	90.6	%	0	(< 15)	11/03/2009
Batch SPT8051						
Method SM20 2540G						
Instrument						

SGS Ref.#	936743	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	936744	Lab Control Sample Duplicate	**Prep Batch**	XXX21950	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/04/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017015, 1096017018, 1096017019, 1096017020, 1096017021

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	176	105	(75-125)			167 mg/Kg	11/05/2009
	LCSD	190	114		8	(< 20)	167 mg/Kg	11/05/2009
Surrogates								
5a Androstane <surr>	LCS		93	(60-120)				11/05/2009
	LCSD		100		7			11/05/2009

Batch	XFC9018	
Method	AK102	
Instrument	HP 7890A	FID SV E F

SGS Ref.#	937153	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	937154	Lab Control Sample Duplicate	**Prep Batch**	XXX21959	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/05/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017004, 1096017005, 1096017006, 1096017007, 1096017008, 1096017009, 1096017010, 1096017011, 1096017012, 1096017013

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Semivolatile Organic Fuels Department								
Diesel Range Organics	LCS	171	103	(75-125)			167 mg/Kg	11/10/2009
	LCSD	161	96		6	(< 20)	167 mg/Kg	11/10/2009
Surrogates								
5a Androstane <surr>	LCS		102	(60-120)				11/10/2009
	LCSD		98		4			11/10/2009

Batch XFC9021
Method AK102
Instrument HP 7890A FID SV E F

SGS Ref.#	937695	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	937696	Lab Control Sample Duplicate	**Prep Batch**	VXX20234	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/06/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017007, 1096017008, 1096017009, 1096017015, 1096017019, 1096017020, 1096017021

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1430	114	(80-125)			1250 ug/Kg	11/06/2009
	LCSD	1360	109		5	(< 20)	1250 ug/Kg	11/06/2009
Toluene	LCS	1490	120	(85-120)			1250 ug/Kg	11/06/2009
	LCSD	1430	114		4	(< 20)	1250 ug/Kg	11/06/2009
Ethylbenzene	LCS	1550	124	(85-125)			1250 ug/Kg	11/06/2009
	LCSD	1480	119		4	(< 20)	1250 ug/Kg	11/06/2009
o-Xylene	LCS	1470	117	(85-125)			1250 ug/Kg	11/06/2009
	LCSD	1410	113		4	(< 20)	1250 ug/Kg	11/06/2009
P & M -Xylene	LCS	3040	122	(85-125)			2500 ug/Kg	11/06/2009
	LCSD	2930	117		4	(< 20)	2500 ug/Kg	11/06/2009
Surrogates								
1,4-Difluorobenzene <surr>	LCS		99	(80-120)				11/06/2009
	LCSD		99		0			11/06/2009

Batch	VFC9751
Method	SW8021B
Instrument	HP 5890 Series II PID+FID VCA

SGS Ref.#	937697	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	937698	Lab Control Sample Duplicate	**Prep Batch**	VXX20234	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/06/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017001, 1096017002, 1096017003, 1096017007, 1096017008, 1096017009, 1096017015, 1096017019, 1096017020, 1096017021

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	12.6	112	(60-120)			11.3 mg/Kg	11/06/2009
	LCSD	12.6	112		0	(< 20)	11.3 mg/Kg	11/06/2009
Surrogates								
4-Bromofluorobenzene <surr>	LCS		114	(50-150)				11/06/2009
	LCSD		113		1			11/06/2009

Batch VFC9751
Method AK101
Instrument HP 5890 Series II PID+FID VCA

SGS Ref.#	937704	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	937705	Lab Control Sample Duplicate	**Prep Batch**	VXX20235	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/06/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017006, 1096017022

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1360	109	(80-125)			1250 ug/Kg	11/07/2009
	LCSD	1270	101		7	(< 20)	1250 ug/Kg	11/07/2009
Toluene	LCS	1430	115	(85-120)			1250 ug/Kg	11/07/2009
	LCSD	1340	107		7	(< 20)	1250 ug/Kg	11/07/2009
Ethylbenzene	LCS	1480	118	(85-125)			1250 ug/Kg	11/07/2009
	LCSD	1390	112		6	(< 20)	1250 ug/Kg	11/07/2009
o-Xylene	LCS	1410	112	(85-125)			1250 ug/Kg	11/07/2009
	LCSD	1320	106		6	(< 20)	1250 ug/Kg	11/07/2009
P & M -Xylene	LCS	2910	117	(85-125)			2500 ug/Kg	11/07/2009
	LCSD	2730	109		7	(< 20)	2500 ug/Kg	11/07/2009
Surrogates								
1,4-Difluorobenzene <surr>	LCS		97	(80-120)				11/07/2009
	LCSD		97		0			11/07/2009

Batch	VFC9751
Method	SW8021B
Instrument	HP 5890 Series II PID+FID VCA

SGS Ref.#	937706	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	937707	Lab Control Sample Duplicate	**Prep Batch**	VXX20235	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/06/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017006, 1096017022

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	12.6	112	(60-120)			11.3 mg/Kg	11/07/2009
	LCSD	12.3	110		2	(< 20)	11.3 mg/Kg	11/07/2009
Surrogates								
4-Bromofluorobenzene <surr>	LCS		116	(50-150)				11/07/2009
	LCSD		117		1			11/07/2009

Batch VFC9751
Method AK101
Instrument HP 5890 Series II PID+FID VCA

SGS Ref.#	938098	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
			Prep Batch	XXX21996	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/10/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017004, 1096017005, 1096017010

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

Polynuclear Aromatics GC/MS

SGS

SGS Ref.#	938098	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
			Prep Batch	XXX21996	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/10/2009	
Matrix	Soil/Solid (dry weight)				

Parameter		QC Results	Pct Recov		LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
Acenaphthylene	LCS	19.1	86		(45-102)			22.2 ug/Kg	11/14/2009
Acenaphthene	LCS	18.8	84		(45-99)			22.2 ug/Kg	11/14/2009
Fluorene	LCS	20.3	91		(50-107)			22.2 ug/Kg	11/14/2009
Phenanthrene	LCS	21.4	96		(50-110)			22.2 ug/Kg	11/14/2009
Anthracene	LCS	19.4	87		(28-103)			22.2 ug/Kg	11/14/2009
Fluoranthene	LCS	22.2	100		(55-115)			22.2 ug/Kg	11/14/2009
Pyrene	LCS	21.2	95		(45-120)			22.2 ug/Kg	11/14/2009
Benzo(a)Anthracene	LCS	20.9	94		(40-110)			22.2 ug/Kg	11/14/2009
Chrysene	LCS	21.6	97		(55-110)			22.2 ug/Kg	11/14/2009
Benzo[b]Fluoranthene	LCS	21.9	99		(45-115)			22.2 ug/Kg	11/14/2009
Benzo[k]fluoranthene	LCS	22.0	99		(45-120)			22.2 ug/Kg	11/14/2009
Benzo[a]pyrene	LCS	18.8	85		(10-102)			22.2 ug/Kg	11/14/2009
Indeno[1,2,3-c,d] pyrene	LCS	22.8	103		(40-120)			22.2 ug/Kg	11/14/2009
Dibenzo[a,h]anthracene	LCS	22.8	103		(40-125)			22.2 ug/Kg	11/14/2009
Benzo[g,h,i]perylene	LCS	23.0	103		(40-118)			22.2 ug/Kg	11/14/2009
Naphthalene	LCS	29.1	131	*	(40-92)			22.2 ug/Kg	11/14/2009
1-Methylnaphthalene	LCS	27.6	124	*	(30-97)			22.2 ug/Kg	11/14/2009
2-Methylnaphthalene	LCS	29.8	134	*	(45-96)			22.2 ug/Kg	11/14/2009
Surrogates									
Terphenyl-d14 <surr>	LCS		89		(30-125)				11/14/2009

SGS Ref.#	938098	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
			Prep Batch	XXX21996	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/10/2009	
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	XMS5197
Method	8270D SIMS
Instrument	HP 6890/5973 MS SVQA

SGS Ref.#	938163	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	938164	Lab Control Sample Duplicate	**Prep Batch**	VXX20243	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/07/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017004, 1096017005, 1096017009, 1096017018

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1330	106	(80-125)			1250 ug/Kg	11/08/2009
	LCSD	1340	107		1	(< 20)	1250 ug/Kg	11/08/2009
Toluene	LCS	1390	111	(85-120)			1250 ug/Kg	11/08/2009
	LCSD	1390	111		0	(< 20)	1250 ug/Kg	11/08/2009
Ethylbenzene	LCS	1400	112	(85-125)			1250 ug/Kg	11/08/2009
	LCSD	1400	112		0	(< 20)	1250 ug/Kg	11/08/2009
o-Xylene	LCS	1400	112	(85-125)			1250 ug/Kg	11/08/2009
	LCSD	1370	110		2	(< 20)	1250 ug/Kg	11/08/2009
Surrogates								
1,4-Difluorobenzene <surr>	LCS		105	(80-120)				11/08/2009
	LCSD		105		0			11/08/2009

Batch VFC9754
Method SW8021B
Instrument HP 5890 Series II PID+HECD VBA

SGS Ref.#	938399	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	938400	Lab Control Sample Duplicate	**Prep Batch**	VXX20250	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/10/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017004, 1096017005

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
o-Xylene	LCS	1440	115	(85-125)			1250 ug/Kg	11/10/2009
	LCSD	1360	109		6	(< 20)	1250 ug/Kg	11/10/2009
P & M -Xylene	LCS	2990	119	(85-125)			2500 ug/Kg	11/10/2009
	LCSD	2800	112		7	(< 20)	2500 ug/Kg	11/10/2009
Surrogates								
1,4-Difluorobenzene <surr>	LCS		98	(80-120)				11/10/2009
	LCSD		99		0			11/10/2009

Batch VFC9756
Method SW8021B
Instrument HP 5890 Series II PID+FID VCA

SGS Ref.#	938401	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	938402	Lab Control Sample Duplicate	**Prep Batch**	VXX20250	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/10/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017004, 1096017005

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	12.5	111	(60-120)			11.3 mg/Kg	11/10/2009
	LCSD	12.7	113		2	(< 20)	11.3 mg/Kg	11/10/2009
Surrogates								
4-Bromofluorobenzene <surr>	LCS		115	(50-150)				11/10/2009
	LCSD		115		0			11/10/2009

Batch VFC9756
Method AK101
Instrument HP 5890 Series II PID+FID VCA

SGS Ref.#	938586	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	938587	Lab Control Sample Duplicate	**Prep Batch**	VXX20258	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/11/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017010, 1096017011, 1096017012, 1096017013

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Benzene	LCS	1110	89	(80-125)			1250 ug/Kg	11/11/2009
	LCSD	1110	89		0	(< 20)	1250 ug/Kg	11/11/2009
Toluene	LCS	1240	99	(85-120)			1250 ug/Kg	11/11/2009
	LCSD	1230	99		0	(< 20)	1250 ug/Kg	11/11/2009
Ethylbenzene	LCS	1290	103	(85-125)			1250 ug/Kg	11/11/2009
	LCSD	1300	104		0	(< 20)	1250 ug/Kg	11/11/2009
o-Xylene	LCS	1240	100	(85-125)			1250 ug/Kg	11/11/2009
	LCSD	1250	100		1	(< 20)	1250 ug/Kg	11/11/2009
P & M -Xylene	LCS	2560	102	(85-125)			2500 ug/Kg	11/11/2009
	LCSD	2560	103		0	(< 20)	2500 ug/Kg	11/11/2009
Surrogates								
1,4-Difluorobenzene <surr>	LCS		96	(80-120)				11/11/2009
	LCSD		97		0			11/11/2009

Batch	VFC9760
Method	SW8021B
Instrument	HP 5890 Series II PID+FID VCA

SGS Ref.#	938588	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	938589	Lab Control Sample Duplicate	**Prep Batch**	VXX20258	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/11/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017010, 1096017011, 1096017012, 1096017013

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	11.5	102	(60-120)			11.3 mg/Kg	11/11/2009
	LCSD	12.0	107		4	(< 20)	11.3 mg/Kg	11/11/2009
Surrogates								
4-Bromofluorobenzene <surr>	LCS		116	(50-150)				11/11/2009
	LCSD		115		1			11/11/2009

Batch VFC9760
Method AK101
Instrument HP 5890 Series II PID+FID VCA

SGS

SGS Ref.#	938875	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
			Prep Batch	XXX22015	
Client Name	SLR Alaska-Anchorage		**Method**	SW3550C	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/13/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017004

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS								
Acenaphthylene	LCS	18.5	83	(45-102)			22.2 ug/Kg	11/15/2009
Acenaphthene	LCS	18.4	83	(45-99)			22.2 ug/Kg	11/15/2009
Fluorene	LCS	20.4	92	(50-107)			22.2 ug/Kg	11/15/2009
Phenanthrene	LCS	20.7	93	(50-110)			22.2 ug/Kg	11/15/2009
Anthracene	LCS	18.8	85	(28-103)			22.2 ug/Kg	11/15/2009
Fluoranthene	LCS	23.6	106	(55-115)			22.2 ug/Kg	11/15/2009
Pyrene	LCS	22.4	101	(45-120)			22.2 ug/Kg	11/15/2009
Benzo(a)Anthracene	LCS	20.8	94	(40-110)			22.2 ug/Kg	11/15/2009
Chrysene	LCS	20.4	92	(55-110)			22.2 ug/Kg	11/15/2009
Benzo[b]Fluoranthene	LCS	19.3	87	(45-115)			22.2 ug/Kg	11/15/2009
Benzo[k]fluoranthene	LCS	19.1	86	(45-120)			22.2 ug/Kg	11/15/2009
Benzo[a]pyrene	LCS	16.6	75	(10-102)			22.2 ug/Kg	11/15/2009
Indeno[1,2,3-c,d] pyrene	LCS	21.7	98	(40-120)			22.2 ug/Kg	11/15/2009
Dibenzo[a,h]anthracene	LCS	22.6	102	(40-125)			22.2 ug/Kg	11/15/2009
Benzo[g,h,i]perylene	LCS	21.2	95	(40-118)			22.2 ug/Kg	11/15/2009
Surrogates								
Terphenyl-d14 <surr>	LCS		100	(30-125)				11/15/2009

Batch XMS5198
Method 8270D SIMS
Instrument HP 6890/5973 MS SVQA

SGS Ref.#	939338	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	939339	Lab Control Sample Duplicate	**Prep Batch**	VXX20278	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/16/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017018

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
o-Xylene	LCS	1320	106	(85-125)			1250 ug/Kg	11/16/2009
	LCSD	1330	107		1	(< 20)	1250 ug/Kg	11/16/2009
P & M -Xylene	LCS	2690	108	(85-125)			2500 ug/Kg	11/16/2009
	LCSD	2710	109		1	(< 20)	2500 ug/Kg	11/16/2009
Surrogates								
1,4-Difluorobenzene <surr>	LCS		100	(80-120)				11/16/2009
	LCSD		100		0			11/16/2009

Batch	VFC9776
Method	SW8021B
Instrument	HP 5890 Series II PID+HECD VBA

SGS Ref.#	939340	Lab Control Sample	**Printed Date/Time**	12/03/2009	15:23
	939341	Lab Control Sample Duplicate	**Prep Batch**	VXX20278	
Client Name	SLR Alaska-Anchorage		**Method**	SW5035A	
Project Name/#	Akiak Old High School Tank Far		**Date**	11/16/2009	
Matrix	Soil/Solid (dry weight)				

QC results affect the following production samples:

1096017018

Parameter		QC Results	Pct Recov	LCS/LCSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Volatile Fuels Department								
Gasoline Range Organics	LCS	12.5	111	(60-120)			11.3 mg/Kg	11/16/2009
	LCSD	12.1	108		3	(< 20)	11.3 mg/Kg	11/16/2009
Surrogates								
4-Bromofluorobenzene <surr>	LCS		94	(50-150)				11/16/2009
	LCSD		95		0			11/16/2009

Batch VFC9776
Method AK101
Instrument HP 5890 Series II PID+HECD VBA

SGS Ref.#	938099	Matrix Spike	**Printed Date/Time**	12/03/2009 15:23
	938100	Matrix Spike Duplicate	**Prep Batch**	XXX21996
			Method	Sonication Extraction Soil 8270
			Date	11/10/2009
Original	1096016005			
Matrix	Soil/Solid (dry weight)			

QC results affect the following production samples:
1096017004, 1096017005, 1096017010

Parameter	Qualifiers	Original Result	QC Result	Pct Recov	MS/MSD Limits	RPD	RPD Limits	Spiked Amount	Analysis Date
Polynuclear Aromatics GC/MS									
Acenaphthylene	MS	ND	0.00	0*	(45-102)			26.4 ug/Kg	11/23/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/23/2009
Acenaphthene	MS	ND	0.00	0*	(45-99)			26.4 ug/Kg	11/23/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/23/2009
Fluorene	MS	4090 J	0.00	0*	(50-107)			26.4 ug/Kg	11/23/2009
	MSD		4071	15,500*		0	(< 30)	26.3 ug/Kg	11/23/2009
Phenanthrene	MS	ND	0.00	0*	(50-110)			26.4 ug/Kg	11/23/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/23/2009
Anthracene	MS	ND	0.00	0*	(28-103)			26.4 ug/Kg	11/23/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/23/2009
Fluoranthene	MS	1380	1357	-75*	(55-115)			26.4 ug/Kg	11/15/2009
	MSD		1381	27*		2	(< 30)	26.3 ug/Kg	11/15/2009
Pyrene	MS	1220	1190	-81*	(45-120)			26.4 ug/Kg	11/15/2009
	MSD		1214	-7*		2	(< 30)	26.3 ug/Kg	11/15/2009
Benzo(a)Anthracene	MS	232 J	246	936*	(40-110)			26.4 ug/Kg	11/15/2009
	MSD		261	990*		5	(< 30)	26.3 ug/Kg	11/15/2009
Chrysene	MS	276 J	292	1,100*	(55-110)			26.4 ug/Kg	11/15/2009
	MSD		300	1,140*		3	(< 30)	26.3 ug/Kg	11/15/2009
Benzo[b]Fluoranthene	MS	126 J	135	512*	(45-115)			26.4 ug/Kg	11/15/2009
	MSD		144	550*		7	(< 30)	26.3 ug/Kg	11/15/2009
Benzo[k]fluoranthene	MS	ND	0.00	0*	(45-120)			26.4 ug/Kg	11/15/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/15/2009
Benzo[a]pyrene	MS	ND	0.00	0*	(10-102)			26.4 ug/Kg	11/15/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/15/2009
Indeno[1,2,3-c,d] pyrene	MS	ND	0.00	0*	(40-120)			26.4 ug/Kg	11/15/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/15/2009
Dibenzo[a,h]anthracene	MS	ND	0.00	0*	(40-125)			26.4 ug/Kg	11/15/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/15/2009
Benzo[g,h,i]perylene	MS	ND	0.00	0*	(40-118)			26.4 ug/Kg	11/15/2009
	MSD		0.00	0*		0	(< 30)	26.3 ug/Kg	11/15/2009
Naphthalene	MS	63000	58095	-18,300*	(40-92)			26.4 ug/Kg	11/23/2009
	MSD		64643	6,260*		11	(< 30)	26.3 ug/Kg	11/23/2009
1-Methylnaphthalene	MS	82300	73810	-32,100*	(30-97)			26.4 ug/Kg	11/23/2009
	MSD		82262	-130*		11	(< 30)	26.3 ug/Kg	11/23/2009
2-Methylnaphthalene	MS	100000	89405	-40,800*	(45-96)			26.4 ug/Kg	11/23/2009
	MSD		99405	-2,720*		11	(< 30)	26.3 ug/Kg	11/23/2009

Surrogates

SGS Ref.#	938099	Matrix Spike	**Printed Date/Time**		12/03/2009 15:23
	938100	Matrix Spike Duplicate	**Prep**	**Batch**	XXX21996
				Method	Sonication Extraction Soil 8270
				Date	11/10/2009
Original	1096016005				
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									
Terphenyl-d14 <surr>	MS		27.5	104	(30-125)				11/15/2009
	MSD		30.5	116		10			11/15/2009

Batch	XMS5198
Method	8270D SIMS
Instrument	HP 6890/5973 MS SVQA

SGS Environmental Services Inc.
CHAIN OF CUSTODY RECORD

Locations Nationwide
- Alaska
- Maryland
- New Jersey
- New York
- North Carolina
- Ohio
- West Virginia

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(1) CLIENT: SLR International Corp
CONTACT: Christina Bentz PHONE NO: 907-748-7930
PROJECT: Aklak Old High School Tank Farm SITE/PWSID#: 005.0065.09017
REPORTS TO: Christina Bentz EMAIL:
Mike Rieser
INVOICE TO: SLR QUOTE #:
P.O. #: 005.0065.09017

SGS Reference #: 1096017 Change Order page 2 of 3

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi incremental Samples	Preservatives Used: MeOH	Analysis Required (3): GRO/BTEX	DRO	PAHs	11-2-9	REMARKS/ LOC ID
	HS-11	10/29/09	1513	SO	2	G		X	X			
	HS-12	10/29/09	1526	SO	2	G		X	X			
	HS-13	10/29/09	1515	SO	2	G		X	X	ANALYZE	- 13	HS-13 thru
	~~HS-14~~	~~10/28/09~~	~~1101~~	~~SO~~	~~2~~	~~G~~		X	X	CANCEL	- 14	HS-21 hold
	HS-15	10/28/09	1032	SO	2	G		X	X	ANALYZE	- 15	samples-
	~~HS-16~~	~~10/28/09~~	~~1051~~	~~SO~~	~~2~~	~~G~~		X	X	CANCEL	- 16	will contact
	~~HS-17~~	~~10/28/09~~	~~1110~~	~~SO~~	~~2~~	~~G~~		X	X	CANCEL	- 17	on Monday
	HS-18	10/28/09	1147	SO	2	G		X	X		- 18	whether to
	HS-19	10/28/09	1158	SO	2	G		X	X	ANALYZE	19	run or not
	HS-20	10/28/09	1356	SO	2	G		X	X		- 20	

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Christina Bentz	10/30/09	1000	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:

(4)

DOD Project? YES (NO)
Cooler ID: HS Tank Farm
Special Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:
Standard Hold HS-13 thru HS-21

Samples Received Cold? YES NO
Cooler TB
Temperature °C: _____ . _____

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

SGS Environmental Services Inc.
CHAIN OF CUSTODY RECORD

Locations Nationwide
- Alaska
- New Jersey
- North Carolina
- West Virginia
- Maryland
- New York
- Ohio

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(1) CLIENT: SLR International Corp
CONTACT: Christina Bentz PHONE NO: 907-748-7930
PROJECT: Akiak Old High School Tank Farm SITE/PWSID#: 005.0065.09017
REPORTS TO: Christina Bentz EMAIL:
Mike Rieser
INVOICE TO: SLR QUOTE #:
P.O. #: 005.0065.09017

SGS Reference #: 1096017 Change Order

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(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi incremental Samples	Preservatives Used: MeOH	Analysis Required (3): GRO/BTEX	DRO	PAHs	ANALYZE-21 (11-2-09)	REMARKS/ LOC ID
	HS-21	10/28/09	1440	SO	2	G		X	X		ANALYZE-21	
	HS-TB	10/28/09	1100	SO	2	G		X				Trip Blank

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Christina Bentz	10/30/09	1000	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received For Laboratory By:

(4)

DOD Project? YES (NO)
Cooler ID: HS Tank Farm

Special Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:
Standard

Samples Received Cold? YES NO
Cooler TB
Temperature °C: _____ . _____

Chain of Custody Seal: (Circle)
INTACT BROKEN ABSENT

SGS Environmental Services Inc.
CHAIN OF CUSTODY RECORD

SGS

Locations Nationwide
- Alaska
- New Jersey
- North Carolina
- West Virginia

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1096017

1096013

(1)
CLIENT: SLR International Corp
CONTACT: Christina Bentz PHONE NO: 907-748-7930
PROJECT: Aklak old High School Tank Farm SITE/PWSID#: 005.0065.09017
REPORTS TO: Christina Bentz, Mike Rieser EMAIL:
INVOICE TO: SLR QUOTE #:
P.O. #: 005.0065.09017

SGS Reference #:

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(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used	Analysis Required (3) GRO/BTEX	DRO	PAHs	REMARKS/ LOC ID
1 AB	HS-1	10/28/09	1122	SO	2	G	MeOH	X	X		All samples and trip blank in one single cooler (HS Tank Farm)
2	HS-2	10/28/09	1131	SO	2	G		X	X		
3	HS-3	10/28/09	1332	SO	2	G		X	X		
4 A-C	HS-4	10/28/09	1345	SO	3	G		X	X	X	
5 A-C	HS-5	10/28/09	1349	SO	3	G		X	X	X	
6 AB	HS-6	10/28/09	1352	SO	2	G		X	X		
7	HS-7	10/28/09	1410	SO	2	G		X	X		
8	HS-8	10/28/09	1418	SO	2	G		X	X		
9	HS-9	10/28/09	1425	SO	2	G		X	X		
10 A-C	HS-10	10/29/09	1512	SO	3	G		X	X	X	

(4)

(5)

	Date	Time	
Collected/Relinquished By:(1) Christina Bentz	10/30/09	1000	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	10/30/09	1620	Received For Laboratory By:

DOD Project? YES (NO)
Cooler ID HS Tank Farm

Special Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:
Standard

Samples Received Cold? YES NO
#
Cooler TB
Temperature °C: 2 . 2.3

Chain of Custody Seal: (Circle)
(INTACT) BROKEN ABSENT

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

White - Retained by Lab
Pink - Retained by Client

SGS Environmental Services Inc.
CHAIN OF CUSTODY RECORD

1096017

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(1)

CLIENT: SLR International Corp

CONTACT: Christina Bentz PHONE NO: 907-748-7930

PROJECT: Atqiak Old High School Tank Farm SITE/PWSID#: 005.0065.09017

REPORTS TO: Christina Bentz EMAIL:
Mike Rieser

INVOICE TO: SLR QUOTE #:

P.O. #: 005.0065.09017

SGS Reference #:

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(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used: HCl	Analysis Required (3): GRO/BTEX	DRO	PAHs	REMARKS/ LOC ID
(11) AB	HS-11	10/29/09	1513	SO	2	G		X	X		
(12)	HS-12	10/29/09	1526	SO	2	G		X	X		
(13)	HS-13	10/29/09	1515	SO	2	G		X	X		HS-13 thru
(14)	HS-14	10/28/09	1101	SO	2	G		X	X		HS-21 hold
(15)	HS-15	10/28/09	1032	SO	2	G		X	X		samples-
(16)	HS-16	10/28/09	1051	SO	2	G		X	X		will contact
(17)	HS-17	10/28/09	1110	SO	2	G		X	X		on Monday
(18)	HS-18	10/28/09	1147	SO	2	G		X	X		whether to
(19)	HS-19	10/28/09	1158	SO	2	G		X	X		run or not
(20)	HS-20	10/28/09	1356	SO	2	G		X	X		

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Christina Bentz	10/30/09	1000	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 10/30/09	Time 1620	Received For Laboratory By:

(4)

DOD Project? YES (NO)

Cooler ID HS Tank Farm

Special Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:

Standard Hold HS-13 thru HS-21

Samples Received Cold? YES NO

Cooler TB

Temperature °C: _____ • _____

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

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

White - Retained by Lab
Pink - Retained by Client

SGS

SGS Environmental Services Inc.
CHAIN OF CUSTODY RECORD

1096017

11 of 13

(1)

CLIENT: SLR International Corp

CONTACT: Christina Bentz PHONE NO: 907-748-7930

PROJECT: Akiak Old High School Tank Farm SITE/PWSID#: 005, 0065, 09017

REPORTS TO: Christina Bentz EMAIL:
Mike Rieser

INVOICE TO: SLR QUOTE #:

P.O. #: 005, 0065, 09017

SGS Reference #:

page 3 of 3

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX/ MATRIX CODE	# CONTAINERS	SAMPLE TYPE C= COMP G= GRAB MI= Multi Incremental Samples	Preservatives Used	Analysis Required (3) GRO/BTEX	DRO	PAHs	REMARKS/ LOC ID
(21) AB	HS-21	10/28/09	1440	SO	2	G	MeOH	X	X		
(22) ↓	HS-TB	10/28/09	1100	SO	2	G		X			Trip Blank

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Christina Bentz	10/30/09	1000	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date 10/30/09	Time 1620	Received For Laboratory By:

(4)

DOD Project? YES (NO)

Cooler ID HS Tank Farm

Special Deliverable Requirements:

Requested Turnaround Time and-or Special Instructions:

Standard

Samples Received Cold? YES NO

Cooler TB

Temperature °C: _____ . _____

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

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

White - Retained by Lab
Pink - Retained by Client

SGS

1096017

SAMPLE RECEIPT FORM

SGS WO#:

Yes	No	NA	
	✓		Are samples **RUSH**, priority or *w/in 72 hrs* of **hold time**?
		✓	If yes, have you done *e-mail ALERT notification*?
	✓		Are samples *within 24 hrs.* of **hold time** or **due date**?
		✓	If yes, have you also *spoken with* supervisor?
		✓	Archiving bottles: Are lids marked w/ red "X"?
✓			Were samples collected with proper preservative?
	✓		**Any problems (ID, cond'n, HT, etc)? Explain:**
		✓	If this is for PWS, provide **PWSID:**
	✓		Payment received: $_____ by Check or Credit Card
	✓		Will courier charges apply?
✓			Data package required? (Level: 1 / 2 / 3 / 4)
			Notes:
	✓		Is this a DoD project? (USACE, Navy, AFCEE)

TAT (circle one): ~~Standard~~ -or- Rush

Received Date: 10/30/09

Received Time: 1620

Cooler ID	Temperature	Measured w/ (Therm #)
2	2.3 °C	
	°C	
	°C	
	°C	

Note: Temperature readings include thermometer correction factors

Delivery method (circle all that apply):
Client / Alert Courier / Lynden / SGS
UPS / FedEx / USPS / DHL / Carlile
AkAir Goldstreak / NAC / ERA / PenAir
Other: _____

Additional Sample Remarks: *(√ if applicable)*
_____ Extra Sample Volume?
_____ Limited Sample Volume?
_____ Multi-Incremental Samples?
_____ Lab-filtered for dissolved_____
_____ Ref Lab required for_____
_____ Foreign Soil?

This section must be filled out for DoD projects (USACE, Navy, AFCEE):

Yes	No	
		Is received temperature ≤6°C?
		Were containers ice-free? *Notify PM immediately of any ice in samples.* If some cooler temperatures are non-compliant, see form FS-0029 (attached) for samples/analyses affected.
		Was there an airbill? *(If "yes," see attached.)*
		Was cooler sealed with custody seals & were they intact? # / where:
		Was there a COC with cooler?
		Was COC sealed in plastic bag & taped inside lid of cooler?
		Was the COC filled out properly? Did labels correspond?
		Did the COC indicate USACE / Navy / AFCEE project?
		Samples were packed to prevent breakage with *(circle one)*: Bubble Wrap Vermiculite Other (specify):
		Were all samples sealed in separate plastic bags?
		Were all VOCs free of headspace and/or MeOH preserved?
		Were correct container / sample sizes submitted?
		Was the PM notified of arrival so they can send Sample Receipt Acknowledgement to client?

Cooler ID _____ Cooler Temp °C _____ Cooler ID _____ Cooler Temp °C _____
Cooler ID _____ Cooler Temp °C _____ Cooler ID _____ Cooler Temp °C _____

This section must be completed if problems are noted.

Was client notified of problems? Yes / No

By (SGS PM): _____

Individual contacted: _____

Via: Phone / Fax / E-mail *(circle one)*

Date/Time: _____

Reason for contact: _____

Change Order Required? Yes / No

Notes:

Completed by (sign): _____ **(print):** Joe Rud

Login proof: **Self-check completed** JJR **Peer-reviewer's Initials** JEC

1096017

SGS

SAMPLE RECEIPT FORM - Bottle Tracking **SGS WO#**

#	Container ID	Matrix	Test	QC	TB	Container Volume: 1L	500mL	250mL or 8oz	125mL or 4oz	60mL	40mL	Other:	Container Type: AG	CG	HDPE	Nalgene	Coli	Septa	Other:	Preservative: None	HCl	HNO3	H2SO4	NaOH	Ascorbic Acid	NH_4Cl	Other:	*Notes
1-3,6-9 11-21	A	2	GRO / BTex						18				✓														✓	
	B	2	DRO						18				✓							✓								
~~4,5,10~~																												
4,5,10	A	2	GRO / BTex						3				✓					✓									✓	
	B	|	DRO / PAH						3				✓					X (5Y)		✓								
	C	↓	extra Volume						3				✓							✓								
22	A	2	GRO / BTex		✓				1				✓					✓									✓	
	B	2	extra Volume		✓				1				✓					✓									✓	
Bottle Totals									17																			

* Note: Containers which require (additional) chemical preservation upon receipt must be documented per SOP#106

Completed by: Joe Rud Date: 10/30/09

APPENDIX E

HUMAN HEALTH CONCEPTUAL SITE MODEL SCOPING FORM AND DIAGRAM

Human Health Conceptual Site Model
Scoping Form

Site Name: Akiak Old High School Tank Farm

File Number: 2402.38.003

Completed by: SLR International Corp

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, a CSM graphic and text must be submitted with the site characterization work plan.

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: Fuel Lines

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
- ☐ Groundwater
- ☐ Surface water
- ☐ 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

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

If both boxes are checked, label this pathway complete: Complete

2 Dermal Absorption of Contaminants from Soil

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Can the soil contaminants permeate the skin? (Contaminants listed below, or within the groups listed below, should be evaluated for dermal absorption). ☑

Arsenic	Lindane
Cadmium	PAHs
Chlordane	Pentachlorophenol
2,4-dichlorophenoxyacetic acid	PCBs
Dioxins	SVOCs
DDT	

If all of the boxes are checked, label this pathway complete: Complete

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 ADEC has determined the groundwater is not a currently or reasonably expected future source of drinking water according to 18 AAC 75.350.* ☑

If both the boxes are checked, label this pathway complete: Complete

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: Complete

3 Ingestion of Wild Foods

Is the site in an area that is used or reasonably could be used for hunting, fishing, or harvesting of wild food? ☑

Do the site contaminants have the potential to bioaccumulate (*see* Appendix A)? ☑

Are site contaminants located where they would have the potential to be taken up into biota? (i.e. the top 6 feet of soil, in groundwater that **could be** connected to surface water, etc.) ☑

If all of the boxes are checked, label this pathway complete: Complete

c) Inhalation

1 Inhalation of Outdoor Air

Is soil contaminated anywhere between 0 and 15 feet bgs? ☑

Do people use the site or is there a chance they will use the site in the future? ☑

Are the contaminants in soil volatile (*See Appendix B*)? ☑

If all of the boxes are checked, label this pathway complete: Complete

2 Inhalation of Indoor Air

Are occupied buildings on the site or reasonably expected to be placed on the site in an area that could be affected by contaminant vapors? (i.e., within 100 feet, horizontally or vertically, of the contaminated soil or groundwater, <u>or</u> subject to "preferential pathways" that promote easy airflow, like utility conduits or rock fractures) ☐

Are volatile compounds present in soil or groundwater (*See Appendix C*)? ☑

If both boxes are checked, label this pathway complete: _____

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

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- Climate permits recreational use of waters for swimming,
- Climate permits exposure to groundwater during activities, such as construction, without protective clothing, or
- Groundwater or surface water is used for household purposes.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No further evaluation is necessary since DEC water-quality standards are being applied as cleanup levels.

Inhalation of Volatile Compounds in Household Water

Exposure from this pathway may need to be assessed only in cases where DEC water-quality or drinking-water standards are not being applied as cleanup levels. Examples of conditions that may warrant further investigation include:

- The contaminated water is used for household purposes such as showering, laundering, and dish washing, and
- The contaminants of concern are volatile (common volatile contaminants are listed in Appendix B)

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No further evaluation is necessary since DEC water-quality standards are being applied as cleanup levels.

Inhalation of Fugitive Dust

Generally DEC soil ingestion cleanup levels in Table B1 of 18 AAC 75 are protective of this pathway, although this is not true in the case of chromium. Examples of conditions that may warrant further investigation include:

- 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. This size can be inhaled and would be of concern for determining if this pathway is complete.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No further evaluation is necessary because DEC soil ingestion cleanup levels, which are being applied at this Site, are assumed to be protective of this pathway and chromium is not considered a potential contaminant of concern at this Site.

Direct Contact with Sediment

This pathway involves people's hands being exposed to sediment, such as during recreational or some types of subsistence activities. People then incidentally **ingest** sediment from normal hand-to-mouth activities. In addition, **dermal absorption of contaminants** may be of concern if people come in contact with sediment and the contaminants are able to permeate the skin (see dermal exposure to soil section). This type of exposure is rare but it should be investigated if:

- Climate permits recreational activities around sediment, and/or
- Community has identified subsistence or recreational activities that would result in exposure to the sediment, such as clam digging.

ADEC soil ingestion cleanup levels are protective of direct contact with sediment. If they are determined to be over-protective for sediment exposure at a particular site, other screening levels could be adopted or developed.

Check the box if further evaluation of this pathway is needed: ☐

Comments:

No further evaluation of this pathway is necessary as there is no known activities that would result in exposure to sediment, nor is sediment an exposure medium at this Site.

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

APPENDIX A

BIOACCUMULATIVE COMPOUNDS

Table A-1: List of Compounds of Potential Concern for Bioaccumulation

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 X of 18 AAC 75.345 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 greater 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 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

Table B-1: List of Volatile Compounds of Potential Concern
Common volatile contaminants of concern at contaminated sites. A chemical is defined as volatile if the Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater and the molecular weight less than 200 g/mole (g/mole; EPA 2004a). Those compounds in Table X of 18 AAC 75.345 that are volatile, based on the definition above, are listed below.

Acenaphthene	1,4-dichlorobenzene	Pyrene
Acetone	1,1-dichloroethane	Styrene
Anthracene	1,2-dichloroethane	1,1,2,2-tetrachloroethane
Benzene	1,1-dichloroethylene	Tetrachloroethylene
Bis(2-chlorethyl)ether	Cis-1,2-dichloroethylene	Toluene
Bromodichloromethane	Trans-1,2-dichloroethylene	1,2,4-trichlorobenzene
Carbon disulfide	1,2-dichloropropane	1,1,1-trichloroethane
Carbon tetrachloride	1,3-dichloropropane	1,1,2-trichloroethane
Chlorobenzene	Ethylbenzene	Trichloroethylene
Chlorodibromomethane	Fluorene	Vinyl acetate
Chloroform	Methyl bromide	Vinyl chloride
2-chlorophenol	Methylene chloride	Xylenes
Cyanide	Naphthalene	GRO
1,2-dichlorobenzene	Nitrobenzene	DRO

APPENDIX C

COMPOUNDS OF CONCERN FOR VAPOR MIGRATION

Table C-1: List of Compounds of Potential Concern for the Vapor Migration

A chemical is considered sufficiently toxic if the vapor concentration of the pure component poses an incremental lifetime cancer risk greater than 10-6 or a non-cancer hazard index greater than 1. A chemical is considered sufficiently volatile if it's Henry's Law constant is 1 x 10^{-5} atm-m^3/mol or greater.

Acenaphthene	Dibenzofuran	Hexachlorobenzene
Acetaldehyde	1,2-Dibromo-3-chloropropane	Hexachlorocyclopentadiene
Acetone	1,2-Dibromoethane (EDB)	Hexachloroethane
Acetonitrile	1,3-Dichlorobenzene	Hexane
Acetophenone	1,2-Dichlorobenzene	Hydrogen cyanide
Acrolein	1,4-Dichlorobenzene	Isobutanol
Acrylonitrile	2-Nitropropane	Mercury (elemental)
Aldrin	N-Nitroso-di-n-butylamine	Methacrylonitrile
alpha-HCH (alpha-BHC)	n-Propylbenzene	Methoxychlor
Benzaldehyde	o-Nitrotoluene	Methyl acetate
Benzene	o-Xylene	Methyl acrylate
Benzo(b)fluoranthene	p-Xylene	Methyl bromide
Benzylchloride	Pyrene	Methyl chloride chloromethane)
beta-Chloronaphthalene	sec-Butylbenzene	Methylcyclohexane
Biphenyl	Styrene	Methylene bromide
Bis(2-chloroethyl)ether	tert-Butylbenzene	Methylene chloride
Bis(2-chloroisopropyl)ether	1,1,1,2-Tetrachloroethane	Methylethylketone (2-butanone)
Bis(chloromethyl)ether	1,1,2,2-Tetrachloroethane	Methylisobutylketone
Bromodichloromethane	Tetrachloroethylene	Methylmethacrylate
Bromoform	Dichlorodifluoromethane	2-Methylnaphthalene
1,3-Butadiene	1,1-Dichloroethane	MTBE
Carbon disulfide	1,2-Dichloroethane	m-Xylene
Carbon tetrachloride	1,1-Dichloroethylene	Naphthalene
Chlordane	1,2-Dichloropropane	n-Butylbenzene
2-Chloro-1,3-butadiene (chloroprene)	1,3-Dichloropropene	Nitrobenzene
Chlorobenzene	Dieldrin	Toluene
1-Chlorobutane	Endosulfan	trans-1,2-Dichloroethylene
Chlorodibromomethane	Epichlorohydrin	1,1,2-Trichloro-1,2,2-trifluoroethane
Chlorodifluoromethane	Ethyl ether	1,2,4-Trichlorobenzene
Chloroethane (ethyl chloride)	Ethylacetate	1,1,2-Trichloroethane
Chloroform	Ethylbenzene	1,1,1-Trichloroethane
2-Chlorophenol	Ethylene oxide	Trichloroethylene
2-Chloropropane	Ethylmethacrylate	Trichlorofluoromethane
Chrysene	Fluorene	1,2,3-Trichloropropane
cis-1,2-Dichloroethylene	Furan	1,2,4-Trimethylbenzene
Crotonaldehyde (2-butenal)	Gamma-HCH (Lindane)	1,3,5-Trimethylbenzene
Cumene	Heptachlor	Vinyl acetate
DDE	Hexachloro-1,3-butadiene	Vinyl chloride (chloroethene)

Source: EPA 2002.

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: Akiak Old High School Tank Farm
Akiak, Alaska
ADEC File Number: 2402.38.003

Completed By: SLR International Corp
Date Completed: December 2009

Follow the directions below. Do not consider engineering or 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. Briefly list other mechanisms or reference the report for details.

(3)
Check exposure media identified in (2).

(4)
Check exposure pathways that are complete or need further evaluation. The pathways identified must agree with Sections 2 and 3 of the CSM Scoping Form.

(5)
Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, or "C/F" for both current and future receptors.

Media	Transport Mechanisms	Exposure Media	Exposure Pathways	Current & Future Receptors: Residents (adults or children)	Commercial or industrial workers	Site visitors, trespassers, or recreational users	Construction workers	Farmers or subsistence harvesters	Subsistence consumers	Other
☑ Surface Soil (0-2 ft bgs)	☑ Direct release to surface soil — check soil	☑ soil	☑ Incidental Soil Ingestion	F		C/F	F	C/F	C/F	
	☑ Migration or leaching to subsurface — check soil		☑ Dermal Absorption of Contaminants from Soil	F		C/F	F	C/F	C/F	
	☑ Migration or leaching 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	☑ groundwater	☑ Ingestion of Groundwater	F						
	☑ *Migration to groundwater* — check groundwater		☐ Dermal Absorption of Contaminants in Groundwater							
	☑ *Volatilization* — check air		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Other (list):*									
☐ Ground-water	☐ Direct release to groundwater — check groundwater	☑ air	☑ Inhalation of Outdoor Air	F		C/F	F	C/F	C/F	
	☐ *Volatilization* — check air		☐ Inhalation of Indoor Air							
	☐ *Flow to surface water body* — check surface water		☐ Inhalation of Fugitive Dust							
	☐ *Flow to sediment* — check sediment									
	☐ *Uptake by plants or animals* — check biota									
	☐ *Other (list):*									
☐ Surface Water	☐ Direct release to surface water — check surface water	☑ surface water	☑ Ingestion of Surface Water	F		C/F		C/F	C/F	
	☐ *Volatilization* — check air		☐ Dermal Absorption of Contaminants in Surface Water							
	☐ *Sedimentation* — check sediment		☐ Inhalation of Volatile Compounds in Tap Water							
	☐ *Uptake by plants or animals* — check biota									
	☐ *Other (list):*									
☐ Sediment	☐ Direct release to sediment — check sediment	☐ sediment	☐ Direct Contact with Sediment							
	☐ *Resuspension, runoff, or erosion* — check surface water									
	☐ *Uptake by plants or animals* — check biota	☑ biota	☑ Ingestion of Wild Foods	F		C/F		C/F	C/F	
	☐ *Other (list):*									

Revised 3/21/06