FINAL
Site Investigation Report

Site Characterization and Restoration-Related Activities Project

Gambell Federal Scout Armory
Alaska Army National Guard
Anchorage, Alaska

January 2008

Contract W91ZRU-05-C-0008

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LIST OF ACRONYMS

AAC	Alaska Administrative Code
ACL	Alternate Cleanup Level
ADCA	Alaska Division of Community Advocacy
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
AK ARNG	Alaska Army National Guard
AKNG-ARE	Alaska National Guard, Army Environmental Office
AST	Aboveground Storage Tank
ASTM	America Society for Testing and Materials
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CFR	Code of Federal Regulations
DRO	Diesel Range Organics
ECAS	Environmental Compliance Assessment System
EPA	(United States) Environmental Protection Agency
FSA	Federal Scout Armory
GC/PID	Gas Chromatography / Photoionization Detection
GRO	Gasoline Range Organics
HCG	Hoefler Consulting Group
HPLC	High Performance Liquid Chromatography
ISC	Installation Spill Contingency Plan
JSA	Job Safety Analysis
MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
NA	Not Applicable
NS	Not Specified
PAH	Polynuclear Aromatic Hydrocarbons
PA/SI	Preliminary Assessment / Site Investigation
POL	Petroleum, Oil, and Lubricants
PPE	Personal Protective Equipment
QL	Quantitation Limit
RL	Reporting Limit
RRO	Residual Range Organics
SC RA	Site Characterization and Restoration-Related Activities Project
SI	Site Investigation
SOPs	Standard Operating Procedures
SPCC	Spill Prevention Control and Countermeasure
TDS	Total Dissolved Solids
TOC	Total Organic Carbon

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EXECUTIVE SUMMARY

The Alaska Army National Guard (AK ARNG) tasked Hoefler Consulting Group (HCG) with conducting a Site Investigation (SI) and evaluation of remedial alternatives for the Gambell Federal Scout Armory in Gambell (St. Lawrence Island), Alaska.

The site had an estimated 3,000-gallon spill of heating oil from an aboveground storage tank (AST) in 1983. Due to the high permeability, well-drained, gravelly soils beneath the tank, the fuel likely moved downward to the permafrost, which is less than 10 feet below ground surface (bgs). The AK ARNG conducted site inspections in 1990 and 1997 that identified stained soil at the 1983 spill location. In addition, several other surface stains and potential spill sources were identified (AK ARNG 1990, 1997).

The purpose of the 2006 SI was to determine if further investigation was necessary by sampling in potentially contaminated areas where previous spills had occurred and/or surface stains had been observed. The fieldwork included a site inspection and hand augering soil borings to collect soil samples. Twenty-three soil borings were completed at locations where past or current observations suggested potential hydrocarbon contamination. Both field screening and laboratory analyses confirmed the presence of petroleum hydrocarbons (primarily as Diesel Range Organics[DRO]) at depths from two to three feet bgs in the vicinity of the 3,000-gallon heating oil spill and a former snow machine parking area. The maximum DRO concentration in samples from these areas was 290 mg/Kg. The total depth of contamination was not determined, but based on available data for Gambell, could be from seven to 25 feet bgs. Lab analyses also confirmed the presence of petroleum contamination associated with surface stains at three other locations; beneath the stairs at the west end of the old armory, at the north end of the old armory ASTs; and between the ASTs east of the new armory. The highest DRO concentration detected in the surface stain areas was 420 mg/Kg. Based on available lab data, the depth of contamination at the surface stain areas is expected to be approximately 3 feet bgs.

Groundwater sampling was not possible because the depth to groundwater was greater than the maximum attainable sample depth of 6.5 feet bgs for this investigation. No analytical results for petroleum contamination exists for the groundwater beneath this site. No surface water existed at the site, and thus no surface water samples were collected.

The Alaska Department of Natural Resources (DNR) well log database contains information regarding two former water wells west of the site that were decommissioned. The current drinking water supply for the village is a new well that was installed 2,000 feet east of the site, at the base of Sevuokuk Mountain. Regional groundwater flow is to the north. Based on this information, no drinking water wells exist downgradient of the site.

Conceptual site models (CSMs) were developed to help evaluate potential human health and ecological risks associated with various exposure pathways. Several human exposure pathways were considered for the site. Ingestion of soil was considered a low risk pathway due to the small quantity of contaminated soil and proximity to residential properties. Human exposure to contaminants via exposure to groundwater is unlikely because the village drinking water is supplied by a public well located 2,000 feet cross-gradient and hydraulically isolated by permafrost. Furthermore, the groundwater in the central and western portions of the gravel spit is saline, and not desirable for human consumption.

The application of Method Two Arctic Zone cleanup levels to the site was not considered appropriate because available data suggests that permafrost beneath the site may be discontinuous and may be subject to degradation under future site conditions. As such, site-specific alternate cleanup levels (ACLs) were developed using laboratory values and field-measured parameters from site investigations. The Method Three ACL for DRO in soil at this site was determined to be 280 mg/Kg. With the exception of the two small surface spills which were estimated to be approximately one cubic yard each, not enough data are available to estimate the volume of contaminated soil above the ACL of 280 mg/Kg. However, the volume appears to be relatively small because the maximum detected concentrations were close to the ACLs.

HCG reviewed remedial alternatives for the site, including groundwater pump and treat, passive free-product recovery, excavation and thermal desorption, bioremediation, and monitored natural attenuation. Additional investigation is warranted to determine the extent of soil contamination and if groundwater contamination exists. A drill rig or excavator will be needed to conduct this work due to the gravelly soil. This information is needed before the potential remedial alternatives can be adequately evaluated.

1 INTRODUCTION

This Site Investigation (SI) report is for the Gambell, Federal Scout Armory (FSA) Site Characterization and Restoration-Related Activities (SC RA) Project. It was prepared for the Alaska Army National Guard (AK ARNG), Army Environmental Section (AKNG-ARE) by the Hoefler Consulting Group (HCG) under purchase order W91ZRU-05-C-0008.

The site investigated in this project had a release of heating oil in 1983. It is suspected that the entire capacity of a 3000-gallon heating oil tank percolated into the gravelly soil. No product recovery, spill response or remedial action was conducted. Two additional spills are suspected to have occurred on the west side of the old armory building and are documented in the 1990 Spill Prevention, Control, and Countermeasure Plan (SPCC) (AK ARNG 1990). A fourth potential spill was noted in June 1997 by a fuel vendor who noticed a leak while filling one of the 1,500-gallon fuel tanks. Fuel was transferred from the interstitial space to the main tank, and no fuel was spilled on the ground (AK ARNG 2003).

The primary purpose of this study was to determine the concentration and extent of contamination at the site. Consideration was also given to the potential that contamination could migrate to groundwater or surface water.

1.1 Project Objectives and Scope

The site investigation evaluated potentially impacted areas to determine the extent of contamination and if contaminant migration is occurring at the site based on Title 18 Alaska Administration Code Chapter 75 (18 AAC 75) and applicable guidance. Specifically, the site submissions include a SI report that includes an Alternate Cleanup Level (ACL) demonstration and evaluation of remedial alternatives. Final site determination is contingent upon the development of cleanup levels for all affected media at the site. Site investigation work was conducted by ADEC Qualified Personnel as defined in 18 AAC 75 and 18 AAC 78 (Appendix B).

The AK ARNG submitted the Site Characterization and Restoration-Related Activities Project; Gambell Federal Scout Armory Work Plan detailing proposed activities for this project (AK ARNG 2006). The Work Plan was approved in May 2006. The fieldwork was completed between July 26 and 27, 2006. The tasks outlined in the Work Plan included the following:

- Conducting field screening of soil to determine if any soil contamination exists on site,
- Conducting soil sampling to define the lateral and vertical extent of contamination,
- Drilling three “deep” borings to further define the extent of contamination and determine if contamination exists at the soil-groundwater interface,
- Installing monitoring wells in the “deep” borings to assess potential groundwater impacts from the spilled fuel and estimate the groundwater flow direction,
- Collecting information to support the development of Alternate Cleanup Levels (ACLs) based on regulation and guidance for soil and groundwater, and
- Evaluating remedial response strategies for the site.

1.2 Site Information

1.2.1 Community Information

Gambell is located in the Bering Sea 36 miles off the coast of Siberia, on the northwestern tip of St. Lawrence Island, which is the largest island on the Bering Shelf (Figure 1-1). Gambell lies at 63.78° N Latitude and 171.74° W Longitude (Sec. 03, T020N, R067W, Kateel River Meridian). Gambell is located in the Cape Nome Recording District. This area is situated on 10.9 square miles of land and 19.5 square miles of water. The climate in Gambell is maritime with continental influences in the winter. Precipitation falls 300 days of the year and totals 14 inches annually, which includes 80 inches of snowfall. Average summer temperatures range from 34 to 48°F and winter temperatures average -2 to 10°F. Extreme temperatures from -30 to 65°F have been recorded (ADCA 2006).

A village water well provides the water for the town. Water is treated and stored in three storage tanks. The school, washeteria, and 116 homes are connected to the piped water and sewer system. Honeybuckets and hauled water are still the primary source of water and waste disposal for 37 homes on the original townsite. A Master Plan is presently underway to develop a new water source to ensure that no water shortages will occur. The landfill is not permitted and the City has intentions to develop a new site. One school, with 176 students, is located in the community. Electricity is provided to the city by the Alaska Village Electric Cooperative. Emergency health care is provided by the Bessie A. Kaningok Health Clinic, which is a qualified Emergency Care Center. Gambell is classified as an isolated village and is found in the EMS Region 5A of the Norton Sound Region. Emergency Services have coastal and air access, and are provided by a health aide (ADCA 2006).

Gambell is heavily dependent upon air transport due to its isolated location with no seaport. The State-owned airport has a 4,500' long, 96' wide asphalt runway, and is presently undergoing major improvements. Regular flights from Nome and charters from Unalakleet are available. Freight is brought in from Kotzebue and Shishmaref by lighterage service (ADCA 2006).

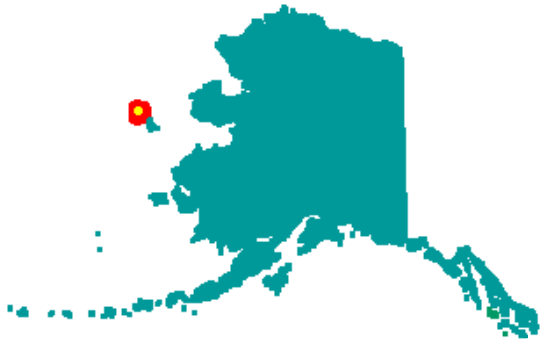


Figure 1-1. City of Gambell Location

http://www.commerce.state.ak.us/dca/commdb/CIS.cfm

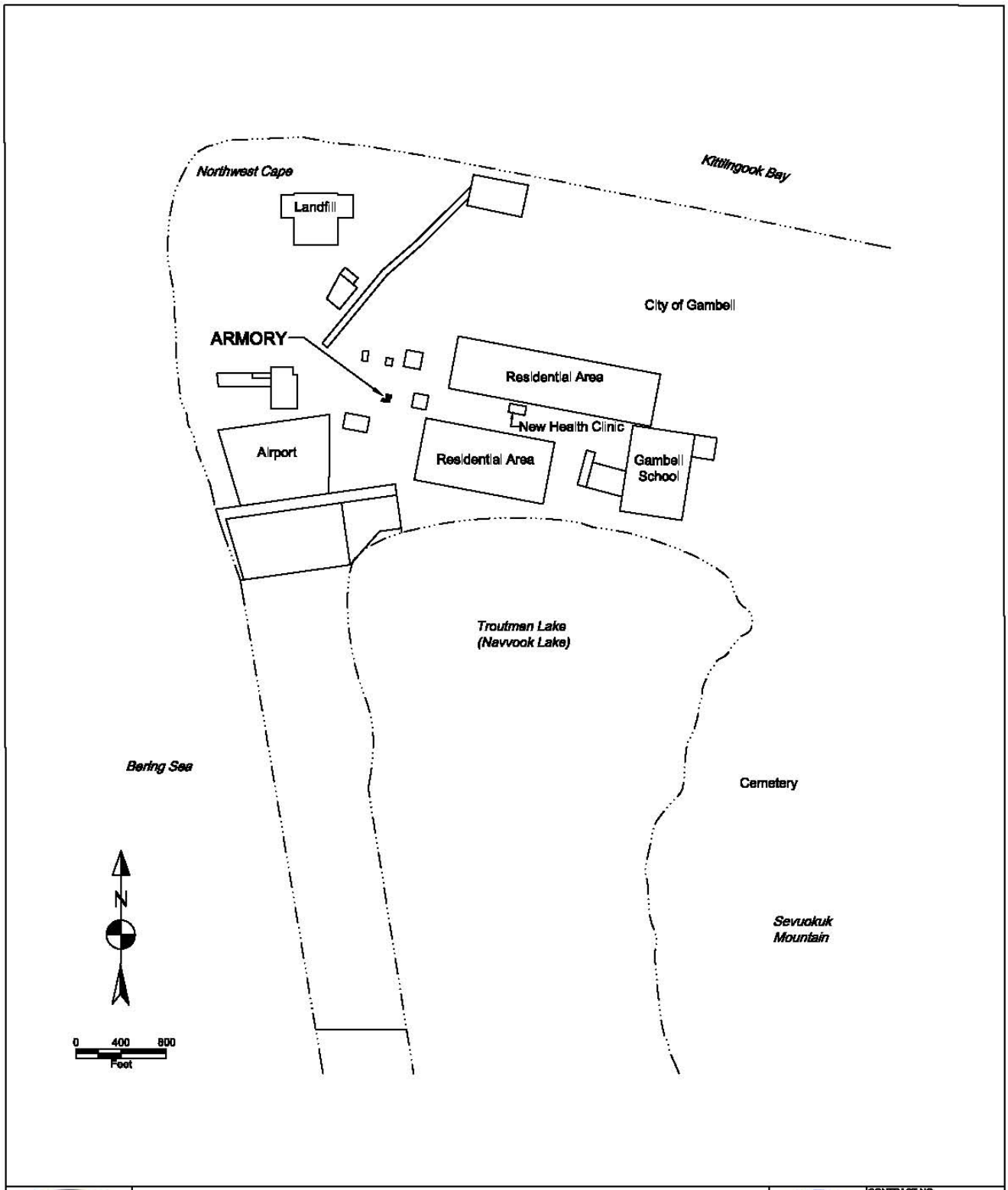
1.2.2 Environmental Setting

The dominant soil lithologies underlying the Gambell area are unconsolidated, poorly to well-sorted gravels with sand and poorly to well-sorted sand with gravels (CORPS 2005). Gravels are underlain by bedrock. The bedrock beneath Gambell consists of granitic Cretaceous plutonic rocks (Amato, et al. 2001). The bedrock also forms the bluff and Sevuokuk Mountain, which bounds Gambell to the east.

Permafrost is commonly encountered at depths ranging from three to fifteen feet bgs (CORPS 2005). Historical data from two former water wells in Gambell suggested that the shallow permafrost was "seasonal" in nature, (ADNR 1962). The logs from these wells are provided in Appendix F. An investigation in 1985 found permafrost to be discontinuous throughout the area. Where present, it was found at depths from seven to ten feet bgs (RZA, 1985). Further investigations in 1992 indicated that permafrost is discontinuous nearest the sea and becomes continuous as you move south and east across the gravel spit toward the bluff. Shallow permafrost near the bluff was shown to vary seasonally in its distance from the bluff, therefore controlling the volume of the shallow drinking water aquifer at the base of the bluff (Munter and Williams, 1992).

Groundwater resources at Gambell are limited. Groundwater from the central spit area is often saline, difficult to recover in usable quantities, and is located in an active lens over permafrost (CORPS 2005). The lack of shallow permafrost near the sea and the presence of saline groundwater was noted in two well logs from the Alaska Department of Natural Resources (ADNR) (Appendix F). One well was located about 1000 feet west of the armory, in the old village site and the other well was about 750 feet northwest of the armory, next to the former elementary school. In the units above the screened interval, both wells penetrated seasonally frozen gravel interlayered with thawed gravel (ADNR 1962). Both wells were abandoned due to poor water quality or low discharge rates(CORPS 2005). Groundwater for the new school and village is obtained from a shallow aquifer at the base of the bluff, located approximately 2,000 feet east of the armory (CORPS 2005). This aquifer occurs in a thaw bulb in the permafrost at the base of Sevuokuk Mountain. Water from seeps in the bluff flows into the gravel aquifer, then north to the sea.

The three major surface water features in the area are the Bering Sea, Kittilngook Bay, and Troutman Lake (Figure 1-2). Troutman Lake is the nearest body of surface water, and is approximately 1,200 feet south of the site. The water in the lake is considered slightly brackish due to influences from the Bering Sea (CORPS 2005). Surface water flow from the site was estimated to be toward the north, with local variation due to mounded gravel.



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Gambell FSA Location Map

Site Characterization and Restoration-Related Activities Project
Gambell, Alaska

ARMY ALASKA NATIONAL GUARD

CONTRACT NO:	W91ZRU-05-C-0008
DRAWN BY:	KRB
DATE:	03/13/06
	FIGURE 1-2

Figure adapted from information provided by AK ARNG.

1.2.3 Facility Information

The site is located in the center of the village, approximately 1/4 mile northeast of the Gambell Airport (Figure 1-2). The geographic coordinates of the site location, based on the NAD83 datum, are 63.778º N Latitude and 171.729º W Longitude. The facility includes a 20 by 60-foot wood-frame building, which is joined to a 30 by 40-foot wood-frame building by an 8 by 12-foot hallway. These buildings are all supported by a wood foundation resting on the ground. Access to the property is unrestricted. The property is owned by Sivuqaq Incorporated and licensed to the AK ARNG until June 30, 2016, with a 30-year renewal option. The facility is not actively used as a drill site, but is used as an office for the native corporation and for dry storage.

Descriptions and locations of equipment, materials, and areas of potential concern relevant to the investigation that were removed or identified prior to the 2006 site visit are shown in Table 1-1 and Figure 1.3.

Table 1-1. Items Removed or Identified Before 2006

Item	Description
1	10 full and 14 empty drums of mogas (automobile gasoline) on a tarp
2	Twenty drums of A1 jet fuel
3	Boat and small spill
4	3,000-gallon single-wall AST
5	Potential spill at the northwest corner of the old armory building, near the single-wall AST
10	3,000-gallon double-wall AST
11	Twelve empty 55-gallon drums
13	Rusty 55-gallon drum containing five gallons of an unknown substance
14	55-gallon drum containing 15 gallons of mogas mixed with water
Standpipe	Standpipe reportedly used to fill facility ASTs (ECAS 1997).

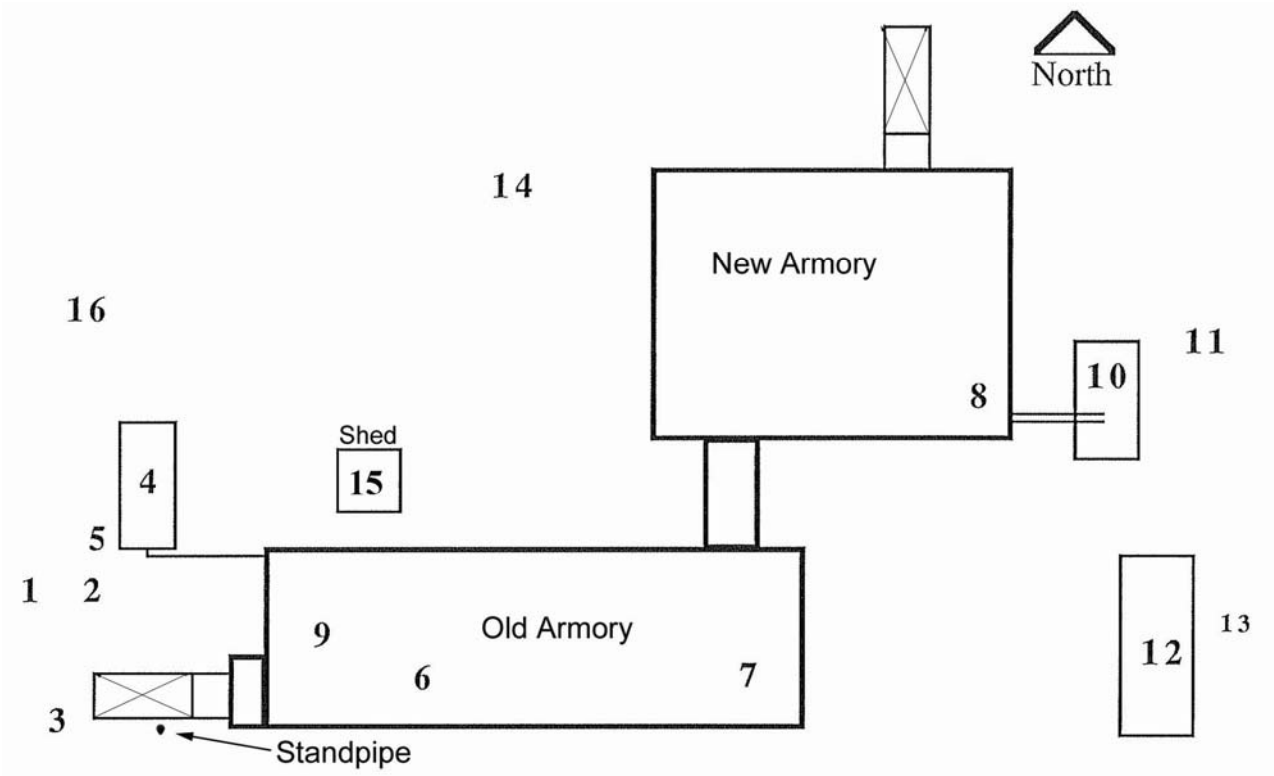
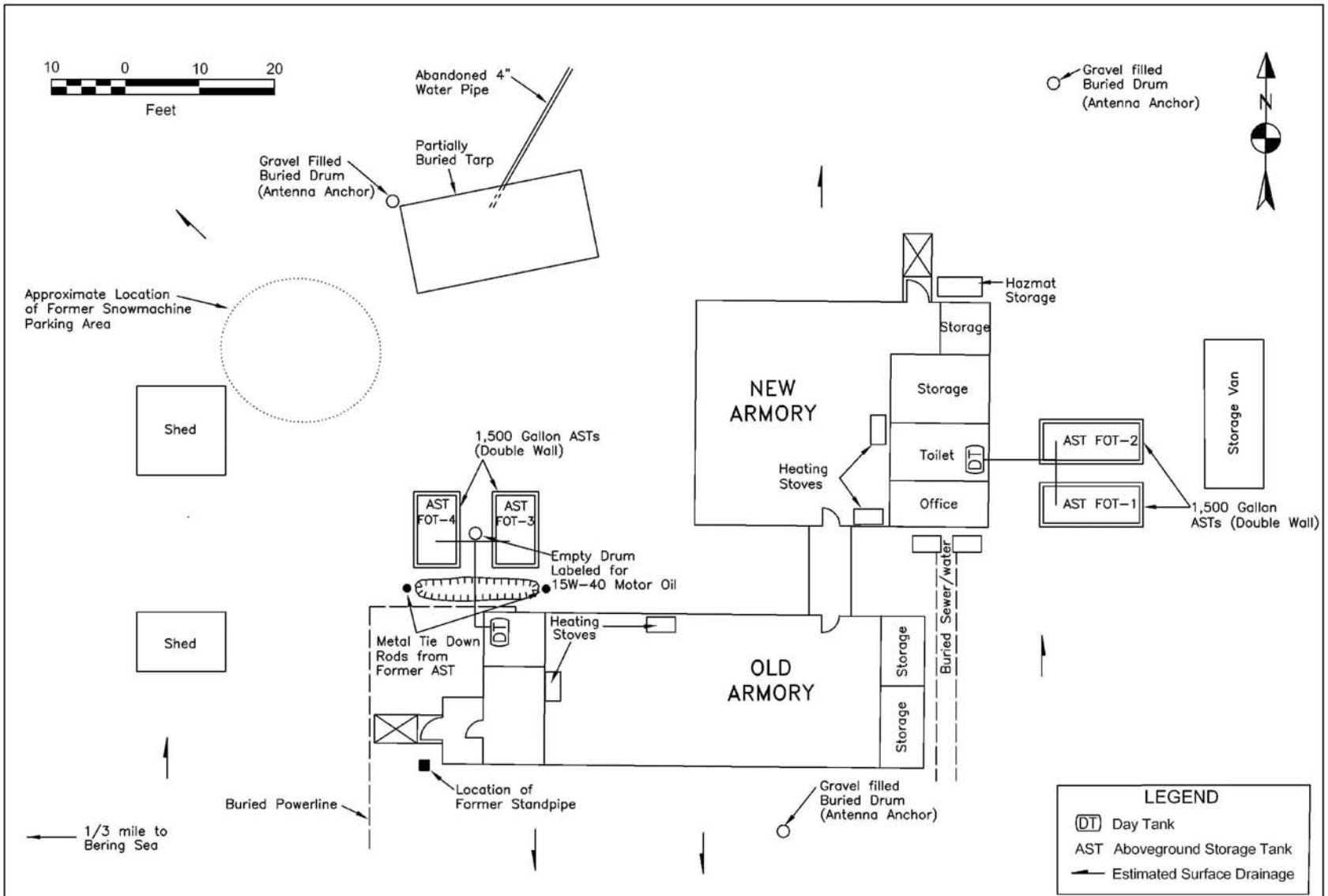


Figure 1-3. 1997 Installation Plan of Gambell FSA (modified from AK ARNG 1990)

Site photos from 1997 supplemented the list of site features by showing the standpipe by the southwest corner of the old armory building (Figure 1-3). Unit personnel indicated that this piping was used to fill the facility ASTs, but had not been used for several years (ECAS 1997).

The current site layout, as of the July 2006 site visit, is shown in Figure 1-4. No access to the storage sheds, hazmat storage locker, or storage van was possible during the site visit, which may have prevented the identification of other potentially hazardous materials. In 2006, the site contained the following:

- A 20 by 60-foot wood-frame building connected to a 30 by 40-foot addition by an 8 by 12-foot hallway. The building was constructed around 1970 and the addition was constructed in 1979.
- An 8 by 20-foot storage van east of the new armory building.
- Four 1,500-gallon double-wall ASTs. Two are near the southeastern corner of the new armory building (FOT-1 and FOT-2), west of the storage van. The other two (FOT-3 and FOT-4) are beside the northwest corner of the old armory building.
- Two storage sheds (8 by 12-foot wooden and 12 by 12-foot metal) along the western property boundary. The small storage shed had been relocated prior to the 2006 site visit.
- One partially buried tarp (approximately 12 by 12 feet) on the northwest portion of the property.
- Two gravel-filled buried, open top drums. One is at the north edge of the partially buried tarp and the other is approximately centered on and south of the old armory. These drums served as anchors for former communication towers.
- One empty, unmarked 55-gallon drum between FOT-3 and FOT-4 labeled 15W-40 Motor Oil.
- A Hazmat storage locker at the northwest corner of the new armory.



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Gambell FSA Site Plan

Site Characterization and Restoration-Related Activities Project
Gambell, Alaska

ARMY ALASKA NATIONAL GUARD

CONTRACT NO: W91ZRU-05-C-0008
DRAWN BY: KRB
DATE: 05/08/07
FIGURE 1-4

Figure adapted from information provided by AK ARNG.

1.3 Reported Spills, Previous Site Work, and Current Status

At least one spill and the presence of several potential spill sources have been identified at the site based on available documentation (AK ARNG 2003). The documented spill occurred in 1983 when the fuel from a full 3,000-gallon AST leaked out and percolated into the gravelly soil. The spill area is identified as area "5" in Figure 1-3. No recovery, spill response or remedial action was conducted (AK ARNG 2005).

The 1990 Spill Prevention Control and Countermeasure (SPCC) Plan identified two suspected "recent" small spill areas based on observations of stained soil and identified them as items "3" and "5" on Figure 1-3 (AK ARNG 1990). The SPCC investigation identified 14 other potential spill sources at the site.

In June 1997, an additional potential spill source was identified when a fuel vendor noted that fuel was accidentally pumped into the interstitial space of one of the 1,500-gallon double-wall tanks and began to seep through a welded seam. The Facilities Management Office transferred the fuel from the interstitial space to the main tank, resulting in no release to the ground (AK ARNG 2003). No records exist to indicate that this tank was ever repaired.

A September 10, 1997 Wincass Management Report described a slight depression in the ground with POL staining near the northwest corner of the old armory by the former 3,000-gallon single-wall AST, previously referred to as item "5" on Figure 1-3. This staining may have been a remnant of the 1983 spill, the "recent" stain noted in 1990, or a new spill. A standpipe by the west entrance ramp to the armory was also listed as having POL staining (ECAS 1997).

1.3.1 1990 Spill Prevention, Control, and Countermeasure Plan

The AK ARNG performed an inspection in September 1990 for the compilation of a SPCC Plan and an Installation Spill Contingency (ISC) Plan. The purpose of this inspection was to locate existing or potential sources of contamination on site and determine the most effective means of preparing the facility and the duty personnel to contain and clean up a potential spill (AK ARNG 1990).

The inspection report noted two areas having surface stains, which may have been related to prior spills, as well as multiple containers of hazardous materials and potentially hazardous wastes in varying states of preservation (Figure 1-3). The report recommended the removal of a single wall tank (item 4), originally installed in 1970. The report also recommended that a drum storage rack be provided, the storage van (item 12) be ventilated, and that unusable product be disposed of. Finally, spill response training, monthly fuel tank inspections, and drum handling Standard Operating Procedures (SOPs) were to be instituted (AK ARNG 1990).

No testing was done to characterize contamination in the stained areas on the west edge of the old armory building. The stain noted as item "5" may have been caused by the 1983 fuel oil spill, in which 3,000 gallons of product were released into the ground and not recovered (AK ARNG 1990).

1.3.2 1997 Environmental Compliance Assessment System (ECAS) Inspection

A site inspection was performed by the AK ARNG in June 1997. The findings of the inspection were published in a September 1997 Wincass Management Report. This inspection noted POL discharges that were not contained or cleaned up and the replacement of the 3,000-gallon single-wall AST with two 1,500-gallon double-wall ASTs. Also noted were two metal tie-down rods remaining from the single-wall AST, POL staining on the ground northwest of the old armory building, and a standpipe sticking out of the ground near the west entrance ramp to the old armory. The area around the standpipe also exhibited minor POL staining (ECAS 1997). Recommendations from the ECAS inspection were to reduce the quantities of POL stored on site to the minimum required for operation (ECAS 1997).

1.3.3 Remedial Efforts and Current Status

No remedial efforts have been undertaken at this site. The Gambell site is considered an active site and is file number 660.38.007 in the Alaska Department of Environmental Conservation (ADEC) Contaminated Sites database.

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2 INVESTIGATION ACTIVITIES

Field activities consisted of a site visit and survey, semi-quantitative field screening, soil borings, and soil core sampling. No surface water or groundwater samples could be collected, as no surface water exists at or near the site and the depth to groundwater could not be determined. The maximum depth of investigation attainable with the available hand equipment was 6.5 feet bgs. Groundwater was not encountered at depths less than 6.5 feet bgs. Field activities were conducted in July 2006.

2.1 Site Inspection

An initial site evaluation was conducted on July 26, 2006. Recent changes such as new and relocated structures are described in Section 1.2.3. A few areas with surface staining were observed. These areas exist in the general vicinity of previously reported stains and, with one exception, appeared to be associated with ASTs. The locations of drums were noted. No surface water was present. The only visible utility was the overhead telephone lines and pole located on the east side of the property. Approximate locations of the buried sewer, water, and power lines were described by an onsite worker. Approximate utility locations are provided on Figure 1-4. Site photos are located in Appendix E.

2.2 Soil Boring and Sampling

In July 2006, 25 soil samples were collected from 23 soil boring and surface sample locations. Sampling and analysis was conducted according to the approved 2006 Work Plan (HCG 2006), unless noted. The samples were collected to delineate the extent and nature of contaminated soil at the site. Site control points were used to locate previously identified areas of concern and establish the sampling locations for data gathering (Figure 2-1). Suitable control points used included the corners of the old and new armory buildings, sheds, and ASTs. Boring placement was determined based on past reports and observations made during the initial site evaluation. Observations, descriptions, and other pertinent sample information were recorded on field forms. Boring logs are presented in Appendix A.

Initial field screening of the site was conducted with a hand auger, small shovel, PID, and use of olfactory and visual observations. Soil samples were collected in areas where past spills, past staining, and current staining were reported or observed. Based on the field screening results, up to two soil samples were collected from selected borings to determine the vertical extent of contamination. Due to the coarse nature of the soil across the site (poorly graded gravel with sand), the boring walls repeatedly failed when attempting to extend a boring deeper than one foot bgs. Therefore, a temporary PVC "casing" was pushed into the boring to stabilize the boring walls and allow sample collection from depths greater than one foot bgs. The casing was removed after each sample was collected.

Soil samples were collected from depths ranging from 0.5 to 3.5 feet bgs. Soil type generally remained consistent with depth in all borings. The soil is light brown gravel (1/2 to 2 inch diameter) with sand (approximately 10% to 80%). In a few locations on the property, the gravel at the ground surface has a significant silt component (up to about 40%). Where it was present, the silt-rich gravel extended to a maximum depth of less than 1.5 feet. Nearly all of the soil samples, except for a few collected at surface stains, were collected from the gravel soil horizon.

Samples were collected, packaged, and sent to Analytica Alaska, Inc. for chemical analysis or Terra Firma Testing for physical parameter analysis. Samples were transferred from the soil auger to the sample containers using clean stainless steel sampling spoons. Soil sampling was conducted as discussed in the approved 2006 Work Plan excepting noted deviations in Section 2.4. Samples to be analyzed for volatile constituents were immediately transferred to their container and preserved with methanol. Two field duplicates were collected from the borings. The soil was homogenized in sealed plastic Ziploc® bags prior to transferring the samples to the containers. Sampling equipment was decontaminated for reuse or disposed as non-hazardous solid waste.

2.3 Sample Analysis

Soil samples were collected at locations shown in Figure 2-1 in accordance with the Work Plan (HCG 2006). Samples were shipped under proper chain-of-custody procedures and sent to Analytica-Alaska for chemical analyses or Terra Firma Testing for physical parameter analyses. Chemical analysis samples were forwarded to Analytica Environmental Laboratories in Thornton, Colorado. TOC samples were analyzed by Huffman Laboratories in Golden, CO. The samples arrived at the proper preservation temperatures and were analyzed within the specified holding times. Sample analyses and testing methods are shown below in Table 2-1. Analytical results are presented in Appendix H and discussed in Section 3 of this report. ADEC Data Review Checklists were completed for these samples and are located in Appendix B.

Table 2-1. Sample Analysis Matrix

Sample ID Code	Parameter	GRO	BTEX	DRO/ RRO	Bulk Density	Hydraulic Conductivity	TOC	Grain Size	Rationale/ Location
	Method	AK101	SW8021	AK102/ AK103	ASTM D2937	ASTM D5084	SW9060	ASTM D422	
GAM-SI-BK1 through -BK6				(6)	(3)	(3)	(6)	(3)	Background
GAM-SI-08 through -13 and -17 through -20				(8)					Delineation
GAM-SI-01 through -07 and -14 through -16		(11)	(11)	(13)			(2)		Source area/ Near source/ Duplicate

(3) – Number of samples collected and analyzed

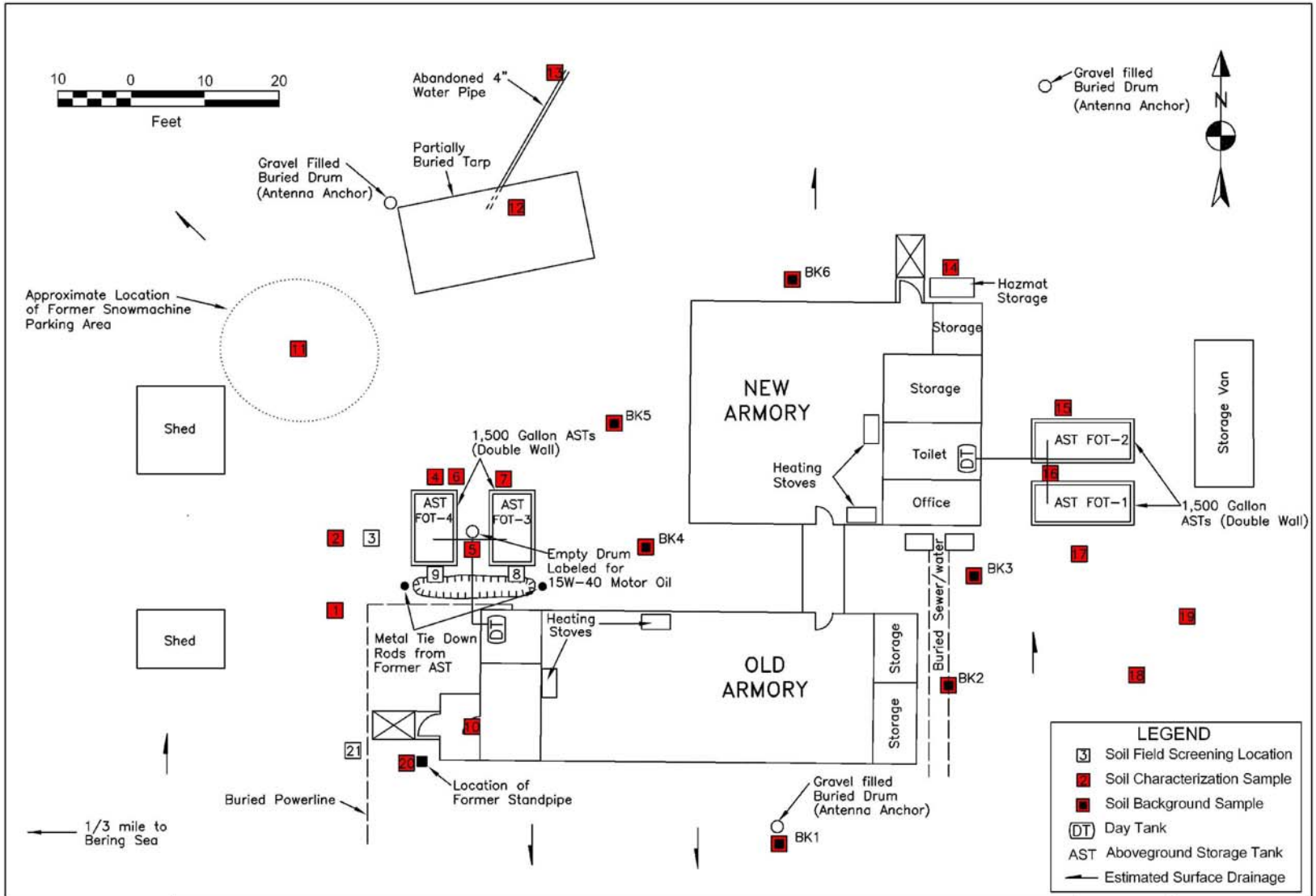
2.4 Data Verification, Validation, and Quality Assurance Summary

Data validation was performed to ensure that the data set met project data quality objectives. Lab data were reviewed following the procedures outlined in the ADEC Environmental Laboratory Data and Quality Assurance Requirements guidance (ADEC, 2006b). The primary data quality objective for the site investigation was to obtain chemical data of sufficient quality to determine where contaminants exist and to determine definitively the concentrations of any such contaminants. Appendix B presents an ADEC Data Review Checklists, detailing data validation efforts. Based on the number of duplicates and laboratory control samples, the precision of lab results is acceptable. The accuracy of the lab results is adequate based on percent recoveries for laboratory quality control samples and surrogates. The data is representative based on an adequate characterization of site conditions and consistency with the conceptual site model and data quality objective. In general, no data was rejected from the data set and data completeness was determined to be 100%. In addition, the sensitivity of the data was satisfactory as all of the practical quantitation limits were less than the regulatory cleanup levels and the blank results were less than the practical quantitation limits.

2.5 Work Plan Deviations

There were no significant deviations from the Work Plan that are expected to impact data quality. Specific deviations include the following:

- The number of samples was modified to best characterize contamination within the available sample media.
- No groundwater was encountered to the maximum attainable depth of investigation (6.5 feet). Therefore, no groundwater samples were collected or sent to the laboratory for analysis.
- No surface water was present on the property. Therefore, no surface water samples were collected or sent to the laboratory for analysis.
- Some sample locations were moved based on site topography, field screening results, and site observations.
- Collecting soil samples at depths greater than one foot bgs required the use of a temporary PVC “casing” to stabilize the borehole walls. The maximum attainable sample depth was 3.5 feet bgs.



Hoefler CONSULTING GROUP

Gambell FSA Soil Sample Locations

Site Characterization and Restoration-Related Activities Project
Gambell, Alaska

ALASKA ARMY NATIONAL GUARD

CONTRACT NO: W91ZRU-05-C-0008
DRAWN BY: KRB
DATE: 05/08/07
FIGURE 2-1

Figure adapted from information provided by AK ARNG.

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3 ANALYTICAL SAMPLE RESULTS

3.1 Soil Sample Results

Twenty-five soil samples were collected from 23 soil borings. Soil analytical data are presented in Table 3-1. Samples from borehole numbers 6 and 16 were sampled at multiple depths (Figure 2-1).

The maximum reported GRO concentration on site was 100 mg/Kg (Figure 3-1). All of the samples analyzed for GRO had concentrations less than the ADEC Method Two migration to groundwater cleanup level (300 mg/Kg). BTEX compounds were above detection limits in only three of 11 samples analyzed. The BTEX concentrations in these three samples are all near their respective detection limits. Data from the trip blank indicated concentrations below analytical detection limits for GRO/BTEX compounds except for benzene. The benzene concentration in the trip blank was 0.013 mg/Kg, which was a higher concentration than was detected in any other sample.

The maximum DRO and RRO concentrations on site were 420 and 63 mg/Kg, respectively. Based on PID field screening results, a higher maximum DRO concentration likely exists at the ground surface corresponding to sample GAM-SI-6-0.5-SO, however, this could not be confirmed due to laboratory error (i.e., sample extract leaked due to an improperly sealed vial). Four of the 24 samples analyzed for DRO exceed the ADEC Method Two migration to groundwater cleanup level for DRO (250 mg/Kg). None of the samples analyzed for RRO exceed the ADEC Method Two migration to groundwater cleanup level (11,000 mg/Kg).

Four of the 25 soil samples were collected near the ASTs east of the new armory (Figure 2-1). The maximum DRO concentration in samples from this location was 200 mg/Kg at 0.5 feet bgs from a sample between the ASTs. A sample from 3.5 feet bgs in the same boring had a DRO concentration of 5.2 mg/Kg. The third sample, collected along the north side of the ASTs, had a DRO concentration of 110 mg/Kg at 0.5 feet bgs. The fourth sample, collected a few feet south of the ASTs had contaminant concentrations near or below detection limits. The laboratory data shows that the DRO concentrations are the greatest at the ground surface next to the fill pipes and decrease with depth.

Soil with elevated DRO concentrations (230 and 270 mg/Kg) was identified at two to three feet bgs in two soil samples from the area formerly identified as a spill area northwest of the old armory (Figure 3-1). Approximately 30 to 40 feet to the north another sample was collected that had a DRO concentration of 290 mg/Kg at a depth of 3.5 feet bgs. The maximum concentration and total depth of contamination at these sample areas are unknown as the contamination was first encountered near the base of the borings (2 to 3.5 feet bgs). However, based on the existing data showing that the maximum concentration was only 290 mg/Kg, this contamination is not considered significant.

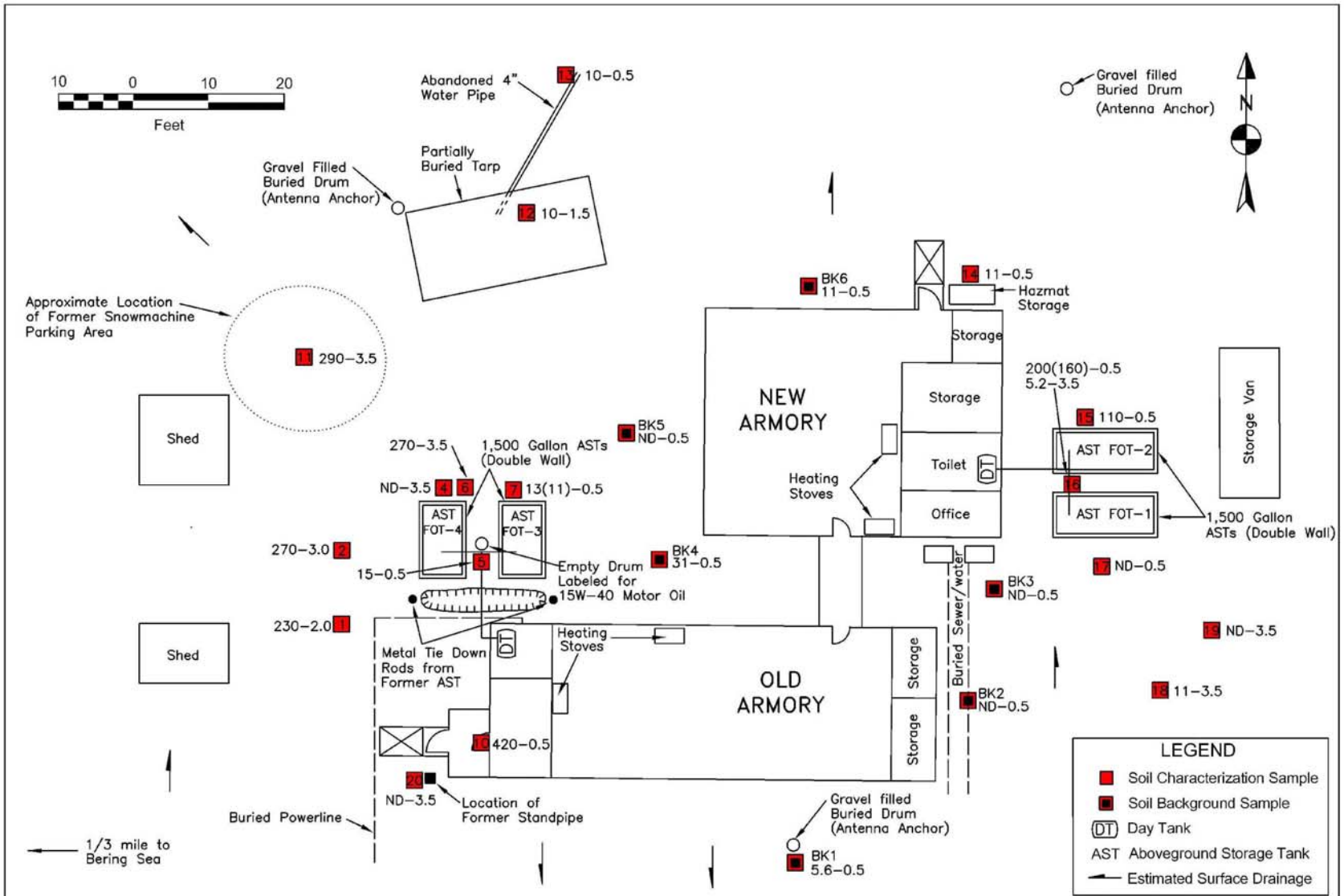
Six of the 25 soil samples were collected as background soil samples (BK1 through BK6) from areas on site that were free of contamination based on field screening. Samples were analyzed for DRO/RRO and TOC. These samples were collected to aid in establishing ACLs for the site. Three of the background samples (BK2, BK4, and BK6) were tested for specific soil characteristics. Particle size analysis showed a consistent soil type (poorly graded gravel with sand) across the site. Dry bulk density values ranged from 109.4 to 111.1 pounds per cubic foot (pcf). Hydraulic conductivity values ranged from 2.16×10^{-4} to 3.74×10^{-4} centimeters per second (cm/sec).

All samples were analyzed for soil moisture and eight samples, including the six background samples, were analyzed for TOC. The soil moisture content ranged from one to 19 percent. In general, the average moisture content decreases with depth. The TOC values ranged from 0.07 to 0.50 percent. In general, the TOC values also decreased with increasing sample depth.

Table 3-1. Soil Sample Analytical Results

Parameter		GRO	Benzene	Toluene	Ethyl-benzene	Xylenes	DRO	RRO	TOC (%)	Dry Bulk Density (pcf)
Analytical Method		AK101	AK101 8021B	AK101 8021B	AK101 8021B	AK101 8021B	AK102	AK103	SW9060	ASTM D2937
Potentially Applicable Cleanup Levels for Soil										
Method One		1,000	0.02	5.4	5.5	78.0	2,000	2,000	--	--
Method Two (Under 40-Inch Zone)	Ingestion	1,400	150	20,300	10,000	203,000	10,250	10,000	--	--
	Inhalation	1,400	9.0	180.0	89.0	81.0	12,500	22,000	--	--
	GW Migration	300	0.02	5.4	5.5	78.0	250	11,000	--	--
Sample ID Code	Depth (feet bgs)	Analytical Results								
GAM-SI-1-2.0-SO	1.75-2.0	NA	NA	NA	NA	NA	**230**	ND (5.9)	**0.12**	NA
GAM-SI-2-3.0-SO	2.75-3.0	NA	NA	NA	NA	NA	**270**	ND (5.9)	NA	NA
GAM-SI-4-3.5-SO	3.25-3.5	100	ND (0.0017)	ND (0.0027)	ND (0.0031)	ND (0.009)	ND (1.5)	ND (6)	**0.07**	NA
GAM-SI-5-0.5-SO	0.25-0.5	ND (0.26)	**0.0099**	ND (0.0039)	ND (0.0045)	ND (0.013)	**15**	**21**	NA	NA
GAM-SI-6-0.5-SO	0.25-0.5	**13**	ND (0.0029)	ND (0.0045)	ND (0.0052)	**0.13**	**	**	NA	NA
GAM-SI-6-3.5-SO	3.25-3.5	ND (0.16)	ND (0.0016)	ND (0.0025)	ND (0.0029)	ND (0.0085)	**270**	ND (6)	NA	NA
GAM-SI-7-0.5-SO	0.25-0.5	ND (0.2)	ND (0.002)	ND (0.003)	ND (0.0035)	ND (0.01)	**13**	**22**	NA	NA
GAM-SI-79-0.5-SO(*)	0.25-0.5	ND (0.21)	ND (0.002)	ND (0.0031)	ND (0.0036)	ND (0.011)	**11**	**21**	NA	NA
GAM-SI-10-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	**420**	**52**	NA	NA
GAM-SI-11-3.5-SO	3.25-3.5	NA	NA	NA	NA	NA	**290**	ND (5.9)	NA	NA
GAM-SI-12-1.5-SO	1.25-1.5	NA	NA	NA	NA	NA	**10**	**30**	NA	NA
GAM-SI-13-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	**10**	**50**	NA	NA
GAM-SI-14-0.5-SO	0.25-0.5	ND (0.19)	ND (0.0019)	ND (0.0029)	ND (0.0033)	ND (0.0098)	**11**	**22**	NA	NA
GAM-SI-15-0.5-SO	0.25-0.5	ND (0.22)	ND (0.0021)	ND (0.0033)	ND (0.0038)	ND (0.011)	**110**	ND (6)	NA	NA
GAM-SI-16-0.5-SO	0.25-0.5	**4.1**	ND (0.0025)	ND (0.0039)	ND (0.0044)	**0.044**	**200**	**63**	NA	NA
GAM-SI-169-0.5-SO(*)	0.25-0.5	**3.9**	ND (0.003)	ND (0.0047)	ND (0.0054)	ND (0.016)	**160**	**56**	NA	NA
GAM-SI-16-3.5-SO	3.25-3.5	ND (0.16)	ND (0.0016)	ND (0.0024)	ND (0.0028)	ND (0.0082)	**5.2**	ND (5.9)	NA	NA
GAM-SI-17-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	ND (1.5)	ND (6)	NA	NA
GAM-SI-18-3.5-SO	3.25-3.5	NA	NA	NA	NA	NA	**11**	ND (6)	NA	NA
GAM-SI-19-3.5-SO	3.25-3.5	NA	NA	NA	NA	NA	ND (1.5)	ND (5.9)	NA	NA
GAM-SI-20-3.5-SO	3.25-3.5	NA	NA	NA	NA	NA	ND (1.5)	ND (6)	NA	NA
GAM-SI-BK1-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	**5.6**	ND (6.1)	**0.39**	NA
GAM-SI-BK2-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	ND (1.5)	ND (5.9)	**0.10**	**114.0**
GAM-SI-BK3-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	ND (1.5)	**20**	**0.50**	NA
GAM-SI-BK4-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	**31**	ND (6)	**0.37**	**109.4**
GAM-SI-BK5-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	ND (1.5)	ND (6.1)	**0.30**	NA
GAM-SI-BK6-0.5-SO	0.25-0.5	NA	NA	NA	NA	NA	**11**	ND (6)	**0.33**	**111.1**

NA – Not Analyzed
ND (X.XXX) – Analyte not detected above the (Method Detection Limit).
Results in mg/Kg unless otherwise indicated.
BOLD text – Analyte detected above the Method Detection Limit
pcf – pounds per cubic foot
* - Field Duplicate Sample Pair.
**- leaking sample vial prevented analysis



Hoefler CONSULTING GROUP

Gambell FSA Soil Sample Results

Site Characterization and Restoration-Related Activities Project
Gambell, Alaska

ALASKA ARMY NATIONAL GUARD

CONTRACT NO:	W91ZRU-05-C-0008
DRAWN BY:	KRB
DATE:	05/08/07
	FIGURE 3-1

Figure adapted from information provided by AK ARNG.

3.1.1 Evaluation of Total Organic Carbon

Background sample parameter concentrations were arithmetically evaluated in accordance with guidance from the ADEC project manager (ADEC, 2005). The evaluation was performed on background samples only and includes analyses for TOC and DRO. The TOC results are needed to provide a representative concentration for naturally occurring carbon in the site soil. Field logs and laboratory results are provided in Appendices A and H, respectively.

Soil organic material is the direct result of vegetation that grows and expires at a location. The living biomass and detritus (roots and other plant residues) are acted upon by biological and physical processes and create by-products that become mobile or stationary within the soil matrix. Typical by-products are carbon dioxide (from aerobic decomposition), methane (from anaerobic decomposition), sugars, polyphenols, amino acids and lignin. The non-gaseous components can undergo secondary synthesis and form relatively high molecular weight compounds that are generically referred to as humic substances. These compounds typically include humic and fulvic acids as well as humin (Stevenson, 1982).

These complex organic chemicals are naturally occurring in soils and can account for a significant portion of the soil genesis. They are entrained within the soil matrix and are extracted with other organic soil constituents during the AK102 / AK103 analytical procedure. The photoionizing detector detects these chemicals eluting from the chromatographic column and are quantified as part of the "hydrocarbon envelope" in the DRO quantitation range.

Conversely, DRO can influence TOC measurement. For the ACL demonstration, organic carbon was quantified using the SW846 Method 9060, which involves direct measurement of the quantity of carbon dioxide that is produced from a thermally oxidized soil sample. Since this method is performed at relatively low temperatures, the measured result is biased only by organic residues contained within the soil matrix. Petroleum contamination can affect measured TOC results, so the background soils were also characterized for petroleum content (as DRO) for reference. All TOC data is located in Table 3-1.

The available TOC data for the site includes eight samples from the current investigation. The TOC sample depths range from 0.5 to 3.5 feet deep and are all from the same soil horizon. The lab results describe the soil as poorly graded gravel with sand, with less than 1% silt (Appendix G). The TOC and soil moisture data both show decreasing values with depth in this soil horizon. Field screening results indicate only small quantities of contamination near the ground surface. However, the spill history suggests that a significant amount of contamination may exist at depths greater than 3 feet bgs. As a result, sample GAM-SI-4-3.5-SO (3.5 feet bgs), with a TOC concentration of 0.07%, was determined to be most representative of the soil horizon where the bulk of contamination may be present. Until the contamination and the contaminated area(s) are better defined, default values of TOC will be applied to the site.

4 NATURE OF CONTAMINATION

The purpose of this section is to use available physical and chemical data collected at the site to characterize the contamination, consider potential transport pathways and potential exposure risks.

Analytical data for soil suggest that hydrocarbon contamination is present at several areas on site (Figure 2-1):

(1) northwest of the old armory near the former 3,000-gallon single-wall AST,
(2) at the north end of the two existing ASTs by the old armory,
(3) at the former snow machine storage area northeast of the old armory,
(4) at the west end of the old armory, and
(5) east of the new armory between the existing ASTs (near the former 3,000-gallon double-wall AST).

Historical data for the area near the former 3,000-gallon AST suggests that a large spill of heating oil occurred in 1983. Stained soil was observed at this area during each previous site visit (AK ARNG 1990; ECAS 1997; AK ARNG 2003). The chemical characteristics of hydrocarbon contamination collected from this area are similar to weathered heating oil. Chromatograms for the analytical samples are provided in Appendix H.

No spills have been recorded for the area at the north end of the two existing ASTs by the old armory. Chemical data from current lab results suggest that compounds with three discrete hydrocarbon ranges exist at this location. One compound has only GRO components (100 mg/Kg) and may be very weathered (old) based on observations and field screening results. This contamination may represent a very small spill of a gasoline-type fuel. The second compound closely resembles that of heating oil. The third compound, present only in shallow (0.5 feet bgs samples) may represent a heavier oil such as motor oil or biogenic compounds. Observations of a very small area with stained soil, decreasing odor with depth, and low contaminant concentrations suggests that the spills in this area were likely minor surface spills.

No historical data exist that document spills for the area at the former snow machine storage area northeast of the old armory. Chemical data from current lab results suggest that the hydrocarbon contamination identified at this location is not similar to a gasoline or 2-cycle fuel that is typically associated with snow machines. Rather, the chemical data suggests that the fuel in this area matches closely with that of a slightly weathered heating oil. This contamination at a depth of 3.5 feet bgs nearly matches that detected in the area near the former 3,000-gallon single-wall AST.

There is no history or record of spills beneath the stairs at the west end of the old armory. The sample at this location was collected from a surface stain. Chemical data from the lab results suggests that this stain was caused by a fuel with characteristics similar to heating oil.

No previous spill have been documented for the area east of the new armory between the existing ASTs, which is the same area occupied by a former double wall 3,000-gallon AST. Relatively low contaminant concentrations of DRO compounds up to 200 mg/Kg were detected at this location. Field screening results suggested that contaminant concentrations were decreasing with depth. Chemical and physical characteristics of this contamination suggest that this contamination represents minor surface releases of heating oil.

4.1 Conceptual Site Models

Conceptual site models were developed for human and ecological exposure pathways to illustrate complete and incomplete exposure pathways. An exposure pathway is the physical course that a chemical takes from the point of release to the receptor. For the purposes of evaluating exposure pathways, it is assumed there are no current site residents. Current human use consists of approximately five site workers that work in the old armory (approximately 40 hours per week). Property access is unrestricted and open to the public. Future exposure pathways assume continued use similar to the current use.

Human health and ecological CSMs for the site are contained in Appendix G. The future scenario used in the models is conservative and assumes that the site and the adjoining properties will remain under the ownership of the native corporation for the foreseeable future. Regarding human health exposure pathways, the inhalation of outdoor air exposure pathway is complete, but not significant at the site due to the small quantities and low concentrations of near-surface volatiles detected. Similarly, due to the shallow depth of some of the contaminated soil, incidental soil ingestion is a complete, but unlikely, pathway of exposure. Human exposure to site-related contaminants in groundwater (active zone or groundwater) is currently an incomplete exposure pathway because the public water supply for the village is an aquifer at the base of the mountain, approximately 2,000 feet east of the village. Since regional groundwater flow is to the north, this aquifer is cross-gradient from the site (Corps 2005). In addition, based on a 1992 study of potable water supplies in Gambell, the aquifer is hydraulically isolated from potential contaminant sources due to its location within the continuous permafrost in the east side of the gravel spit. This permafrost acts as a barrier for soil contaminant migration to the drinking water aquifer (Munter and Williams, 1992). In the future, if an additional water supply is needed to provide potable water for the village and the selected source is down gradient of the site, human exposure to site-related contaminants in groundwater may become a complete exposure pathway.

5 CLEANUP GOALS

Hazardous substance soil and groundwater cleanup levels are published in Title 18, Chapter 75, Sections 340, 341, 345, and 350 of the Alaska Administrative Code (18 AAC 75.340, .341, .345, and .350). Cleanup levels were evaluated for the Gambell Federal Scout Armory using ADEC Methods One, Two, and Three. A description of each and comparison is presented in this section. Method One establishes cleanup levels according to a matrix scoring protocol. Method Two uses reference to a table of risk-based cleanup levels. Method Three uses site-specific data to calculate alternate cleanup levels.

5.1 Method One - Matrix Score Sheet

Under 18 AAC 75.340(a)(1), soil cleanup levels can be established by reference to a matrix scoring protocol. The scoring is based on site-specific parameters that include depth to groundwater, mean precipitation, soil type, distance to potential receptors, and volume of contaminated soil. This ADEC "**Method One**" provides standards for GRO, DRO and RRO in soil only for arctic and non-arctic climatic zones. This site is in the non-arctic zone. The applicability of this method is generally limited to sites involved in emergency response and interim removal activities.

5.1.1 Input Parameters

Inputs that are required for the identification of Method One cleanup levels are taken from current fieldwork when possible. Additional information is taken from Alaska Department of Natural Resources (ADNR 1962), Alaska Army National Guard (AK ARNG 1990), and public data resources. Generally, conservative estimates were used to determine each input parameter.

Depth to groundwater – The depth to groundwater could not be determined during the July 2006 investigation with the available tools. However, no groundwater was encountered shallower than 6.5 feet bgs. Well logs for the two former water wells west of the site suggest a depth to water of about 25 feet bgs, beneath seasonal frost (ADNR 1962). Other information from a geotechnical investigation conducted across the central portion of the gravel spit suggest a depth to water, which is perched above discontinuous permafrost, of 7 to 10 feet bgs (RZA 1985). Since the armory is located between the water wells and the geotechnical investigation site, groundwater is estimated to be between 7 and 25 feet bgs. Assuming the most conservative range for this parameter yields a matrix input value of 8.

Mean precipitation – The average annual precipitation is fourteen inches according to the Western Regional Climate Center (WRCC) (http://www.wrcc.dri.edu/summary/Climsmak.html). The input value for this parameter is 1.

Soil type – Lab testing of soil samples show that the soil type is consistent laterally and vertically across the site. Results indicate that the soil type is poorly graded gravel with sand. The matrix input value for this parameter is 10.

Distance to potential receptors – Records for local groundwater wells were obtained from the two former drinking water wells in Gambell. The two old wells, School Water Well No. 1, and the Gambell Village Well are located about 1,000 feet west and 750 feet northwest of the armory, respectively. These wells were abandoned due to problems with salt-water intrusion and low production. A new village well was installed about 2,000 feet east of the site, as the base of Sevuokuk Mountain. Continuous permafrost has been shown to separate this drinking water aquifer from all other groundwater on the gravel spit (Munter and Williams, 1992). The drinking water aquifer is not a potential receptor due to the lateral distance between the site and the drinking water aquifer, the cross-gradient location of the water well, and the apparent continuous permafrost beneath the two areas. However, to be conservative, only the horizontal distance from the site was considered in the selection of this parameter. The matrix input value for this parameter is 12.

Volume of contaminated soil – A significant volume of contaminated soil may exist at this site as a result of the 3,000-gallon heating oil spill in 1983. However, all of the available analytical data for the site indicates that the estimated volume of contaminated soil in this area is about thirteen cubic yards. The matrix input value for this parameter is 2.

5.1.2 Method One Cleanup Levels

Table 5-1 provides a summary of the matrix inputs and scoring for the site. The cumulative matrix score for the site is 33, which provides the Level B assignment and yields cleanup levels for GRO and DRO of 100 and 200 mg/Kg, respectively.

Table 5-1. ADEC Method One Matrix Score Sheet

PETROLEUM HYDROCARBON CLEANUP LEVELS IN NON ARCTIC ZONES		
1. Depth to Subsurface Water		Parameter Matrix Score
<5 feet	(10)	
5-15 feet	(8)	
15-25 feet	(6)	8
25-50 feet	(4)	
>50 feet	(1)	
2. Mean Annual Precipitation		Parameter Matrix Score
>40 inches	(10)	
25-40 inches	(5)	1
15-25 inches	(3)	
<15 inches	(1)	
3. Soil Type (Unified Soil Classification)		Parameter Matrix Score
Clean, coarse-grained soils	(10)	
Coarse-grained soils with fines	(8)	10
Fine-grained soils (low organic content)	(3)	
Fine grained soils (high organic content)	(1)	
4. Potential Receptors		Parameter Matrix Score
Public well within 1,000 feet, or		
Private well within 500 feet	(15)	
Municipal/private well within ½ mile	(12)	
Municipal/private well within 1 mile	(8)	12
No known well within ½ mile	(6)	
No known well within 1 mile	(4)	
Non-potable ground water	(1)	
5. Volume of Contaminated Soil		Parameter Matrix Score
>500 cubic yards	(10)	
100-500 cubic yards	(8)	
25-100 cubic yards	(5)	2
>De Minimis-25 cubic yards	(2)	
De Minimis	(0)	
Total Matrix Score		33

Cleanup Level (mg/Kg) per 18 AAC 75.340

Matrix Score		GRO	DRO	RRO	Benzene	Toluene	Ethylbenzene	Xylenes
Level A	>40	50	100	2,000	0.02*	5.4*	5.5*	78*
Level B	27-40	100	200	2,000	0.02*	5.4*	5.5*	78*
Level C	21-26	500	1,000	2,000	0.02*	5.4*	5.5*	78*
Level D	<21	1,000	2,000	2,000	0.02*	5.4*	5.5*	78*

* - ADEC Method Two, migration to groundwater in the "Under 40 inch" zone. Units in mg/Kg.

5.2 Method Two - 18 AAC 75.341 Tables B & C

Under 18 AAC 75.340(a)(2), soil cleanup levels can be established by reference to a table of "risk-based" cleanup levels. These "**Method Two**" cleanup levels are provided for ingestion and inhalation exposures as well as migration to groundwater impacts for each of three climatic zones. The underlying risk model considers default ingestion and inhalation residential exposure scenarios at a cumulative cancer risk of one in one-hundred thousand (for carcinogens) or health effects index of 1.0 (for non-carcinogens). The migration to groundwater cleanup levels are based on an equilibrium partition model for contaminants that consider default site conditions. These Method Two cleanup levels are considered conservatively protective of human health and the environment.

5.2.1 Method Two Cleanup Levels

Table 5-2 provides a summary of the published Method Two cleanup levels for "Under 40-inch" and "Arctic" zone sites. Current available site information suggests that permafrost is continuous beneath the Gambell site (Corps 2005). Based on this information, the migration to groundwater (deep, sub-permafrost) is not a concern, allowing Arctic zone cleanup levels to be applied to the site. However, based on a conservative approach that considers potential future permafrost degradation and the possibility for contaminants to migrate to the groundwater, Method Two migration to groundwater cleanup levels are considered most appropriate. The migration to groundwater cleanup levels for GRO and DRO are 300 and 250 mg/Kg, respectively.

Table 5-2. Method Two Cleanup Levels

Compound of Concern	Under 40-Inch Zone			Arctic Zone		Most Restrictive Cleanup Goal	Exposure route of primary concern
	Ingestion	Inhalation	Migration to Groundwater	Ingestion	Inhalation		
Gasoline Range Organics	1,400	1,400	300	1,400	1,400	300	Migration to groundwater
Diesel Range Organics	10,250	12,500	250	12,500	12,500	250	Migration to groundwater
Residual Range Organics	10,000	22,000	11,000	13,700	22,000	10,000	Ingestion
Benzene	150	9	0.02	200	13	0.02	Migration to groundwater
Toluene	20,300	180	5.4	274,000	180	5.4	Migration to groundwater
Ethylbenzene	10,000	89	5.5	13,700	89	5.5	Migration to groundwater
Xylenes	203,000	81	78	274,000	81	78	Migration to groundwater

All cleanup levels are in units of mg/Kg.
* - Based on 18 AAC 75.341 Tables B & C, Under 40-Inch Zone and Arctic Zone.

5.3 Method Three - Alternative Cleanup Level Demonstration

Under 18 AAC 75.340(e), soil cleanup levels are established by using approved site-specific soil data as inputs to the equations used to derive the Method Two cleanup levels as set out in "Cleanup Levels Guidance" (ADEC, 2004d). These site-specific "**Method Three**" cleanup levels can be used to modify the "migration to groundwater" or "inhalation" cleanup levels using justified and appropriate changes to the default exposure scenario. The Method Three cleanup levels are considered protective of human health and the environment while being based on site conditions and an anticipated future residential land use.

5.3.1 Site-Specific Physical Considerations

Site-specific considerations could include the exposure factors used in the derivation of the human health risk cleanup levels as well as the physical characteristics of the soils at the site. Default residential exposures were used for the ACL demonstration since the future site use may be different from the current industrial/commercial use.

Differences are noted for the physical data inputs in Table 5-3. Physical data for the site are used in developing site-specific Method Three cleanup levels for the "migration to groundwater" exposure route only. The default value for the groundwater pathway (0.2) was used for the average soil moisture content because no average annual soil moisture data is available for the site. Default values were used for aquifer hydraulic conductivity, hydraulic gradient, source length parallel to groundwater flow, and aquifer thickness and TOC content (0.001). Site-specific data used includes the dry soil bulk density (1.67 g/cm^3), total soil porosity (0.37), water-filled (0.334) and air-filled soil porosities (0.036), and infiltration rate (0.07 m/yr). The default infiltration rate was modified based on the 1961-1990 average annual precipitation value of 14 inches per year (WRCC 2007). Infiltration is calculated as 1/5 of the average annual precipitation value, thus the infiltration rate was changed to 0.07 meters per year. Appendix C includes additional detail regarding calculations of the site-specific physical parameters. Groundwater was not sampled at the site, thus no results are listed in Table 5-3.

5.3.2 Migration to Groundwater Cleanup Level Development

Site-specific cleanup levels for the migration to groundwater exposure pathway are calculated using the ADEC Method Three calculator (http://www.dec.alaska.gov/spar/csp/WEBCALC/index.htm) (ADEC 2008). The input data are summarized in Table 5-3.

Table 5-3. Method Three Web Calculator Input Values

Input Parameter	Default Values	Selected Data (based on site conditions)	Basis for selection	Source, reference, justification
Zone for Site	-	Under 40-inch Zone	Annual precipitation 14 inches	Western Regional Climate Center
Exposure scenario	-	Residential	Potential future land use	Assume no Institutional Controls or restrictions
Soil - Chemicals of potential concern (maximum detected concentration, mg/Kg)	-	Benzene (0.0099)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
	-	Ethylbenzene (0.0054*)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
	-	Toluene (0.059*)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
	-	Xylenes (0.13)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
	-	GRO (100)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
	-	DRO (420)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
	-	RRO (63)	Gambell FSA site work, 2006	SI Fieldwork, 2006, HCG
Groundwater - Chemicals of potential concern (maximum detected concentration, mg/L)	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
	-	-	-	-
Dry bulk density	1.5	1.67†	ADEC, 2004b†	SI Fieldwork, 2006, HCG
Total soil porosity (volume fraction)	0.434	0.37†	ADEC, 2004b†	SI Fieldwork, 2006, HCG
Water-filled soil porosity (volume fraction)	0.30	0.334†	ADEC, 2004b†	SI Fieldwork, 2006, HCG
Air-filled soil porosity (volume fraction)	0.13	0.036†	ADEC, 2004b†	SI Fieldwork, 2006, HCG
Infiltration rate (m/yr)	0.13	0.07	NCDC 1961 to 1990 Monthly Climate Summary - Gambell	http://www.wrcc.dri.edu/summary/Climsmak.html

* - datum is a non-detect quantitation limit.
† - see Appendix C for sample calculations.

Ethylbenzene and toluene were not detected in soils at the site. The associated PQLs reported for these non-detected results were below Method Two migration to groundwater cleanup levels for all parameters. The highest reported quantitation limits are used as the maximum concentration in the Method Three calculated cleanup levels.

5.3.3 Method Three Cleanup Levels

Table 5-4 provides a summary of the calculated Method Three cleanup levels for the site.

Table 5-4. Calculated Method Three Cleanup Levels

Compound of Concern	Ingestion*	Inhalation*	Migration to Groundwater*	Restrictive Cleanup Goal	Exposure route of Primary concern
Gasoline Range Organics	40,600†	5,000†	310	310	Migration to groundwater
Diesel Range Organics	10,100	28,000†	280	280	Migration to groundwater
Residual Range Organics	10,100	--	12,000	10,100	Ingestion
Benzene	150	12	0.019	0.019	Migration to groundwater
Toluene	20,300	170	5.7	5.7	Migration to groundwater
Ethylbenzene	10,100	85	5.8	5.8	Migration to groundwater
Xylenes	203,000	79	83	79	Inhalation

All cleanup levels are in units of mg/Kg.

† - The 18 AAC 75 Method Three Maximum Allowable Concentrations for GRO and DRO are 1,400 and 12,500 mg/Kg, respectively.

* - Cleanup levels calculated using site-specific data (Table 5-3). Cleanup levels listed here are from the Method Three Step 4 Calculator Output (Appendix D).

5.3.4 Discussion

This section of the report provides a summary of the previously identified cleanup levels. These cleanup levels are applicable to the site based on the established regulatory approaches, as well as conditions identified at the site. All cleanup levels are presented as values to be considered in developing the final cleanup levels for the site. Table 5-5 provides a summary of the potentially applicable cleanup levels for soil at the site. The proposed cleanup levels are not based on the Arctic Zone cleanup levels even though the available data for the area suggests the existence of continuous permafrost. The proposed ACLs are the most appropriate based on the Method Three calculations completed using site-specific data.

Table 5-5. Summary of Potentially Applicable Cleanup Levels for Soil

Compound of Concern	Method One	Method Two		Method Three (Site-specific)	Proposed ACLs (Site-Specific)	Exposure Route Pathway
		Under 40-Inch Zone*	Arctic Zone**			
Gasoline Range Organics	100	300	1,400	310	310	Migration to groundwater
Diesel Range Organics	200	250	12,500	280	280	Migration to groundwater
Residual Range Organics	2,000	11,000	13,700	10,100	10,100	Ingestion
Benzene	0.02	0.02	13	0.019	0.019	Migration to groundwater
Toluene	5.4	5.4	180	5.7	5.7	Migration to groundwater
Ethylbenzene	5.5	5.5	89	5.8	5.8	Migration to groundwater
Xylenes	78	78	81	79	79	Inhalation

All cleanup levels are in units of mg/Kg.
* Cleanup levels are the most restrictive (Migration to Groundwater) for the Under 40-Inch Zone.
** Cleanup levels are based on the most restrictive cleanup levels for the Arctic Zone. All cleanup levels are based on the Inhalation exposure pathway except for the Residual Range Organics cleanup level, which is based on Ingestion.

5.4 "18 AAC 75.350" Determination

Following the ADEC methods, the final component in the ACL demonstration is an On-Site groundwater assessment. During this activity, groundwater is sampled for specific laboratory analyses. This effort quantifies the current groundwater impacts and allows evaluation of the groundwater to determine if an aquifer exemption under 40 CFR 146.4 and 18 AAC 75.350 is appropriate. The effort also assesses the potential for contaminants to migrate beyond the immediate release location(s) and designated points of compliance. The activity considers the site topography and hydrology to identify preferential transport routes for contaminants. Points of compliance at the property boundary or likely contact locations are identified for groundwater and/or surface water sampling.

Under the State of Alaska contaminated sites regulations (18 AAC 75.350) and provisions of the Clean Water Act (40 CFR 146.4) a responsible party may petition the Department to acknowledge the unsuitability of a groundwater resource. Considerations include the availability, quality and feasibility of the groundwater source as a potential source of drinking water. Such a determination allows the conceptual site models to be refined by removing the ingestion of groundwater as a complete exposure pathway.

The 2006 SI did not include groundwater sampling because of the inability to reach the shallow groundwater with the tools available. Therefore, in order to conduct an On-Site groundwater assessment, further work including groundwater sampling is required. It is recommended that drilling equipment be used to install monitoring wells for groundwater sampling.

5.4.1 Background and Site Information

Groundwater near the west side of the gravel spit was once used as a source of drinking water for the village. However, the two wells drilled in 1962 that provided water for the school and village were abandoned due to problems with salt water intrusion and poor production. The wells were replaced with a new well at the base of the mountain, 2,000 feet east of the village. The water in this well is supplied by springs that flow into the gravel at the base of the mountain. The spring-fed aquifer is hydraulically isolated from other groundwater on the spit by permafrost. This means that the shallow groundwater beneath the site does not get used as a source of drinking water and will not likely be used in the future. In addition, the shallow groundwater is susceptible to contamination from multiple point and non-point sources that may include fuels and liquids from vehicles, animal fecal waste, pesticides and herbicides, decomposing organic matter, or turbidity.

5.4.2 Discussion

Development of the shallow groundwater at the site for use as drinking water is not feasible based on the limited availability, salt water intrusion, and potential for contamination. As such, the site is appropriate for consideration as an unsuitable groundwater source. Consequently, the shallow groundwater at the site is eligible for exemption under 40 CFR 146.4 and regulatory relief under 18 AAC 75.350 authority in consultation with the landowner, the public, and appropriate government officials. The practical impact of this exemption is a modification of the CSM to reflect a removal of groundwater ingestion as a complete exposure pathway.

6 EXTENT OF CONTAMINATION AND RISK EVALUATION

The purpose of this section is to apply proposed cleanup goals for the site and estimate the extent of contamination that exceeds the cleanup goals based on available site data. The proposed cleanup goals for the site are in Table 5-5. The extent of contamination is based on the calculated Method Three alternate cleanup levels. The primary contaminant of concern at the site is DRO, which has a calculated cleanup level of 280 mg/Kg.

6.1 Extent of Contamination

No samples exceed the proposed Method Three ACLs for GRO/BTEX or RRO at the site and only two soil samples collected during this investigation have DRO concentrations that exceed the proposed 280 mg/Kg ACL. One of the samples where the DRO concentration was greater than the proposed ACL was collected at a surface stain beneath the stairs at the west end of the old armory. The release appeared to be very minor, as the stained area appeared small and the majority of the stained gravel was sitting on top of wood planks. No other sample information is available from soil beneath this stain to determine the depth or extent of this contamination, but based on field observations, this release is likely insignificant. The second sample with concentrations exceeding the proposed ACL for DRO is from the former snow machine storage area northwest of the old armory. At this location, sample GAM-SI-11-3.5-SO from 3.5 feet bgs had a DRO concentration of 290 mg/Kg. The horizontal and vertical extents of contamination and source of this contamination was not identified during this investigation. However, the contamination at this location occurs at a similar depth and has chemical characteristics similar to the contamination identified at the reported 3,000-gallon heating oil spill location, which is located approximately 50 feet upgradient (south). No other data is available to evaluate the possibility that the contamination at this location may be associated with the former heating oil spill.

Soil that exceeds the proposed cleanup level for DRO may exist at two other locations on site based on the field observations. The first location is a surface stain at the northeast corner of the western AST by the old armory (Figure 6-1). Field screening and field observations indicated that this stain was small and that the contaminant concentrations were highest near the ground surface and decreased with depth. Samples were collected from 0.5 feet bgs and 3.5 feet bgs at this location. Lab results for the deeper sample indicated a DRO concentration of 270 mg/Kg. Due to the extract leaking from an improperly sealed vial in the lab, the shallow sample (GAM-SI-6-0.5-SO) could not be analyzed and no DRO result is available. Based on field observations that suggested that this sample had a DRO concentration exceeding the proposed cleanup level of 280 mg/Kg, the area with contamination is expected to be about three feet long, two feet wide, and three feet deep.

The second location where soil may exceed the proposed ACL is the area formerly identified as a 3,000-gallon heating oil spill area, west of the existing old armory ASTs (Figure 6-1). No surface staining was evident in this area during the 2006 site investigation and initial field screening of soil indicated no significant impacts to depths of three feet bgs. Lab results from soil samples collected at two and three feet bgs, however, show DRO concentrations of 230 and 270 mg/Kg, respectively. These concentrations are below the proposed ACL for DRO, but field observations and lab results suggest increasing contaminant concentrations with depth. Due to limitations of the sampling methods to acquire soil samples deeper than 3.5 feet, the presence of contamination exceeding the proposed ACL could not be verified and the vertical extent of contamination could not be determined. Based on the suspected date, volume, and location of the reported heating oil spill, the highly permeable soil type, and expected depth of permafrost less than 10 feet deep, a reasonable deduction would be that the bulk of contamination associated with this spill remains between 3 and 10 feet bgs.

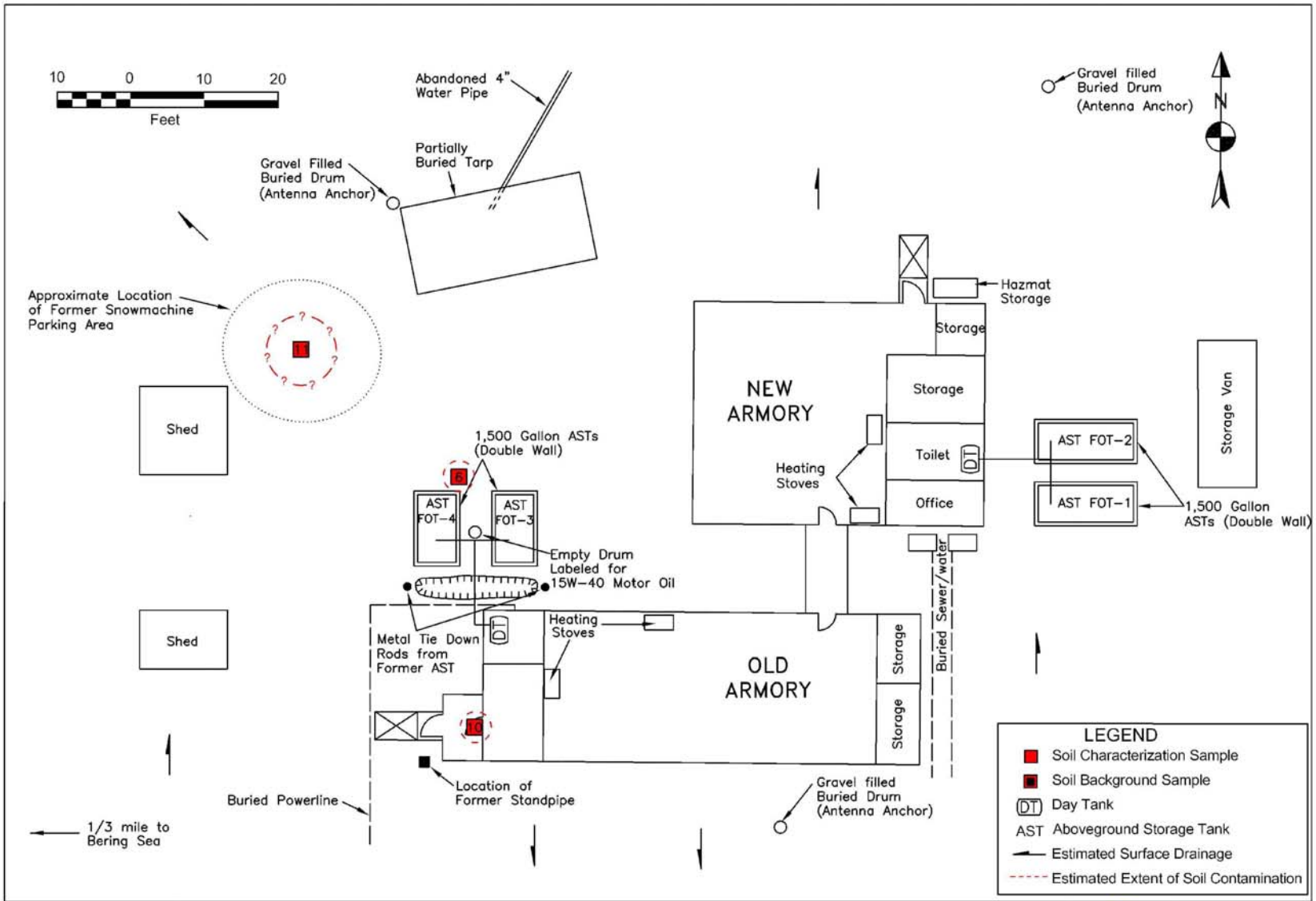
6.2 Risk Evaluation

Risk evaluation for this site included a comparison of existing contaminant levels with regulatory criteria for various media and determining the likelihood of contaminant migration and exposure to receptors. Risk evaluation for surface water and sediment were not applicable because these media were not present on site. Therefore, there is no risk associated with these media. Since groundwater was not encountered during this investigation and no data regarding contaminant concentrations exist, a comparison with regulatory levels is not possible. Even with the highly permeable soil that would have allowed rapid vertical migration to the supra-permafrost groundwater, the risk

of exposure to receptors is considered low because the groundwater resources utilized for city water is 2,000 feet cross-gradient from the site and is hydraulically isolated due to permafrost.

Soil on site has been impacted by petroleum hydrocarbons and provides some level of risk. No soil samples had confirmed contaminant concentrations that exceed Method Two under 40-inch zone risk-based standards for exposure due to ingestion or inhalation. Two soil samples were confirmed, and a third sample suspected, as having contaminant concentrations that exceeded the more conservative migration to groundwater cleanup levels, which are considered appropriate based on the possibility that permafrost degradation may occur at the site. Therefore, this contamination represents a potential future risk because impacts to the groundwater are theoretically possible based on the maximum concentrations of DRO in the soil. The potential risk associated with the contamination at the surface stain next to the AST designated FOT-4 cannot be evaluated because no analytical data exist from this location. However, this sample (GAM-SI-6-0.5-SO) and the other two samples which exceed the ADEC Method Three DRO ACL of 280 mg/Kg are estimated to provide a low amount of risk because the exceedances are slight and the soil volume based on existing lab data appears to be small (< 10 cy). The risk to human health should remain minimal even if there is future contaminant migration to the sub-permafrost groundwater because the village is served by public water and the drinking water well is cross-gradient and 2,000 feet from this site.

This risk evaluation cannot be completed for soil because the extent of contamination has not been determined at several of the spill locations on site. Based on the existing data, the risk associated with this contamination appears to be low. However, the potential risk may be significantly higher if the soil contamination is vertically or laterally extensive or the groundwater has been impacted.



Hoefler CONSULTING GROUP

Gambell FSA Estimated Extent of Soil Contamination

Site Characterization and Restoration-Related Activities Project
Gambell, Alaska

ARMY ALASKA NATIONAL GUARD

CONTRACT NO:	W91ZRU-05-C-0008
DRAWN BY:	KRB
DATE:	05/08/07
	FIGURE 6-1

Figure adapted from information provided by AK ARNG.

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7 REMEDIAL ALTERNATIVES

This section of the report provides an estimate of the volume of soil exceeding the proposed 18 AAC 75.340(e), Method Three ACL for DRO of 280 mg/Kg and summarizes possible remedial alternatives for the site.

7.1 Soil Volume Estimate

Figure 6-1 shows the estimated extent of DRO contamination at the locations where data suggests that soil concentrations exceed the proposed Method Three ACL for DRO of 280 mg/Kg. The depth of contamination in the surface stain areas is expected to be less than three feet bgs. The cumulative volume of soil exceeding the DRO cleanup level at these locations may be two cubic yards. Based on the limited field screening and analytical data for the area surrounding the snow machine parking area the volume of contamination cannot be estimated with a high degree of certainty. More data is required to determine the depth and extent of this contamination and whether it is associated with the suspected 3,000-gallon spill. Based on the existing data, assuming that this contamination is not associated with the suspected 3,000-gallon spill, and using an estimated depth to supra-permafrost groundwater of eight feet, the volume of contaminated soil at this location would be approximately eleven cubic yards. The total estimated volume of soil with contaminant concentrations above the proposed ACLs, therefore, is thirteen cubic yards.

7.2 Remedial Alternatives

The ADEC Guidance for Cleanup of Petroleum Contaminated Sites (ADEC, 2000) outlines remedial alternatives for contaminated sites in Alaska. An evaluation of the remedial alternatives for the site cannot be adequately completed without first knowing the depth, extent, and concentration of contaminants. Since additional investigation is required to collect this information, this evaluation is limited to the known volume of contamination based on the calculated Method Three cleanup levels. The following section presents several of the remedial alternatives that could be considered for the site. Remedial alternatives discussed here can be used alone or in conjunction with other remedial methods. Some alternatives, while feasible, may not be economically viable or reasonable. If free-product is identified on site, remedial alternatives should include alternatives that address free product removal in compliance with ADEC regulations (18 AAC 75.325) that require recovery of free product to the maximum extent practicable.

7.2.1 Excavation and Thermal desorption

Excavation and thermal desorption of the suspected soil exceeding the proposed ACLs is a potential remedial option. Excavation of the soil associated with the surface stains would likely be easily accomplished using this method except that buildings or ASTs would need to be moved prior to excavation. Excavation of soil in the former snow machine storage area would require an excavator to remove and stockpile approximately three feet of clean soil from the contaminated area before excavating contaminated soil. Depending on the extent of contamination, complete removal of contaminated soil from the site may not be possible without moving the existing sheds, ASTs, or old armory. Under this option, soil would probably be shipped off site to Anchorage or Seattle for treatment since the costs of conducting thermal remediation at a remote site such as this would likely be very high. As long as the volume of soil requiring treatment did not increase greatly over the estimated 13 cubic yards, this option may be fairly viable. Under these assumptions, the costs would be moderate, but the benefit of quick and certain remediation would outweigh the costs of further remedial actions.

7.2.2 Monitored Natural Attenuation

Natural attenuation is the reduction in the concentration and mass of hazardous substances due to naturally occurring physical, chemical and biological processes without human intervention. These processes include, but are not limited to, dispersion, diffusion, sorption, retardation, and degradation. Several groundwater monitoring wells would likely be needed to implement this strategy. The purpose of these wells would be to provide data within the area of groundwater contamination to monitor changes in the contaminant plume over time.

7.2.3 Bioremediation (Enhanced Natural Attenuation)

Bioremediation is a treatment method that decreases petroleum product concentrations in soil and groundwater through biological action. Ex-situ bioremediation methods such as landfarming or cell bioremediation are viable treatment options for the site as excavation of the contaminated soil is reasonable based on the expected depth of contamination (<10 feet deep) and minimal design, construction, and maintenance that would be required to treat the soil. Other (in-situ) bioremediation options that could be implemented at this site could include vapor extraction and bioventing. This technology uses naturally occurring microorganisms that are stimulated to biodegrade contaminated soils in place. The most developed and most feasible bioremediation method for in-situ treatment relies on optimizing environmental conditions by providing an oxygen source that is delivered to the subsurface through an injection well or infiltration system for the enhancement of microbial activity. This method is a viable treatment option as the soil would transmit the nutrients and oxygen required in order to make this method effective.

7.2.4 Chemical Oxidation

Chemical oxidation is a treatment method that decreases petroleum concentrations by destroying organic contaminants either dissolved in groundwater, sorbed to the aquifer material, or present in their free phase. This method can be very effective and have lows costs. Given the highly permeable soils on site, this could be a very effective and cost-efficient method of remediation for the surface and sub-surface contamination.

7.2.5 Groundwater Pump and Treat

If groundwater contamination is identified at the site during future site investigations, groundwater pump and treat may be used to remove free product or petroleum constituents dissolved in the water. Based on the type of contamination and predominant soil type (gravel), this method may be effective in removing contamination as the fuel will likely drain out of the soil as the water table surface is depressed due to pumping. In addition, the high hydraulic conductivity of the soil would result in large treatment areas around the extraction wells, requiring fewer wells. This method would require several extraction wells and would likely have high operation and maintenance costs relative to the amount of product that would be recovered.

7.2.6 Passive Free-Product Recovery

If free product is identified at the site during future site investigations, passive free-product recovery is a remedial method that would remove free product from the groundwater. This method would require the installation of a recovery well network in the area with free product. Each well would contain a passive recovery system that would collect free product. Recovered product would be consolidated into a single container during regular site visits and disposed at an approved disposal facility. This method would reduce the amount of source material, thereby reducing the potential for off-site migration and facilitating site cleanup.

Currently, the presence and/or extent of free product is unknown. To evaluate the feasibility of implementing a passive free-product recovery network, a ground water investigation would be needed to determine if the groundwater has been impacted. Wells installed during this investigation could be constructed so that they would serve as monitoring points or as recovery wells. The information gained from these wells would be used to determine the center and extent of contamination and focus recovery efforts appropriately.

7.3 Remedial Alternatives Summary

Based on existing data from this investigation that provide uncertain volume estimates of contaminated soil and provide no information regarding potential groundwater contamination, remediation alternatives such as soil excavation and thermal desorption, chemical oxidation, and bioremediation may all be feasible at this site. Since the risk is very low, however, based on the small volume and low contaminant concentrations identified during this investigation, monitored natural attenuation may be the most cost-effective and appropriate approach of remediation at the site at this time. Should future investigations show that the extent of soil contamination is much greater or that groundwater has been impacted, remedial alternatives will need to be re-evaluated.

8 CONCLUSIONS

The first armory building in Gambell was constructed around 1970 and a large addition was added in 1979. These buildings, along with two other sheds and a storage van, are currently in use. One large spill and several stained soil areas have been identified by AK ARNG since the facility was developed. No previous recovery, spill responses, or remedial actions have been conducted. The 2006 site investigation was conducted to determine the presence, concentration and extent of contamination at the site.

8.1 Soil

Spill sites were identified at the site during investigations between 1990 and 2006 (AK ARNG 1990; 1997; 2003; and 2006). The contaminant species consist primarily of DRO-related compounds, specifically heating oil. The only documented spill occurred in 1983 when a full 3,000-gallon AST spilled its contents near the northwest corner of the old armory. Two additional small spills areas near the 1983 spill area were identified in 2006 based on the presence of stained soil. The previously identified spill locations and areas with potential spills were investigated during the 2006 SI.

In 2006, 23 soil borings were drilled and 25 samples were analyzed to determine the concentration and extent of contamination in soil at the site. Hydrocarbon contamination was identified at five locations on site. Three of these areas appeared to have impacts due to small surface releases. Of these three, two were surface stains near the northwest corner of the old armory; one north of the existing western AST and one beneath the stairs. The third was between the ASTs at the east end of the new armory. The maximum contaminant concentrations at these locations were identified at or near the ground surface and concentrations decreased with depth. Based on the observed surface stains, field screening results and laboratory analyses, the spills at these locations are likely insignificant.

The remaining two locations where hydrocarbon contamination was identified were at the former snow machine parking area and at the former 3,000-gallon heating oil spill location. Contamination at these locations was encountered at depths greater than two feet deep and had similar chemical characteristics. No other data is available that links these contaminated areas. The extent of contamination at these areas is unknown.

Method Two Arctic Zone cleanup levels were considered inappropriate based on available data that indicates permafrost may be discontinuous beneath the site. As such, site-specific information were used to determine appropriate ADEC Method Three cleanup levels for the site that take into consideration discontinuous permafrost or the possibility that permafrost may degrade in the future. No samples collected during this investigation exceed the proposed ACLs for GRO/BTEX or RRO. The proposed ACL for DRO was calculated to be 280 mg/Kg. Available laboratory data show that the only two samples that exceed the proposed DRO ACL are sample GAM-SI-10-0.5-SO and GAM-SI-11-3.5-SO. Sample GAM-SI-10-0.5-SO was collected from a small surface stain beneath the stairs and Sample GAM-SI-11-3.5-SO was collected at the former snow machine storage area. No lab data are available to determine whether contamination identified at the northeast corner of the old armory western AST or northwest of the old armory building exceed the proposed ACLs. Based on the current lab results, and the proposed cleanup levels, only DRO would remain as a contaminant of concern for the site. Application of these cleanup levels would mean that soil at the site would need treatment to bring the site into compliance.

Based on the existing site data, which currently indicates a small volume of soil with DRO contamination exceeding the proposed cleanup levels, several remedial alternatives would probably be effective due to the gravelly soil composition. However, since the site has not been fully characterized, recommendation of an appropriate remedial strategy is not yet possible. Further characterization and subsurface sampling from three feet bgs to groundwater should be conducted. An excavator or drill rig is required for this work. Remedial approaches should be re-evaluated based on the new information collected during future site characterization work.

8.2 Groundwater

Groundwater contamination may exist at this site based solely on historical information that reports a 3,000 gallon heating oil spill in 1983 and the highly permeable soil that lies above the shallow groundwater. Groundwater samples could not be collected during the 2006 investigation because no groundwater was encountered down to the depth of refusal (6.5 feet bgs) of the hand-driven groundwater monitoring probe. Available information regarding the occurrence of permafrost and shallow, active zone, groundwater in the area suggest continuous permafrost beneath the area and depths to groundwater ranging from three to 15 feet bgs. Due to the coarse, non-compacting soil at the site, drilling equipment is necessary to collect groundwater samples or install monitoring wells.

Since groundwater moving beneath the site is not likely to be used as a drinking water source due to its location, land use, and the presence of an adequate village water supply, the site is appropriate for consideration as an unsuitable groundwater source under authority of 18 AAC 75.350. Since the presence and/or contaminant distribution and concentration in groundwater is currently unknown, it is unknown whether the groundwater beneath the site is in compliance with the Table C cleanup levels.

Based on available data, the local direction of groundwater flow is to the north. No information exists to determine whether contaminants exist in the groundwater or if they are migrating off site at concentrations above the ADEC Table C cleanup levels. Future evaluation of the groundwater conditions beneath the site should include sampling to characterize potential groundwater contamination at this site.

Based on the reported spill volume at this location, the presence of free product is possible. If this were confirmed during future site investigations, ADEC regulations (18 AAC 75.325) require recovery of free product to the maximum extent practicable.

9 REFERENCES

Alaska Army National Guard (AK ARNG). 2005. *Site Characterization and Restoration Work Statement.* July 13, 2005.

AK ARNG. 2003. Spill History. Last Updated March 2003.

AK ARNG. 1990. *Gambell AKARNG Scout Armory Spill Prevention, Control, and Countermeasure Plan and Installation Spill Contingency Plan.* September 1990.

Alaska Department of Environmental Conservation (ADEC) 2006. Technical Memorandum-06-002, *Environmental Laboratory Data and Quality Assurance Requirements.* October 9, 2006.

ADEC. 2005. Letter, RE: Alternate Cleanup Level Demonstration Project, Draft Report Template, March 8, 2005

ADEC. 2004. Cleanup Levels Guidance. January 30, 2004

ADEC. 2003a. Title 18 AAC Chapter 75, Oil and Other Hazardous Substances Pollution Control. August 8, 2003.

ADEC. 2003b. *Technical Guidance Document on Determination of Background Concentrations in Soil*. June 13, 2003.

Alaska Department of Natural Resources (ADNR). 1962. *Well Log Tracking System Database: Gambell wells.* Available online at http://squid.dnr.state.ak.us/welts/ (Accessed 01-25-2006).

Alaska Division of Community Advocacy (ADCA). 2006. *Gambell Community Information Summary.* Available online at http://www.commerce.state.ak.us/dca/commdb/CIS.cfm (Accessed 01-24-2006).

Amato, J. M., Miller, E. L., Toro, J., and Wright, J. E. 2003. Cretaceous Magmatism on St. Lawrence Island, Alaska, and Cape Dezhnev, Northeast Russia: Geochemistry, 40Ar/39Ar ages, and implications for the tectonic evolution of the Bering Strait Region, in K. H. Clautice, and P. K. Davis, eds., *Short Notes on Alaskan Geology 2003*, State of Alaska Division of Geological and Geophysical Surveys Professional Report 120, 1-20, 2003.

Environmental Compliance Assessment System (ECAS). 1997. *Wincass Management Report B065, Alaska Army National Guard.* September 10, 1997.

Hoefler Consulting Group (HCG). 2004. *Corporate Health and Safety Plan*. January 2004

Munter, J.A., and Williams, Jerry, 1992. Analysis of potable water-supply options Gambell, Alaska: Alaska Division of Geological & Geophysical Surveys Public Data File 92-10, 41 p.

RZA, Inc. 1985. Geotechnical, geophysical, and soil/groundwater quality studies, Defense Environmental Restoration Program, Gambell, St. Lawrence Island, Alaska: Anchorage, Alaska, unpublished report for URS Engineers, Inc., Anchorage, Alaska, 22 p. plus figures and appendix.

U.S. Army Corps of Engineers (Corps), 2005. *Decision Document Gambell Formerly Used Defense Site F10AK0690, St. Lawrence Island, Alaska*, June 2005.

Western Regional Climate Center (WRCC). 2007. *1961-1990 Monthly Climate Summary* (http://www.wrcc.dri.edu/summary/Climsmak.html (Accessed 03-01-2007).

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Appendix A Field Forms and Boring Logs

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Soil/Sediment Sample Collection Log

AK ARNG SC RA Project

Site: Gambell FSA

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-1-2.0-SO	7/26	18:30	BL/JC	(Soil)

USCS Soil Class: GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT

Observations (PID result, odor, color, frozen, other): Lt brn Sandy Fine Gravel to 3/4" Coarse sand 80% well rounded wet

Analytical Methods: GRO BTEX (DRO/RRO) (TOC) Bulk Density Hydraulic Conductivity Grain Size

Collection Method	Auger	Water Level Depth bgs	—
Sample Depth bgs	2.0	Permafrost Depth bgs	—

1

BORING LOG

Depth (ft)	Strat Section	PID
1	GP	
2	BH	0.4

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
2-2.5-SO				
GAM-SI-2-3.0-SO	7/26	18:52		(Soil)

USCS Soil Class: GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT

Observations (PID result, odor, color, frozen, other): Same soil

Analytical Methods: GRO BTEX (DRO/RRO) TOC Bulk Density Hydraulic Conductivity Grain Size

Collection Method	A	Water Level Depth bgs	—
Sample Depth bgs	2.5 (3.0)	Permafrost Depth bgs	—

2

BORING LOG

Depth (ft)	Strat Section	PID
1	GP	
2		0.4
3	BOH	0.5

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
3-3.5-SO	7/26	19:10		(Soil)

USCS Soil Class: GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT

Observations (PID result, odor, color, frozen, other): same soil except 90% gravel 10% coarse sand 2-2.5 coarse gravel to 2" 90

Analytical Methods: GRO BTEX DRO/RRO TOC Bulk Density Hydraulic Conductivity Grain Size

Collection Method	A	Water Level Depth bgs	—
Sample Depth bgs	3.5	Permafrost Depth bgs	—

3

BORING LOG

Depth (ft)	Strat Section	PID
1	GP	
2		
3	BOH	0.4

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project **Site: Gambell FSA**

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-4-3.5-SO	7/26	19:40		(S)

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: Same soil; 2-2.5 coarse gravel to 2"

Analytical Methods: (GRO) (BTEX) Bulk Density; (DRO/RRO) Hydraulic Conductivity; (TOC) Grain Size

Collection Method: A

Sample Depth bgs: 3.5

Water Level Depth bgs:

Permafrost Depth bgs:

4

BORING LOG

Depth (ft)	Strat Section	PID
2	GP	0.3
3	BOH	

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-5-0.5-SO	7/26	19:46		(S)

USCS Soil Class	GW	(GP)	GM	GC	SW	(SP)	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: Same soil but 80% sand med-coarse

Analytical Methods: (GRO) (BTEX) Bulk Density; (DRO/RRO) Hydraulic Conductivity; TOC Grain Size

Collection Method: Auger

Sample Depth bgs: 0.5

Water Level Depth bgs:

Permafrost Depth bgs:

5

BORING LOG

Depth (ft)	Strat Section	PID
.25	GP	4.9
.5	BOH	

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-6-0.5-SO	7/27	8:50		(S)
6-1.0-SO		8:55		
GAM-SI-6-3.5-SO		9:00		

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: collected at surface stain; Strong HC odor at surface decreasing with depth

Analytical Methods: (GRO) (BTEX) Bulk Density; (DRO/RRO) Hydraulic Conductivity; TOC Grain Size

Collection Method: Shovel / Auger

Sample Depth bgs: 0.5 & 3.5

Water Level Depth bgs:

Permafrost Depth bgs:

6

BORING LOG

Depth (ft)	Strat Section	PID
	GP/GM	40.2
+		30.6
2	GP	
3	BOH	3.2

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project

Site: Gambell FSA

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-7-0.5-SO	7/27	9:05		

USCS Soil Class	GW GP GM GC SW (SP) SM SC ML CL OL MH CH OH PT		
Observations PID result, odor, color, frozen, other	Sand (coarse) + fine gravel to 1/2" surface stain beneath tank fill – strong e surface		
Analytical Methods	(GRO) BTEX (DRO/RRO) TOC		
	Bulk Density	Hydraulic Conductivity	Grain Size
Collection Method	shovel	**Water Level Depth** bgs	
Sample Depth bgs	0.5	**Permafrost Depth** bgs	

Depth (ft): .25 / 0.5 — Strat Section: GP — PID: 1.5 Bot

Dupe

7

GAM-SI-99-0.5-SO

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
8-0.5-SO	7/27	9:10		

USCS Soil Class	GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT		
Observations PID result, odor, color, frozen, other	some fine gravel & coarse sand		
Analytical Methods	GRO BTEX DRO/RRO TOC		
	Bulk Density	Hydraulic Conductivity	Grain Size
Collection Method	shovel	**Water Level Depth** bgs	
Sample Depth bgs	0.5	**Permafrost Depth** bgs	

Depth (ft): .5 — Strat Section: GP — PID: 0.8 Bot

8

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
9-0.5-SO	7/27	9:15		

USCS Soil Class	GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT		
Observations PID result, odor, color, frozen, other	GP and (40%) coarse sand		
Analytical Methods	GRO BTEX DRO/RRO TOC		
	Bulk Density	Hydraulic Conductivity	Grain Size
Collection Method	shovel	**Water Level Depth** bgs	
Sample Depth bgs	0.5	**Permafrost Depth** bgs	

Depth (ft): .5 — Strat Section: GP — PID: 0.4 Bot

9

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project **Site: Gambell FSA**

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-10-0.5-SO	7/27	9:20		Soil

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: with trace silt/organics; collected at area beneath old armory deck possible stain - no odor

Analytical Methods	GRO / BTEX / DRO/RRO / TOC; Bulk Density / Hydraulic Conductivity / Grain Size		
Collection Method	shovel	**Water Level Depth** bgs	
Sample Depth bgs	0.5	**Permafrost Depth** bgs	

10

Depth (ft)	Strat Section	PID
.5	GP/GM	0.7

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-11-3.5-SO	7/27	9:45		Soil

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: Same fine gravel clean wet; NO odor

Analytical Methods	GRO / BTEX / DRO/RRO / TOC; Bulk Density / Hydraulic Conductivity / Grain Size		
Collection Method	A	**Water Level Depth** bgs	
Sample Depth bgs	3.5	**Permafrost Depth** bgs	

11

Depth (ft)	Strat Section	PID
1		
2	GP	
3		0.5
	BOH	

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-12-1.5-SO 12-3.5-SO	7/27	10:00 10:12		Soil

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: silty gravel at surface; clean gravel deeper

Analytical Methods	GRO / BTEX / DRO/RRO / TOC; Bulk Density / Hydraulic Conductivity / Grain Size		
Collection Method	A	**Water Level Depth** bgs	
Sample Depth bgs	3.5	**Permafrost Depth** bgs	

12

Depth (ft)	Strat Section	PID
1	GM	0.3
2	GP	
3		0.4
	BOH	

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project

Site: Gambell FSA

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-13-0.5-SO	7/27	10:30		Soil

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: fine gravel w/rootlets

13

Analytical Methods: GRO; BTEX; DRO/RRO; TOC; Bulk Density; Hydraulic Conductivity; Grain Size

Collection Method	Water Level Depth bgs
shovel	
Sample Depth bgs: 0.5	**Permafrost Depth** bgs:

Depth (ft)	Strat Section	PID
0.5	GP/GM	0.3
	Bott	

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-14-0.5-SO	7/27	12:25		Soil

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: fine gravel & coarse sand w/ rootlets, trace silt; in front of HazMat locker; no obs stain or HC odor

14

Analytical Methods: GRO; BTEX; DRO/RRO; TOC; Bulk Density; Hydraulic Conductivity; Grain Size

Collection Method	Water Level Depth bgs
shovel	
Sample Depth bgs: 0.5	**Permafrost Depth** bgs:

Depth (ft)	Strat Section	PID
0.5	GP/GM	0.4
	Bott	

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-15-0.5-SO	7/27	12:28		Soil

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: same clean; N side of N AST (New Annex) beneath fill pipe; no observable stain or HC odor

15

Analytical Methods: GRO; BTEX; DRO/RRO; TOC; Bulk Density; Hydraulic Conductivity; Grain Size

Collection Method	Water Level Depth bgs
shovel	
Sample Depth bgs: 0.5	**Permafrost Depth** bgs:

Depth (ft)	Strat Section	PID
0.5	GP	0.3
	Bott	

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project

Site: Gambell FSA

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-RI-16-0.5-SO GAM-RI-16-3.5-SO	7/27	12:30 15:45		

USCS Soil Class: GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT

Observations (PID result, odor, color, frozen, other): w/ trace silt & rootlets / clean wet fine gravel @ Ground beneath South AST @ fill pipe & E end of New Armory; no observable stain or HC odor

Analytical Methods: (GRO) (BTEX) (DRO/RRO) TOC; Bulk Density; Hydraulic Conductivity; Grain Size

Collection Method	Shovel	Water Level Depth bgs	
Sample Depth bgs	0.5 & 3.5	Permafrost Depth bgs	

GAM-RI-16-0.5-SO

Dupe

16

Depth (ft)	Strat Section	PID
0.5	GP/GM	8.4
1		
2	GP	
3		0.4
	BOH	

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-17-0.5-SO	7/27	12:32		

USCS Soil Class: GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT

Observations (PID result, odor, color, frozen, other): Same w/ silt & rootlets; South end of former AST @ E end of New Armory; no

Analytical Methods: GRO BTEX (DRO/RRO) TOC; Bulk Density; Hydraulic Conductivity; Grain Size

Collection Method	Shovel	Water Level Depth bgs	
Sample Depth bgs	0.5	Permafrost Depth bgs	

17

Depth (ft)	Strat Section	PID
	GP/GM	
0.5		0.4
	BOH	

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-18-3.5-SO	7/27	12:45		

USCS Soil Class: GW (GP) GM GC SW SP SM SC ML CL OL MH CH OH PT

Observations (PID result, odor, color, frozen, other): clean, wet; end of former storage Veg at E end of Old Armory; No observable surface stain or vegetation impacts or HC odor

Analytical Methods: GRO BTEX (DRO/RRO) TOC; Bulk Density; Hydraulic Conductivity; Grain Size

Collection Method	Auger	Water Level Depth bgs	
Sample Depth bgs	3.5	Permafrost Depth bgs	

18

Depth (ft)	Strat Section	PID
	GP/GM	
1		
2	GP	
3		0.5
	BOH	

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project

Site: Gambell FSA

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-19-3.5-SO	7/27	13:00		(Soil)

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT
		(GP)													

Observations PID result, odor, color, frozen, other: clean, wet; former 55 gal drum, no surface evidence of stain + no HC odor

Analytical Methods: GRO, BTEX, (DRO/RRO), TOC, Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method: A

Water Level Depth bgs:

Sample Depth bgs: 3.5

Permafrost Depth bgs:

19

BORING LOG

Depth (ft)	Strat Section	PID
0	GP	0.3
1		
2		
3		

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-SI-20-3.5-SO	7/27	13:15		(Soil)

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT
		(GP)													

Observations PID result, odor, color, frozen, other: with coarse sand; former standpipe location, no surface evidence or stain, no HC odor

Analytical Methods: GRO, BTEX, (DRO/RRO), TOC, Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method: A

Water Level Depth bgs:

Sample Depth bgs: 3.5

Permafrost Depth bgs:

20

BORING LOG

Depth (ft)	Strat Section	PID
0	GP	0.3
1		
2		
3		

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
21-.5-SO	7/27	13:28		(Soil)

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT
		(GP)													

Observations PID result, odor, color, frozen, other: fine gravel; former boat + small spill, no surface evidence or stain, no HC odor

Analytical Methods: GRO, BTEX, DRO/RRO, TOC, Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method: (S) Shovel

Water Level Depth bgs:

Sample Depth bgs: .5

Permafrost Depth bgs:

21

BORING LOG

Depth (ft)	Strat Section	PID
0	GP/GM	
.5	GP	0.3
	Bedrock	

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project **Site: Gambell FSA**

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
22-05-S0	7/27	15:47		(S)

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: SAME OK brn fine gravel with coarse sand and trace rootlets

Analytical Methods	GRO	BTEX	DRO/RRO	TOC
	Bulk Density	Hydraulic Conductivity		Grain Size
Collection Method	Shovel	**Water Level Depth** bgs		
Sample Depth bgs	0.5	**Permafrost Depth** bgs		

Depth (ft)	Strat Section	PID
0.5	Base	0.4

22

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-01-BK1-05-S0	7/27	15:50		(S)

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: OK brn fine gravel / coarse sand well rounded damp w/ trace silt & rootlets

Analytical Methods	GRO	BTEX	(DRO/RRO)	(TOC)
	Bulk Density	Hydraulic Conductivity		Grain Size
Collection Method	Shovel	**Water Level Depth** bgs		
Sample Depth bgs		**Permafrost Depth** bgs		

Depth (ft)	Strat Section	PID
0.5	Base	0.5

23

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-01-BK2-05-S0	7/27	15:52		

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: Same

Analytical Methods	GRO	BTEX	(DRO/RRO)	(TOC)
	(Bulk Density)	(Hydraulic Conductivity)		(Grain Size)
Collection Method	Shovel	**Water Level Depth** bgs		
Sample Depth bgs	0.5	**Permafrost Depth** bgs		

Depth (ft)	Strat Section	PID
0.5	Base	0.5

24

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project **Site: Gambell FSA**

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-01-BK3-0.5-SO	7/27	16:00		

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: same

Analytical Methods: GRO, BTEX, (DRO/RRO), (TOC), Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method	shovel	**Water Level Depth** bgs	—
Sample Depth bgs	0.5	**Permafrost Depth** bgs	—

25

Depth (ft)	Strat Section	PID
0.5	Bott	0.3

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-01-BK4-0.5-SO	7/27	16:02		

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: same

Analytical Methods: GRO, BTEX, (DRO/RRO), (TOC), (Bulk Density), (Hydraulic Conductivity), (Grain Size)

Collection Method	shovel	**Water Level Depth** bgs	—
Sample Depth bgs	0.5	**Permafrost Depth** bgs	—

26

Depth (ft)	Strat Section	PID
0.5	Bott	0.2

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-01-BK5-0.5-SO	7/27	16:04		

USCS Soil Class	GW	(GP)	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other: same

Analytical Methods: GRO, BTEX, (DRO/RRO), (TOC), Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method	shovel	**Water Level Depth** bgs	—
Sample Depth bgs	0.5	**Permafrost Depth** bgs	—

27

Depth (ft)	Strat Section	PID
0.5	Bott	0.2

Soil/Sediment Sample Collection Log

AK ARNG SC RA Project

Site: Gambell FSA

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment
GAM-BH-BK6-0.5-50	7/27	16:06		S

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT
		S													

Observations PID result, odor, color, frozen, other: Same

Analytical Methods: GRO, BTEX, DRO/RRO, TOC, Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method: shovel

Sample Depth bgs: 0.5

Water Level Depth bgs:

Permafrost Depth bgs:

Depth (ft)	Strat Section	PID
0.5		0.2 BGN

28

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other:

Analytical Methods: GRO, BTEX, DRO/RRO, TOC, Bulk Density, Hydraulic Conductivity, Grain Size

Collection Method:

Sample Depth bgs:

Water Level Depth bgs:

Permafrost Depth bgs:

Depth (ft)	Strat Section	PID

BORING LOG

Sample ID	Date mm/dd/yr	Time Military	Samplers	Matrix Soil/Sediment

USCS Soil Class	GW	GP	GM	GC	SW	SP	SM	SC	ML	CL	OL	MH	CH	OH	PT

Observations PID result, odor, color, frozen, other:

Analytical Methods: GRO, BTEX, DRO/RRO, TOC, Bulk Density, Hydraulic Conductivity, Grain Size

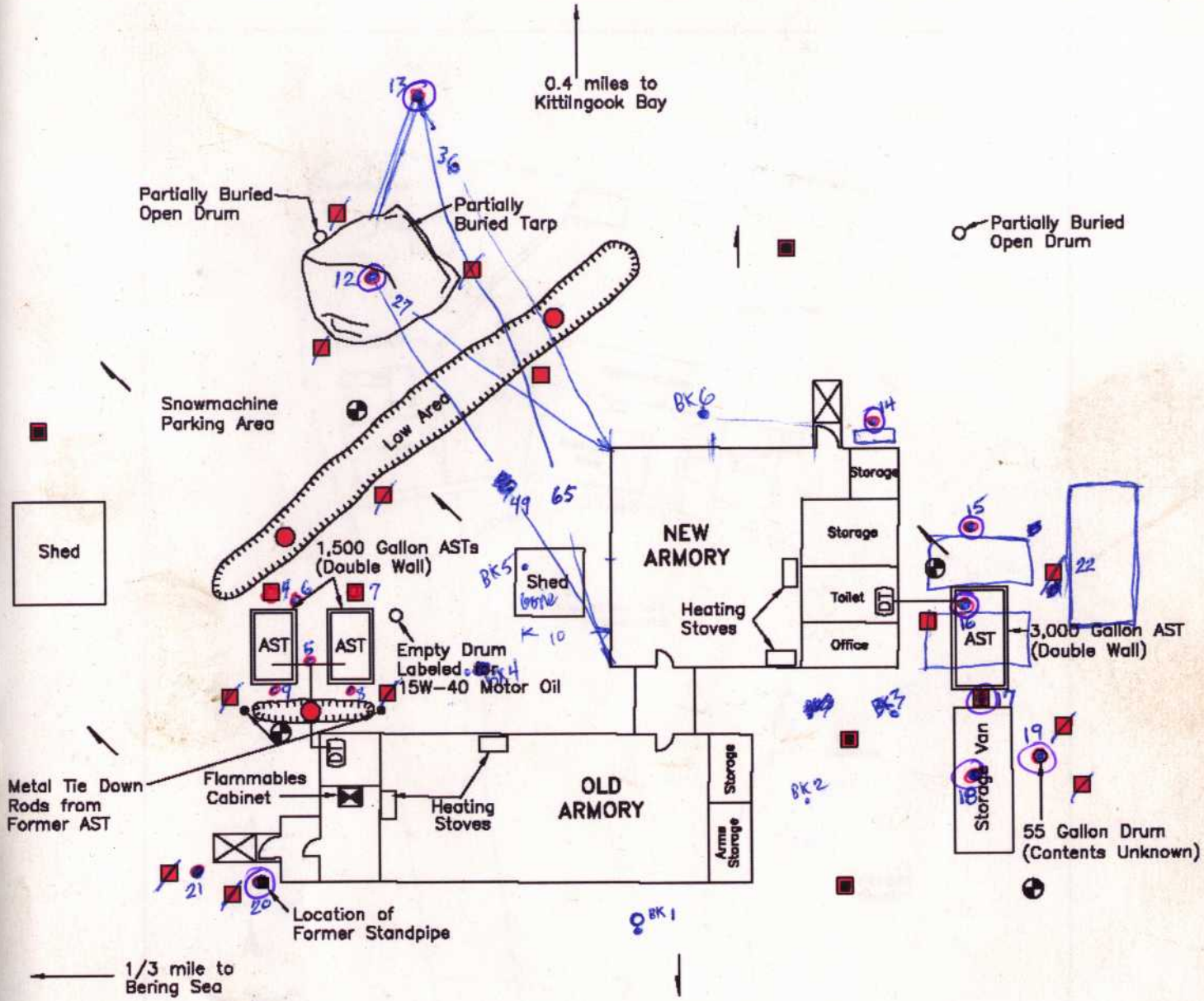
Collection Method:

Sample Depth bgs:

Water Level Depth bgs:

Permafrost Depth bgs:

Depth (ft)	Strat Section	PID



LEGEND

- Ground Water Sample
- Surface Water Sample
- Soil Characterization Sample
- Soil Background Sample
- DT Day Tank
- AST Aboveground Storage Tank
- Surface Drainage

N

10 0 10 20

Feet

Gambell FSA Proposed Sample Locations

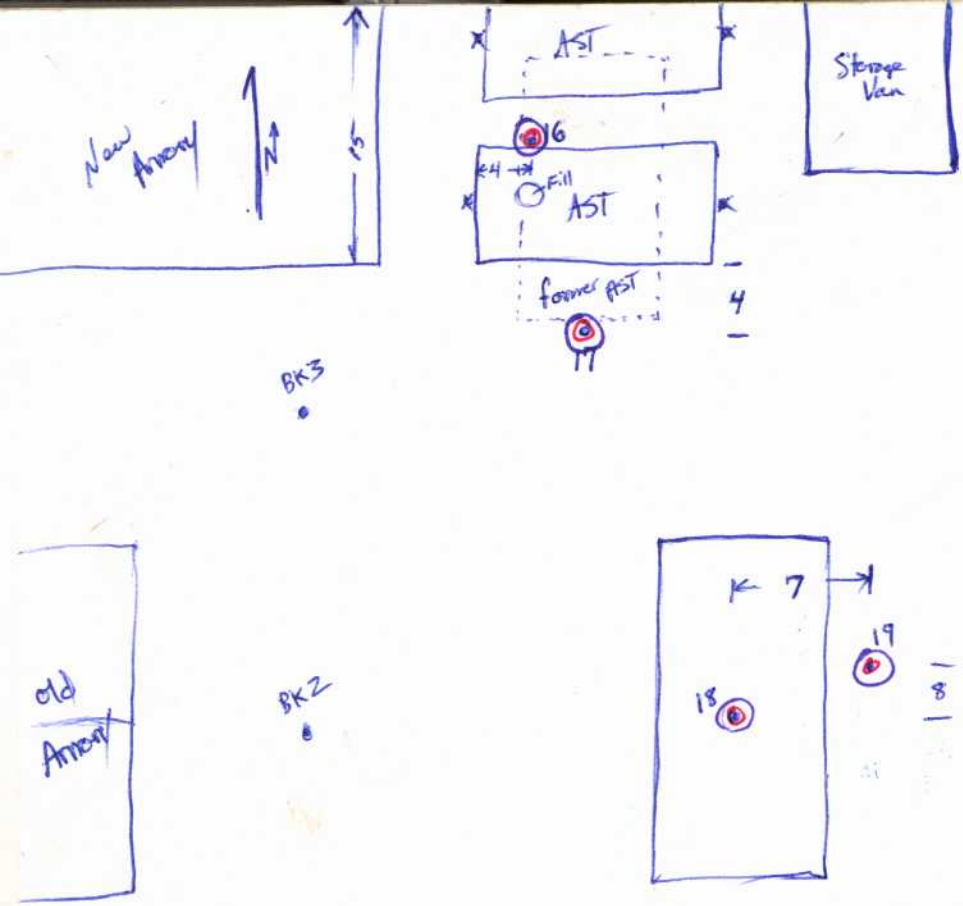
Site Characterization and Restoration-Related Activities Project
Gambell, Alaska

HOEFLER CONSULTING GROUP

ARMY ALASKA ARNG NATIONAL GUARD

CONTRACT NO:	W91ZRU-05-C-0008
DRAWN BY:	KRB
DATE:	06/21/06
	FIGURE 3-1

Figure adapted from information provided by AK ARNG.


New Armory
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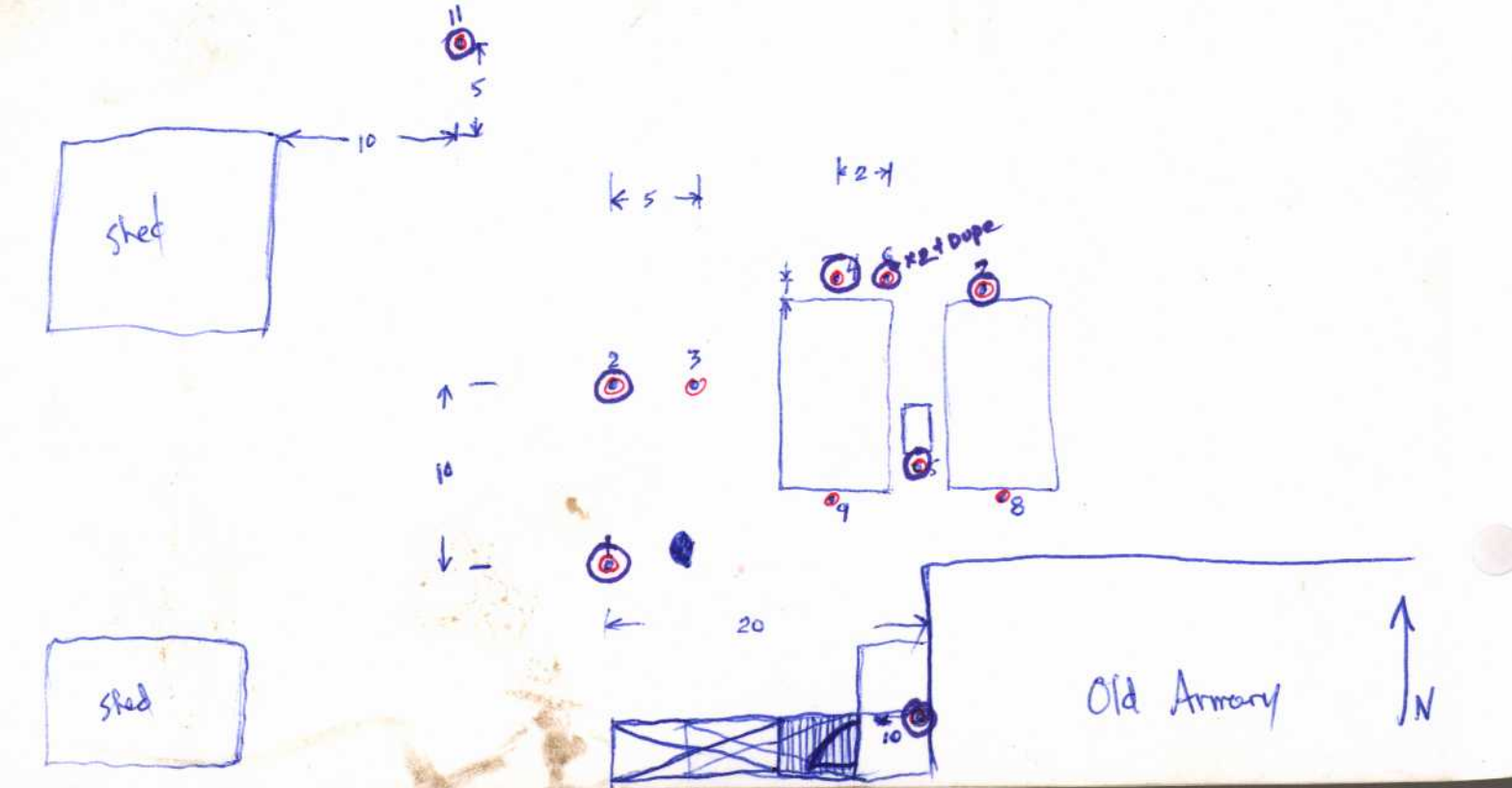
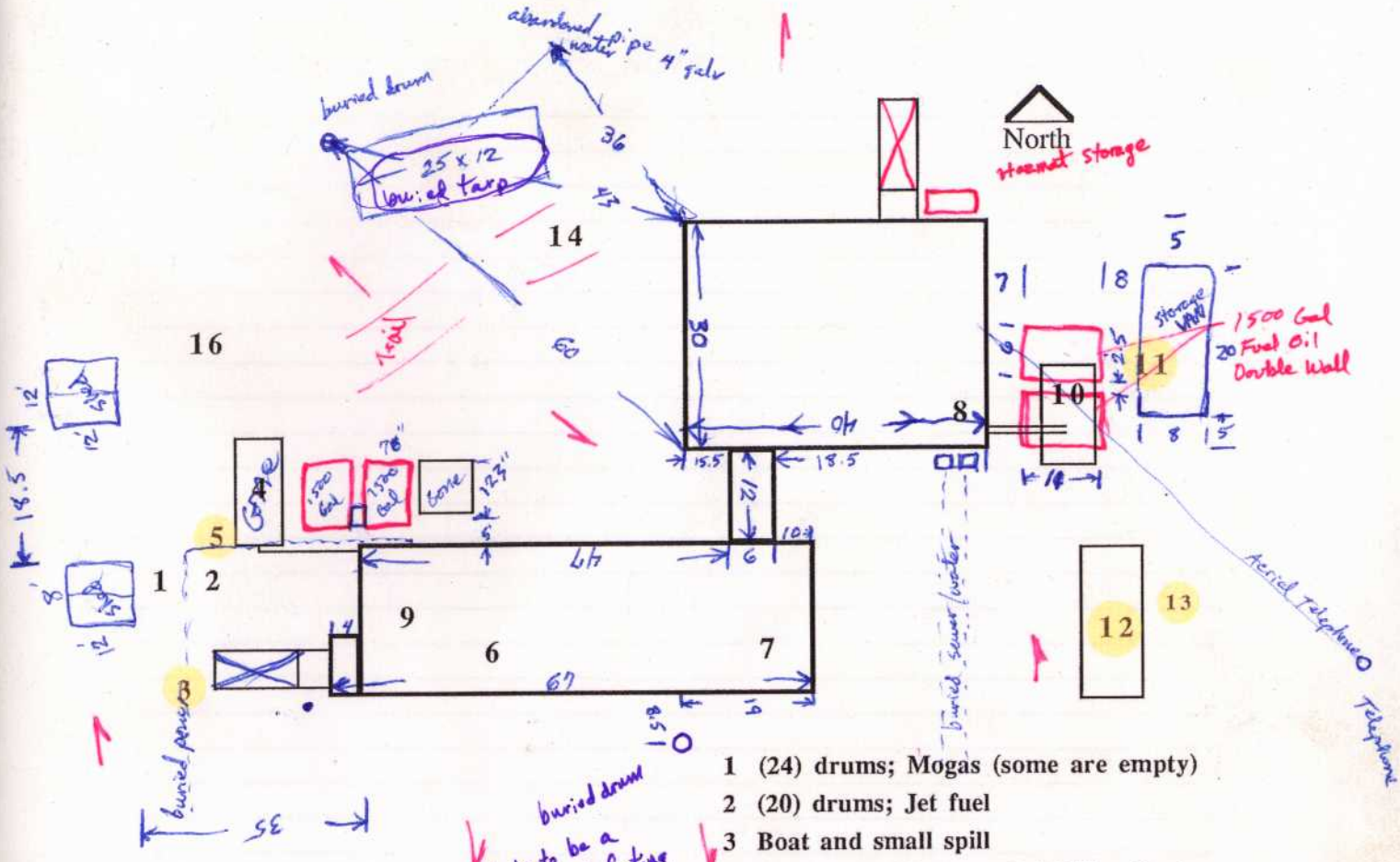
15
AST
Storage Van
6
4
Fill
AST
former AST
4
BK3

old Armory
BK2
7
19
18
8


11
5
10
shed
5
2
K2 + Dupe
3
2
3
10
9
8
20
shed
10
Old Armory
N



1 (24) drums; Mogas (some are empty)
2 (20) drums; Jet fuel
3 Boat and small spill
4 Fuel tank (single wall 3,000 gallon)
5 Spill area
6 (3) five-gallon pails (paint and cleaner)
7 (6) five-gallon pails (corrosive agent)
8 Five gallon paint
9 Flammables cabinet (misc. chemicals)
10 Fuel tank (double wall 3,000 gallon)
11 (12) drums (empty)
12 Storage van; POL
13 Drum (unknown)
14 Drum (Mogas/water)
15 Shed (five gallon, unknown)
16 Snowmachines

overall area topographic slope to the north
local variation due to mounded areas of gravel

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Appendix B List of ADEC Qualified Personnel and ADEC Data Review Checklists

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Qualified Personnel Form

Assessment Firm Name HCG, Inc. d.b.a. Hoefler Consulting Group
Address 3401 Minnesota Drive, Suite 300
City, State, Zip Code Anchorage, Alaska, 99503
Phone Number (907) 563-2137
Fax Number (907) 563-2164
Email bberglund@hoeflernet.com
POC (Group Leader) Bret Berglund
Phone Number (907) 563-2128

QUALIFIED PERSONNEL

The personnel listed below are "qualified" as defined in 18 AAC 78 and 18 AAC 75. A "qualified person" is a person who actively practices environmental science or engineering, geology, physical science, hydrology, or a related field and meets the following minimum requirements: (A) a bachelor's degree or equivalent from an accredited postsecondary institution in environmental science or engineering, geology, hydrology, physical science, or a related field; "equivalent" means that the person earned at least 128 semester hours, 168 trimester hours, or 192 quarter hours, at an accredited postsecondary institution, of which at least 24 semester credits (or at least 18 percent of credits) were in the science major and at least 16 semester credits (or at least 13 percent of credits) were in upper division level courses; and (B) at least one year of professional experience in environmental science or engineering, geology, physical science, or a related field, completed after the degree described in (A) was obtained. The list below includes names of qualified persons who conducted the field work, including sample collection, for HCG on this project. The Field Team Leader was Bill Lawrence. The Project Manager was Bill Lawrence.

Name	Degree Year		Educational Institution / Majors	Years of Professional Experience	ADEC Qualified Person
Berglund, Bret	BA 1985	MS 1989	Carleton College/Geology; Texas A&M/Oceanography - Marine Geology	16	Yes
Lawrence, Bill (CPG)	BS 1993	MS 1995	University of Idaho / Geology, Hydrology	10	Yes
Craner, Jeremy	BS 2002	MS 2006	University of Idaho/Geology; Oregon State University/Hydrogeology	1	In Training
Webb, Nathan	BS 1988	MS 2007	University of Colorado, Boulder Chemistry & Environmental Biology, Biology	16	Yes

Laboratory Data Review Checklist

1. Laboratory

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

   ☒ Yes ☐ No Comments:

   Analytica - job No. A0608006

   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:

   AK101/BTEX AK102 and 103

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

   ☒ Yes ☐ No Comments:

   4.5

   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:

No discrepancy

e. Data quality or usability affected? Explain.

Comments:

No.

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:

N/A

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

Comments:

N/A

5. Samples Results

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

☐ Yes ☒ No Comments:

Sample GAM-SI-6-0.5-SO was not analyzed for DRO/RRO. As noted in the case narrative, the laboratory sample extract leaked due to an improperly sealed vial.

b. All applicable holding times met?

☒ Yes ☐ No Comments:

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:

e. Data quality or usability affected? Explain.

Comments:

No.

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:

iii. If above PQL, what samples are affected?

Comments:

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

☐ Yes ☒ No Comments:

N/A

v. Data quality or usability affected? Explain.

Comments:

No.

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

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

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

☐ Yes ☐ No Comments:

N/A

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

☑ Yes ☐ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. (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:

N/A

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

☐ Yes ☐ No Comments:

N/A

vii. Data quality or usability affected? Explain.

Comments:

N/A

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:

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

☐ Yes ☑ No Comments:

N/A

iv. Data quality or usability affected? Explain.

Comments:

N/A

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

i. One trip blank reported per matrix, analysis and cooler?

☑ Yes ☐ No Comments:

ii. All results less than PQL?

☐ Yes ☑ No Comments:

Benzene found at the PQL.

iii. If above PQL, what samples are affected?

Comments:

Samples associated with report were non-detect for benzene. Samples not flagged.

iv. Data quality or usability affected? Explain.

Comments:

No

e. Field Duplicate

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

☑ Yes ☐ No Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No Comments:

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☒ Yes ☐ No Comments:

iv. Data quality or usability affected? Explain.

Comments:

N/A

f. Decontamination or Equipment Blank (if applicable)

☐ Yes ☐ No ☒ Not Applicable

i. All results less than PQL?

☐ Yes ☐ No Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? Explain.

Comments:

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

a. Defined and appropriate?

☐ Yes ☐ No Comments:

Completed by:	Nathan Webb
Title:	Staff Scientist
Date:	Tuesday, March 06, 2007
CS Report Name:	Gambell
Report Date:	
Consultant Firm:	Hoefler Consulting Group
Laboratory Name:	Analytica
Laboratory Report Number:	A0608006
ADEC File Number:	
ADEC RecKey Number:	

Laboratory Data Review Checklist

1. Laboratory

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

   ☑ Yes ☐ No Comments:

   Analytica - job no. A0608045

   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:

   DRO and RRO by AK102 and 103

3. Laboratory Sample Receipt Documentation

   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?

   ☑ Yes ☐ No Comments:

   4.5

   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:

No discrepancy

e. Data quality or usability affected? Explain.

Comments:

No.

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:

N/A

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

Comments:

N/A

5. Samples Results

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

☒ Yes ☐ No Comments:

b. All applicable holding times met?

☒ Yes ☐ No Comments:

c. All soils reported on a dry weight basis?

☒ 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:

e. Data quality or usability affected? Explain.

Comments:

No.

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:

iii. If above PQL, what samples are affected?

Comments:

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

☐ Yes ☒ No Comments:

N/A

v. Data quality or usability affected? Explain.

Comments:

No.

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

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples?

☑ Yes ☐ No Comments:

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

☐ Yes ☐ No Comments:

N/A

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

☑ Yes ☐ No Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. (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:

N/A

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

☐ Yes ☐ No Comments:

N/A

vii. Data quality or usability affected? Explain.
Comments:

N/A

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:

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

☐ Yes ☑ No Comments:

N/A

iv. Data quality or usability affected? Explain.

Comments:

N/A

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

i. One trip blank reported per matrix, analysis and cooler?

☑ Yes ☐ No Comments:

N/A

ii. All results less than PQL?

☑ Yes ☐ No Comments:

iii. If above PQL, what samples are affected?

Comments:

iv. Data quality or usability affected? Explain.

Comments:

e. Field Duplicate

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

☐ Yes ☑ No Comments:

Background samples.

ii. Submitted blind to lab?

☒ Yes ☒ No Comments:

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

☒ Yes ☐ No Comments:

iv. Data quality or usability affected? Explain.

Comments:

N/A

f. Decontamination or Equipment Blank (if applicable)

☐ Yes ☐ No ☒ Not Applicable

i. All results less than PQL?

☐ Yes ☐ No Comments:

ii. If above PQL, what samples are affected?

Comments:

iii. Data quality or usability affected? Explain.

Comments:

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

a. Defined and appropriate?

☐ Yes ☐ No Comments:

Completed by:	Nathan Webb
Title:	Staff Scientist
Date:	Tuesday, March 06, 2007
CS Report Name:	Gambell
Report Date:	
Consultant Firm:	Hoefler Consulting Group
Laboratory Name:	Analytica
Laboratory Report Number:	A0608045
ADEC File Number:	
ADEC RecKey Number:	

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Appendix C Method Three Calculator Parameter Calculations

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Topic: **Soil Bulk Density (average value)**
Calculation by: **Bill Lawrence**

Soil Bulk Density (Dry Weight Adjustment)

Reference: ASTM D2937
The referenced analytical method provides sample results reported on a wet-weight basis. In order to use these data in the development of Alternate Cleanup Levels for soil, the results are converted to dry-weight basis results.

Dry Bulk Density (g/cm^3) = Wet Bulk Density (g/cm^3) * (1-Moisture Content)

Ave. Wet Bulk Density ($\rho_{b(wet)}$) =	115.9	pcf	
=	1.86	g/cm^3	where pcf * 0.01601846 = g/cm^3
% Moisture =	10.0	%	
Moisture Content (M.C.) =	0.100		

Dry Soil Bulk Density (ρ_b) = $\rho_{b(wet)}$ * (1 - M.C.)

1.86 g/cm^3 * (1 - 0.021) = **1.67** **g/cm^3**

Notes:
1 – Soil moisture is the Method Three Default value for volatilization pathway.

Reference: ρ_b in Equation 11, ADEC Cleanup Levels Guidance

	Dry Bulk Density (pcf)	Dry Bulk Density (g/cm^3)	Source
Average of 2006 SI samples	104	1.67	Gambell SI 2006
Expected range for fine-med grain alluvial sediment (SP-SM)*	90 - 115	1.4 - 1.8	Wash DGER*
Gravel, 1/4- to 2-in, dry**	119	1.9	FM 5-412**
ADEC Method 3 Calculator Default Value Range	62 - 125	1.0 - 2.0	ADEC Calculator
ADEC Method 3 Calculator Default Value Range	94	1.5	ADEC Calculator
Dry Bulk Density (ρ_b) =		**1.67**	

* - Wash DGER = Washington Division of Geology and Earth Resources Bulletin 78, 1989, Table 1
** - FM 5-412 = U.S. Dept. of the Army, Field Manual 5-412, Project Management, Table 6-10

Topic: **Total Soil Porosity**
Calculation by: **Bill Lawrence**

Reference: **n in Equation 11, ADEC Cleanup Levels Guidance**

Total Soil Porosity = 1- (Dry Soil Bulk Density / Soil Particle Density)

Dry Soil Bulk Density (ρ_b) = 1.67 g/cm^3

Soil Particle Density[1] (ρ_s) = 2.65 g/cm^3

Total Soil Porosity (n) = $1 - (\rho b / \rho s)$

$= 1 - (1.67\ g/cm^3 / 2.65\ g/cm^3) = \mathbf{0.370}$

Notes:
1 – Soil Particle Density value is the Method Three Default Value.

Topic: **Water-Filled Soil Porosity**
Calculation by: **Bill Lawrence**

Reference: **θ_w in Equation 11, ADEC Cleanup Levels Guidance**

Water filled Soil Porosity (L_{water}/L_{soil}) = Ave. Soil Moisture Content * Dry Soil Bulk Density

Ave. Soil Moisture content (w) = 0.20
Dry Soil Bulk Density (ρ_b)[1] = 1.67 g/cm^3

Water-filled Soil Porosity (θ_w) = $w * \rho_b$
= $0.20 * 1.67\ g/cm^3$ = **0.334** **g/cm^3**

Notes:
1 – Ave. soil moisture content value is the Method Three Groundwater Pathway Default Value.

Topic: **Air-Filled Soil Porosity (average value)**
Calculation by: **Bill Lawrence**

Reference: **θ_a in Equation 11, ADEC Cleanup Levels Guidance**

Air-filled Soil Porosity (L_{air}/L_{soil}) = Total Soil Porosity - Water-filled Porosity

Total Soil Porosity (n) = 0.370 g/cm^3
Water-filled Porosity (θ_w) = 0.33 g/cm^3

Air-filled Soil Porosity (θ_a) = $n - \theta_w$

$0.370\ g/cm^3 - 0.17$ = **0.036** **g/cm^3**

Topic: **Infiltration Rate**
Calculation by: **Bill Lawrence**

Reference: **I in Equation 11, ADEC Cleanup Levels Guidance**

Infiltration Rate (m/yr) = 1/5 Annual Precipitation

Annual Precipitation	14	Inches
	0.36	Meters, where Inches * 39.37 = Meters

Infiltration Rate (I) = 0.36 * 1/5 = **0.07 m/yr**

GAMBELL, ALASKA (503226)

1961-1990 Monthly Climate Summary

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	11.6	6.4	9.8	18.9	33.6	44.0	50.7	49.7	43.5	33.7	24.8	18.6	28.9
Average Min. Temperature (F)	3.7	-1.4	0.7	8.8	25.2	34.2	41.5	41.7	36.6	28.2	19.1	11.5	20.9
Average Total Precipitation (in.)	0.89	0.79	1.04	0.71	0.88	0.66	0.92	1.87	1.52	1.52	1.53	1.79	14.12

Unofficial values based on averages/sums of smoothed daily data. Information is computed from available daily data during the 1961-1990 period. Smoothing, missing data and observation-time changes may cause these 1961-1990 values to differ from official NCDC values. This table is presented for use at locations that don't have official NCDC data. No adjustments are made for missing data or time of observation. Check NCDC normals table for official data.

Western Regional Climate Center, wrcc@dri.edu

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Appendix D Method Three Calculator Calculations

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Division of Spill Prevention and Response

Contaminated Sites Program

Method Three & Cumulative Risk Calculator - Step One

STEP One:

Select the zone for the site. The definitions of these zones are as follows:

Under 40-inch Zone: South Central and the Interior
Over 40-inch Zone: Southeast
Arctic Zone: Areas north of latitude 68 degrees N, see definition in 18 AAC 75.990 (4))

- (•) Under 40-Inch Zone
- ( ) Over 40-Inch Zone
- ( ) Arctic Zone

Also, select whether the default residential exposure assumptions will be used, or if commercial/industrial exposure assumptions are appropriate. See the definitions of residential and commercial/industrial in 18 AAC 75.990[105] and 18 AAC 75.990 [19], respectively.

- (•) Residential
- ( ) Commercial/Industrial

Click the "continue" button to select chemicals for the site.

Continue

Division of Spill Prevention and Response

Contaminated Sites Program

Method Three & Cumulative Risk Calculator - Step Two

STEP 2:

Select the chemicals present in soil or groundwater at the site. Optionally, enter the concentration (in units of mg/kg for soil and mg/L for groundwater) of the chemicals that will be present at the site to complete cumulative risk calculations. The groundwater column is only used to calculate cumulative risk, not determining a groundwater ACL. Select whether the "Ten Times Rule" applies to each compound. For appropriate application of the "Ten Times Rule", consult your DEC Project Manager, 18 AAC 75.345-350 , and Guidance on Use of 10X Rule and Risk Assessments to Develop Groundwater Cleanup Levels . Then, click the "continue" button to edit site parameters.

Chemical Name	Is Chemical Present in Soil?	Maximum Concentration (mg/kg)	Is Chemical Present in Groundwater?	Maximum Concentration (mg/L)	Check if 10X Rule Applies
Acenaphthene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Acetone	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Aldrin	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Anthracene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Antimony	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Arsenic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Barium	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Benzene	◉ Yes ○ No	0.0099	○ Yes ◉ No	0	☐
Benzo(a)anthracene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Benzo(a)pyrene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Benzo(b)fluoranthene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Benzo(k)fluoranthene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Benzoic acid	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Beryllium	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Bis(2-chlorethyl)ether	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Bis(2-ethylhexyl)phthalate	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Bromodichloromethane	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Bromoform	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Butanol	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Butyl benzyl phthalate	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Cadmium	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Carbazole	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Carbon disulfide	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Carbon tetrachloride	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chlordane	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chloroaniline, p-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chlorobenzene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chlorodibromomethane	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chloroform	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chlorophenol, 2-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chromium (total)	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chromium +3	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Chromium +6	○ Yes ◉ No	0	○ Yes ◉ No	0	☐

Chrysene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
cis-1,2-Dichloroethylene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Cyanide	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
DDD	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
DDE	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
DDT	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dibenzo(a,h)anthracene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichlorobenzene, 1,2-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichlorobenzene, 1,4-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichlorobenzidine, 3,3-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichloroethane, 1,1-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichloroethane, 1,2-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichloroethylene, 1,1-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichlorophenol, 2,4-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichloropropane, 1,2-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dichloropropene, 1,3-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dieldrin	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Diethyl phthalate	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dimethylphenol, 2,4-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Di-n-butyl phthalate	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dinitrophenol, 2,4-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dinitrotoluene, 2,4-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dinitrotoluene, 2,6-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Di-n-octyl phthalate	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Dioxin	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
DRO (Total)	◉ Yes ○ No	420	○ Yes ◉ No	0	☐
DRO Aliphatic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
DRO Aromatic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Endosulfan	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Endrin	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Ethylbenzene	◉ Yes ○ No	0.0054	○ Yes ◉ No	0	☐
Fluoranthene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Fluorene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
GRO (Total)	◉ Yes ○ No	100	○ Yes ◉ No	0	☐
GRO Aliphatic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
GRO Aromatic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
HCH, a-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
HCH, b-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
HCH, g- (lindane)	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Heptachlor	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Heptachlor epoxide	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Hexachloro-1,3-butadiene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Hexachlorobenzene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Hexachlorocyclopentadiene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Hexachloroethane	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Indeno(1,2,3-c,d)pyrene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐

Isophorone	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Lead	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Mercury	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Methoxychlor	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Methyl bromide	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Methylene chloride	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Methylphenol, 2- (o-cresol)	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Naphthalene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Nickel	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Nitrobenzene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
N-Nitrosodi-n-propylamine	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
N-Nitrosodiphenylamine	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
PCBs	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Pentachlorophenol	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Phenol	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Pyrene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
RRO (Total)	◉ Yes ○ No	63	○ Yes ◉ No	0	☐
RRO Aliphatic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
RRO Aromatic	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Selenium	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Silver	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Styrene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Tetrachloroethane, 1,1,2,2-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Tetrachloroethylene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Toluene	◉ Yes ○ No	0.059	○ Yes ◉ No	0	☐
Toxaphene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
trans-1,2-Dichloroethylene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Trichlorobenzene, 1,2,4-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Trichloroethane, 1,1,1-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Trichloroethane, 1,1,2-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Trichloroethylene	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Trichlorophenol, 2,4,5-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Trichlorophenol, 2,4,6-	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Vanadium	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Vinyl Acetate	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Vinyl Chloride	○ Yes ◉ No	0	○ Yes ◉ No	0	☐
Xylenes	◉ Yes ○ No	0.13	○ Yes ◉ No	0	☐
Zinc	○ Yes ◉ No	0	○ Yes ◉ No	0	☐

Continue Add Chemical

Method Three & Cumulative Risk Calculator - Step Three

STEP Three:

The following parameters may be modified with site-specific information. Note that some parameters can be calculated based on other parameters - if one value is changed, others may need to change as well. These parameters are noted below. The calculated parameters will be updated automatically unless the "Fix" checkboxes are selected. Select these boxes only if you have site-specific data for these parameters. Also, some parameters have acceptable ranges of values; if a value outside the acceptable range is entered then a warning message will appear. You will be allowed to continue without changing the value; however, the results of the calculator will likely be inappropriate.

For definitions of the following parameters, click here. Please refer to the Cleanup Level Guidance for details.

Parameters for derivation of the Volatilization Factor and Soil Saturation Limit:

ρ_b: Dry soil bulk density (g/cm^3)	1.67	
n: Total soil porosity (L_{pore}/L_{soil})[a]	0.370	☐ Fix
Θ_w: Water-filled soil porosity (L_{water}/L_{soil})[b]	0.17	☐ Fix
Θ_a: Air-filled soil porosity (L_{air}/L_{soil})[c]	0.203	☐ Fix
w: average soil moisture content (g_{water}/g_{soil})	0.1	
f_{oc}: organic carbon content of soil (g/g)	0.001	

Notes:
[a] If not measured, n is calculated as 1 - (ρ_b/ ρ_s). The default value for ρ_s is 2.65 g/cm^3.
[b] If not measured, Θ_w is calculated as w * ρ_b.
[c] If not measured, Θ_a is calculated as n - (w * ρ_b).

Parameters for derivation of Migration to Groundwater cleanup level:

Some parameters are the same between the equations for the Migration to Groundwater pathway and the equations for the Volatilization Factor or Soil Saturation Limit. Please make changes to the parameters n, p_b, and f_{oc} above.

Θ_w: Water-filled soil porosity (L_{water}/L_{soil})[a]	0.334	☐ Fix
Θ_a: Air-filled soil porosity (L_{air}/L_{soil})[b]	0.036	☐ Fix
w: average soil moisture content (g_{water}/g_{soil})	0.2	
K: aquifer hydraulic conductivity (m/yr)	876	
i: hydraulic gradient (m/m)	0.002	
L: source length parallel to groundwater flow (m)	32	
I: infiltration rate (m/yr)	0.07	
d_a: aquifer thickness (m)	10	

Notes:
[a] If not measured, Θ_w is calculated as w * ρ_b.
[b] If not measured, Θ_a is calculated as n - (w * ρ_b).

After modifying the above values with any site-specific data, click the "continue" button to calculate cleanup levels.

Continue

Method Three & Cumulative Risk Calculator - Step Four

STEP Four:

The following are the calculated cleanup levels for each chemical and pathway. Where values are provided for more than one pathway, the lowest of the values should be used as the soil cleanup level. All cleanup levels are in units of mg/kg. Any other chemical-specific requirements that must be considered follow the table of cleanup levels.

Chemical Name	Chemical Type	Ingestion	Inhalation	Migration to GW
Benzene	Organic	150	12	0.019
DRO (Total)	Organic	10100	28000	280
Ethylbenzene	Organic	10100	85	5.8
GRO (Total)	Organic	40600	5000	310
RRO (Total)	Organic	10100		12000
Toluene	Organic	20300	170	5.7
Xylenes	Organic	203000	79	83

Chemical	Notes
DRO (Total)	The Maximum Allowable DRO concentration is 12500 mg/kg
GRO (Total)	The Maximum Allowable GRO concentration is 1400 mg/kg
RRO (Total)	The Maximum Allowable RRO concentration is 22000 mg/kg

These cleanup levels should be printed. To print, please select the print function on your web browser. This page may also be saved and emailed for documentation of the calculated cleanup levels. For best results, save the page as a "Web Archive for email" file (.mht) if your browser supports this; in Internet Explorer 5 choose "Save as..." from the file menu and change the "Save as type" to "Web Archive for email". Other browsers should have a similar choice.

For reference, the parameters used to calculate these levels are as follows (with defaults that have been changed listed in parentheses):

Volatilization Pathway:

ρ_b: Dry soil bulk density (g/cm^3):	1.67	(Default: 1.5)
n: Total soil porosity (L_{pore}/L_{soil}):	0.37	(Default: 0.434)
Θ_w: Water-filled soil porosity (L_{water}/L_{soil}):	0.17	(Default: 0.15)
Θ_a: Air-filled soil porosity (L_{air}/L_{soil}):	0.203	(Default: 0.284)
w: average soil moisture content (g_{water}/g_{soil}):	0.1	(Default: 0.1)
f_{oc}: organic carbon content of soil (g/g):	0.001	(Default: 0.001)

Groundwater Pathway:

Θ_w: Water-filled soil porosity (L_{water}/L_{soil}):	0.334	(Default: 0.3)
Θ_a: Air-filled soil porosity (L_{air}/L_{soil}):	0.036	(Default: 0.13)
w: average soil moisture content (g_{water}/g_{soil}):	0.2	(Default: 0.2)
K: aquifer hydraulic conductivity (m/yr):	876	(Default: 876)
i: hydraulic gradient (m/m):	0.002	(Default: 0.002)
L: source length parallel to groundwater flow (m):	32	(Default: 32)
I: infiltration rate (m/yr):	0.07	(Default: 0.13)
d_a: aquifer thickness (m):	10	(Default: 10)

The exposure scenario and zone for this project: Under 40-inch Zone - Residential Exposures

Today's date: 1/16/2008

Enter site name to view on printout: Gambell FSA

If you wish to calculate cumulative risks based on concentrations that have been entered for the site, select the "continue" button below. If you do not wish to complete this step, please note that you must demonstrate that the calculated cleanup levels will not produce unacceptable cumulative risks before they will be accepted. If cumulative risks are above the benchmarks, the cleanup levels should be modified downwards. See the Cleanup Level Guidance for details.

Continue

Alternatively, to return to the first step to rerun the calculator, click here.

Method Three & Cumulative Risk Calculator - Step Five

STEP 5:

The following are cumulative cancer risks and hazard quotients by chemical. Note that petroleum ranges (GRO, DRO, and RRO) are not included in cumulative risks. Also, if PCBs or dioxins are present at the site, the cumulative risks associated with these chemicals may also need to be considered; please contact the ADEC project manager for your site for information on how to address these chemicals.

Chemical Name	Soil Concentration (mg/kg)	Soil-based Cancer Risk	Soil-based Hazard Quotient
Benzene	0.0099	0.000000009	0
Ethylbenzene	0.0054	0	0.0000014
Toluene	0.059	0	0.000032
Xylenes	0.13	0	0.00000064

Chemical Name	Groundwater Concentration (mg/L)	Groundwater-based Cancer Risk	Groundwater-based Hazard Quotient
Benzene	0	0	0
Ethylbenzene	0	0	0
Toluene	0	0	0
Xylenes	0	0	0

Overall totals are as follows:

Hazard Index: 0.000034

Cancer Risk: 0.000000009

These cumulative risk levels should be printed. To print, please select the print function on your web browser. This page may also be saved and emailed for documentation of the calculated cumulative risks. For best results, save the page as a "Web Archive for email" file (.mht) if your browser supports this; in Internet Explorer 5 choose "Save as..." from the file menu and change the "Save as type" to "Web Archive for email". Other browsers should have a similar choice.

To revise concentrations and recalculate cumulative risks, click here.

Alternatively, to return to the first step to rerun the calculator, click here.

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Appendix E Site Photos

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Photo 1 – Sign located inside armory.

Photo 2 – View of north side of new armory building.

Photo 3 – View of new and old armory, ASTs, and shed (facing southeast).

Photo 4 – View of new and old armory, ASTs, and sheds (facing east).

Photo 5 – View of old and new armory (facing north west).

Photo 6 – View of new armory, ASTs, and storage van (facing northwest).

Photo 7 – Staining beneath stairs on west side of old armory (facing south).

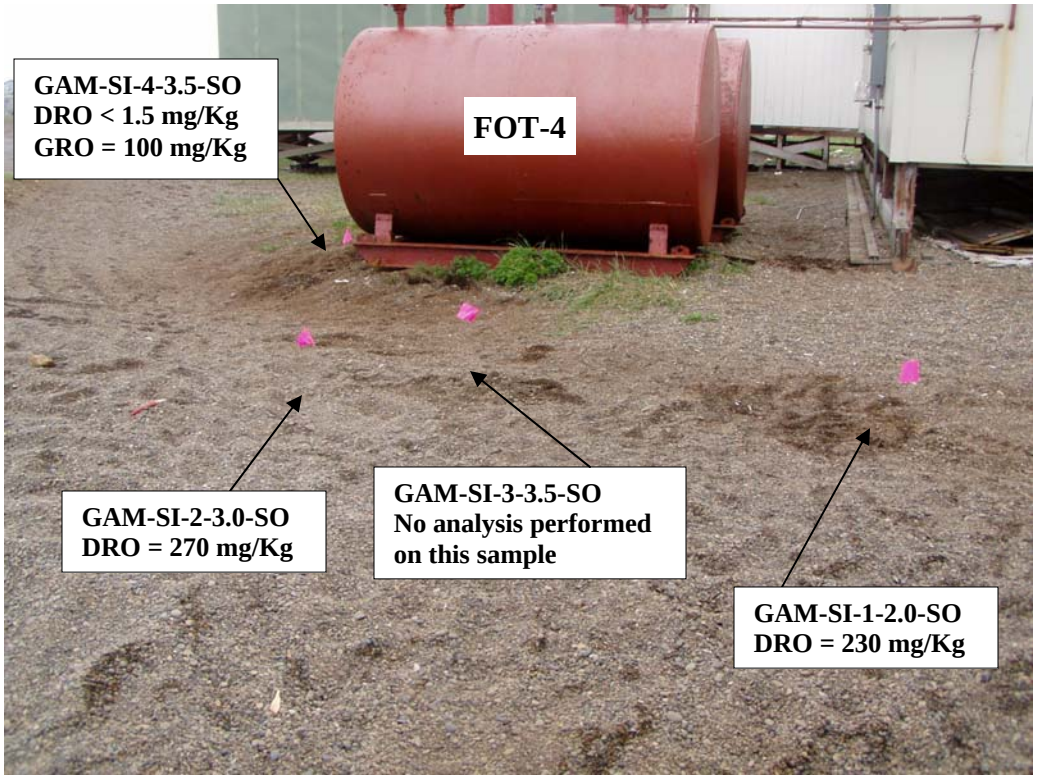

Photo 8 – Sample locations northwest of old armory (facing east).

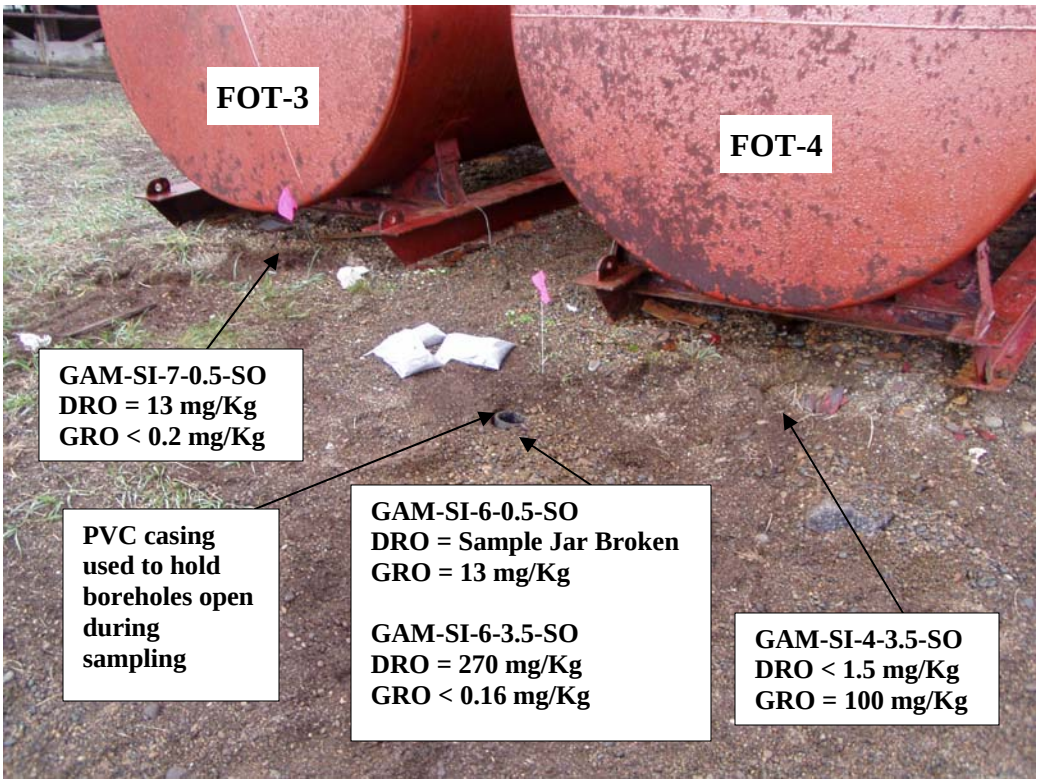

Photo 9 – Sample locations north of the ASTs northwest of the old armory (facing south).

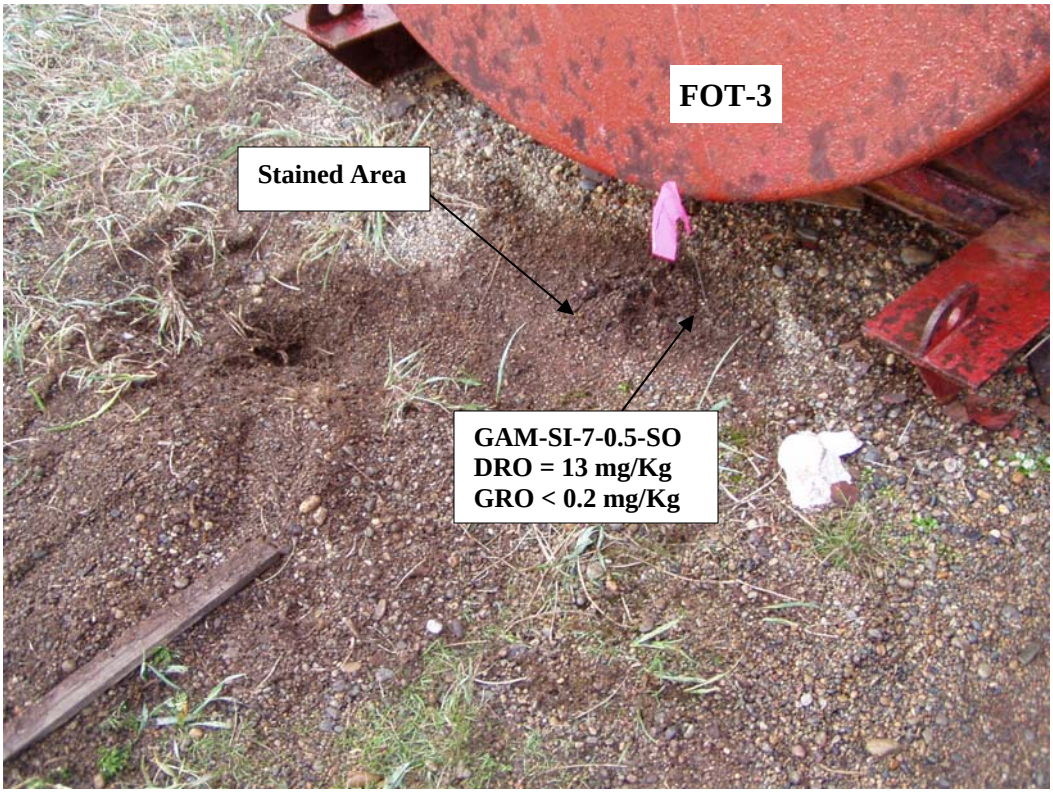

Photo 10 – Sample at north end of FOT-3 and visible surface stain.

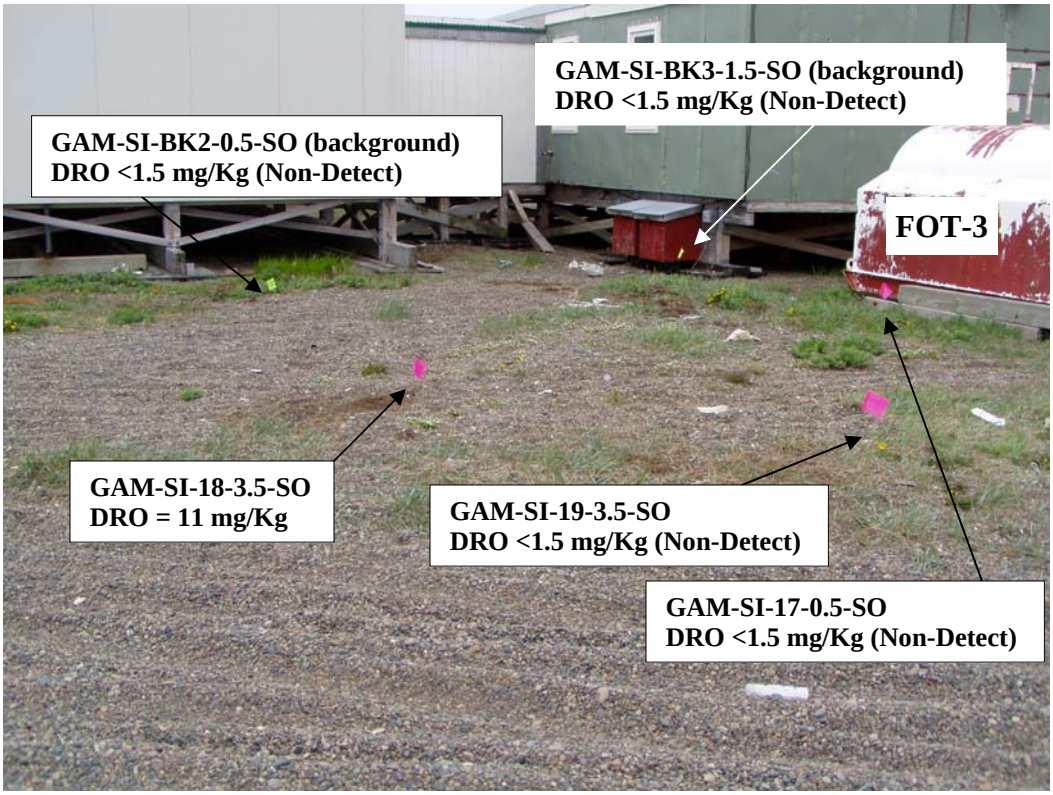

Photo 11 – Samples collected southwest of new armory.

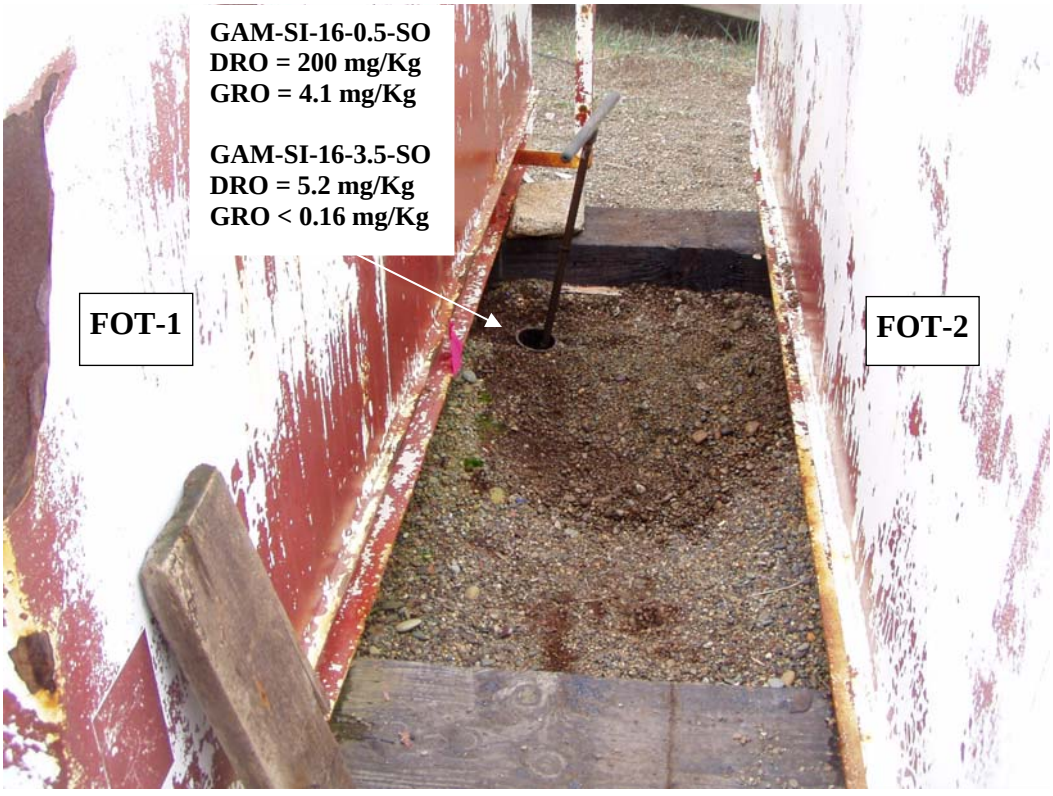

Photo 12 – Sample collected between the two current ASTs west of the new armory (facing west).

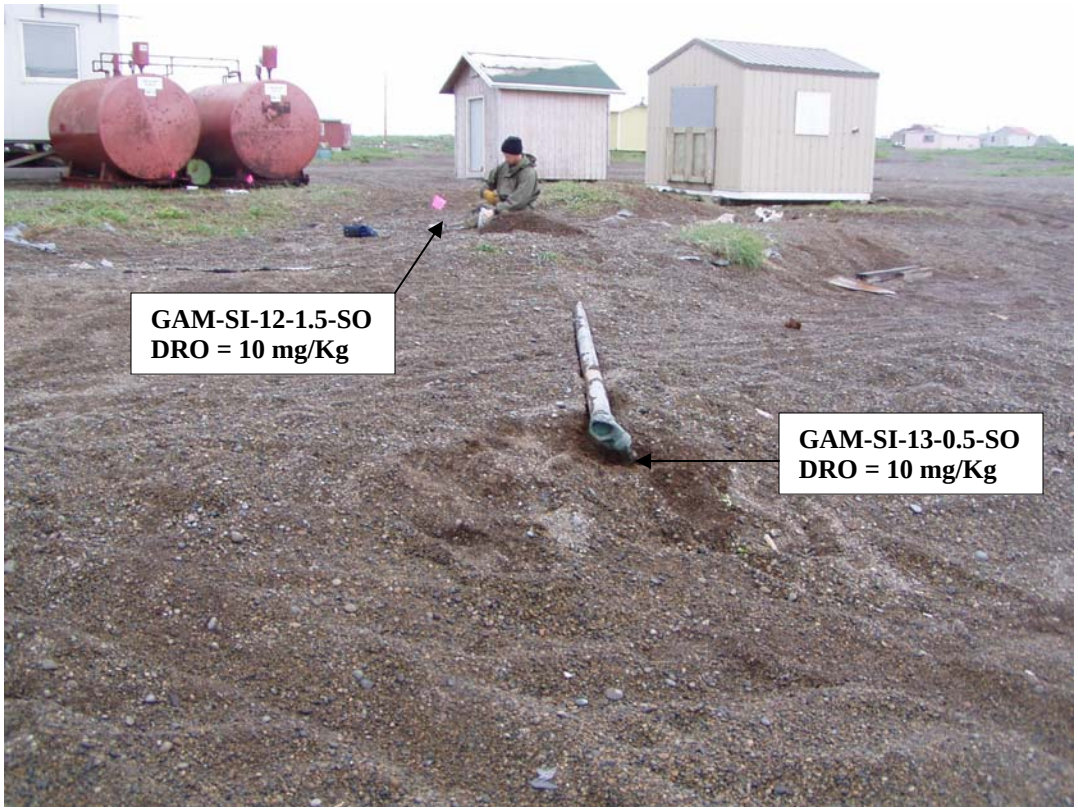

Photo 13 – Abandoned water pipe, buried tarp, ASTs, and sheds (facing southwest).

Photo 14 – Buried tarp and partially buried drum (antenna anchor) (facing west).

Photo 15 – Partially buried drum (antenna anchor) located south of the old armory.

Appendix F Well Logs

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WELL DRILLING LOG

2854

PROJECT NO BU300-300 TITLE Gambell School Water Well NO 2
SITE Gambell, Alaska WELL NO.
LOCATION 15 ft. South of New School Bldg.
CONTRACTOR Otto H. Kockritz , BIA TYPE OF RIG Cable

DATE	STARTING DEPTH FEET	STOPING DEPTH FEET	DEPTH TO WATER FEET	SOIL CLASSIFICATION
July 12, 1962	0	6.5		Small Gravel
	6.5	10.5		Small Gravel (Frozen, seasonal frost)
	10.5	19.6	19.6	Small Gravel (Thawed)
	19.6	20.0		Water Bearing Gravel
	20.0	25.9	25.9	Frozen Small Gravel
	25.9	33.6		Bottom of Casing. Water Bearing Small Gravel
July 13, 1962	33.6	39.2		Bottom of Screen. Water Bearing, Small Gravel

INSTALLED IN WELL

	OPENING	DIA	LENGTH IN FEET	MATERIAL
SCREEN	60 Slot	4"	5' - 8"	
INNER CASING		None		
OUTER CASING		4"	36.6' (3" Projects Above Surface).	

TEST OF WELL

HOURS PUMPED	CAPACITY GPM	STATIC WATER LEVEL	DRAW DOWN	REMARKS
2	2 gpm per ft. of D.D.			Determined by bailing. Time includes surging.

1" = 20'-0"

2858

WELL DRILLING LOG

PROJECT NO. BU300-300 TITLE Gambell Village Well
SITE Gambell, Alaska WELL NO.
LOCATION
CONTRACTOR BIA Driller - Otto H. Kockritz TYPE OF RIG Cable

DATE	STARTING DEPTH FEET	STOPING DEPTH FEET	DEPTH TO WATER FEET	SOIL CLASSIFICATION
July 14, 1962	0	6.5		Small Gravel
	6.5	12.5		Small Gravel, Frozen (Seasonal)
	12.5	25.5		Small Gravel, Thawed
	25.5	35.1	26.4	Small Gravel, Frozen. Bottom of Casing at 26.4
				Bottom of Screen at 35.1

INSTALLED IN WELL

	OPENING	DIA	LENGTH IN FEET	MATERIAL
SCREEN	18 Slot	4"	5' - 8"	
INNER CASING		None		
OUTER CASING		4"	26.4' (3' Projects above ground).	

TEST OF WELL

HOURS PUMPED	CAPACITY GPM	STATIC WATER LEVEL	DRAW DOWN	REMARKS
	2 gpm per ft. of drawdown			Determined by bailing.

BU300-300 1-14

Appendix G Conceptual Site Models

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Human Health Conceptual Site Model
Scoping Form

Site Name: AKARNG Gambell FSA

File Number: 660.38.007

Completed by: Emerson Krueger -Rev. Bill Lawrence 11-21-07

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: _____

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: _____

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: _____

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: _____

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, or 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:

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:

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:

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:

4. Other Comments (*Provide other comments as necessary to support the information provided in this form.)*

HUMAN HEALTH CONCEPTUAL SITE MODEL

Site: AKARNG Gambell FSA
Gambell, AK 99742
File Number: 660.38.007

Completed By: Emerson Krueger-Revised by Bill Lawrence
Date Completed: 03 MAY 2007-Revised 21 NOV 2007

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	C/F	C/F	C/F				
	☑ Migration or leaching to subsurface → *check soil*		☐ Dermal Absorption of Contaminants from Soil							
	☑ 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	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	C/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							
	☐ *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							
	☐ *Other (list):*									

Revised 11/21/07

Ecoscoping Form

Site Name: AKARNG Gambell FSA
Completed by: Emerson Krueger
Date: 03 MAY 2007

Instructions: Follow the italicized instructions in each section below. "Off-ramps," where the evaluation ends before completing all of the sections, can be taken when indicated by the instructions. Comment boxes should be used to help support your answers.

1. Direct Visual Impacts and Acute Toxicity

Are direct impacts that may result from the site contaminants evident, or is acute toxicity from high contaminant concentrations suspected? C*heck the appropriate box.*

☐ Yes – *describe observations below and evaluate all of the remaining sections without taking any off-ramps.*
☑ No – *go to next section.*

Comments:

6. Receptor-Pathway Interactions

Check each terrestrial and aquatic pathways that could occur at the site.

Terrestrial Pathway Interactions

☐ Exposure to water-borne contaminants as a result of wading or swimming in contaminated waters or ingesting contaminated water
☐ Contaminant uptake in terrestrial plants whose roots are in contact with contaminated surface water
☐ Contaminant migration via saturated or unsaturated groundwater zones and discharge at upland "seep" locations (not associated with a wetland or water body)
☐ Contaminant uptake by terrestrial plants whose roots are in contact with groundwater present within the root zone
☐ Particulates deposited on plants directly or from rain splash
☑ Contaminants dissolved into moisture in the soil, making them available to roots
☑ Incidental ingestion and/or exposure while animals grub for food, burrow or groom
☐ Inhalation of fugitive dust or vapors disturbed by foraging or burrowing activities

☐ Bioaccumulatives (see Appendix C) taken up by soil invertebrates, which are in turn eaten by higher food chain organisms

☐ Other site-specific exposure pathways

Aquatic Pathway Interactions

☑ Contaminated surface runoff migration to water bodies through swales, drainage ditches, or overland flow

☐ Aquatic receptors exposed through osmotic exchange, respiration, or ventilation of surface waters

☑ Contaminant migration via saturated or unsaturated groundwater zones and discharge at "seep" locations along banks or directly to surface water

☑ Deposition into sediments from upwelling of contaminated groundwater

☐ Aquatic receptors may be exposed directly to contaminated sediments through foraging or burrowing, or indirectly exposed due to osmotic exchange, respiration, or ventilation of sediment pore water.

☐ Aquatic plants rooted in contaminated sediments

☐ Bioaccumulatives (see Appendix C) taken up by sediment invertebrates, which are in turn eaten by higher food chain organisms

☐ Other site-specific exposure pathways

If any of the above boxes are checked go on to the next section. If none are checked, end the evaluation and check the box below.

☐ OFF-RAMP: NO FURTHER ECOLOGICAL EVALUATION NECESSARY

Comments:

7. Habitat

Check all that may apply. See Ecoscoping Guidance for additional help.

☐ Habitat that could be affected by the contamination supports valued species (i.e., species that are regulated, used for subsistence, have ceremonial importance, have commercial value, or provide recreational opportunity)

☐ Critical habitat or anadromous stream in an area that could be affected by the contamination

☐ Habitat that is important to the region that could be affected by the contamination

☐ Contamination is in a park, preserve, or wildlife refuge

If any of the above boxes are checked go on to the next scoping factor. If none are checked, end the evaluation and check the box below.

☑ OFF-RAMP: NO FURTHER ECOLOGICAL EVALUATION NECESSARY

Comments:

8. Contaminant Quantity

Check all that may apply. See Ecoscoping Guidance for additional help.

☐ Endangered-, threatened-, or species of special concern are present
☐ The aquatic environment is or could be affected
☐ Non-petroleum contaminants may be present, or the total area of petroleum-contaminated surface soil exceeds one-half acre

If any of the above boxes are checked go on to the next scoping factor. If none are checked, end the evaluation and check the box below.

☐ OFF-RAMP: NO FURTHER ECOLOGICAL EVALUATION NECESSARY

Comments:

9. Toxicity Determination

Check all that apply.

☐ Bioaccumulative chemicals are present (see Appendix C)
☐ Contaminants exceed benchmark levels (see Table ???)

If either box is checked complete a detailed Ecologcial Conceptual Site Model (see DEC's Conceptual Site Model Guidance) and submit it with the form to you DEC Project Manager.

If neither box is checked, check the box below and submit this form to your DEC Project Manager..

☐ OFF-RAMP: NO FURTHER ECOLOGICAL EVALUATION NECESSARY

Comments:

Appendix H Analytical Results and Electronic Copy of Report
(contained on compact disc in sleeve)

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ANALYTICA
Environmental Laboratories

Analytica International, Inc.
5761 Silverado Way, Unit N
Anchorage, AK 99518
Phone: 907-258-2155
Fax: 907-258-6634

9/6/2006

Hoefler Consulting Group
3401 Minnesota Drive
#300
Anchorage, AK 99503
Attn: Nathan Webb

Work Order #: A0608006
Date: 9/6/2006
Work ID: Task 11
Date Received: 7/31/2006
Proj #: Gambell SI National Guard

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0608006-01	GAM-SI-1-2.0-SO	A0608006-02	GAM-SI-2-3.0-SO
A0608006-03	GAM-SI-4-3.5-SO	A0608006-04	GAM-SI-5-0.5-SO
A0608006-05	GAM-SI-6-0.5-SO	A0608006-06	GAM-SI-6-3.5-SO
A0608006-07	GAM-SI-7-0.5-SO	A0608006-08	GAM-SI-79-0.5-SO
A0608006-09	GAM-SI-10-0.5-SO	A0608006-10	GAM-SI-11-3.5-SO
A0608006-11	GAM-SI-12-1.5-SO	A0608006-12	GAM-SI-13-0.5-SO
A0608006-13	GAM-SI-14-0.5-SO	A0608006-14	GAM-SI-15-0.5-SO
A0608006-15	GAM-SI-16-0.5-SO	A0608006-16	GAM-SI-169-0.5-SO
A0608006-17	GAM-SI-16-3.5-SO	A0608006-18	GAM-SI-17-0.5-SO
A0608006-19	GAM-SI-18-3.5-SO	A0608006-20	GAM-SI-19-3.5-SO
A0608006-21	AX 19588 Trip Blank		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

K. Plett

Krissy Plett
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0608006

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Test Methods for Evaluating Solid Waste, USEPA SW-846, Third Edition, Revision 4, December 1996.

Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216-80, July 1980.

Method AK101 For the Determination of Gasoline Range Organics, Revision 3.0, 01/31/96.

Method AK102 For the Determination of Diesel Range Organics, Revision 3.0, 01/31/96.

Method AK103 For the Determination of Residual Range Organics, Revision 2.0, 01/31/96.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below, organized by test:

SAMPLE RECEIPT:
Twenty (2) samples were received at a temperature of 4.5°C at Analytica-Anchorage on 7/31/2006 1:40:00 PM. The samples were received in good condition and in order per chain of custody.

The samples were transferred for analysis at Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received in two coolers at temperatures of 2.1°C and 5.2°C in good condition and in order per chain of custody on 8/3/2006 and on 8/7/2006, respectively.

Test Method: ADEC AK101 - GRO - Solid

HOLDING TIMES:
Holding times were met for this Test

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

OPENING CONTINUING CALIBRATIONS:
The opening CCV has the surrogate outside of control windows. All samples associated with this CCV have the surrogate in control and the closing CCV is also in control.

RunDate	Data File	Analyte	Recovery	LCL	UCL
8/22/2006 1:45:00 PM	06082204.D	p-Bromofluorobenzene	137.	75	125

CLOSING CONTINUING CALIBRATIONS:
Closing continuing calibrations were within method criteria or not applicable.

Case Narrative

Analytica Alaska Inc.
Work Order: A0608006
(continued)

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: ADEC AK102 - DRO - Solid

HOLDING TIMES:
Holding times were met for this Test

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
The extract for sample GAM-SI-6-0.5-SO (A0608006-05A) leaked due to an improperly sealed vial. The sample was cancalled by the client.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

OPENING CONTINUING CALIBRATIONS:
Opening continuing calibrations were within method criteria.

CLOSING CONTINUING CALIBRATIONS:
Closing continuing calibrations were within method criteria or not applicable.

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
As shown below, the matrix spike and matrix spike duplicate were outside of limits for the target. The sample has a concentration greater than four times spike amount. In this case it is not appropriate to calculate a recovery. The result should be used as a replicate.

Type	Client Sample	LabSample	Analyte	Recovery	LCL	UCL	Parent	Spike
MS	GAM-SI-11-3.5-SO	A0608006-10A	Diesel Range Organic	-42.	50	129	293	67.6
MSD	GAM-SI-11-3.5-SO	A0608006-10A	Diesel Range Organic	-177	50	129	293	66.6

Test Method: ADEC AK103 - RRO - Solid

Case Narrative

Analytica Alaska Inc.
Work Order: A0608006
(continued)

HOLDING TIMES:
Holding times were met for this Test

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
The extract for sample GAM-SI-6-0.5-SO (A0608006-05B) leaked due to an improperly sealed vial. The sample was cancalled by the client.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

OPENING CONTINUING CALIBRATIONS:
Opening continuing calibrations were within method criteria.

CLOSING CONTINUING CALIBRATIONS:
Closing continuing calibrations were within method criteria or not applicable.

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH - Solid

HOLDING TIMES:
Holding times were met for this Test

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

OPENING CONTINUING CALIBRATIONS:
Opening continuing calibrations were within method criteria.

CLOSING CONTINUING CALIBRATIONS:
Closing continuing calibrations were within method criteria or not applicable.

SURROGATE RECOVERIES:

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: ASTM D2216 - Pmoist - Solid

All method criteria was met for this test.

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-1-2.0-SO**

Matrix: Soil Collection Date: 7/26/2006 6:30:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-01B	Analysis Date:	8/30/2006 5:55:31AM
Prep Date:	8/9/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082853.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060809019	Percent Moisture	2.30
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.29 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	5.9	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.84	0.27	1.7	**92.7**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-01A	Analysis Date:	8/30/2006 5:55:31AM
Prep Date:	8/9/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082853.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060809018	Percent Moisture	2.30
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.29 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**230**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.34	0.27	1.7	**72.8**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-2-3.0-SO**

Matrix: Soil Collection Date: 7/26/2006 6:52:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-02B
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.10 g

Analysis Date: 8/30/2006 6:44:41AM
Instrument: GC_E
File Name: 06082854.D
Dilution Factor: 1
Percent Moisture 1.84
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	5.9	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.7**		mg/Kg	0.85	0.27	1.7	**99.9**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-02A
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.10 g

Analysis Date: 8/30/2006 6:44:41AM
Instrument: GC_E
File Name: 06082854.D
Dilution Factor: 1
Percent Moisture 1.84
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**270**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.3**		mg/Kg	0.34	0.27	1.7	**77.0**	50	150	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-4-3.5-SO**

Matrix: Soil Collection Date: 7/26/2006 7:40:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-03B
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.97 g

Analysis Date: 8/30/2006 7:33:59AM
Instrument: GC_E
File Name: 06082855.D
Dilution Factor: 1
Percent Moisture 2.18
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.85	0.27	1.7	**90.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-03A
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.97 g

Analysis Date: 8/30/2006 7:33:59AM
Instrument: GC_E
File Name: 06082855.D
Dilution Factor: 1
Percent Moisture 2.18
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.0**		mg/Kg	0.34	0.27	1.7	**61.5**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-03C
Prep Date: 8/17/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060818005
Report Basis: Dry Weight Basis
Sample prep wt./vol: 48.10 g

Analysis Date: 8/18/2006 1:14:00AM
Instrument: GC_B
File Name: 06081724.D
Dilution Factor: 25
Percent Moisture 2.18
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**100**		mg/Kg	1.3	0.18	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.7**		mg/Kg	0.020	0.0066	1.7	**97.1**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-4-3.5-SO**

Matrix: Soil

Collection Date: 7/26/2006 7:40:00PM

Lab Sample Number:	A0608006-03C	Analysis Date:	8/22/2006 6:23:00PM
Prep Date:	8/22/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06082214.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060823006	Percent Moisture	2.18
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	48.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0066	0.0017	4
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.013	0.0031	
Toluene	108-88-3	**ND**		mg/Kg	0.013	0.0027	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.027	0.0090	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.7**		mg/Kg	0.0066	0.0044	1.7	**96.9**	77	120	4

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-5-0.5-SO**

Matrix: Soil Collection Date: 7/26/2006 7:46:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-04B
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.11 g

Analysis Date: 8/30/2006 8:23:50AM
Instrument: GC_E
File Name: 06082856.D
Dilution Factor: 1
Percent Moisture 4.79
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**21**		mg/Kg	15	6.1	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.7**		mg/Kg	0.87	0.28	1.7	**97.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-04A
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.11 g

Analysis Date: 8/30/2006 8:23:50AM
Instrument: GC_E
File Name: 06082856.D
Dilution Factor: 1
Percent Moisture 4.79
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**15**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.3**		mg/Kg	0.35	0.27	1.7	**75.6**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-04C
Prep Date: 8/22/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060823007
Report Basis: Dry Weight Basis
Sample prep wt./vol: 33.90 g

Analysis Date: 8/22/2006 6:51:00PM
Instrument: GC_B
File Name: 06082215.D
Dilution Factor: 25
Percent Moisture 4.79
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.9	0.26	3

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.8**		mg/Kg	0.029	0.0097	2.5	**110**	50	150	3

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-5-0.5-SO**

Matrix: Soil

Collection Date: 7/26/2006 7:46:00PM

Lab Sample Number:	A0608006-04C	Analysis Date:	8/22/2006 6:51:00PM
Prep Date:	8/22/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06082215.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060823006	Percent Moisture	4.79
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	33.90 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**0.0099**		mg/Kg	0.0097	0.0025	4
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.019	0.0045	
Toluene	108-88-3	**ND**		mg/Kg	0.019	0.0039	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.039	0.013	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.4**		mg/Kg	0.0097	0.0064	2.5	**94.6**	77	120	4

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-6-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 8:50:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-05C	Analysis Date:	8/19/2006 4:30:00AM
Prep Date:	8/17/2006	Instrument:	GC_B
Analytical Method ID:	ADEC AK101 - GRO	File Name:	06081828.D
Prep Method ID:	AK101	Dilution Factor:	25
Prep Batch Number:	T060831011	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	31.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**13**		mg/Kg	2.3	0.30	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**3.3**		mg/Kg	0.034	0.011	2.9	**112**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-05C	Analysis Date:	8/19/2006 4:30:00AM
Prep Date:	8/17/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081828.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060831010	Percent Moisture	11
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	31.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.011	0.0029	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.023	0.0052	
Toluene	108-88-3	**ND**		mg/Kg	0.023	0.0045	
Xylenes, Total	1330-20-7	**0.13**		mg/Kg	0.045	0.015	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.9**		mg/Kg	0.011	0.0074	2.9	**98.3**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-6-3.5-SO**

Matrix: Soil Collection Date: 7/27/2006 9:00:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-06B
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.96 g

Analysis Date: 8/30/2006 9:13:18AM
Instrument: GC_E
File Name: 06082857.D
Dilution Factor: 1
Percent Moisture 2.10
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.85	0.27	1.7	**96.7**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-06A
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.96 g

Analysis Date: 8/30/2006 9:13:18AM
Instrument: GC_E
File Name: 06082857.D
Dilution Factor: 1
Percent Moisture 2.10
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**270**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.3**		mg/Kg	0.34	0.27	1.7	**79.1**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-06C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 51.10 g

Analysis Date: 8/19/2006 5:25:00AM
Instrument: GC_B
File Name: 06081830.D
Dilution Factor: 25
Percent Moisture 2.10
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.2	0.16	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.9**		mg/Kg	0.019	0.0063	1.6	**115**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-6-3.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 9:00:00AM

Lab Sample Number:	A0608006-06C	Analysis Date:	8/19/2006 5:25:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081830.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	2.10
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	51.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0063	0.0016	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.012	0.0029	
Toluene	108-88-3	**ND**		mg/Kg	0.012	0.0025	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.025	0.0085	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.7**		mg/Kg	0.0063	0.0041	1.6	**102**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-7-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 9:05:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-07B
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.08 g

Analysis Date: 8/30/2006 10:02:50AM
Instrument: GC_E
File Name: 06082858.D
Dilution Factor: 1
Percent Moisture 4.75
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**22**		mg/Kg	15	6.1	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.7**		mg/Kg	0.87	0.28	1.7	**99.4**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-07A
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.08 g

Analysis Date: 8/30/2006 10:02:50AM
Instrument: GC_E
File Name: 06082858.D
Dilution Factor: 1
Percent Moisture 4.75
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**13**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.4**		mg/Kg	0.35	0.27	1.7	**79.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-07C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 43.10 g

Analysis Date: 8/19/2006 5:53:00AM
Instrument: GC_B
File Name: 06081831.D
Dilution Factor: 25
Percent Moisture 4.75
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.5	0.20	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.2**		mg/Kg	0.023	0.0076	2.0	**109**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-7-0.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 9:05:00AM

Lab Sample Number:	A0608006-07C	Analysis Date:	8/19/2006 5:53:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081831.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	4.75
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	43.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0076	0.0020	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.015	0.0035	
Toluene	108-88-3	**ND**		mg/Kg	0.015	0.0030	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.030	0.010	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.9**		mg/Kg	0.0076	0.0050	2.0	**97.4**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-79-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 9:05:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-08B
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.98 g

Analysis Date: 8/30/2006 10:52:32AM
Instrument: GC_E
File Name: 06082859.D
Dilution Factor: 1
Percent Moisture 5.59
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**21**		mg/Kg	15	6.2	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.88	0.28	1.8	**90.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-08A
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.98 g

Analysis Date: 8/30/2006 10:52:32AM
Instrument: GC_E
File Name: 06082859.D
Dilution Factor: 1
Percent Moisture 5.59
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**11**		mg/Kg	5.3	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.3**		mg/Kg	0.35	0.28	1.8	**71.6**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-08C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 42.10 g

Analysis Date: 8/19/2006 6:20:00AM
Instrument: GC_B
File Name: 06081832.D
Dilution Factor: 25
Percent Moisture 5.59
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.6	0.21	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.2**		mg/Kg	0.024	0.0079	2.0	**108**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-79-0.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 9:05:00AM

Lab Sample Number:	A0608006-08C	Analysis Date:	8/19/2006 6:20:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081832.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	5.59
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	42.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0079	0.0020	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.016	0.0036	
Toluene	108-88-3	**ND**		mg/Kg	0.016	0.0031	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.031	0.011	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.0**		mg/Kg	0.0079	0.0052	2.0	**96.7**	77	120	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-10-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 9:20:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-09B	Analysis Date:	8/30/2006 11:42:12AM
Prep Date:	8/9/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082860.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060809019	Percent Moisture	5.61
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.01 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**52**		mg/Kg	15	6.2	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.88	0.28	1.8	**92.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-09A	Analysis Date:	8/31/2006 6:54:04AM
Prep Date:	8/9/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082883.D
Prep Method ID:	3550B	Dilution Factor:	10
Prep Batch Number:	T060809018	Percent Moisture	5.61
Report Basis:	Dry Weight Basis	Analyst Initials:	LW
Sample prep wt./vol:	30.01 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**420**		mg/Kg	53	15	2

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**ND**		mg/Kg	3.5	2.8	1.8	**60.8**	50	150	2 DIL

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-11-3.5-SO**

Matrix: Soil Collection Date: 7/27/2006 9:45:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-10B	Analysis Date:	8/30/2006 12:32:07PM
Prep Date:	8/9/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082861.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060809019	Percent Moisture	1.45
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.26 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	5.9	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.7**		mg/Kg	0.84	0.27	1.7	**103**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-10A	Analysis Date:	8/30/2006 12:32:07PM
Prep Date:	8/9/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082861.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060809018	Percent Moisture	1.45
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.26 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**290**		mg/Kg	5.0	1.4	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.4**		mg/Kg	0.34	0.26	1.7	**84.7**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-12-1.5-SO**

Matrix: Soil Collection Date: 7/27/2006 10:00:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-11B
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060810007
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.90 g

Analysis Date: 8/30/2006 7:14:15PM
Instrument: GC_E
File Name: 06082869.D
Dilution Factor: 1
Percent Moisture 7.73
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**30**		mg/Kg	15	6.3	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.91	0.29	1.8	**87.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-11A
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060810006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.90 g

Analysis Date: 8/30/2006 7:14:15PM
Instrument: GC_E
File Name: 06082869.D
Dilution Factor: 1
Percent Moisture 7.73
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**10**		mg/Kg	5.4	1.6	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.36	0.28	1.8	**64.7**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-13-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 10:30:00AM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-12B	Analysis Date:	8/30/2006 8:04:32PM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082870.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810007	Percent Moisture	3.41
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.95 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**50**		mg/Kg	15	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.86	0.28	1.7	**89.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-12A	Analysis Date:	8/30/2006 8:04:32PM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082870.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810006	Percent Moisture	3.41
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.95 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**10**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.35	0.27	1.7	**66.5**	50	150	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-14-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 12:25:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-13B
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060810007
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.03 g

Analysis Date: 8/30/2006 8:54:55PM
Instrument: GC_E
File Name: 06082871.D
Dilution Factor: 1
Percent Moisture 5.00
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**22**		mg/Kg	15	6.1	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.88	0.28	1.8	**84.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-13A
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060810006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.03 g

Analysis Date: 8/30/2006 8:54:55PM
Instrument: GC_E
File Name: 06082871.D
Dilution Factor: 1
Percent Moisture 5.00
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**11**		mg/Kg	5.3	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.35	0.28	1.8	**62.8**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-13C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 45.60 g

Analysis Date: 8/19/2006 6:47:00AM
Instrument: GC_B
File Name: 06081833.D
Dilution Factor: 25
Percent Moisture 5.00
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.4	0.19	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.0**		mg/Kg	0.022	0.0072	1.9	**108**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-14-0.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 12:25:00PM

Lab Sample Number:	A0608006-13C	Analysis Date:	8/19/2006 6:47:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081833.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	5.00
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	45.60 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0072	0.0019	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.014	0.0033	
Toluene	108-88-3	**ND**		mg/Kg	0.014	0.0029	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.029	0.0098	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.8**		mg/Kg	0.0072	0.0048	1.9	**96.2**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-15-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 12:28:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-14B
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060810007
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.91 g

Analysis Date: 8/30/2006 9:45:25PM
Instrument: GC_E
File Name: 06082872.D
Dilution Factor: 1
Percent Moisture 2.18
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.85	0.27	1.7	**85.5**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-14A
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060810006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.91 g

Analysis Date: 8/30/2006 9:45:25PM
Instrument: GC_E
File Name: 06082872.D
Dilution Factor: 1
Percent Moisture 2.18
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**110**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.34	0.27	1.7	**67.2**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-14C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 39.10 g

Analysis Date: 8/19/2006 7:15:00AM
Instrument: GC_B
File Name: 06081834.D
Dilution Factor: 25
Percent Moisture 2.18
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.6	0.22	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.4**		mg/Kg	0.025	0.0082	2.1	**114**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-15-0.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 12:28:00PM

Lab Sample Number:	A0608006-14C	Analysis Date:	8/19/2006 7:15:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081834.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	2.18
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	39.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0082	0.0021	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.016	0.0038	
Toluene	108-88-3	**ND**		mg/Kg	0.016	0.0033	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.033	0.011	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.2**		mg/Kg	0.0082	0.0054	2.1	**102**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-16-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 12:30:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-15B
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060810007
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.90 g

Analysis Date: 8/30/2006 10:35:50PM
Instrument: GC_E
File Name: 06082873.D
Dilution Factor: 1
Percent Moisture 13
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**63**		mg/Kg	16	6.7	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.7**		mg/Kg	0.96	0.31	1.9	**90.7**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-15A
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060810006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 29.90 g

Analysis Date: 8/30/2006 10:35:50PM
Instrument: GC_E
File Name: 06082873.D
Dilution Factor: 1
Percent Moisture 13
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**200**		mg/Kg	5.7	1.6	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.4**		mg/Kg	0.38	0.30	1.9	**71.1**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-15C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 37.10 g

Analysis Date: 8/19/2006 7:42:00AM
Instrument: GC_B
File Name: 06081835.D
Dilution Factor: 25
Percent Moisture 13
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**4.1**		mg/Kg	1.9	0.25	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.6**		mg/Kg	0.029	0.0096	2.5	**102**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-16-0.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 12:30:00PM

Lab Sample Number:	A0608006-15C	Analysis Date:	8/19/2006 7:42:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081835.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	13
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	37.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0096	0.0025	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.019	0.0044	
Toluene	108-88-3	**ND**		mg/Kg	0.019	0.0039	
Xylenes, Total	1330-20-7	**0.044**		mg/Kg	0.039	0.013	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.3**		mg/Kg	0.0096	0.0064	2.5	**90.4**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-169-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 12:30:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-16B
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060810007
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.16 g

Analysis Date: 8/30/2006 11:26:10PM
Instrument: GC_E
File Name: 06082874.D
Dilution Factor: 1
Percent Moisture 19
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**56**		mg/Kg	17	7.2	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.7**		mg/Kg	1.0	0.33	2.1	**85.2**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-16A
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060810006
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.16 g

Analysis Date: 8/30/2006 11:26:10PM
Instrument: GC_E
File Name: 06082874.D
Dilution Factor: 1
Percent Moisture 19
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**160**		mg/Kg	6.2	1.8	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.3**		mg/Kg	0.41	0.32	2.1	**64.2**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608006-16C
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: Dry Weight Basis
Sample prep wt./vol: 33.10 g

Analysis Date: 8/19/2006 8:10:00AM
Instrument: GC_B
File Name: 06081836.D
Dilution Factor: 25
Percent Moisture 19
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**3.9**		mg/Kg	2.3	0.31	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**3.1**		mg/Kg	0.035	0.012	3.0	**102**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-169-0.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 12:30:00PM

Lab Sample Number:	A0608006-16C	Analysis Date:	8/19/2006 8:10:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081836.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	19
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	33.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.012	0.0030	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.023	0.0054	
Toluene	108-88-3	**ND**		mg/Kg	0.023	0.0047	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.047	0.016	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**2.8**		mg/Kg	0.012	0.0077	3.0	**90.6**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-16-3.5-SO**

Matrix: Soil Collection Date: 7/27/2006 3:45:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-17B	Analysis Date:	8/31/2006 12:16:21AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082875.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810007	Percent Moisture	2.01
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.07 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	5.9	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.85	0.27	1.7	**93.2**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-17A	Analysis Date:	8/31/2006 12:16:21AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082875.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810006	Percent Moisture	2.01
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.07 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**5.2**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**0.98**		mg/Kg	0.34	0.27	1.7	**57.7**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-17C	Analysis Date:	8/19/2006 8:38:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	ADEC AK101 - GRO	File Name:	06081837.D
Prep Method ID:	AK101	Dilution Factor:	25
Prep Batch Number:	T060821019	Percent Moisture	2.01
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	53.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	1.2	0.16	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.8**		mg/Kg	0.018	0.0060	1.6	**112**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-16-3.5-SO**

Matrix: Soil

Collection Date: 7/27/2006 3:45:00PM

Lab Sample Number:	A0608006-17C	Analysis Date:	8/19/2006 8:38:00AM
Prep Date:	8/18/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06081837.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060821018	Percent Moisture	2.01
Report Basis:	Dry Weight Basis	Analyst Initials:	ma
Sample prep wt./vol:	53.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.0060	0.0016	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.012	0.0028	
Toluene	108-88-3	**ND**		mg/Kg	0.012	0.0024	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.024	0.0082	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**1.6**		mg/Kg	0.0060	0.0040	1.6	**99.5**	77	120	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-17-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 12:32:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-18B	Analysis Date:	8/31/2006 1:06:24AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082876.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810007	Percent Moisture	2.95
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.93 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.86	0.28	1.7	**86.5**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-18A	Analysis Date:	8/31/2006 1:06:24AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082876.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810006	Percent Moisture	2.95
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.93 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.34	0.27	1.7	**62.1**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-18-3.5-SO**

Matrix: Soil Collection Date: 7/27/2006 12:45:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-19B	Analysis Date:	8/31/2006 1:56:15AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082877.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810007	Percent Moisture	2.19
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.01 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.85	0.27	1.7	**90.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-19A	Analysis Date:	8/31/2006 1:56:15AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082877.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810006	Percent Moisture	2.19
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.01 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**11**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.34	0.27	1.7	**65.5**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-19-3.5-SO**

Matrix: Soil Collection Date: 7/27/2006 1:00:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-20B	Analysis Date:	8/31/2006 2:46:12AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082878.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810007	Percent Moisture	1.33
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.93 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	5.9	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.85	0.27	1.7	**92.4**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-20A	Analysis Date:	8/31/2006 2:46:12AM
Prep Date:	8/10/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082878.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060810006	Percent Moisture	1.33
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.93 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.34	0.27	1.7	**67.3**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **AX 19588 Trip Blank**

Matrix: Soil

Collection Date:

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-21A	Analysis Date:	8/21/2006 8:46:00PM
Prep Date:	8/21/2006	Instrument:	GC_B
Analytical Method ID:	ADEC AK101 - GRO	File Name:	06082114.D
Prep Method ID:	AK101	Dilution Factor:	25
Prep Batch Number:	T060822014	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	ma
Sample prep wt./vol:	24.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	2.6	0.34	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**4.0**		mg/Kg	0.039	0.013	3.4	**119**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608006-21A	Analysis Date:	8/21/2006 8:46:00PM
Prep Date:	8/21/2006	Instrument:	GC_B
Analytical Method ID:	Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH	File Name:	06082114.D
Prep Method ID:	BTEXSoilMeOH	Dilution Factor:	25
Prep Batch Number:	T060822013	Percent Moisture	
Report Basis:	As Received	Analyst Initials:	ma
Sample prep wt./vol:	24.10 g	Prep Extract Vol:	25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**0.013**		mg/Kg	0.013	0.0034	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.026	0.0060	
Toluene	108-88-3	**ND**		mg/Kg	0.026	0.0052	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.052	0.018	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**3.5**		mg/Kg	0.013	0.0086	3.4	**103**	77	120	1

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid Collection Date: 8/9/2006 3:00:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T060809019-MB
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060809019
Report Basis: As Received
Sample prep wt./vol: 30.00 g

Analysis Date: 8/30/2006 1:49:30AM
Instrument: GC_E
File Name: 06082848.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	ND		mg/Kg	14	5.8	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.83	0.27	1.7	**91.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T060809018-MB
Prep Date: 8/9/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060809018
Report Basis: As Received
Sample prep wt./vol: 30.00 g

Analysis Date: 8/30/2006 3:03:02PM
Instrument: GC_E
File Name: 06082864.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: LW
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	ND		mg/Kg	5.0	1.4	2

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.33	0.26	1.7	**70.6**	50	150	2

Lab Sample Number: T060810006-MB
Prep Date: 8/10/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060810006
Report Basis: As Received
Sample prep wt./vol: 30.00 g

Analysis Date: 8/23/2006 3:22:52AM
Instrument: GC_E
File Name: 06081756.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	ND		mg/Kg	5.0	1.4	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.0**		mg/Kg	0.33	0.26	1.7	**60.9**	50	150	1

The following test was conducted by: Analytica - Thornton

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid Collection Date: 8/17/2006 12:00:00AM

Lab Sample Number: T060818005-MB
Prep Date: 8/17/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060818005
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/17/2006 8:02:00PM
Instrument: GC_B
File Name: 06081713.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	0.10	0.013	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.029**		mg/Kg	0.0015	0.00050	0.030	**95.5**	50	150	1

Lab Sample Number: T060821019-MB
Prep Date: 8/18/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060821019
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/19/2006 1:17:00AM
Instrument: GC_B
File Name: 06081821.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	0.10	0.013	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.028**		mg/Kg	0.0015	0.00050	0.030	**93.1**	50	150	1

Lab Sample Number: T060822014-MB
Prep Date: 8/21/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060822014
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/21/2006 8:18:00PM
Instrument: GC_B
File Name: 06082113.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	0.10	0.013	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.031**		mg/Kg	0.0015	0.00050	0.030	**102**	50	150	1

Lab Sample Number: T060823007-MB
Prep Date: 8/22/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060823007
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/22/2006 5:55:00PM
Instrument: GC_B
File Name: 06082213.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid Collection Date: 8/22/2006 12:00:00AM

Lab Sample Number: T060823007-MB
Prep Date: 8/22/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060823007
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/22/2006 5:55:00PM
Instrument: GC_B
File Name: 06082213.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	0.10	0.013	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.028**		mg/Kg	0.0015	0.00050	0.030	**94.7**	50	150	1

Lab Sample Number: T060831011-MB
Prep Date: 8/17/2006
Analytical Method ID: ADEC AK101 - GRO
Prep Method ID: AK101
Prep Batch Number: T060831011
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/19/2006 1:17:00AM
Instrument: GC_B
File Name: 06081821.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Gasoline Range Organics	n/a	**ND**		mg/Kg	0.10	0.013	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.028**		mg/Kg	0.0015	0.00050	0.030	**93.1**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T060818007-MB
Prep Date: 8/17/2006
Analytical Method ID: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH
Prep Method ID: BTEXSoilMeOH
Prep Batch Number: T060818007
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/17/2006 8:02:00PM
Instrument: GC_B
File Name: 06081713.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.00050	0.00013	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.0010	0.00023	
Toluene	108-88-3	**ND**		mg/Kg	0.0010	0.00020	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.0020	0.00068	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.026**		mg/Kg	0.00050	0.00033	0.030	**86.8**	77	120	1

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid Collection Date: 8/18/2006 12:00:00AM

Lab Sample Number: T060821018-MB
Prep Date: 8/18/2006
Analytical Method ID: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH
Prep Method ID: BTEXSoilMeOH
Prep Batch Number: T060821018
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/19/2006 1:17:00AM
Instrument: GC_B
File Name: 06081821.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	ND		mg/Kg	0.00050	0.00013	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.0010	0.00023	
Toluene	108-88-3	ND		mg/Kg	0.0010	0.00020	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.0020	0.00068	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	0.026		mg/Kg	0.00050	0.00033	0.030	86.3	77	120	1

Lab Sample Number: T060822013-MB
Prep Date: 8/21/2006
Analytical Method ID: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH
Prep Method ID: BTEXSoilMeOH
Prep Batch Number: T060822013
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/21/2006 8:18:00PM
Instrument: GC_B
File Name: 06082113.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	ND		mg/Kg	0.00050	0.00013	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.0010	0.00023	
Toluene	108-88-3	ND		mg/Kg	0.0010	0.00020	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.0020	0.00068	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	0.027		mg/Kg	0.00050	0.00033	0.030	89.7	77	120	1

Lab Sample Number: T060823006-MB
Prep Date: 8/22/2006
Analytical Method ID: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH
Prep Method ID: BTEXSoilMeOH
Prep Batch Number: T060823006
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/22/2006 5:55:00PM
Instrument: GC_B
File Name: 06082213.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	ND		mg/Kg	0.00050	0.00013	1
Ethylbenzene	100-41-4	ND		mg/Kg	0.0010	0.00023	
Toluene	108-88-3	ND		mg/Kg	0.0010	0.00020	
Xylenes, Total	1330-20-7	ND		mg/Kg	0.0020	0.00068	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid Collection Date: 8/22/2006 12:00:00AM

Lab Sample Number: T060823006-MB
Prep Date: 8/22/2006
Analytical Method ID: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH
Prep Method ID: BTEXSoilMeOH
Prep Batch Number: T060823006
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/22/2006 5:55:00PM
Instrument: GC_B
File Name: 06082213.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

p-Bromofluorobenzene	460-00-4	**0.025**		mg/Kg	0.00050	0.00033	0.030	**84.4**	77	120	1

Lab Sample Number: T060831010-MB
Prep Date: 8/17/2006
Analytical Method ID: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH
Prep Method ID: BTEXSoilMeOH
Prep Batch Number: T060831010
Report Basis: As Received
Sample prep wt./vol: 25.00 g

Analysis Date: 8/19/2006 1:17:00AM
Instrument: GC_B
File Name: 06081821.D
Dilution Factor: 1
Percent Moisture NA
Analyst Initials: ma
Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Benzene	71-43-2	**ND**		mg/Kg	0.00050	0.00013	1
Ethylbenzene	100-41-4	**ND**		mg/Kg	0.0010	0.00023	
Toluene	108-88-3	**ND**		mg/Kg	0.0010	0.00020	
Xylenes, Total	1330-20-7	**ND**		mg/Kg	0.0020	0.00068	

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
p-Bromofluorobenzene	460-00-4	**0.026**		mg/Kg	0.00050	0.00033	0.030	**86.3**	77	120	1

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608006

Project: Task 11

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060809018**

LCS/LCSD REPORT

Analysis: ADEC AK102 - DRO | MB: T060809018-MB | Prep Date: 8/9/2006

MB Anal. Date: 8/30/2006 3:03:02PM | Units: mg/Kg

LCS Anal. Date: 8/30/2006 2:38:42AM | LCSD Anal. Date: 8/30/2006 3:27:53AM | Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	72.8	68.3	66.7	66.7	109.2	102.4	6.4	75 - 125	20	

MS/MSD REPORT

Analysis: ADEC AK102 - DRO | Parent: A0608006-10A | Prep Date: 8/9/2006

Samp. Anal. Date: 8/30/2006 12:32:07PM | Units: mg/Kg

MS Anal. Date: 8/30/2006 1:22:17PM | MSD Anal. Date: 8/30/2006 2:12:41PM | Matrix: Soil

Analyte Name	SampResult	MSRes.	MSDRes	SPLev	SPDLev	Recov.	MSD Rec.	RPD	Recov Lim	RPDLim	Flag		
Diesel Range Organics	293	264	175	67.6	66.6	-42.9	-177.2	40.5	50 - 129	20	*NOTE 2*	*NOTE 2*	*RPD*

Prep Batch: **T060810006**

LCS REPORT

Analysis: ADEC AK102 - DRO | MB: T060810006-MB | Prep Date: 8/10/2006

MB Anal. Date: 8/23/2006 3:22:52AM | Units: mg/Kg

LCS Anal. Date: 8/23/2006 4:12:30AM | Matrix: Solid

Analyte Name	SampResult	LCSRes.	SPLev	Recov.	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	71.3	66.7	106.9	75 - 125		

Prep Batch: **T060809019**

LCS/LCSD REPORT

Analysis: ADEC AK103 - RRO | MB: T060809019-MB | Prep Date: 8/9/2006

MB Anal. Date: 8/30/2006 1:49:30AM | Units: mg/Kg

LCS Anal. Date: 8/30/2006 4:17:08AM | LCSD Anal. Date: 8/30/2006 5:06:28AM | Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608006

Project: Task 11

Project Number:

Prep Batch: **T060809019**

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: ADEC AK103 - RRO

MB: T060809019-MB

Prep Date: 8/9/2006

MB Anal. Date: 8/30/2006 1:49:30AM

Units: mg/Kg

LCS Anal. Date: 8/30/2006 4:17:08AM LCSD Anal. Date: 8/30/2006 5:06:28AM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag	
Residual Range Organics	ND	44.4	56.1	66.7	66.7	66.6	84.1	23.3	60 - 120	20		RPD

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado
Workorder (SDG): A0608006
Project: Task 11
Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060810024**

SAMPLE DUPLICATE REPORT

Analysis: ASTM D2216 - Pmoist
Base Sample: A0608006-01A
Prep Date: 8/9/2006

Samp. Anal. Date: 8/9/2006 4:30:00PM
DUP Anal. Date: 8/9/2006 4:30:00PM
Units: %
Matrix: Soil

Analyte Name	SampResult	DUPRes.	RPD	RPDLim	Flag
Moisture	2.30	ND	0.0	20	

Analysis: ASTM D2216 - Pmoist
Base Sample: A0608006-08A
Prep Date: 8/9/2006

Samp. Anal. Date: 8/9/2006 4:30:00PM
DUP Anal. Date: 8/9/2006 4:30:00PM
Units: %
Matrix: Soil

Analyte Name	SampResult	DUPRes.	RPD	RPDLim	Flag
Moisture	5.59	5.59	0.0	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608006

Project: Task 11

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060818007**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH MB: T060818007-MB

Prep Date: 8/17/2006

MB Anal. Date: 8/17/2006 8:02:00PM Units: mg/Kg

LCS Anal. Date: 8/17/2006 6:39:00PM LCSD Anal. Date: 8/17/2006 7:06:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.00956	0.00980	0.01000	0.0100	95.6	98.0	2.5	70 - 130	20	
Toluene	ND	0.00956	0.00982	0.01000	0.0100	95.6	98.2	2.7	70 - 130	20	
Ethylbenzene	ND	0.00981	0.0101	0.01000	0.0100	98.1	101.0	2.9	70 - 130	20	
Xylenes, Total	ND	0.0289	0.0297	0.0300	0.0300	96.3	99.0	2.7	77 - 112	20	

Prep Batch: **T060821018**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH MB: T060821018-MB

Prep Date: 8/18/2006

MB Anal. Date: 8/19/2006 1:17:00AM Units: mg/Kg

LCS Anal. Date: 8/18/2006 11:55:00PM LCSD Anal. Date: 8/19/2006 12:22:00AM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.0101	0.0105	0.01000	0.0100	101.0	105.0	3.9	70 - 130	20	
Toluene	ND	0.0102	0.0104	0.01000	0.0100	102.0	104.0	1.9	70 - 130	20	
Ethylbenzene	ND	0.0105	0.0108	0.01000	0.0100	105.0	108.0	2.8	70 - 130	20	
Xylenes, Total	ND	0.0307	0.0318	0.0300	0.0300	102.3	106.0	3.5	77 - 112	20	

Prep Batch: **T060822013**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH MB: T060822013-MB

Prep Date: 8/21/2006

MB Anal. Date: 8/21/2006 8:18:00PM Units: mg/Kg

LCS Anal. Date: 8/21/2006 6:55:00PM LCSD Anal. Date: 8/21/2006 7:23:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.0103	0.0102	0.01000	0.0100	103.0	102.0	1.0	70 - 130	20	
Toluene	ND	0.0102	0.0102	0.01000	0.0100	102.0	102.0	0.0	70 - 130	20	
Ethylbenzene	ND	0.0104	0.0104	0.01000	0.0100	104.0	104.0	0.0	70 - 130	20	

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608006

Project: Task 11

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060822013**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

MB: T060822013-MB

Prep Date: 8/21/2006

MB Anal. Date: 8/21/2006 8:18:00PM

Units: mg/Kg

LCS Anal. Date: 8/21/2006 6:55:00PM LCSD Anal. Date: 8/21/2006 7:23:00PM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Xylenes, Total	ND	0.0309	0.0308	0.0300	0.0300	103.0	102.7	0.3	77 - 112	20	

Prep Batch: **T060823006**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

MB: T060823006-MB

Prep Date: 8/22/2006

MB Anal. Date: 8/22/2006 5:55:00PM

Units: mg/Kg

LCS Anal. Date: 8/22/2006 4:32:00PM LCSD Anal. Date: 8/22/2006 5:00:00PM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.0100	0.00993	0.01000	0.0100	100.0	99.3	0.7	70 - 130	20	
Toluene	ND	0.0102	0.00999	0.01000	0.0100	102.0	99.9	2.1	70 - 130	20	
Ethylbenzene	ND	0.0103	0.0101	0.01000	0.0100	103.0	101.0	2.0	70 - 130	20	
Xylenes, Total	ND	0.0306	0.0300	0.0300	0.0300	102.0	100.0	2.0	77 - 112	20	

Prep Batch: **T060831010**

LCS/LCSD REPORT

Analysis: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

MB: T060831010-MB

Prep Date: 8/17/2006

MB Anal. Date: 8/19/2006 1:17:00AM

Units: mg/Kg

LCS Anal. Date: 8/18/2006 11:55:00PM LCSD Anal. Date: 8/19/2006 12:22:00AM

Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Benzene	ND	0.0101	0.0105	0.01000	0.0100	101.0	105.0	3.9	70 - 130	20	
Toluene	ND	0.0102	0.0104	0.01000	0.0100	102.0	104.0	1.9	70 - 130	20	
Ethylbenzene	ND	0.0105	0.0108	0.01000	0.0100	105.0	108.0	2.8	70 - 130	20	
Xylenes, Total	ND	0.0307	0.0318	0.0300	0.0300	102.3	106.0	3.5	77 - 112	20	

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608006

Project: Task 11

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060818005**

LCS/LCSD REPORT

Analysis: ADEC AK101 - GRO MB: T060818005-MB

Prep Date: 8/17/2006

MB Anal. Date: 8/17/2006 8:02:00PM Units: mg/Kg

LCS Anal. Date: 8/17/2006 4:20:00PM LCSD Anal. Date: 8/17/2006 4:48:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Gasoline Range Organics	ND	0.465	0.513	0.500	0.500	93.0	102.6	9.8	60 - 120	20	

Prep Batch: **T060821019**

LCS/LCSD REPORT

Analysis: ADEC AK101 - GRO MB: T060821019-MB

Prep Date: 8/18/2006

MB Anal. Date: 8/19/2006 1:17:00AM Units: mg/Kg

LCS Anal. Date: 8/18/2006 9:37:00PM LCSD Anal. Date: 8/18/2006 10:05:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Gasoline Range Organics	ND	0.558	0.536	0.500	0.500	111.6	107.2	4.0	60 - 120	20	

Prep Batch: **T060822014**

LCS/LCSD REPORT

Analysis: ADEC AK101 - GRO MB: T060822014-MB

Prep Date: 8/21/2006

MB Anal. Date: 8/21/2006 8:18:00PM Units: mg/Kg

LCS Anal. Date: 8/21/2006 4:38:00PM LCSD Anal. Date: 8/21/2006 5:06:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Gasoline Range Organics	ND	0.574	0.546	0.500	0.500	114.8	109.2	5.0	60 - 120	20	

Prep Batch: **T060823007**

LCS/LCSD REPORT

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608006

Project: Task 11

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060823007**

LCS/LCSD REPORT

Analysis: ADEC AK101 - GRO MB: T060823007-MB

Prep Date: 8/22/2006

MB Anal. Date: 8/22/2006 5:55:00PM Units: mg/Kg

LCS Anal. Date: 8/22/2006 2:13:00PM LCSD Anal. Date: 8/22/2006 2:40:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Gasoline Range Organics	ND	0.596	0.575	0.500	0.500	119.2	115.0	3.6	60 - 120	20	

Prep Batch: **T060831011**

LCS/LCSD REPORT

Analysis: ADEC AK101 - GRO MB: T060831011-MB

Prep Date: 8/17/2006

MB Anal. Date: 8/19/2006 1:17:00AM Units: mg/Kg

LCS Anal. Date: 8/18/2006 9:37:00PM LCSD Anal. Date: 8/18/2006 10:05:00PM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Gasoline Range Organics	ND	0.558	0.536	0.500	0.500	111.6	107.2	4.0	60 - 120	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

SURROGATE RECOVERY SUMMARY REPORT

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK102 - DRO**

Lab Sample #:	A0608006-01A		Dilution:	1	
Analysis Date:	8/30/2006 5:55:31AM		Client Sample:	**GAM-SI-1-2.0-SO**	
Batch Number:	T060809018		Data File:	06082853.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	73	50	150		Complete

Lab Sample #:	A0608006-02A		Dilution:	1	
Analysis Date:	8/30/2006 6:44:41AM		Client Sample:	**GAM-SI-2-3.0-SO**	
Batch Number:	T060809018		Data File:	06082854.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	77	50	150		Complete

Lab Sample #:	A0608006-03A		Dilution:	1	
Analysis Date:	8/30/2006 7:33:59AM		Client Sample:	**GAM-SI-4-3.5-SO**	
Batch Number:	T060809018		Data File:	06082855.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	62	50	150		Complete

Lab Sample #:	A0608006-04A		Dilution:	1	
Analysis Date:	8/30/2006 8:23:50AM		Client Sample:	**GAM-SI-5-0.5-SO**	
Batch Number:	T060809018		Data File:	06082856.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	76	50	150		Complete

Lab Sample #:	A0608006-06A		Dilution:	1	
Analysis Date:	8/30/2006 9:13:18AM		Client Sample:	**GAM-SI-6-3.5-SO**	
Batch Number:	T060809018		Data File:	06082857.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	79	50	150		Complete

Lab Sample #:	A0608006-07A		Dilution:	1	
Analysis Date:	8/30/2006 10:02:50AM		Client Sample:	**GAM-SI-7-0.5-SO**	
Batch Number:	T060809018		Data File:	06082858.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	79	50	150		Complete

Lab Sample #:	A0608006-08A		Dilution:	1	
Analysis Date:	8/30/2006 10:52:32AM		Client Sample:	**GAM-SI-79-0.5-SO**	
Batch Number:	T060809018		Data File:	06082859.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	72	50	150		Complete

Lab Sample #:	A0608006-09A		Dilution:	1	
Analysis Date:	8/30/2006 11:42:12AM		Client Sample:	**GAM-SI-10-0.5-SO**	
Batch Number:	T060809018		Data File:	06082860.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	73	50	150		Rrun

Lab Sample #:	A0608006-10A		Dilution:	1	
Analysis Date:	8/30/2006 12:32:07PM		Client Sample:	**GAM-SI-11-3.5-SO**	
Batch Number:	T060809018		Data File:	06082861.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK102 - DRO**

Lab Sample #:	A0608006-10A		Dilution:	1	
Analysis Date:	8/30/2006 12:32:07PM		Client Sample:	**GAM-SI-11-3.5-SO**	
Batch Number:	T060809018		Data File:	06082861.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	85	50	150		Complete

Lab Sample #:	A0608006-09A		Dilution:	10	
Analysis Date:	8/31/2006 6:54:04AM		Client Sample:	**GAM-SI-10-0.5-SO**	
Batch Number:	T060809018		Data File:	06082883.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	61	50	150	DILUTED OUT	Complete

Lab Sample #:	A0608006-11A		Dilution:	1	
Analysis Date:	8/30/2006 7:14:15PM		Client Sample:	**GAM-SI-12-1.5-SO**	
Batch Number:	T060810006		Data File:	06082869.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	65	50	150		Complete

Lab Sample #:	A0608006-12A		Dilution:	1	
Analysis Date:	8/30/2006 8:04:32PM		Client Sample:	**GAM-SI-13-0.5-SO**	
Batch Number:	T060810006		Data File:	06082870.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	67	50	150		Complete

Lab Sample #:	A0608006-13A		Dilution:	1	
Analysis Date:	8/30/2006 8:54:55PM		Client Sample:	**GAM-SI-14-0.5-SO**	
Batch Number:	T060810006		Data File:	06082871.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	63	50	150		Complete

Lab Sample #:	A0608006-14A		Dilution:	1	
Analysis Date:	8/30/2006 9:45:25PM		Client Sample:	**GAM-SI-15-0.5-SO**	
Batch Number:	T060810006		Data File:	06082872.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	67	50	150		Complete

Lab Sample #:	A0608006-15A		Dilution:	1	
Analysis Date:	8/30/2006 10:35:50PM		Client Sample:	**GAM-SI-16-0.5-SO**	
Batch Number:	T060810006		Data File:	06082873.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	71	50	150		Complete

Lab Sample #:	A0608006-16A		Dilution:	1	
Analysis Date:	8/30/2006 11:26:10PM		Client Sample:	**GAM-SI-169-0.5-SO**	
Batch Number:	T060810006		Data File:	06082874.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	64	50	150		Complete

Lab Sample #:	A0608006-17A		Dilution:	1	
Analysis Date:	8/31/2006 12:16:21AM		Client Sample:	**GAM-SI-16-3.5-SO**	
Batch Number:	T060810006		Data File:	06082875.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK102 - DRO**

Lab Sample #:	A0608006-17A		Dilution:	1	
Analysis Date:	8/31/2006 12:16:21AM		Client Sample:	**GAM-SI-16-3.5-SO**	
Batch Number:	T060810006		Data File:	06082875.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	58	50	150		Complete

Lab Sample #:	A0608006-18A		Dilution:	1	
Analysis Date:	8/31/2006 1:06:24AM		Client Sample:	**GAM-SI-17-0.5-SO**	
Batch Number:	T060810006		Data File:	06082876.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	62	50	150		Complete

Lab Sample #:	A0608006-19A		Dilution:	1	
Analysis Date:	8/31/2006 1:56:15AM		Client Sample:	**GAM-SI-18-3.5-SO**	
Batch Number:	T060810006		Data File:	06082877.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	66	50	150		Complete

Lab Sample #:	A0608006-20A		Dilution:	1	
Analysis Date:	8/31/2006 2:46:12AM		Client Sample:	**GAM-SI-19-3.5-SO**	
Batch Number:	T060810006		Data File:	06082878.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	67	50	150		Complete

Lab Sample #:	T060809018-MB		Dilution:	1	
Analysis Date:	8/30/2006 1:49:30AM		Client Sample:	**MB**	
Batch Number:	T060809018		Data File:	06082848.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	68	60	120		Rrun

Lab Sample #:	T060809018-MB		Dilution:	1	
Analysis Date:	8/30/2006 3:03:02PM		Client Sample:	**MB**	
Batch Number:	T060809018		Data File:	06082864.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	71	60	120		Complete

Lab Sample #:	T060810006-MB		Dilution:	1	
Analysis Date:	8/23/2006 3:22:52AM		Client Sample:	**MB**	
Batch Number:	T060810006		Data File:	06081756.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	61	60	120		Complete

Lab Sample #:	T060809018-LCS		Dilution:	1	
Analysis Date:	8/30/2006 2:38:42AM		Client Sample:	**LCS**	
Batch Number:	T060809018		Data File:	06082849.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	84	60	120		Complete

Lab Sample #:	T060810006-LCS		Dilution:	1	
Analysis Date:	8/23/2006 4:12:30AM		Client Sample:	**LCS**	
Batch Number:	T060810006		Data File:	06081757.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK102 - DRO**

Lab Sample #:	T060810006-LCS		Dilution:	1	
Analysis Date:	8/23/2006 4:12:30AM		Client Sample:	**LCS**	
Batch Number:	T060810006		Data File:	06081757.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	78	60	120		Complete

Lab Sample #:	T060809018-LCSD		Dilution:	1	
Analysis Date:	8/30/2006 3:27:53AM		Client Sample:	**LCSD**	
Batch Number:	T060809018		Data File:	06082850.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	73	60	120		Complete

Lab Sample #:	T060810006-LCSD		Dilution:	1	
Analysis Date:	8/23/2006 5:02:06AM		Client Sample:	**LCSD**	
Batch Number:	T060810006		Data File:	06081758.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	79	60	120		Complete

Lab Sample #:	A0608006-10A-MS		Dilution:	1	
Analysis Date:	8/30/2006 1:22:17PM		Client Sample:	**MS**	
Batch Number:	T060809018		Data File:	06082862.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	83	50	150		Complete

Lab Sample #:	A0608006-10A-MSD		Dilution:	1	
Analysis Date:	8/30/2006 2:12:41PM		Client Sample:	**MSD**	
Batch Number:	T060809018		Data File:	06082863.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	66	50	150		Complete

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK103 - RRO**

Lab Sample #:	A0608006-01B			Dilution:	1
Analysis Date:	8/30/2006 5:55:31AM			Client Sample:	**GAM-SI-1-2.0-SO**
Batch Number:	T060809019			Data File:	06082853.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	93	50	150		Complete

Lab Sample #:	A0608006-02B			Dilution:	1
Analysis Date:	8/30/2006 6:44:41AM			Client Sample:	**GAM-SI-2-3.0-SO**
Batch Number:	T060809019			Data File:	06082854.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	100	50	150		Complete

Lab Sample #:	A0608006-03B			Dilution:	1
Analysis Date:	8/30/2006 7:33:59AM			Client Sample:	**GAM-SI-4-3.5-SO**
Batch Number:	T060809019			Data File:	06082855.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	90	50	150		Complete

Lab Sample #:	A0608006-04B			Dilution:	1
Analysis Date:	8/30/2006 8:23:50AM			Client Sample:	**GAM-SI-5-0.5-SO**
Batch Number:	T060809019			Data File:	06082856.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	97	50	150		Complete

Lab Sample #:	A0608006-06B			Dilution:	1
Analysis Date:	8/30/2006 9:13:18AM			Client Sample:	**GAM-SI-6-3.5-SO**
Batch Number:	T060809019			Data File:	06082857.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	97	50	150		Complete

Lab Sample #:	A0608006-07B			Dilution:	1
Analysis Date:	8/30/2006 10:02:50AM			Client Sample:	**GAM-SI-7-0.5-SO**
Batch Number:	T060809019			Data File:	06082858.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	99	50	150		Complete

Lab Sample #:	A0608006-08B			Dilution:	1
Analysis Date:	8/30/2006 10:52:32AM			Client Sample:	**GAM-SI-79-0.5-SO**
Batch Number:	T060809019			Data File:	06082859.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	90	50	150		Complete

Lab Sample #:	A0608006-09B			Dilution:	1
Analysis Date:	8/30/2006 11:42:12AM			Client Sample:	**GAM-SI-10-0.5-SO**
Batch Number:	T060809019			Data File:	06082860.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	92	50	150		Complete

Lab Sample #:	A0608006-10B			Dilution:	1
Analysis Date:	8/30/2006 12:32:07PM			Client Sample:	**GAM-SI-11-3.5-SO**
Batch Number:	T060809019			Data File:	06082861.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK103 - RRO**

Lab Sample #:	A0608006-10B	Dilution:	1
Analysis Date:	8/30/2006 12:32:07PM	Client Sample:	**GAM-SI-11-3.5-SO**
Batch Number:	T060809019	Data File:	06082861.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	103	50	150		Complete

Lab Sample #:	A0608006-11B	Dilution:	1
Analysis Date:	8/30/2006 7:14:15PM	Client Sample:	**GAM-SI-12-1.5-SO**
Batch Number:	T060810007	Data File:	06082869.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	87	50	150		Complete

Lab Sample #:	A0608006-12B	Dilution:	1
Analysis Date:	8/30/2006 8:04:32PM	Client Sample:	**GAM-SI-13-0.5-SO**
Batch Number:	T060810007	Data File:	06082870.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	89	50	150		Complete

Lab Sample #:	A0608006-13B	Dilution:	1
Analysis Date:	8/30/2006 8:54:55PM	Client Sample:	**GAM-SI-14-0.5-SO**
Batch Number:	T060810007	Data File:	06082871.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	84	50	150		Complete

Lab Sample #:	A0608006-14B	Dilution:	1
Analysis Date:	8/30/2006 9:45:25PM	Client Sample:	**GAM-SI-15-0.5-SO**
Batch Number:	T060810007	Data File:	06082872.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	86	50	150		Complete

Lab Sample #:	A0608006-15B	Dilution:	1
Analysis Date:	8/30/2006 10:35:50PM	Client Sample:	**GAM-SI-16-0.5-SO**
Batch Number:	T060810007	Data File:	06082873.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	91	50	150		Complete

Lab Sample #:	A0608006-16B	Dilution:	1
Analysis Date:	8/30/2006 11:26:10PM	Client Sample:	**GAM-SI-169-0.5-SO**
Batch Number:	T060810007	Data File:	06082874.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	85	50	150		Complete

Lab Sample #:	A0608006-17B	Dilution:	1
Analysis Date:	8/31/2006 12:16:21AM	Client Sample:	**GAM-SI-16-3.5-SO**
Batch Number:	T060810007	Data File:	06082875.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	93	50	150		Complete

Lab Sample #:	A0608006-18B	Dilution:	1
Analysis Date:	8/31/2006 1:06:24AM	Client Sample:	**GAM-SI-17-0.5-SO**
Batch Number:	T060810007	Data File:	06082876.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK103 - RRO**

Lab Sample #:	A0608006-18B		Dilution:	1	
Analysis Date:	8/31/2006 1:06:24AM		Client Sample:	**GAM-SI-17-0.5-SO**	
Batch Number:	T060810007		Data File:	06082876.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
Squalane	87	50	150		Complete

Lab Sample #:	A0608006-19B		Dilution:	1	
Analysis Date:	8/31/2006 1:56:15AM		Client Sample:	**GAM-SI-18-3.5-SO**	
Batch Number:	T060810007		Data File:	06082877.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
Squalane	90	50	150		Complete

Lab Sample #:	A0608006-20B		Dilution:	1	
Analysis Date:	8/31/2006 2:46:12AM		Client Sample:	**GAM-SI-19-3.5-SO**	
Batch Number:	T060810007		Data File:	06082878.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
Squalane	92	50	150		Complete

Lab Sample #:	T060809019-MB		Dilution:	1	
Analysis Date:	8/30/2006 1:49:30AM		Client Sample:	**MB**	
Batch Number:	T060809019		Data File:	06082848.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
Squalane	91	60	120		Complete

Lab Sample #:	T060809019-LCS		Dilution:	1	
Analysis Date:	8/30/2006 4:17:08AM		Client Sample:	**LCS**	
Batch Number:	T060809019		Data File:	06082851.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
Squalane	93	60	120		Complete

Lab Sample #:	T060809019-LCSD		Dilution:	1	
Analysis Date:	8/30/2006 5:06:28AM		Client Sample:	**LCSD**	
Batch Number:	T060809019		Data File:	06082852.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
Squalane	112	60	120		Complete

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK101 - GRO**

Lab Sample #:	A0608006-03C		Dilution:	25	
Analysis Date:	8/18/2006 1:14:00AM		Client Sample:	**GAM-SI-4-3.5-SO**	
Batch Number:	T060818005		Data File:	06081724.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	97	50	150		Complete

Lab Sample #:	A0608006-04C		Dilution:	25	
Analysis Date:	8/18/2006 1:42:00AM		Client Sample:	**GAM-SI-5-0.5-SO**	
Batch Number:	T060818005		Data File:	06081725.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	23	50	150	LOW	Rrun

Lab Sample #:	A0608006-04C		Dilution:	25	
Analysis Date:	8/19/2006 4:02:00AM		Client Sample:	**GAM-SI-5-0.5-SO**	
Batch Number:	T060821019		Data File:	06081827.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	107	50	150		Rrun

Lab Sample #:	A0608006-06C		Dilution:	25	
Analysis Date:	8/19/2006 5:25:00AM		Client Sample:	**GAM-SI-6-3.5-SO**	
Batch Number:	T060821019		Data File:	06081830.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	115	50	150		Complete

Lab Sample #:	A0608006-07C		Dilution:	25	
Analysis Date:	8/19/2006 5:53:00AM		Client Sample:	**GAM-SI-7-0.5-SO**	
Batch Number:	T060821019		Data File:	06081831.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	109	50	150		Complete

Lab Sample #:	A0608006-08C		Dilution:	25	
Analysis Date:	8/19/2006 6:20:00AM		Client Sample:	**GAM-SI-79-0.5-SO**	
Batch Number:	T060821019		Data File:	06081832.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	108	50	150		Complete

Lab Sample #:	A0608006-13C		Dilution:	25	
Analysis Date:	8/19/2006 6:47:00AM		Client Sample:	**GAM-SI-14-0.5-SO**	
Batch Number:	T060821019		Data File:	06081833.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	108	50	150		Complete

Lab Sample #:	A0608006-14C		Dilution:	25	
Analysis Date:	8/19/2006 7:15:00AM		Client Sample:	**GAM-SI-15-0.5-SO**	
Batch Number:	T060821019		Data File:	06081834.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	114	50	150		Complete

Lab Sample #:	A0608006-15C		Dilution:	25	
Analysis Date:	8/19/2006 7:42:00AM		Client Sample:	**GAM-SI-16-0.5-SO**	
Batch Number:	T060821019		Data File:	06081835.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK101 - GRO**

Lab Sample #:	A0608006-15C			Dilution:	25
Analysis Date:	8/19/2006 7:42:00AM			Client Sample:	**GAM-SI-16-0.5-SO**
Batch Number:	T060821019			Data File:	06081835.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	102	50	150		Complete

Lab Sample #:	A0608006-16C			Dilution:	25
Analysis Date:	8/19/2006 8:10:00AM			Client Sample:	**GAM-SI-169-0.5-SO**
Batch Number:	T060821019			Data File:	06081836.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	102	50	150		Complete

Lab Sample #:	A0608006-17C			Dilution:	25
Analysis Date:	8/19/2006 8:38:00AM			Client Sample:	**GAM-SI-16-3.5-SO**
Batch Number:	T060821019			Data File:	06081837.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	112	50	150		Complete

Lab Sample #:	A0608006-21A			Dilution:	25
Analysis Date:	8/21/2006 8:46:00PM			Client Sample:	**AX 19588 Trip Blank**
Batch Number:	T060822014			Data File:	06082114.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	119	50	150		Complete

Lab Sample #:	A0608006-04C			Dilution:	25
Analysis Date:	8/22/2006 6:51:00PM			Client Sample:	**GAM-SI-5-0.5-SO**
Batch Number:	T060823007			Data File:	06082215.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	110	50	150		Complete

Lab Sample #:	A0608006-05C			Dilution:	25
Analysis Date:	8/19/2006 4:30:00AM			Client Sample:	**GAM-SI-6-0.5-SO**
Batch Number:	T060831011			Data File:	06081828.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	112	50	150		Complete

Lab Sample #:	T060818005-MB			Dilution:	1
Analysis Date:	8/17/2006 8:02:00PM			Client Sample:	**MB**
Batch Number:	T060818005			Data File:	06081713.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	96	60	120		Complete

Lab Sample #:	T060821019-MB			Dilution:	1
Analysis Date:	8/19/2006 1:17:00AM			Client Sample:	**MB**
Batch Number:	T060821019			Data File:	06081821.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	93	60	120		Complete

Lab Sample #:	T060822014-MB			Dilution:	1
Analysis Date:	8/21/2006 8:18:00PM			Client Sample:	**MB**
Batch Number:	T060822014			Data File:	06082113.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK101 - GRO**

Lab Sample #:	T060822014-MB		Dilution:	1	
Analysis Date:	8/21/2006 8:18:00PM		Client Sample:	**MB**	
Batch Number:	T060822014		Data File:	06082113.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	102	60	120		Complete

Lab Sample #:	T060823007-MB		Dilution:	1	
Analysis Date:	8/22/2006 5:55:00PM		Client Sample:	**MB**	
Batch Number:	T060823007		Data File:	06082213.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	95	60	120		Complete

Lab Sample #:	T060831011-MB		Dilution:	1	
Analysis Date:	8/19/2006 1:17:00AM		Client Sample:	**MB**	
Batch Number:	T060831011		Data File:	06081821.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	93	60	120		Complete

Lab Sample #:	T060818005-LCS		Dilution:	1	
Analysis Date:	8/17/2006 4:20:00PM		Client Sample:	**LCS**	
Batch Number:	T060818005		Data File:	06081705.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	100	60	120		Complete

Lab Sample #:	T060821019-LCS		Dilution:	1	
Analysis Date:	8/18/2006 9:37:00PM		Client Sample:	**LCS**	
Batch Number:	T060821019		Data File:	06081813.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	108	60	120		Complete

Lab Sample #:	T060822014-LCS		Dilution:	1	
Analysis Date:	8/21/2006 4:38:00PM		Client Sample:	**LCS**	
Batch Number:	T060822014		Data File:	06082105.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	109	60	120		Complete

Lab Sample #:	T060823007-LCS		Dilution:	1	
Analysis Date:	8/22/2006 2:13:00PM		Client Sample:	**LCS**	
Batch Number:	T060823007		Data File:	06082205.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	116	60	120		Complete

Lab Sample #:	T060831011-LCS		Dilution:	1	
Analysis Date:	8/18/2006 9:37:00PM		Client Sample:	**LCS**	
Batch Number:	T060831011		Data File:	06081813.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	108	60	120		Complete

Lab Sample #:	T060818005-LCSD		Dilution:	1	
Analysis Date:	8/17/2006 4:48:00PM		Client Sample:	**LCSD**	
Batch Number:	T060818005		Data File:	06081706.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK101 - GRO**

Lab Sample #:	T060818005-LCSD		Dilution:	1	
Analysis Date:	8/17/2006 4:48:00PM		Client Sample:	**LCSD**	
Batch Number:	T060818005		Data File:	06081706.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	104	60	120		Complete

Lab Sample #:	T060821019-LCSD		Dilution:	1	
Analysis Date:	8/18/2006 10:05:00PM		Client Sample:	**LCSD**	
Batch Number:	T060821019		Data File:	06081814.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	106	60	120		Complete

Lab Sample #:	T060822014-LCSD		Dilution:	1	
Analysis Date:	8/21/2006 5:06:00PM		Client Sample:	**LCSD**	
Batch Number:	T060822014		Data File:	06082106.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	111	60	120		Complete

Lab Sample #:	T060823007-LCSD		Dilution:	1	
Analysis Date:	8/22/2006 2:40:00PM		Client Sample:	**LCSD**	
Batch Number:	T060823007		Data File:	06082206.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	115	60	120		Complete

Lab Sample #:	T060831011-LCSD		Dilution:	1	
Analysis Date:	8/18/2006 10:05:00PM		Client Sample:	**LCSD**	
Batch Number:	T060831011		Data File:	06081814.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
p-Bromofluorobenzene	106	60	120		Complete

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH**

Lab Sample #:	A0608006-03C	Dilution:	25
Analysis Date:	8/18/2006 1:14:00AM	Client Sample:	**GAM-SI-4-3.5-SO**
Batch Number:	T060818007	Data File:	06081724.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	43	77	120	LOW	Rrun

Lab Sample #:	A0608006-04C	Dilution:	25
Analysis Date:	8/18/2006 1:42:00AM	Client Sample:	**GAM-SI-5-0.5-SO**
Batch Number:	T060818007	Data File:	06081725.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	21	77	120	LOW	Rrun

Lab Sample #:	A0608006-03C	Dilution:	25
Analysis Date:	8/19/2006 3:35:00AM	Client Sample:	**GAM-SI-4-3.5-SO**
Batch Number:	T060821018	Data File:	06081826.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	103	77	120		Rrun

Lab Sample #:	A0608006-04C	Dilution:	25
Analysis Date:	8/19/2006 4:02:00AM	Client Sample:	**GAM-SI-5-0.5-SO**
Batch Number:	T060821018	Data File:	06081827.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	95	77	120		Rrun

Lab Sample #:	A0608006-06C	Dilution:	25
Analysis Date:	8/19/2006 5:25:00AM	Client Sample:	**GAM-SI-6-3.5-SO**
Batch Number:	T060821018	Data File:	06081830.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	102	77	120		Complete

Lab Sample #:	A0608006-07C	Dilution:	25
Analysis Date:	8/19/2006 5:53:00AM	Client Sample:	**GAM-SI-7-0.5-SO**
Batch Number:	T060821018	Data File:	06081831.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	97	77	120		Complete

Lab Sample #:	A0608006-08C	Dilution:	25
Analysis Date:	8/19/2006 6:20:00AM	Client Sample:	**GAM-SI-79-0.5-SO**
Batch Number:	T060821018	Data File:	06081832.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	97	77	120		Complete

Lab Sample #:	A0608006-13C	Dilution:	25
Analysis Date:	8/19/2006 6:47:00AM	Client Sample:	**GAM-SI-14-0.5-SO**
Batch Number:	T060821018	Data File:	06081833.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	96	77	120		Complete

Lab Sample #:	A0608006-14C	Dilution:	25
Analysis Date:	8/19/2006 7:15:00AM	Client Sample:	**GAM-SI-15-0.5-SO**
Batch Number:	T060821018	Data File:	06081834.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH**

Lab Sample #:	A0608006-14C	Dilution:	25
Analysis Date:	8/19/2006 7:15:00AM	Client Sample:	**GAM-SI-15-0.5-SO**
Batch Number:	T060821018	Data File:	06081834.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	102	77	120		Complete

Lab Sample #:	A0608006-15C	Dilution:	25
Analysis Date:	8/19/2006 7:42:00AM	Client Sample:	**GAM-SI-16-0.5-SO**
Batch Number:	T060821018	Data File:	06081835.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	90	77	120		Complete

Lab Sample #:	A0608006-16C	Dilution:	25
Analysis Date:	8/19/2006 8:10:00AM	Client Sample:	**GAM-SI-169-0.5-SO**
Batch Number:	T060821018	Data File:	06081836.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	91	77	120		Complete

Lab Sample #:	A0608006-17C	Dilution:	25
Analysis Date:	8/19/2006 8:38:00AM	Client Sample:	**GAM-SI-16-3.5-SO**
Batch Number:	T060821018	Data File:	06081837.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	100	77	120		Complete

Lab Sample #:	A0608006-21A	Dilution:	25
Analysis Date:	8/21/2006 8:46:00PM	Client Sample:	**AX 19588 Trip Blank**
Batch Number:	T060822013	Data File:	06082114.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	103	77	120		Complete

Lab Sample #:	A0608006-03C	Dilution:	25
Analysis Date:	8/22/2006 6:23:00PM	Client Sample:	**GAM-SI-4-3.5-SO**
Batch Number:	T060823006	Data File:	06082214.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	97	77	120		Complete

Lab Sample #:	A0608006-04C	Dilution:	25
Analysis Date:	8/22/2006 6:51:00PM	Client Sample:	**GAM-SI-5-0.5-SO**
Batch Number:	T060823006	Data File:	06082215.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	95	77	120		Complete

Lab Sample #:	A0608006-05C	Dilution:	25
Analysis Date:	8/19/2006 4:30:00AM	Client Sample:	**GAM-SI-6-0.5-SO**
Batch Number:	T060831010	Data File:	06081828.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	98	77	120		Complete

Lab Sample #:	T060818007-MB	Dilution:	1
Analysis Date:	8/17/2006 8:02:00PM	Client Sample:	**MB**
Batch Number:	T060818007	Data File:	06081713.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH**

Lab Sample #: T060818007-MB Dilution: 1
Analysis Date: 8/17/2006 8:02:00PM Client Sample: **MB**
Batch Number: T060818007 Data File: 06081713.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	87	77	120		Complete

Lab Sample #: T060821018-MB Dilution: 1
Analysis Date: 8/19/2006 1:17:00AM Client Sample: **MB**
Batch Number: T060821018 Data File: 06081821.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	86	77	120		Complete

Lab Sample #: T060822013-MB Dilution: 1
Analysis Date: 8/21/2006 8:18:00PM Client Sample: **MB**
Batch Number: T060822013 Data File: 06082113.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	90	77	120		Complete

Lab Sample #: T060823006-MB Dilution: 1
Analysis Date: 8/22/2006 5:55:00PM Client Sample: **MB**
Batch Number: T060823006 Data File: 06082213.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	84	77	120		Complete

Lab Sample #: T060831010-MB Dilution: 1
Analysis Date: 8/19/2006 1:17:00AM Client Sample: **MB**
Batch Number: T060831010 Data File: 06081821.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	86	77	120		Complete

Lab Sample #: T060818007-LCS Dilution: 1
Analysis Date: 8/17/2006 6:39:00PM Client Sample: **LCS**
Batch Number: T060818007 Data File: 06081710.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	87	77	120		Complete

Lab Sample #: T060821018-LCS Dilution: 1
Analysis Date: 8/18/2006 11:55:00PM Client Sample: **LCS**
Batch Number: T060821018 Data File: 06081818.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	100	77	120		Complete

Lab Sample #: T060822013-LCS Dilution: 1
Analysis Date: 8/21/2006 6:55:00PM Client Sample: **LCS**
Batch Number: T060822013 Data File: 06082110.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	105	77	120		Complete

Lab Sample #: T060823006-LCS Dilution: 1
Analysis Date: 8/22/2006 4:32:00PM Client Sample: **LCS**
Batch Number: T060823006 Data File: 06082210.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH**

Lab Sample #:	T060823006-LCS	Dilution:	1
Analysis Date:	8/22/2006 4:32:00PM	Client Sample:	**LCS**
Batch Number:	T060823006	Data File:	06082210.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	105	77	120		Complete

Lab Sample #:	T060831010-LCS	Dilution:	1
Analysis Date:	8/18/2006 11:55:00PM	Client Sample:	**LCS**
Batch Number:	T060831010	Data File:	06081818.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	100	77	120		Complete

Lab Sample #:	T060818007-LCSD	Dilution:	1
Analysis Date:	8/17/2006 7:06:00PM	Client Sample:	**LCSD**
Batch Number:	T060818007	Data File:	06081711.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	89	77	120		Complete

Lab Sample #:	T060821018-LCSD	Dilution:	1
Analysis Date:	8/19/2006 12:22:00AM	Client Sample:	**LCSD**
Batch Number:	T060821018	Data File:	06081819.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	103	77	120		Complete

Lab Sample #:	T060822013-LCSD	Dilution:	1
Analysis Date:	8/21/2006 7:23:00PM	Client Sample:	**LCSD**
Batch Number:	T060822013	Data File:	06082111.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	103	77	120		Complete

Lab Sample #:	T060823006-LCSD	Dilution:	1
Analysis Date:	8/22/2006 5:00:00PM	Client Sample:	**LCSD**
Batch Number:	T060823006	Data File:	06082211.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	103	77	120		Complete

Lab Sample #:	T060831010-LCSD	Dilution:	1
Analysis Date:	8/19/2006 12:22:00AM	Client Sample:	**LCSD**
Batch Number:	T060831010	Data File:	06081819.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
p-Bromofluorobenzene	103	77	120		Complete

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,067** **Lab Project Number:** **A0608006**

Prep Date: 8/9/2006

Lab Method Blank Id: T060809018-MB
Prep Batch ID: T060809018
Method: ADEC AK102 - DRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060809018-LCS	LCS	06082849.D	8/30/2006 2:38:42AM
T060809018-LCSD	LCSD	06082850.D	8/30/2006 3:27:53AM
A0608006-01A	GAM-SI-1-2.0-SO	06082853.D	8/30/2006 5:55:31AM
A0608006-02A	GAM-SI-2-3.0-SO	06082854.D	8/30/2006 6:44:41AM
A0608006-03A	GAM-SI-4-3.5-SO	06082855.D	8/30/2006 7:33:59AM
A0608006-04A	GAM-SI-5-0.5-SO	06082856.D	8/30/2006 8:23:50AM
A0608006-06A	GAM-SI-6-3.5-SO	06082857.D	8/30/2006 9:13:18AM
A0608006-07A	GAM-SI-7-0.5-SO	06082858.D	8/30/2006 10:02:50AM
A0608006-08A	GAM-SI-79-0.5-SO	06082859.D	8/30/2006 10:52:32AM
A0608006-10A	GAM-SI-11-3.5-SO	06082861.D	8/30/2006 12:32:07PM
A0608006-10A-MS	MS	06082862.D	8/30/2006 1:22:17PM
A0608006-10A-MSD	MSD	06082863.D	8/30/2006 2:12:41PM
A0608006-09A	GAM-SI-10-0.5-SO	06082883.D	8/31/2006 6:54:04AM

Prep Date: 8/9/2006

Lab Method Blank Id: T060809019-MB
Prep Batch ID: T060809019
Method: ADEC AK103 - RRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060809019-LCS	LCS	06082851.D	8/30/2006 4:17:08AM
T060809019-LCSD	LCSD	06082852.D	8/30/2006 5:06:28AM
A0608006-01B	GAM-SI-1-2.0-SO	06082853.D	8/30/2006 5:55:31AM
A0608006-02B	GAM-SI-2-3.0-SO	06082854.D	8/30/2006 6:44:41AM
A0608006-03B	GAM-SI-4-3.5-SO	06082855.D	8/30/2006 7:33:59AM
A0608006-04B	GAM-SI-5-0.5-SO	06082856.D	8/30/2006 8:23:50AM
A0608006-06B	GAM-SI-6-3.5-SO	06082857.D	8/30/2006 9:13:18AM
A0608006-07B	GAM-SI-7-0.5-SO	06082858.D	8/30/2006 10:02:50AM
A0608006-08B	GAM-SI-79-0.5-SO	06082859.D	8/30/2006 10:52:32AM
A0608006-09B	GAM-SI-10-0.5-SO	06082860.D	8/30/2006 11:42:12AM
A0608006-10B	GAM-SI-11-3.5-SO	06082861.D	8/30/2006 12:32:07PM

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,067** **Lab Project Number:** **A0608006**

Prep Date: 8/10/2006

Lab Method Blank Id: T060810006-MB
Prep Batch ID: T060810006
Method: ADEC AK102 - DRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060810006-LCS	LCS	06081757.D	8/23/2006 4:12:30AM
T060810006-LCSD	LCSD	06081758.D	8/23/2006 5:02:06AM
A0608006-11A	GAM-SI-12-1.5-SO	06082869.D	8/30/2006 7:14:15PM
A0608006-12A	GAM-SI-13-0.5-SO	06082870.D	8/30/2006 8:04:32PM
A0608006-13A	GAM-SI-14-0.5-SO	06082871.D	8/30/2006 8:54:55PM
A0608006-14A	GAM-SI-15-0.5-SO	06082872.D	8/30/2006 9:45:25PM
A0608006-15A	GAM-SI-16-0.5-SO	06082873.D	8/30/2006 10:35:50PM
A0608006-16A	GAM-SI-169-0.5-SO	06082874.D	8/30/2006 11:26:10PM
A0608006-17A	GAM-SI-16-3.5-SO	06082875.D	8/31/2006 12:16:21AM
A0608006-18A	GAM-SI-17-0.5-SO	06082876.D	8/31/2006 1:06:24AM
A0608006-19A	GAM-SI-18-3.5-SO	06082877.D	8/31/2006 1:56:15AM
A0608006-20A	GAM-SI-19-3.5-SO	06082878.D	8/31/2006 2:46:12AM

Prep Date: 8/9/2006

Lab Method Blank Id: T060810024-MB
Prep Batch ID: T060810024
Method: ASTM D2216 - Pmoist

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0608006-01A	GAM-SI-1-2.0-SO		8/9/2006 4:30:00PM
A0608006-02A	GAM-SI-2-3.0-SO		8/9/2006 4:30:00PM
A0608006-03A	GAM-SI-4-3.5-SO		8/9/2006 4:30:00PM
A0608006-04A	GAM-SI-5-0.5-SO		8/9/2006 4:30:00PM
A0608006-05A	GAM-SI-6-0.5-SO		8/9/2006 4:30:00PM
A0608006-06A	GAM-SI-6-3.5-SO		8/9/2006 4:30:00PM
A0608006-07A	GAM-SI-7-0.5-SO		8/9/2006 4:30:00PM
A0608006-08A	GAM-SI-79-0.5-SO		8/9/2006 4:30:00PM
A0608006-09A	GAM-SI-10-0.5-SO		8/9/2006 4:30:00PM
A0608006-10A	GAM-SI-11-3.5-SO		8/9/2006 4:30:00PM
A0608006-01A-DUP	DUP		8/9/2006 4:30:00PM
A0608006-08A-DUP	DUP		8/9/2006 4:30:00PM

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,067** **Lab Project Number:** **A0608006**

Prep Date: 8/10/2006

Lab Method Blank Id: T060811010-MB
Prep Batch ID: T060811010
Method: ASTM D2216 - Pmoist

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0608006-11A	GAM-SI-12-1.5-SO		8/10/2006 4:45:43PM
A0608006-12A	GAM-SI-13-0.5-SO		8/10/2006 4:45:43PM
A0608006-13A	GAM-SI-14-0.5-SO		8/10/2006 4:45:43PM
A0608006-14A	GAM-SI-15-0.5-SO		8/10/2006 4:45:43PM
A0608006-15A	GAM-SI-16-0.5-SO		8/10/2006 4:45:43PM
A0608006-16A	GAM-SI-169-0.5-SO		8/10/2006 4:45:43PM
A0608006-17A	GAM-SI-16-3.5-SO		8/10/2006 4:45:43PM
A0608006-18A	GAM-SI-17-0.5-SO		8/10/2006 4:45:43PM
A0608006-19A	GAM-SI-18-3.5-SO		8/10/2006 4:45:43PM
A0608006-20A	GAM-SI-19-3.5-SO		8/10/2006 4:45:43PM
F0608066-10A	Batch QC		8/10/2006 4:45:43PM
F0608066-10A-DUP	DUP		8/10/2006 4:45:43PM

Prep Date: 8/17/2006

Lab Method Blank Id: T060818005-MB
Prep Batch ID: T060818005
Method: ADEC AK101 - GRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060818005-LCS	LCS	06081705.D	8/17/2006 4:20:00PM
T060818005-LCSD	LCSD	06081706.D	8/17/2006 4:48:00PM
A0608006-03C	GAM-SI-4-3.5-SO	06081724.D	8/18/2006 1:14:00AM

Prep Date: 8/17/2006

Lab Method Blank Id: T060818007-MB
Prep Batch ID: T060818007
Method: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060818007-LCS	LCS	06081710.D	8/17/2006 6:39:00PM
T060818007-LCSD	LCSD	06081711.D	8/17/2006 7:06:00PM

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,067** **Lab Project Number:** **A0608006**

Prep Date: 8/18/2006

Lab Method Blank Id: T060821018-MB
Prep Batch ID: T060821018
Method: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060821018-LCS	LCS	06081818.D	8/18/2006 11:55:00PM
T060821018-LCSD	LCSD	06081819.D	8/19/2006 12:22:00AM
A0608006-06C	GAM-SI-6-3.5-SO	06081830.D	8/19/2006 5:25:00AM
A0608006-07C	GAM-SI-7-0.5-SO	06081831.D	8/19/2006 5:53:00AM
A0608006-08C	GAM-SI-79-0.5-SO	06081832.D	8/19/2006 6:20:00AM
A0608006-13C	GAM-SI-14-0.5-SO	06081833.D	8/19/2006 6:47:00AM
A0608006-14C	GAM-SI-15-0.5-SO	06081834.D	8/19/2006 7:15:00AM
A0608006-15C	GAM-SI-16-0.5-SO	06081835.D	8/19/2006 7:42:00AM
A0608006-16C	GAM-SI-169-0.5-SO	06081836.D	8/19/2006 8:10:00AM
A0608006-17C	GAM-SI-16-3.5-SO	06081837.D	8/19/2006 8:38:00AM

Prep Date: 8/18/2006

Lab Method Blank Id: T060821019-MB
Prep Batch ID: T060821019
Method: ADEC AK101 - GRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060821019-LCS	LCS	06081813.D	8/18/2006 9:37:00PM
T060821019-LCSD	LCSD	06081814.D	8/18/2006 10:05:00PM
A0608006-06C	GAM-SI-6-3.5-SO	06081830.D	8/19/2006 5:25:00AM
A0608006-07C	GAM-SI-7-0.5-SO	06081831.D	8/19/2006 5:53:00AM
A0608006-08C	GAM-SI-79-0.5-SO	06081832.D	8/19/2006 6:20:00AM
A0608006-13C	GAM-SI-14-0.5-SO	06081833.D	8/19/2006 6:47:00AM
A0608006-14C	GAM-SI-15-0.5-SO	06081834.D	8/19/2006 7:15:00AM
A0608006-15C	GAM-SI-16-0.5-SO	06081835.D	8/19/2006 7:42:00AM
A0608006-16C	GAM-SI-169-0.5-SO	06081836.D	8/19/2006 8:10:00AM
A0608006-17C	GAM-SI-16-3.5-SO	06081837.D	8/19/2006 8:38:00AM

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,067** **Lab Project Number:** **A0608006**

Prep Date: 8/21/2006

Lab Method Blank Id: T060822013-MB
Prep Batch ID: T060822013
Method: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060822013-LCS	LCS	06082110.D	8/21/2006 6:55:00PM
T060822013-LCSD	LCSD	06082111.D	8/21/2006 7:23:00PM
A0608006-21A	AX 19588 Trip Blank	06082114.D	8/21/2006 8:46:00PM

Prep Date: 8/21/2006

Lab Method Blank Id: T060822014-MB
Prep Batch ID: T060822014
Method: ADEC AK101 - GRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060822014-LCS	LCS	06082105.D	8/21/2006 4:38:00PM
T060822014-LCSD	LCSD	06082106.D	8/21/2006 5:06:00PM
A0608006-21A	AX 19588 Trip Blank	06082114.D	8/21/2006 8:46:00PM

Prep Date: 8/22/2006

Lab Method Blank Id: T060823006-MB
Prep Batch ID: T060823006
Method: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060823006-LCS	LCS	06082210.D	8/22/2006 4:32:00PM
T060823006-LCSD	LCSD	06082211.D	8/22/2006 5:00:00PM
A0608006-03C	GAM-SI-4-3.5-SO	06082214.D	8/22/2006 6:23:00PM
A0608006-04C	GAM-SI-5-0.5-SO	06082215.D	8/22/2006 6:51:00PM

Prep Date: 8/22/2006

Lab Method Blank Id: T060823007-MB
Prep Batch ID: T060823007
Method: ADEC AK101 - GRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060823007-LCS	LCS	06082205.D	8/22/2006 2:13:00PM
T060823007-LCSD	LCSD	06082206.D	8/22/2006 2:40:00PM
A0608006-04C	GAM-SI-5-0.5-SO	06082215.D	8/22/2006 6:51:00PM

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,067** **Lab Project Number:** **A0608006**

Prep Date: 8/17/2006

Lab Method Blank Id: T060831010-MB
Prep Batch ID: T060831010
Method: Aromatic VOCs by GC/PID via method 8021B - BTEX MeOH

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060831010-LCS	LCS	06081818.D	8/18/2006 11:55:00PM
T060831010-LCSD	LCSD	06081819.D	8/19/2006 12:22:00AM
A0608006-05C	GAM-SI-6-0.5-SO	06081828.D	8/19/2006 4:30:00AM

Prep Date: 8/17/2006

Lab Method Blank Id: T060831011-MB
Prep Batch ID: T060831011
Method: ADEC AK101 - GRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060831011-LCS	LCS	06081813.D	8/18/2006 9:37:00PM
T060831011-LCSD	LCSD	06081814.D	8/18/2006 10:05:00PM
A0608006-05C	GAM-SI-6-0.5-SO	06081828.D	8/19/2006 4:30:00AM

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.
Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery , RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Workorder (SDG): A0608006

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

REPORTING CONVENTIONS FOR THIS REPORT

A0608006

TestPkgName	Basis	# Sig Figs	Reporting Limit
8021/5035 (Solid) - BTEX MeOH	Dry Weight Basis	2	Report to PQL
AK101/5035 (Solid) - GRO	Dry Weight Basis	2	Report to PQL
AK102/3550B (Solid) - DRO	Dry Weight Basis	2	Report to PQL
AK103/3550B (Solid) - RRO	Dry Weight Basis	2	Report to PQL
ASTMD2216/ASTMD2216 (Solid) - Pmoist	As Received	3	Report to MDL, J qual below PQL

Analytica Chain of Custody Form

5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way. # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
3330 Industrial Ave., Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax
12189 Pennsylvania St., Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax

Chain of Custody No: 53568

Client Name & Address: HCG Inc 3401 Minnesota Ste 300 Anch AK 99503

Public Water System (PWS) ID#:

Project Name: Gambell SI National Guard Task 005

Section To be Completed by Analytica
Quote ID:
LGN: A06080006
Account #:
Cash
Credit Card

Report to: N Webb
Phone No: 563-2196
Fax No: 563-2164
E-mail: nwebb@hoeflernet.com

Turnaround Time for Results (TAT)
[X] Standard [ ] Expedited (< 10 days, prior authorization required)
(please specify due date below; add'tl charges may apply)

Requested Due Date for Results:

Invoice to Name & Address:

Special Instructions/Comments: Provide Chromatograms ⊗AEL Quote A05080009 [X] Sub

P.O. or Contract No:

Kit Prep/Shipping Charge: $

Requested Analysis/Method

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	GRO/BTEX Lot #: Pres:	DRO/RRO Lot #: Pres:	TOC Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Field Preserved	Field Filtered	MS/MSD ?
GAM - SI - 1 - 2.0 - SO	7/26	18:30	S	2		X	X								
GAM - SI - 2 - 3.0 - SO		18:52		1		X									
GAM - SI - 4 - 3.5 - SO		19:40		3	X	X	X								
GAM - SI - 5 - 0.5 - SO		19:46		2	X	X									
GAM - SI - 6 - 0.5 - SO	7/27	8:50		2	X	X									
GAM - SI - 6 - 3.5 - SO		9:00		2	X	X									
GAM - SI - 7 - 0.5 - SO		9:05		2	X	X									
GAM - SI - 7a - 0.5 - SO		9:05		2	X	X									
GAM - SI - 10 - 0.5 - SO		9:20		1		X									
GAM - SI - 11 - 3.5 - SO		9:45		1		X									

Relinquished by:	Date	Time	Received by:	Date	Time
	7/31	1400		7/31/06	1400
Relinquished by:	Date	Time	Received by:	Date	Time
	8/1	12:00			
Relinquished by:	Date	Time	Received by:	Date	Time

Name of Sampler: (printed)

Section To Be Completed by Analytica

	THO	ANC	JNU	FBKS
Condition of Custody Seal?:				
Initialed By:				
Temp/Loc:		4.5C		
Thermo ID#:				
Shipped Via:		Client		

Version 2.0

Analytica Chain of Custody Form

ANALYTICA GROUP

5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way, # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
3330 Industrial Ave., Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax
12189 Pennsylvania St., Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax

Chain of Custody No: 53569

Client Name & Address:
HCG Inc
3401 Minnesota Dr Ste 300
Anch AK 99503

Public Water System (PWS) ID#:

Project Name: Gambell SI National Guard
Task 005

Section To be Completed by Analytica
Quote ID:
LGN: A0608006
Account #:
Cash
Credit Card

Report to: N Webb
Phone No: 563-2196
Fax No: 563-2164
E-mail: nwebb@hoefleret.com

Turnaround Time for Results (TAT)
X Standard
Expedited (< 10 days, prior authorization required)
(please specify due date below; add'tl charges may apply)

Requested Due Date for Results:

Invoice to Name & Address:

Special Instructions/Comments:
Provide Chromatograms
AEL Quote A0508009
Sub

P.O. or Contract No:

Requested Analysis/Method

Kit Prep/Shipping Charge: $

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	GRO/BTEX Lot #: Pres:	DRO/PRO Lot #: Pres:	TOC Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Field Preserved	Field Filtered	MS/MSD ?
GAM-SI-12-1.5-SO	7/27	10:00	S	1		X								
GAM-SI-13-0.5-SO		10:30		1		X								
GAM-SI-14-0.5-SO		12:25		2	X	X								
GAM-SI-15-0.5-SO		12:28		2	X	X								
GAM-SI-16-0.5-SO		12:30		2	X	X								
GAM-SI-169-0.5-SO		12:30		2	X	X								
GAM-SI-16-3.5-SO		15:45		2	X	X								
GAM-SI-17-0.5-SO		12:32		1		X								
GAM-SI-18-3.5-SO		12:45		1		X								
GAM-SI-19-3.5-SO		13:00		1		X								

Relinquished by:	Date	Time	Received by:	Date	Time
	7/31	1440		7/31/06	1440
Relinquished by:	Date	Time	Received by:	Date	Time
	8/1	1200			
Relinquished by:	Date	Time	Received by:	Date	Time

Name of Sampler: (printed)

Section To Be Completed by Analytica

	THO	ANC	JNU	FBKS
Condition of Custody Seal?:				
Initialed By:				
Temp/Loc:		4.5C		
Thermo ID#:				
Shipped Via:		Client		

Version 2.0

ANALYTICA

Cooler Receipt Form

Client: Hoefler Consulting Group **Client Code:** 010580 **Order #:** A0608006
Project: Task 005

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 7/31/2006 **Cooler opened by:** jc **Signature:**

1. Was airbill Attached?	N/A	Airbill #:		Carrier Name:	Client
2. Custody Seals?	N/A	How many?	0	Location:	Seal Name:
3. Seals intact?	N/A				
4. COC Attached?	Yes	Properly Completed?	Yes	Signed by AEL employee?	Yes

5. Project Identification from custody paper: Gambell SI National Gaurd Task 005
6. Preservative: Temperature: 4.5

Designated person initial here to acknowledge receipt: _____ Date: 8/1/06

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 7/31/2006 **Log-in By:** jc

1. Packing Type:			
2. Were samples in separate bags?	Yes		
3. Were containers intact?	Yes	Labels agree with COC?	Yes
4. Number of bottles received:	20	Number of samples received:	20
5. Correct containers used?	Yes	Correct preservatives added?	N/A
6. Sufficient sample volume?	N/A		
7. Bubbles in VOA samples?	N/A		

8. Was Project manager called and status discussed? No
9. Was anyone called? No Who was called? _____ By whom? _____ Date: _____

COMMENTS:

ANALYTICA

Cooler Receipt Form

Client: Hoefler Consulting Group Client Code: 010580 Order #: A0608006
Project: Task 005

Cooler ID: 2

A. Preliminary Examination Phase:

Date cooler opened: 8/3/2006
Cooler opened by: RA

Signature: for DA

1. Was airbill Attached? Yes
2. Custody Seals? Yes
3. Seals intact? Yes
4. COC Attached? Yes
5. Project Identification from custody paper: Task 005
6. Preservative: BlueGel

Airbill #: 792811342600 Carrier Name: FedEx
How many? 1 Location: lid Seal Name: Justin Cronan
Properly Completed? Yes Signed by AEL employee? Yes
Temperature: 2.1

Designated person initial here to acknowledge receipt: DSM for RA Date: 8/3/06

COMMENTS:

B. Log-In Phase: Samples Log-in Date: 8/3/2006 Log-in By: DM

1. Packing Type: Bubblewrap
2. Were samples in separate bags? Yes
3. Were containers intact? Yes Labels agree with COC? Yes
4. Number of bottles received: 31 Number of samples received: 20
5. Correct containers used? Yes Correct preservatives added? Yes
6. Sufficient sample volume? Yes
7. Bubbles in VOA samples? N/A
8. Was Project manager called and status discussed? N/A
9. Was anyone called? N/A Who was called? _____ By whom? _____ Date: _____

COMMENTS:

Analytica International, Inc.
5761 Silverado Way, Unit N
Anchorage, AK 99518
Phone: 907-258-2155
Fax: 907-258-6634

ANALYTICA
Environmental Laboratories

8/29/2006

Hoefler Consulting Group
3401 Minnesota Drive
#300
Anchorage, AK 99503
Attn: Nathan Webb

Work Order #: A0608045
Date: 8/29/2006
Work ID: Task 11
Date Received: 7/31/2006
Proj #: Gambell SI National Guard

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A0608045-01	GAM-SI-20-3.5-SO	A0608045-02	GAM-SI-BK1-0.5-SO
A0608045-03	GAM-SI-BK2-0.5-SO	A0608045-04	GAM-SI-BK3-0.5-SO
A0608045-05	GAM-SI-BK4-0.5-SO	A0608045-06	GAM-SI-BK5-0.5-SO
A0608045-07	GAM-SI-BK6-0.5-SO		

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

K. Plett

Krissy Plett
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

Analytica Alaska Inc.
Work Order: A0608045

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Method AK102 For the Determination of Diesel Range Organics, Revision 3.0, 01/31/96.

Method AK103 For the Determination of Residual Range Organics, Revision 2.0, 01/31/96.

Standard Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures, ASTM D 2216-80, July 1980.

SAMPLE RECEIPT:
Eight (8) samples were received at a temperature of 4.5°C at Analytica-Anchorage on 7/31/2006 1:40:00 PM. The samples were received in good condition and in order per chain of custody.

The samples were transferred for analysis at Analytica Environmental Laboratories (AEL); 12189 Pennsylvania St. Thornton, CO 80241 where they were received at a temperature of 5.2°C in good condition and in order per chain of custody on 8/7/2006.

REVIEW FOR COMPLIANCE WITH ANALYTICA QA PLAN
A summary of our review is shown below, organized by test:

Test Method: ADEC AK102 - DRO - Solid

HOLDING TIMES:
Holding times were met for this test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

OPENING CONTINUING CALIBRATIONS:
Opening continuing calibrations were within method criteria.

CLOSING CONTINUING CALIBRATIONS:
Closing continuing calibrations were within method criteria or not applicable.

SURROGATE RECOVERIES:
The method blank shown below has the surrogate outside of control windows. All associated samples have normal surrogate recoveries.

Sample	LabID	Surrogate	Recovery	LCL	UCL	
MB	T060808015-MB	o-Terphenyl	56.	60	120	Complete

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:

There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: ADEC AK103 - RRO - Solid

HOLDING TIMES:
Holding times were met for this test.

SAMPLE PREPARATION ISSUES AND OBSERVATIONS:
There were no unusual observations.

INSTRUMENT PERFORMANCE CHECKS:
Instrument checks were within method criteria.

INITIAL CALIBRATIONS:
Initial calibrations were within method criteria.

OPENING CONTINUING CALIBRATIONS:
Opening continuing calibrations were within method criteria.

CLOSING CONTINUING CALIBRATIONS:
Closing continuing calibrations were within method criteria or not applicable.

SURROGATE RECOVERIES:
There were no surrogate outliers.

METHOD BLANK OUTLIERS:
There are no method blank outliers.

LCS OUTLIERS:
There are no LCS outliers.

MS/MSD and DUP OUTLIERS:
There are no MS/MSD or DUP outliers.

Test Method: ASTM D2216 - Pmoist - Solid

All method criteria was met for this test.

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-20-3.5-SO**

Matrix: Soil Collection Date: 7/27/2006 1:15:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-01B	Analysis Date:	8/26/2006 4:27:22AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082518.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808016	Percent Moisture	2.81
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.07 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.86	0.27	1.7	**96.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-01A	Analysis Date:	8/26/2006 4:27:22AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082518.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808015	Percent Moisture	2.81
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.07 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.34	0.27	1.7	**72.4**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-BK1-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 3:50:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-02B	Analysis Date:	8/26/2006 5:16:19AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082519.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808016	Percent Moisture	4.41
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.98 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.1	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.87	0.28	1.7	**87.0**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-02A	Analysis Date:	8/26/2006 5:16:19AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082519.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808015	Percent Moisture	4.41
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	29.98 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**5.6**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.35	0.27	1.7	**67.8**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-BK2-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 3:52:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608045-03B
Prep Date: 8/8/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060808016
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.08 g

Analysis Date: 8/26/2006 6:05:25AM
Instrument: GC_E
File Name: 06082520.D
Dilution Factor: 1
Percent Moisture 1.79
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	14	5.9	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.6**		mg/Kg	0.85	0.27	1.7	**96.1**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608045-03A
Prep Date: 8/8/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060808015
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.08 g

Analysis Date: 8/26/2006 6:05:25AM
Instrument: GC_E
File Name: 06082520.D
Dilution Factor: 1
Percent Moisture 1.79
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.34	0.27	1.7	**70.5**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-BK3-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 4:00:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-04B	Analysis Date:	8/26/2006 6:54:34AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082521.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808016	Percent Moisture	5.43
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.04 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**20**		mg/Kg	15	6.2	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.3**		mg/Kg	0.88	0.28	1.8	**71.5**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-04A	Analysis Date:	8/26/2006 6:54:34AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082521.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808015	Percent Moisture	5.43
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.04 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.3	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**0.98**		mg/Kg	0.35	0.28	1.8	**55.6**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-BK4-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 4:02:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608045-05B
Prep Date: 8/8/2006
Analytical Method ID: ADEC AK103 - RRO
Prep Method ID: 3550B
Prep Batch Number: T060808016
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.02 g

Analysis Date: 8/26/2006 7:43:39AM
Instrument: GC_E
File Name: 06082522.D
Dilution Factor: 1
Percent Moisture 3.50
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.5**		mg/Kg	0.86	0.28	1.7	**86.5**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number: A0608045-05A
Prep Date: 8/8/2006
Analytical Method ID: ADEC AK102 - DRO
Prep Method ID: 3550B
Prep Batch Number: T060808015
Report Basis: Dry Weight Basis
Sample prep wt./vol: 30.02 g

Analysis Date: 8/26/2006 7:43:39AM
Instrument: GC_E
File Name: 06082522.D
Dilution Factor: 1
Percent Moisture 3.50
Analyst Initials: LWM
Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**31**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.2**		mg/Kg	0.35	0.27	1.7	**68.1**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-BK5-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 4:02:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-06B	Analysis Date:	8/26/2006 8:32:38AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082523.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808016	Percent Moisture	4.47
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.09 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.1	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.4**		mg/Kg	0.87	0.28	1.7	**83.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-06A	Analysis Date:	8/26/2006 8:32:38AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082523.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808015	Percent Moisture	4.47
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.09 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.2	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.35	0.27	1.7	**64.3**	50	150	1

Detailed Analytical Report

Analytica Alaska Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Client Sample Report

Client Sample Name: **GAM-SI-BK6-0.5-SO**

Matrix: Soil Collection Date: 7/27/2006 4:04:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-07B	Analysis Date:	8/26/2006 9:21:48AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK103 - RRO	File Name:	06082524.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808016	Percent Moisture	3.75
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.42 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Residual Range Organics	n/a	**ND**		mg/Kg	15	6.0	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
Squalane	111-01-3	**1.4**		mg/Kg	0.85	0.27	1.7	**84.3**	50	150	1

The following test was conducted by: Analytica - Thornton

Lab Sample Number:	A0608045-07A	Analysis Date:	8/26/2006 9:21:48AM
Prep Date:	8/8/2006	Instrument:	GC_E
Analytical Method ID:	ADEC AK102 - DRO	File Name:	06082524.D
Prep Method ID:	3550B	Dilution Factor:	1
Prep Batch Number:	T060808015	Percent Moisture	3.75
Report Basis:	Dry Weight Basis	Analyst Initials:	LWM
Sample prep wt./vol:	30.42 g	Prep Extract Vol:	1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**11**		mg/Kg	5.1	1.5	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**1.1**		mg/Kg	0.34	0.27	1.7	**64.0**	50	150	1

Detailed Analytical Report

Analytica Environmental Laboratories, Inc.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Report Section: Method Blank Report

Client Sample Name: **MB**

Matrix: Solid

Collection Date: 8/8/2006 2:00:00PM

The following test was conducted by: Analytica - Thornton

Lab Sample Number: T060808015-MB

Prep Date: 8/8/2006

Analytical Method ID: ADEC AK102 - DRO

Prep Method ID: 3550B

Prep Batch Number: T060808015

Report Basis: As Received

Sample prep wt./vol: 30.00 g

Analysis Date: 8/15/2006 9:30:52AM

Instrument: GC_E

File Name: 06081428.D

Dilution Factor: 1

Percent Moisture NA

Analyst Initials: LWM

Prep Extract Vol: 1.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	run #:
Diesel Range Organics	n/a	**ND**		mg/Kg	5.0	1.4	1

Surrogate	CASNo	Result	Flags	Units	PQL	MDL	Spike	% Recov	LCL	UCL	run #:
o-Terphenyl	84-15-1	**0.94**		mg/Kg	0.33	0.26	1.7	**56.6**	50	150	1

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Tests Run at: Analytica Environmental Laboratories - Thornton, Colorado

Workorder (SDG): A0608045

Project: Task 11

Project Number:

QUALITY CONTROL REPORT

Prep Batch: **T060808015**

LCS/LCSD REPORT

Analysis: ADEC AK102 - DRO MB: T060808015-MB

Prep Date: 8/8/2006

MB Anal. Date: 8/15/2006 9:30:52AM Units: mg/Kg

LCS Anal. Date: 8/15/2006 10:20:42AM LCSD Anal. Date: 8/15/2006 11:10:23AM Matrix: Solid

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	ND	60.2	57.8	66.7	66.7	90.3	86.7	4.1	75 - 125	20	

MS/MSD REPORT

Analysis: ADEC AK102 - DRO Parent: A0608045-05A

Prep Date: 8/8/2006

Samp. Anal. Date: 8/26/2006 7:43:39AM Units: mg/Kg

MS Anal. Date: 8/26/2006 10:10:57AM MSD Anal. Date: 8/26/2006 11:00:39AM Matrix: Soil

Analyte Name	SampResult	MSRes.	MSDRes	SPLev	SPDLev	Recov.	MSD Rec.	RPD	Recov Lim	RPDLim	Flag
Diesel Range Organics	31.2	94.0	103	69.1	68.8	90.9	104.4	9.1	50 - 129	20	

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little signifcance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

SURROGATE RECOVERY SUMMARY REPORT

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK102 - DRO**

Lab Sample #:	A0608045-01A		Dilution:	1	
Analysis Date:	8/26/2006 4:27:22AM		Client Sample:	**GAM-SI-20-3.5-SO**	
Batch Number:	T060808015		Data File:	06082518.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	72	50	150		Complete

Lab Sample #:	A0608045-02A		Dilution:	1	
Analysis Date:	8/26/2006 5:16:19AM		Client Sample:	**GAM-SI-BK1-0.5-SO**	
Batch Number:	T060808015		Data File:	06082519.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	68	50	150		Complete

Lab Sample #:	A0608045-03A		Dilution:	1	
Analysis Date:	8/26/2006 6:05:25AM		Client Sample:	**GAM-SI-BK2-0.5-SO**	
Batch Number:	T060808015		Data File:	06082520.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	71	50	150		Complete

Lab Sample #:	A0608045-04A		Dilution:	1	
Analysis Date:	8/26/2006 6:54:34AM		Client Sample:	**GAM-SI-BK3-0.5-SO**	
Batch Number:	T060808015		Data File:	06082521.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	56	50	150		Complete

Lab Sample #:	A0608045-05A		Dilution:	1	
Analysis Date:	8/26/2006 7:43:39AM		Client Sample:	**GAM-SI-BK4-0.5-SO**	
Batch Number:	T060808015		Data File:	06082522.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	68	50	150		Complete

Lab Sample #:	A0608045-06A		Dilution:	1	
Analysis Date:	8/26/2006 8:32:38AM		Client Sample:	**GAM-SI-BK5-0.5-SO**	
Batch Number:	T060808015		Data File:	06082523.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	64	50	150		Complete

Lab Sample #:	A0608045-07A		Dilution:	1	
Analysis Date:	8/26/2006 9:21:48AM		Client Sample:	**GAM-SI-BK6-0.5-SO**	
Batch Number:	T060808015		Data File:	06082524.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	64	50	150		Complete

Lab Sample #:	T060808015-MB		Dilution:	1	
Analysis Date:	8/15/2006 9:30:52AM		Client Sample:	**MB**	
Batch Number:	T060808015		Data File:	06081428.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	57	60	120	LOW	Complete

Lab Sample #:	T060808015-LCS		Dilution:	1	
Analysis Date:	8/15/2006 10:20:42AM		Client Sample:	**LCS**	
Batch Number:	T060808015		Data File:	06081429.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK102 - DRO**

Lab Sample #:	T060808015-LCS		Dilution:	1	
Analysis Date:	8/15/2006 10:20:42AM		Client Sample:	**LCS**	
Batch Number:	T060808015		Data File:	06081429.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	71	60	120		Complete

Lab Sample #:	T060808015-LCSD		Dilution:	1	
Analysis Date:	8/15/2006 11:10:23AM		Client Sample:	**LCSD**	
Batch Number:	T060808015		Data File:	06081430.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	70	60	120		Complete

Lab Sample #:	A0608045-05A-MS		Dilution:	1	
Analysis Date:	8/26/2006 10:10:57AM		Client Sample:	**MS**	
Batch Number:	T060808015		Data File:	06082525.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	74	50	150		Complete

Lab Sample #:	A0608045-05A-MSD		Dilution:	1	
Analysis Date:	8/26/2006 11:00:39AM		Client Sample:	**MSD**	
Batch Number:	T060808015		Data File:	06082526.D	
AnalyteName	**SSRecov**	**LCL**	**UCL**	**SSFlag**	**Result Status**
o-Terphenyl	84	50	150		Complete

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

Test Method: **ADEC AK103 - RRO**

Lab Sample #:	A0608045-01B	Dilution:	1
Analysis Date:	8/26/2006 4:27:22AM	Client Sample:	**GAM-SI-20-3.5-SO**
Batch Number:	T060808016	Data File:	06082518.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	96	50	150		Complete

Lab Sample #:	A0608045-02B	Dilution:	1
Analysis Date:	8/26/2006 5:16:19AM	Client Sample:	**GAM-SI-BK1-0.5-SO**
Batch Number:	T060808016	Data File:	06082519.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	87	50	150		Complete

Lab Sample #:	A0608045-03B	Dilution:	1
Analysis Date:	8/26/2006 6:05:25AM	Client Sample:	**GAM-SI-BK2-0.5-SO**
Batch Number:	T060808016	Data File:	06082520.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	96	50	150		Complete

Lab Sample #:	A0608045-04B	Dilution:	1
Analysis Date:	8/26/2006 6:54:34AM	Client Sample:	**GAM-SI-BK3-0.5-SO**
Batch Number:	T060808016	Data File:	06082521.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	72	50	150		Complete

Lab Sample #:	A0608045-05B	Dilution:	1
Analysis Date:	8/26/2006 7:43:39AM	Client Sample:	**GAM-SI-BK4-0.5-SO**
Batch Number:	T060808016	Data File:	06082522.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	87	50	150		Complete

Lab Sample #:	A0608045-06B	Dilution:	1
Analysis Date:	8/26/2006 8:32:38AM	Client Sample:	**GAM-SI-BK5-0.5-SO**
Batch Number:	T060808016	Data File:	06082523.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	83	50	150		Complete

Lab Sample #:	A0608045-07B	Dilution:	1
Analysis Date:	8/26/2006 9:21:48AM	Client Sample:	**GAM-SI-BK6-0.5-SO**
Batch Number:	T060808016	Data File:	06082524.D

AnalyteName	SSRecov	LCL	UCL	SSFlag	Result Status
Squalane	84	50	150		Complete

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: **61,155** **Lab Project Number:** **A0608045**

Prep Date: 8/8/2006

Lab Method Blank Id: T060808015-MB
Prep Batch ID: T060808015
Method: ADEC AK102 - DRO

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
T060808015-LCS	LCS	06081429.D	8/15/2006 10:20:42AM
T060808015-LCSD	LCSD	06081430.D	8/15/2006 11:10:23AM
A0608045-01A	GAM-SI-20-3.5-SO	06082518.D	8/26/2006 4:27:22AM
A0608045-02A	GAM-SI-BK1-0.5-SO	06082519.D	8/26/2006 5:16:19AM
A0608045-03A	GAM-SI-BK2-0.5-SO	06082520.D	8/26/2006 6:05:25AM
A0608045-04A	GAM-SI-BK3-0.5-SO	06082521.D	8/26/2006 6:54:34AM
A0608045-05A	GAM-SI-BK4-0.5-SO	06082522.D	8/26/2006 7:43:39AM
A0608045-06A	GAM-SI-BK5-0.5-SO	06082523.D	8/26/2006 8:32:38AM
A0608045-07A	GAM-SI-BK6-0.5-SO	06082524.D	8/26/2006 9:21:48AM
A0608045-05A-MS	MS	06082525.D	8/26/2006 10:10:57AM
A0608045-05A-MSD	MSD	06082526.D	8/26/2006 11:00:39AM

Prep Date: 8/8/2006

Lab Method Blank Id: T060808022-MB
Prep Batch ID: T060808022
Method: ASTM D2216 - Pmoist

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

SampleNum	ClientSampleName	DataFile	AnalysisDate
A0608004-01A	Batch QC		8/8/2006 2:45:00PM
A0608045-01A	GAM-SI-20-3.5-SO		8/8/2006 2:45:00PM
A0608045-02A	GAM-SI-BK1-0.5-SO		8/8/2006 2:45:00PM
A0608045-03A	GAM-SI-BK2-0.5-SO		8/8/2006 2:45:00PM
A0608045-04A	GAM-SI-BK3-0.5-SO		8/8/2006 2:45:00PM
A0608045-05A	GAM-SI-BK4-0.5-SO		8/8/2006 2:45:00PM
A0608045-06A	GAM-SI-BK5-0.5-SO		8/8/2006 2:45:00PM
A0608045-07A	GAM-SI-BK6-0.5-SO		8/8/2006 2:45:00PM
A0608004-01A-DUP	DUP		8/8/2006 2:45:00PM

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.
Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit
NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit
HIGH = Recovery , RPD, or other parameter is above Upper Control Limit
E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank
J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)
W = Post digestion spike did not meet criteria
S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

Workorder (SDG): A0608045

Project: **Task 11**

Client: **Hoefler Consulting Group**

Client Project Number: **Gambell SI National Guard**

REPORTING CONVENTIONS FOR THIS REPORT

A0608045

TestPkgName	Basis	# Sig Figs	Reporting Limit
AK102/3550B (Solid) - DRO	Dry Weight Basis	2	Report to PQL
AK103/3550B (Solid) - RRO	Dry Weight Basis	2	Report to PQL
ASTMD2216/ASTMD2216 (Solid) - Pmoist	As Received	3	Report to MDL, J qual below PQL

Analytica Chain of Custody Form

5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way. # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
3330 Industrial Ave., Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax
12189 Pennsylvania St., Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax

Chain of Custody No: 53570

Client Name & Address: ACG Inc 3401 Minnesota Dr Ste 300 Anch AK 99524

Public Water System (PWS) ID#:

Project Name: Gambell SI National Guard Task 005

Section To be Completed by Analytica
Quote ID: AC50S0009 LGN: AC608045
Account #: Cash: Credit Card:

Report to: N Webb

Turnaround Time for Results (TAT)
[X] Standard [ ] Expedited (< 10 days, prior authorization required) *(please specify due date below; add'tl charges may apply)*

Invoice to Name & Address:

Phone No: 563-2196
Fax No: 563-2164
E-mail: nwebb@hoffernet.com

Requested Due Date for Results:

Special Instructions/Comments: Provide Chromatograms
Quote AC50S0009
[X] AEL
(X) SUB TO HUFFMAN

P.O. or Contract No:

Kit Prep/Shipping Charge: $

Requested Analysis/Method

	Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	GRO/BTEX Lot #: Pres:	DRO/RRO Lot #: Pres:	TOC Lot #: Pres:						Field Preserved	Field Filtered	MS/MSD ?
-01	GAM-SI-20-3.5-50	7/27	13:15	S	1		X									
	~~GAM-SI-22-0.5-50~~		~~15:49~~	~~TRIP~~												
-02	GAM-SI-BK1-0.5-50	7/27	15:50	Soil	2		X	X								
-03	GAM-SI-BK2-0.5-50		15:52		2		X	X								
-04	GAM-SI-BK3-0.5-50		16:00		2		X	X								
-05	GAM-SI-BK4-0.5-50		16:02		2		X	X								
-06	GAM-SI-BK5-0.5-50		16:04		2		X	X								
-07	GAM-SI-BK6-0.5-50		16:06		2		X	X								
~~-08~~	~~AX19585 Trip Blank~~				1	X		AG	added TB on COC#				AC608006			

Relinquished by:	Date	Time	Received by:	Date	Time
	7/31	1400		7/31/06	1400
Relinquished by:	Date	Time	Received by:	Date	Time
Anne Gleason	8/03	1200			
Relinquished by:	Date	Time	Received by:	Date	Time
Name of Sampler: (printed)					

Section To Be Completed by Analytica

	THO	ANC	JNU	FBKS
Condition of Custody Seal?:				
Initialed By:				
Temp/Loc:		4.5C		
Thermo ID#:				
Shipped Via:		client		

Version 2.0

ANALYTICA

Cooler Receipt Form

Client: Hoefler Consulting Group **Client Code:** 010580 **Order #:** A0608045
Project: Task 005

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 7/31/2006
Cooler opened by: RG **Signature:** Annie Glaser

1. Was airbill Attached?	N/A	Airbill #:		Carrier Name:	Client
2. Custody Seals?	N/A	How many?	0	Location:	Seal Name:
3. Seals intact?	Yes				
4. COC Attached?	Yes	Properly Completed?	Yes	Signed by AEL employee?	Yes

5. Project Identification from custody paper:
6. Preservative: BlueGel **Temperature:** 4.5

Designated person initial here to acknowledge receipt: AG **Date:** 08/03/06

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 7/31/2006 **Log-in By:** AG

1. Packing Type:	Bubblewrap		
2. Were samples in separate bags?	Yes		
3. Were containers intact?	Yes	Labels agree with COC?	Yes
4. Number of bottles received:	14	Number of samples received:	8
5. Correct containers used?	Yes	Correct preservatives added?	Yes
6. Sufficient sample volume?	Yes		
7. Bubbles in VOA samples?	No		

8. Was Project manager called and status discussed? No
9. Was anyone called? No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

ANALYTICA

Cooler Receipt Form

Client: Hoefler Consulting Group Client Code: 010580 Order #: A0608045
Project: Task 005

Cooler ID: 2

A Preliminary Examination Phase: Date cooler opened: 8/7/2006
Cooler opened by: RA Signature: RR

1. Was airbill Attached?	Yes	Airbill #: 790514476849		Carrier Name:	FedEx
2. Custody Seals?	Yes	How many? 1	Location: top	Seal Name:	Rob G
3 Seals intact?	Yes				
4. COC Attached?	Yes	Properly Completed?	Yes	Signed by AEL employee?	Yes
5. Project Identification from custody paper:		Gambell St National Guard			
6. Preservative:	BlueGel	Temperature:	5.2		

Designated person initial here to acknowledge receipt: RR Date: 8/7/06

COMMENTS:

B. Log-In Phase: Samples Log-in Date: 8/8/2006 Log-in By: RA

1. Packing Type:	Bubblewrap		
2. Were samples in separate bags?	Yes		
3. Were containers intact?	Yes	Labels agree with COC?	Yes
4. Number of bottles received:	7	Number of samples received.	7
5. Correct containers used?	Yes	Correct preservatives added?	N/A
6. Sufficient sample volume?	Yes		
7. Bubbles in VOA samples?	N/A		
8. Was Project manager called and status discussed?	No		
9. Was anyone called? No	Who was called?	By whom?	Date:

COMMENTS:

ANALYTICA
GROUP

Analytica Environmental Laboratories, Inc.
12189 Pennsylvania Street
Thornton, Colorado 80241
(303) 469-8868
(303) 469-5254 fax

Analytica International, Inc.
Analytica Alaska Inc.
5761 Silverado Way, Unit N
Anchorage, Alaska 99518
(800) 478-8848
(907) 258-2155
(907) 258-6634 fax

Analytica Alaska, Inc.
5438 Shaune Drive
Juneau, Alaska 99801
(907) 780-6668
(907) 780-6670 fax

Analytica International, Inc.
3330 Industrial Avenue
Fairbanks, Alaska 99701
(907) 456-3116
(907) 456-3125 fax

Analytica Solutions, Inc.
12189 Pennsylvania Street
Thornton, Colorado 80241
(303) 469-8868
(303) 469-5254 fax

"Feel the Chemistry"

www.analyticagroup.com

Nathan Webb
Hoefler Consulting Group
3401 Minnesota
Anchorage, AK 99503

Work Order#: A0608091
Work ID: Gambell RI National Guard Task 005

Date Red'd: 7/31/06

Date Sept 19, 2006

Enclosed are the analytical results for the submitted sample(s) for analysis. Please review the Case Narrative if one is included for a discussion of any data and /or quality control issues. The subcontractor provides listings of data qualifiers, analytical codes, key dates and QC relationships in the report.

Sincerely,

Krissy Plett
Project Manager

Our Sample number A0608091-01A corrospondes to your GAM-SI-BK1-05-SO
Our Sample number A0608091-02A corrospondes to your GAM-SI-BK2-05-SO
Our Sample number A0608091-03A corrospondes to your GAM-SI-BK3-05-SO
Our Sample number A0608091-04A corrospondes to your GAM-SI-BK4-05-SO
Our Sample number A0608091-05A corrospondes to your GAM-SI-BK5-05-SO
Our Sample number A0608091-06A corrospondes to your GAM-SI-BK6-05-SO
Our Sample number A0608091-07A corrospondes to your GAM-SI-1-2.0-SO
Our Sample number A0608091-08A corrospondes to your GAM-SI- 4-3.5-SO

CUSTOMER #:
06815

HUFFMAN
LABORATORIES, INC.
Quality Analytical Services Since 1936
4630 Indiana Street • Golden, CO 80403
Phone: (303) 278-4455 • FAX: (303) 278-7012

DATE 8/23/06
LAB# 178606
P.O. ANC-550
RECD 08/10/06

ANALYSIS REPORT

KRISSY PLETT
ANALYTICA ALASKA
5761 SILVERADO WAY #N
ANCHORAGE AK 99518

SEQUENCE/ SAMPLE NUMBER	ANALYSIS Total Carbon--%	Tot CO2 as C--%	Organic C*----%
01/A0608091-01A	0.39	<0.02	0.39
02/A0608091-02A	0.10	<0.02	0.10
03/A0608091-03A	0.50	<0.02	0.50
04/A0608091-04A	0.37	<0.02	0.37
05/A0608091-05A	0.30	<0.02	0.30
06/A0608091-06A	0.33	<0.02	0.33
07/A0608091-07A	0.12	<0.02	0.12
08/A0608091-08A	0.07	<0.02	0.07

Temperature blank upon arrival 11 degrees C

The samples were dried in air at 105 degrees C overnight prior to analysis. After drying, all samples were ground in entirety prior to analysis. All results are reported on a dried sample basis.

*By difference

Analytica Chain of Custody Form

5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way. # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
475 Hall St., Fairbanks, AK 99701, (907) 456 - 3116, (907) 456-3125 Fax
12189 Pennsylvania St., Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax

Chain of Custody No: 54928

Client Name & Address:
Analytica
5761 Silverado Way
Anchorage, AK 99518

Report to: Krissy Plett
Phone No: 907-258-2155 x224
Fax No: 907-258-3364
E-mail: Kplett@analyticagroup.com
Special Instructions/Comments:

Public Water System (PWS) ID#:
Project Name:

Turnaround Time for Results (TAT)
X Standard ___ Expedited (< 10 days, prior authorization required) *(please specify due date below; add'l charges may apply)*
Requested Due Date for Results:

Section To be Completed by Analytica
Quote ID:
LGN: A0608091
Account #: Cash: Credit Card:

Invoice to Name & Address:
Analytica

P.O. or Contract No: ANC-550

Kit Prep/Shipping Charge: $

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	Requested Analysis/Method: TOC (Lot #: / Pres:)	Lot #: / Pres:	Lot #: / Pres:	Lot #: / Pres:	Lot #: / Pres:	Lot #: / Pres:	Lot #: / Pres:	Field Preserved	Field Filtered	MS/MSD ?
GAM-SI-BK1-0.5-SO	7/27	1550	S	1	X									
GAM-SI-BK2-0.5-SO	7/27	1552	S	1	X									
GAM-SI-BK3-0.5-SO	7/27	1600	S	1	X									
GAM-SI-BK4-0.5-SO	7/27	1602	S	1	X									
GAM-SI-BK5-0.5-SO	7/27	1604	S	1	X									
GAM-SI-BK6-0.5-SO	7/27	1606	S	1	X									
GAM-SI-1-2.0-SO	7/26	1830	S	1	X									
GAM-SI-4-3.5-SO	7/26	1940	S	1	X									

Relinquished by:	Date	Time	Received by:	Date	Time
Kristin Crum	8/8	1200			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Name of Sampler: (printed)

Section To Be Completed by Analytica

	THO	ANC	JNU	FBKS
Condition of Custody Seal?:				
Initialed By:				
Temp/Loc:				
Thermo ID#:				
Shipped Via:				

Version 2.0

Analytica Chain of Custody Form

ANALYTICA GROUP

5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way. # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
3330 Industrial Ave., Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax
12189 Pennsylvania St., Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax

Chain of Custody No: 53570

Client Name & Address: ACG Inc 3401 Minnesota Dr Ste 300 Anch AK 99504

Public Water System (PWS) ID#:

Project Name: Gambell SI National Guard Task 005

Section To be Completed by Analytica
Quote ID: AC50800009 LCN: AC608045
Account #: Cash: Credit Card:

Report to: N Webb

Phone No: 563-2196

Fax No: 563-2164

E-mail: nwebb@hoffernet.com

Turnaround Time for Results (TAT)
[X] Standard [ ] Expedited (< 10 days, prior authorization required) *(please specify due date below; add'l charges may apply)*

Requested Due Date for Results:

Invoice to Name & Address:

Special Instructions/Comments: Provide Chromatograms

Quote AC50800009 [X] AEL (X) SUB TO HUFFMAN

P.O. or Contract No:

Kit Prep/Shipping Charge: $

Requested Analysis/Method

Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	GRO/BTEX Lot # Pres:	DRO/RRO Lot # Pres:	TOC Lot # Pres:	Lot # Pres:	Lot # Pres:	Lot # Pres:	Lot # Pres:	Lot # Pres:	Field Preserved	Field Filtered	MS/MSD ?
GAM-SI-20-3.5-SO	7/27	13:15	S	1		X									
~~GAM-SI-22-0.5-SO~~		~~15:49~~	~~TRIP~~												
GAM-SI-BK1-0.5-SO	7/27	15:50	Soil	2		X	X								
GAM-SI-BK2-0.5-SO		15:52		2		X	X								
GAM-SI-BK3-0.5-SO		16:00		2		X	X								
GAM-SI-BK4-0.5-SO		16:02		2		X	X								
GAM-SI-BK5-0.5-SO		16:04		2		X	X								
GAM-SI-BK6-0.5-SO		16:06		2		X	X								
AX19588 Trip Blank				1	X										

Relinquished by:	Date	Time	Received by:	Date	Time
	7/31	1400		7/31/06	1400
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by:	Date	Time

Name of Sampler: (printed)

Section To Be Completed by Analytica

	THO	ANC	JNU	FBKS
Condition of Custody Seal?				
Initialed By:				
Temp/Loc:		4.5C		
Thermo ID#:				
Shipped Via:		client		

Version 2.0

Analytica Chain of Custody Form

5438 Shaune Drive, Juneau, AK 99801, (907) 780-6668, (907) 780-6670 fax
5761 Silverado Way. # N, Anchorage, AK 99518, (907) 258-2155, (907) 258-6634 fax
3330 Industrial Ave., Fairbanks, AK 99701, (907) 456-3116, (907) 456-3125 fax
12189 Pennsylvania St., Thornton, CO 80241, (303) 469-8868, (303) 469-5254 fax

Chain of Custody No: 53568

Client Name & Address: HCG inc 3401 Minnesota Ste 300 Anch Ak 99503

Public Water System (PWS) ID#:

Project Name: Gambell SI National Guard Task 005

Section To be Completed by Analytica
Quote ID: A0608006
Account #:

Report to: N Webb
Phone No: 563-2196
Fax No: 563 2164
E-mail: nwebb@hoeflernet.com

Turnaround Time for Results (TAT)
X Standard ___ Expedited (< 10 days, prior authorization required)
(please specify due date below; add'l charges may apply)
Requested Due Date for Results:

Invoice to Name & Address:

Special Instructions/Comments: Provide Chromatograms ⊗IAEL Quote A0508006 ☒Sub

P.O. or Contract No:

Requested Analysis/Method

Kit Prep/Shipping Charge: $ / Client Sample Identification / Location	Date Sampled	Time Sampled	Matrix (S-DW-WW-Other)	No. of Containers	GRO/BTEX Lot #: Pres:	DRO/RRO Lot #: Pres:	TOC Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Lot #: Pres:	Field Preserved	Field Filtered	MS/MSD ?
GAM-SI-1-2.0-SO	7/26	18:30	S	2		X	X								
GAM-SI-2-3.0-SO		18:52		1		X									
GAM-SI-4-3.5-SO		19:40		3	X	X	X								
GAM-SI-5-0.5-SO		19:46		2	X	X									
GAM-SI-6-0.5-SO	7/27	8:50		2	X	X									
GAM-SI-6-3.5-SO		9:00		2	X	X									
GAM-SI-7-0.5-SO		9:05		2	X	X									
GAM-SI-7A-0.5-SO		9:05		2	X	X									
GAM-SI-10-0.5-SO		9:20		1		X									
GAM-SI-11-3.5-SO		9:45		1		X									

Relinquished by:	Date	Time	Received by:	Date	Time
	7/31	1400		7/31/06	1400
Relinquished by:	Date	Time	Received by:	Date	Time
	8/1	1200			
Relinquished by:	Date	Time	Received by:	Date	Time

Name of Sampler: (printed)

Section To Be Completed by Analytica

	THO	ANC	JNU	FBKS
Condition of Custody Seal?:				
Initialed By:				
Temp/Loc:		4.5C		
Thermo ID#:				
Shipped Via:		Client		

Version 2.0

Cooler Receipt Form

ANALYTICA

Client: Hoefler Consulting Group **Client Code:** 010580 **Order #:** A0608091
Project: Task 005

Cooler ID: 1

A. Preliminary Examination Phase: **Date cooler opened:** 7/31/2006
Cooler opened by: jc **Signature:**

1. Was airbill Attached?	N/A	Airbill #:		Carrier Name:	Client
2. Custody Seals?	N/A	How many?	0	Location:	Seal Name:
3. Seals intact?	N/A				
4. COC Attached?	Yes	Properly Completed?	Yes	Signed by AEL employee?	Yes

5. Project Identification from custody paper: Gambell Toc Sub
6. Preservative: Temperature: 4.5

Designated person initial here to acknowledge receipt: JC Date: 7/31/06

COMMENTS:

B. Log-In Phase: **Samples Log-in Date:** 7/31/2006 **Log-in By:** jc

1. Packing Type:			
2. Were samples in separate bags?	Yes		
3. Were containers intact?	Yes	Labels agree with COC?	Yes
4. Number of bottles received:	8	Number of samples received:	8
5. Correct containers used?	Yes	Correct preservatives added?	N/A
6. Sufficient sample volume?	N/A		
7. Bubbles in VOA samples?	N/A		

8. Was Project manager called and status discussed? No
9. Was anyone called? No **Who was called?** _____ **By whom?** _____ **Date:** _____

COMMENTS:

801 East 82nd Avenue, #A-9
Anchorage, AK 99518

TERRA FIRMA TESTING

Laboratory Testing / Construction Monitoring

Telephone: (907) 344-5934
Fax: (907) 344-5993
terrafirma@alaska.com

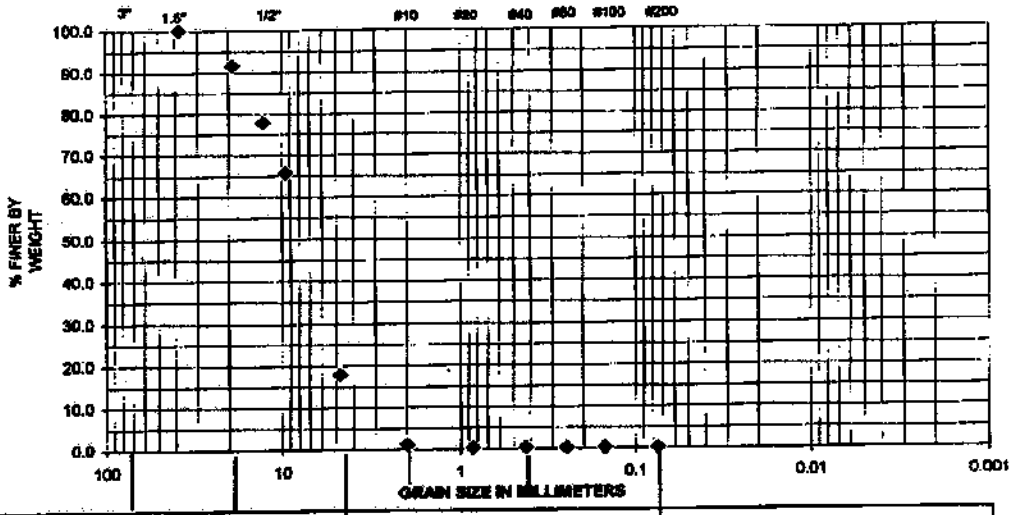
PROJECT CLIENT:	Hoefler Consulting Group
PROJECT NAME:	
PROJECT NO.:	1480-06
SAMPLE LOCATION:	BK 2; Gambell
SAMPLE NO/ DEPTH	0.5'
DESCRIPTION:	Poorly grd. gravel w/ sand.
DATE TESTED:	8/3/2006
TESTED BY:	JF
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	82.1	USC:	GP
% SAND:	17.7	FC:	
% SILT/CLAY:	0.2	.02 mm:	

ASTM D1557(uncorrected)	pcf
ASTM D4718 (corrected)	pcf
OPTIMUM M.C.% (corrected)	
NATURAL M.C. %	1.5

PARTICLE SIZE ANALYSIS

ASTM D422/ C136



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SIEVE ANALYSIS RESULT

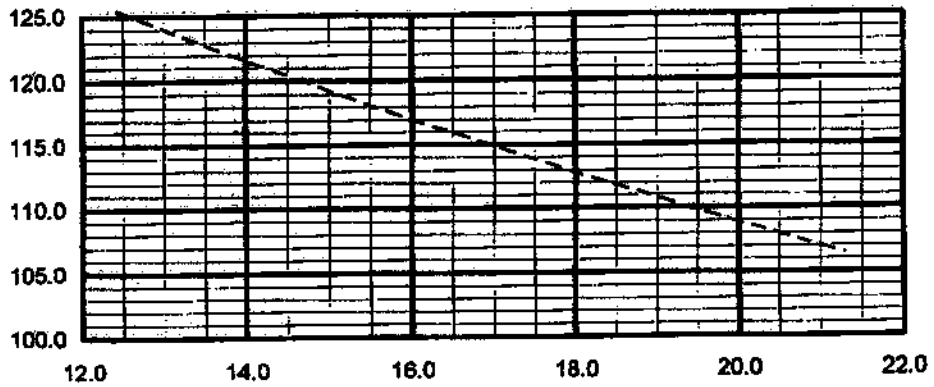
SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC.
152.4	6"		
76.2	3"		
38.1	1.5"	100	
19.05	3/4"	92	
12.7	1/2"	78	
9.5	3/8"	66	
4.75	#4	18	
2	#10	1	
0.85	#20	0	
0.425	#40	0	
0.25	#60	0	
0.15	#100	0	
0.075	#200	0.2	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1		
2		
4		
8		
15		
30		
60		
250		
1440		

MOISTURE-DENSITY RELATIONSHIP

ASTM D1557



Perm. (ASTM D2434)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	

801 East 82nd Avenue, #A-9
Anchorage, AK 99518

TERRA FIRMA TESTING

Laboratory Testing / Construction Monitoring

Telephone: (907) 344-5934
Fax: (907) 344-5993
terrafirma@alaska.com

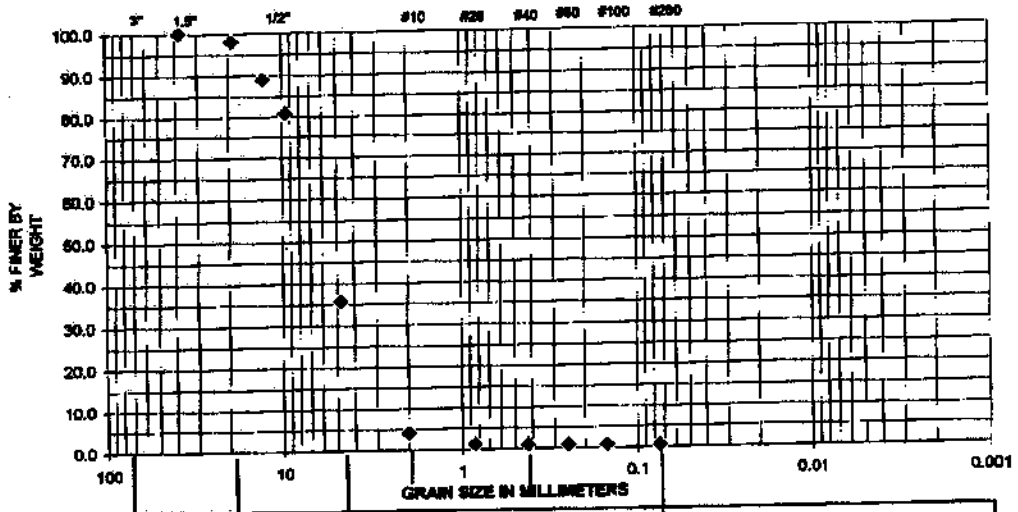
PROJECT CLIENT:	Hoefler Consulting Group
PROJECT NAME:	
PROJECT NO.:	1480-06
SAMPLE LOCATION:	BK 4; Gambell
SAMPLE NO/ DEPTH	0.5'
DESCRIPTION:	Poorly grd. gravel w/ sand.
DATE TESTED:	8/3/2006
TESTED BY:	JF
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	64.3	USC:	GP
% SAND:	35.2	FC:	
% SILT/CLAY:	0.5	.02 mm:	

ASTM D1557(uncorrected)	pcf
ASTM D4718 (corrected)	pcf
OPTIMUM M.C.% (corrected)	
NATURAL M.C. %	3.7

PARTICLE SIZE ANALYSIS

ASTM D422/ C136



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SIEVE ANALYSIS RESULT

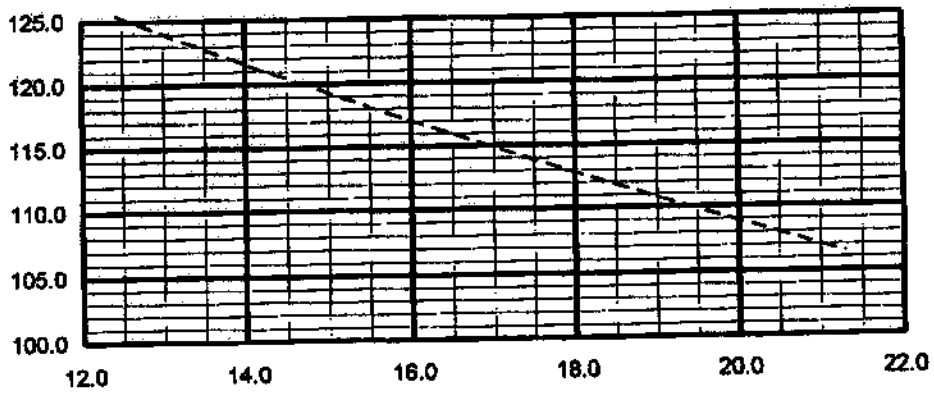
SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC.
152.4	6"		
76.2	3"		
38.1	1.5"	100	
19.05	3/4"	88	
12.7	1/2"	69	
9.5	3/8"	61	
4.75	# 4	36	
2	#10	4	
0.85	#20	1	
0.425	#40	1	
0.25	# 60	1	
0.15	#100	1	
0.075	#200	0.5	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1		
2		
4		
8		
15		
30		
60		
250		
1440		

MOISTURE-DENSITY RELATIONSHIP

ASTM D1557



Perm. (ASTM D2434)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	

801 East 82nd Avenue, #A-9
Anchorage, AK 99518

TERRA FIRMA TESTING

Laboratory Testing / Construction Monitoring

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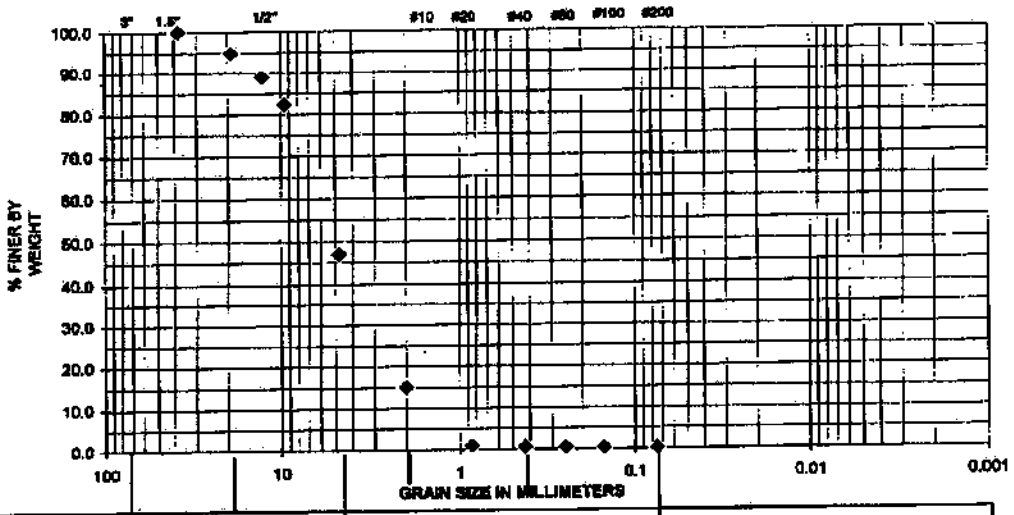
PROJECT CLIENT:	Hoefler Consulting Group
PROJECT NAME:	
PROJECT NO.:	1480-06
SAMPLE LOCATION:	BK 6; Gambell
SAMPLE NO/ DEPTH	0.5'
DESCRIPTION:	Well grd. gravel w/ sand
DATE TESTED:	8/3/2006
TESTED BY:	JF
REVIEWED BY:	Ron Caron C.E.T.

% GRAVEL:	53.0	USC:	GW
% SAND:	46.8	FC:	
% SILT/CLAY:	0.2	.02 mm:	

ASTM D1557(uncorrected)	pcf
ASTM D4718 (corrected)	pcf
OPTIMUM M.C.% (corrected)	
NATURAL M.C. %	3.1

PARTICLE SIZE ANALYSIS

ASTM D422/ C136



COBBLES	GRAVEL		SAND			SILT or CLAY
	Coarse	Fine	Coarse	Medium	Fine	

SIEVE ANALYSIS RESULT

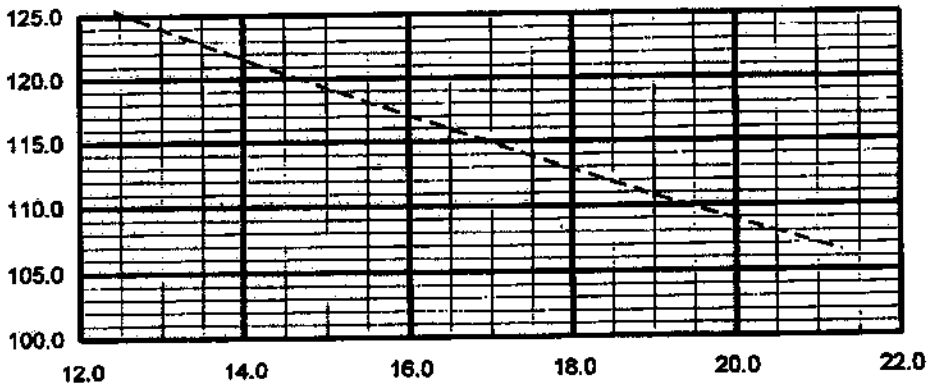
SIEVE SIZE (mm)	SIEVE SIZE (in.)	TOTAL % PASSING	SPEC
152.4	6"		
76.2	3"		
38.1	1.5"	100	
19.05	3/4"	95	
12.7	1/2"	89	
9.5	3/8"	82	
4.75	# 4	47	
2	#10	15	
0.85	#20	1	
0.425	#40	1	
0.25	# 60	0	
0.015	#100	0	
0.075	#200	0.2	

HYDROMETER RESULT

ELAPSED TIME	DIAMETER (mm)	TOTAL % PASSING
0		
0.5		
1		
2		
4		
8		
15		
30		
60		
250		
1440		

MOISTURE-DENSITY RELATIONSHIP

ASTM D1557



Perm. (ASTM D2434)	
Degradation (ATM T-13)	
Atterberg Limit ASTM 4318	