ALTA GEOSCIENCES, Inc.
Environmental & Geotechnical Solutions

SITE INVESTIGATION REPORT
EARTH STATION HOUSING SITE
COLD BAY, ALASKA
ADEC SITE NO. 1990250129701

AT&T/Alascom Sites
Alaska

Prepared for:

ScottishPower Holdings, Inc.
Portland, Oregon

NOVEMBER 2006

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ACRONYMS & ABBREVIATIONS

µg/L	micrograms per liter
µg/kg	micrograms per kilogram
AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ALTA	Alta Geosciences, Inc.
AST	above ground storage tank
BTEX	benzene, toluene, ethylbenzene, and xylenes
DRO	diesel-range organics
GRO	gasoline-range organics
KSI	Kent & Sullivan, Inc.
LNAPL	light, non-aqueous phase liquid
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
ORP	oxidation-reduction potential
PERCO	PacifiCorp Environmental Remediation Company
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyls
QA	quality assurance
QC	quality control
RPD	relative percent difference
TOC	top of casing
UST	underground storage tank
USGS	U.S. Geological Survey
VOC	volatile organic compound

EXECUTIVE SUMMARY

The Employee Housing Site associated with the Cold Bay Earth Station is located in the town of Cold Bay, approximately 3 miles south of the Earth Station complex. A single soil boring was drilled near the location of a suspected surface release of heating oil adjacent to the new above ground heating fuel storage tank at the housing site during the Phase II investigation in 1996. A single sample from that soil boring contained 715 mg/kg DRO, exceeding ADEC's Method 2 criteria (250 mg/kg).

The investigation described in this Site Investigation Report was intended to evaluate the possibility of a surface or subsurface release in that area and establish the extent of such impacts to soils. Nine soil samples were collected from a grid pattern covering 100 square feet. These samples were all collected from a depth of 1 foot below ground. A test pit was excavated near the center of the grid to a depth of 8 feet. Two soil samples (3 feet and 7 feet) were taken from the test pit. No field evidence of impacts from petroleum hydrocarbons was observed.

All soil samples were analyzed for DRO. One sample contained 40.6 mg/kg DRO (well below ADEC criteria) and the other 10 samples were all non-detect for DRO.

No evidence of a surface or subsurface release of petroleum hydrocarbons can be documented related to the existing or former heating oil tank. There exists the possibility that impacts from petroleum hydrocarbons reported in the Phase II report (if actually present) may be the result of other releases unrelated to the heating oil tanks and the house itself. The Cold Bay airport area has extensive petroleum hydrocarbon soil impacts from prior military operations, for instance.

1.0 INTRODUCTION

This Site Investigation Report presents the results of site investigations conducted at the AT&T/Alascom employee housing site at cold bay, Alaska. (Figures 1 and 2).

The AT&T/Alascom facility at Cold Bay includes two areas with residual petroleum contamination exceeding ADEC cleanup criteria. One is the Earth Station Complex, about three miles north of Cold Bay which is the subject of separate reports and cleanup plans (see *Cleanup Plan, Cold Bay Earth Station, Cold Bay, Alaska*; ALTA Geosciences July 2005). The other is the former heating oil Underground Storage Tank (UST) at the Employee Housing Area.

This document has been prepared by ALTA Geosciences, Inc. (ALTA), for ScottishPower Holdings, Inc., which is responsible for conducting investigation and remediation at these sites.

This work was performed in accordance with the Field Sampling/Quality Assurance Project Plan (ALTA Geosciences, June 2006). All work was performed under the direction of a "qualified person" as defined in 18 AAC 75.

1.1 BACKGROUND

The house is believed to have been originally constructed in 1951 (New Horizons Report), but it appears to have been moved to it's current location in 1973 as shown on a drawing titled *"Facilities Relocation Plan & Detail, Cold Bay Airport, Aircraft Parking Apron – 1972"* prepared by the Alaska Department of Public Works, Division of Aviation. The structure is approximately 1100 square feet, single story, of wood frame construction with a full basement. The basement consists of 8-inch thick cast in place concrete walls. The footings are approximately 10 feet below ground surface.

The house is located on land leased by AT&T/Alascom from the Alaska Department of Transportation and Public Facilities (ADOT/PF).

1.2 PREVIOUS INVESTIGATIONS

Previous investigations and remediation at this site are described in the following reports:

- *Permanent Closure Site Assessment, Cold Bay Earth Station.* New Horizons Telecom, Inc., July, 1995 (New Horizons, 1995). Referred to hereafter as "the New Horizons Report."
- *Final Phase I Environmental Site Assessment – Cold Bay Earth Station, Cold Bay, Alaska.* Woodward Clyde Consultants, 1995 (WCC, 1995). Referred to hereafter as "the Phase II Report."

- *Phase II Site Investigation – Cold Bay Earth Station, Cold Bay, Alaska*. Woodward Clyde Consultants, December 30, 1997. (WCC, 1997). Referred to hereafter as "the Phase II Report".

1.2.1 Environmental Setting

The site is situated in a residential area on Baranov Road approximately one-eighth mile west of the cold bay airport perimeter fence The Site is generally level. The Cold Bay shoreline is approximately one-quarter mile north of the Site.

A soil boring was drilled at this Site to a depth of 26.5 feet as part of the Phase II investigations. Soils encountered were coarse grained gray sand with gravel. Groundwater was not encountered in the boring. Investigations performed nearby regarding former Fort Randall indicate that groundwater is approximately 50 feet below ground surface in this area. Groundwater flow direction is towards the north, towards Cold Bay. A new municipal water system supplies piped water to homes in this area. There are no known groundwater wells near or downgradient of the site

1.2.2 Heating Oil Tank Removal and Replacement

The New Horizons report documents the removal of a 800 gallon underground heating oil storage tank, and it's subsequent replacement with a 500 gallon above ground storage tank. The removal and replacement occurred in October, 1990, although the report was not produced until some five years later. The AST was reportedly placed at the same location as the former UST (see Figure 3, note that all figures from previous investigations have been reoriented to a common "north – up" orientation).

In addition, the New Horizons report documents the removal and replacement of a 500 gallon heating oil UST at the Earth Station complex.

The New Horizons report provides the results of three soil analyses from the UST excavations. All three samples were analyzed for Total Petroleum Hydrocarbons (TPH) by EPA method 418.1. Results ranged from 22 mg/kg TPH to 186 mg/kg TPH. Although the report does not differentiate which sample came from which UST excavation, all three results appear to be below ADEC cleanup levels.

Curiously, the New Horizons report shows both the former UST and the replacement AST on the north side of the house (Figure 3), while both the Phase I and Phase II reports show the AST tank location to be on the north side of the house (Figure 4) where it exists today (Figure 5). It seems unlikely that the AST would have been installed on the opposite side of the house from the original UST, since that would require running completely new fuel lines. It therefore seems most probable that the figure in the New Horizons report is in error with respect to the location of both the original UST and the replacement AST, and that both

were located on the north side of the house where the AST presently sits. This error most probably resulted from the long time lag between when New Horizons performed the work (1990) and when the report was produced (1995). This time lag is likely also responsible for the lack of specificity with respect to the soil sample locations.

1.2.3 Phase I/Phase II Report Investigations and Results

As a part of the Phase II investigation, a single soil boring (SB8) was advanced near the current AST. The Phase II Report states *"... where the site technician stated that approximately 100 gallons fo heating fuel had disappeared from a temporary tank. The heating fuel was being stored in a drum during the tank replacement in 1990."*

There is some discrepancy as to exactly where the soil boring was in fact located. As shown on the published boring log for SB8, the boring location is exactly 10 feet from the corner of the house, and aligned with the northwest/southeast wall (see Figure 6A). Careful field measurements show this indicated location would infact be within the tree branches and at a significant distance from the new AST (see Figure 1). This contrasts with the location shown on the field notes contained in Appendix 1 of the Phase II Report (see Figure 6B) where the boring is shown in the middle of the space bounded by the trees, the house, and the new AST. Based on our field observations and detailed measurements, it is our opinion that the location shown on the field notes more accurately represents the actual location of boring SB8.

Five soil samples were collected from the soil boring and screened in the field for evidence of contamination. Two of the samples were analyzed for DRO and BTEX based on elevated PID readings and petroleum odors. DRO concentrations in the two samples were 770 mg/kg (15 feet bgs) and 15 mg/kg (25 feet bgs). Ethylbenzene and xylenes were reported from the 15 foot sample at concentrations of 0.026 mg/kg and 0.12 mg/kg respectively, well below ADEC Method 2 cleanup levels. The Phase II Report states *"Strong petroleum odor was observed in samples from soil boring SB8 at depths from 10 to 20 feet."*

1.3 INVESTIGATION OBJECTIVES

The purpose of this site investigation was to document prior information suggesting petroleum hydrocarbon impacts in site soils (the Phase II Report) and evaluate the nature and extent of such impacts.

2.0 INVESTIGATION ACTIVITIES

Since the New Horizons report indicated a “clean” closure of the former UST, the inferred release mechanism was the loss of the 100 gallons of heating oil during the changeover from the UST to the AST. Since this would be a surface release, the heating oil should be detectable in the shallow surface soils in the area of the inferred release. Soil samples from deeper levels should verify vertical migration from the surface, or evaluate whether undiscovered releases from the original UST exist. Soil sampling was performed on September 12 and 13, 2006.

2.1 SOIL SAMPLING LOCATIONS AND DEPTHS

To achieve the investigation objectives, a grid 5 foot on center was established on the north side of the house, between the house and the trees and extending from the front (northwest) corner of the house to the new AST. Sample locations were identified by row (1, 2, 3) and column (A, B, C) identifiers (e.g., “B2” is at approximately the inferred location of soil boring SB8 from the Phase II investigation (see Figure 7). Shallow (one foot bgs) soil samples were collected from each grid location.

Following the shallow soil sampling, a test pit was excavated at location C2, as close as possible to the existing AST and presumably adjacent to the former UST location. The test pit extended from the C2 location to the B2 location. Although no information is available regarding the original UST, tanks in this capacity range are commonly 48 inches in diameter. Considering the date of installation (ca. 1973), the tank was likely provided with minimal soil cover (1 to 2 feet). The test pit was extended to a depth of approximately 8 feet (likely at least two feet below the former UST bottom) and soil samples were collected from depths of 3 feet and 7 feet. A depth of eight feet was felt to be the deepest practicable excavation depth which would not endanger the stability of the adjacent AST.

2.2 SOIL SAMPLING PROCEDURES

Soil samples from the one foot depth soil sampling grid were obtained by first excavating by shove to a depth of approximately 1.5 feet. Soil was then scraped from the shovel hole sidewalls using a decontaminated stainless steel spoon and transferred into laboratory supplied glass sampling jars. A split of the sample was placed in a plastic bag for field screening.

The three foot depth soil sample from the test pit was obtained by excavating to a depth of four feet. The soil sample was taken by scraping from the test pit sidewall as for the shallow (one foot) samples. For the deeper sample, the soil was taken from fresh soil from the backhoe bucket by first scraping the outer soils and collecting the sample from what

appeared to be undisturbed natural soils. Soil samples were placed in laboratory supplied glass jars and a plastic bag as described above.

Following soil sampling, the test pit and shovel holes were backfilled with the excavated site soils.

2.3 SAMPLE SCREENING AND HANDLING

Soil samples for field screening in plastic bags were taken to an indoor location and allowed to warm to room temperature. Field screening samples were then observed for stains and/or odors. A “sheen test” was also performed on field screening samples by placing a small amount of soil in a glass jar, adding fresh tap water, agitating the sample and allowing it to stand while being observed for petroleum sheens.

Samples for laboratory analysis were labeled and placed in a cooler with synthetic ice. The cooler was shipped via air freight to the analytical laboratory under chain-of-custody.

2.4 SAMPLE ANALYSIS

All soil samples were analyzed by TestAmerica of Anchorage, Alaska, for DRO by method AK102.

3.0 RESULTS

3.1 STRATIGRAPHY

Site soils from the ground surface to approximately 1.5 feet were observed to consist of brown silty sand with gravel with a significant amount of organic matter (grass roots).

Below 1.5 feet to the depth explored, soils consist of gravel/sand mixture with cobbles up to 6 inches in size.

3.2 FIELD SCREENING RESULTS

No odors, stains, or sheens were noted in any of the samples.

3.3 ANALYTICAL RESULTS

Laboratory analysis certificates are presented in Appendix A together with the completed ADEC laboratory review checklist.

All samples were non-detect for DRO except for sample C1 (1-foot bgs), which contained 40.6 mg/kg DRO.

3.4 QUALITY ASSURANCE REVIEW

The ADEC Laboratory Data Review Checklist is contained in Appendix A. All field and laboratory quality assurance parameters are within acceptable limits except that no field duplicates were collected due to an insufficient number of sample jars. The data is considered acceptable for use.

4.0 CONCLUSIONS

Based on this site investigation, the following conclusions can be drawn:

- None of the samples collected showed any evidence of significant impacts from petroleum hydrocarbons
- The hypothesized scenario that the temporarily stored heating oil from the time the old UST was removed and the new AST installed in 1990 was released to the ground surface cannot be substantiated.
- No evidence was observed of an undiscovered release from the old UST.

To date, at least fourteen soil samples have been collected and analyzed for DRO or TPH from this area:

- At least one sample collected by New Horizons during the removal of the former UST
- Two samples collected and analyzed by Woodward Clyde Consultants as a part of the Phase II investigation.
- Eleven samples collected and analyzed as a part of this 2006 site investigation.

Of these fourteen samples, only a single sample from the Phase II investigation (SB8, 15 feet), was reported as containing levels of petroleum hydrocarbons in excess of ADEC Method 2 criteria (715 mg/kg). The results of this analysis cannot be duplicated or confirmed.

No evidence of a surface or subsurface release of petroleum hydrocarbons can be documented related to the existing or former heating oil tank. There exists the possibility that impacts from petroleum hydrocarbons reported in the Phase II report (if actually present) may be the result of other releases unrelated to the heating oil tanks and the house itself. The Cold Bay airport area has extensive petroleum hydrocarbon soil impacts from prior military operations (see *"Final 2002 Remedial Investigation Report, Cold Bay, Alaska"*, U.S. Army Corps of Engineers, August 2003).

5.0 REFERENCES

Alta Geosciences, Inc., July 2006: *Field Sampling Quality Control Program Plan*.

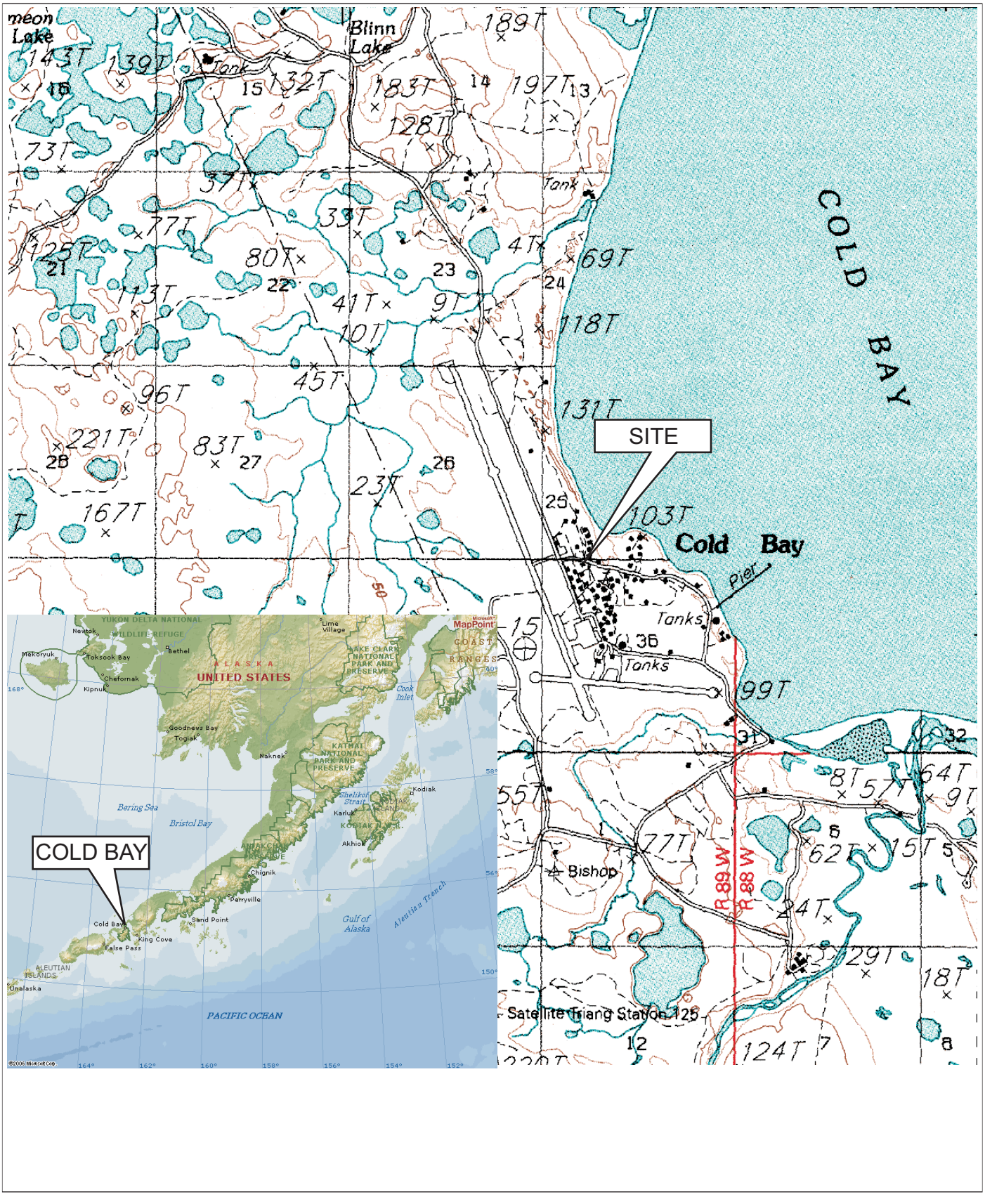
New Horizons Telecom, Inc., July 1995: *Permanent Closure Site Assessment, Cold Bay Earth Station.*

U.S. Army Corps of Engineers, August 2003: *"Final 2002 Remedial Investigation Report, Cold Bay, Alaska"*.

Woodward Clyde Consultants, 1995: *Final Phase I Environmental Site Assessment – Cold Bay Earth Station, Cold Bay, Alaska.*

Woodward Clyde Consultants, December 30, 1997: *Phase II Site Investigation – Cold Bay Earth Station, Cold Bay, Alaska*.

FIGURES



ALTA GEOSCIENCES, INC. *Environmental & Geotechnical Solutions* Bothell, Washington *Prepared for: ScottishPower Holdings, Inc.*	**COLD BAY EMPLOYEE HOUSING SITE** **COLD BAY, ALASKA** **LOCATION MAP**	**FIGURE** **1**

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Bothell, Washington

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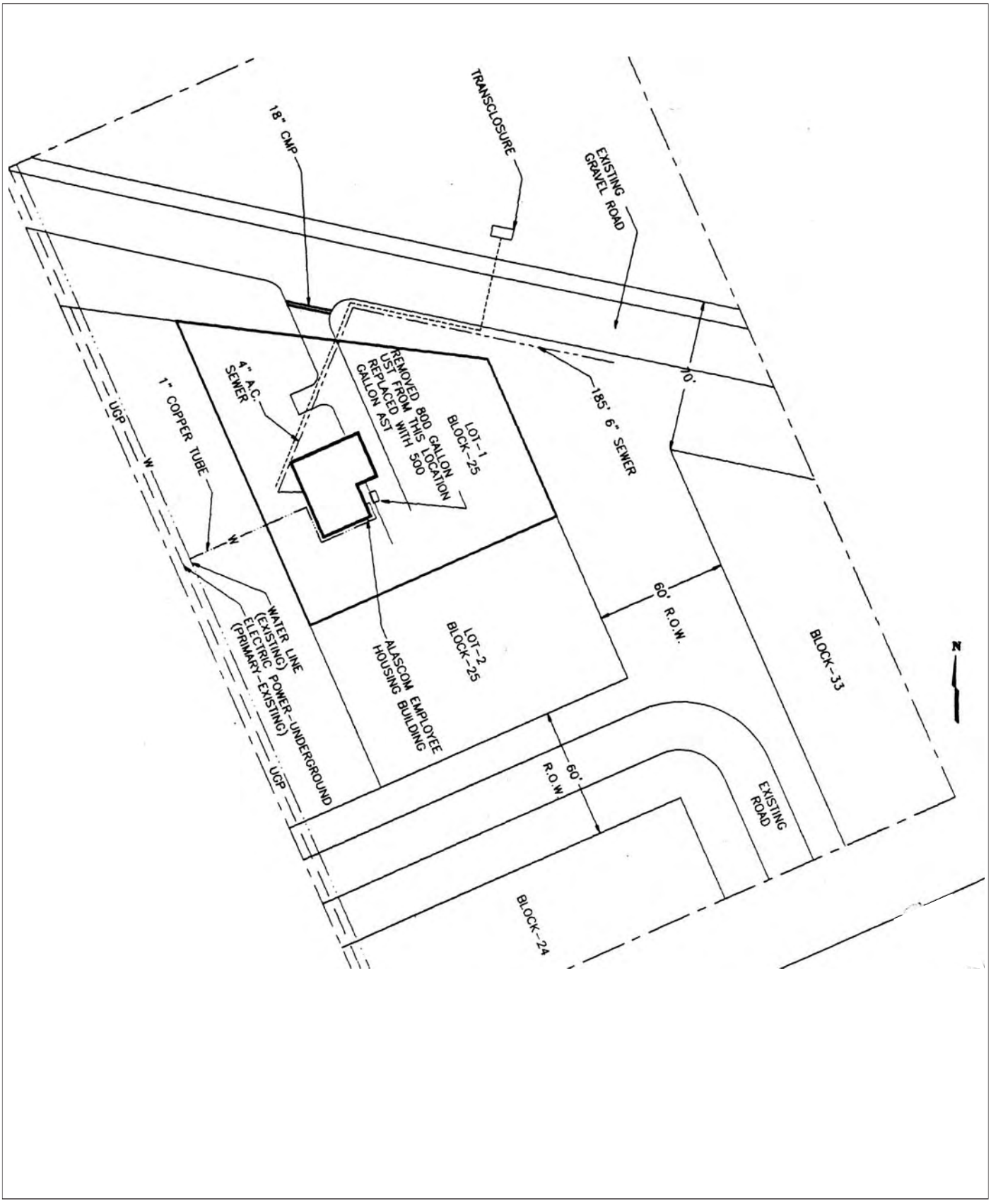
COLD BAY EMPLOYEE HOUSING SITE
COLD BAY, ALASKA

AERIAL PHOTO

FIGURE
2



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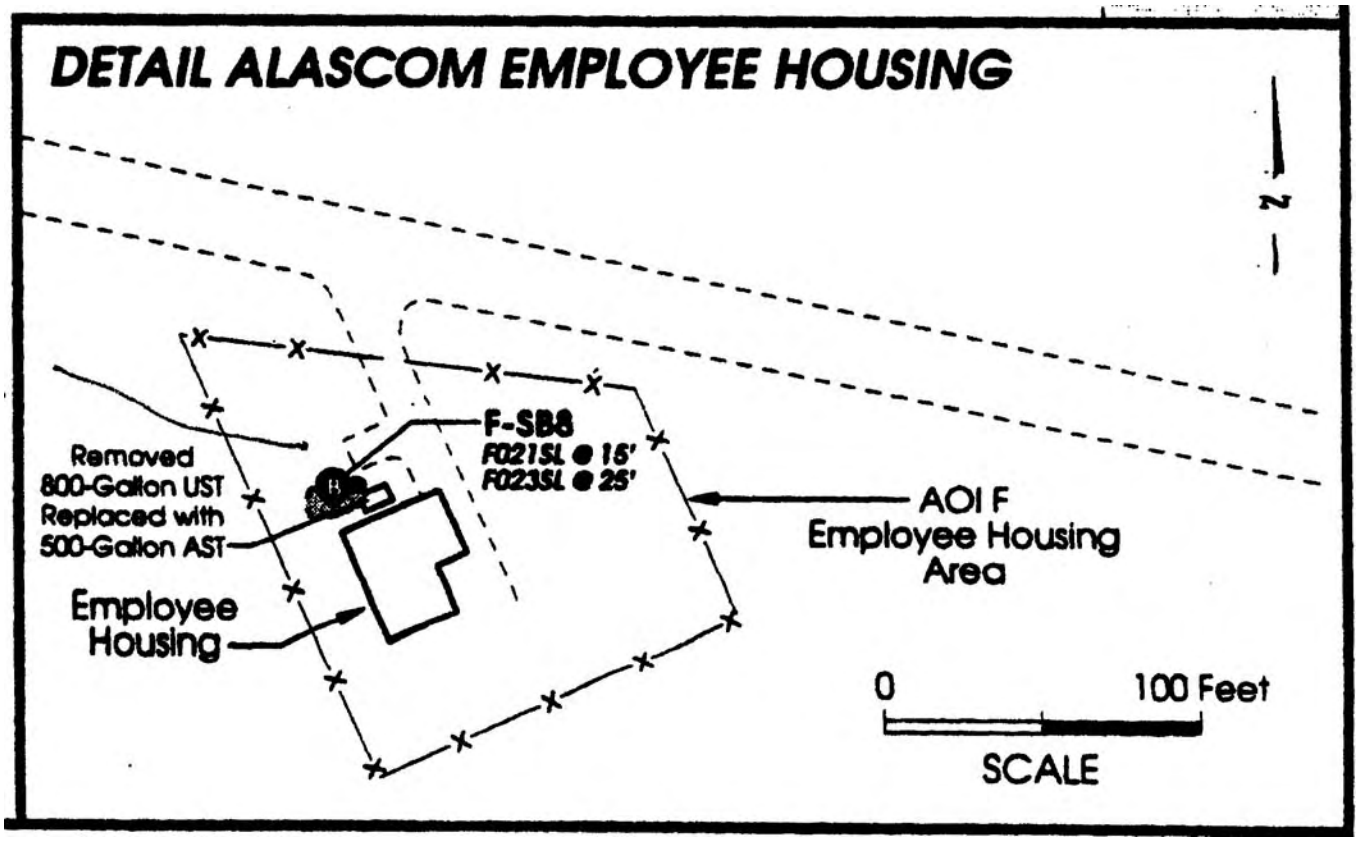
Bothell, Washington

Prepared for: ScottishPower Holdings, Inc.

COLD BAY EMPLOYEE HOUSING SITE
COLD BAY, ALASKA

TANK REMOVAL AND REPLACEMENT LOCATIONS FROM NEW HORIZONS REPORT

FIGURE
3



ALTA GEOSCIENCES, INC. *Environmental & Geotechnical Solutions* Bothell, Washington *Prepared for: ScottishPower Holdings, Inc.*	**COLD BAY EMPLOYEE HOUSING SITE** **COLD BAY, ALASKA** **TANK LOCATIONS AS SHOWN ON PHASE II REPORT**	**FIGURE** **4**

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Bothell, Washington

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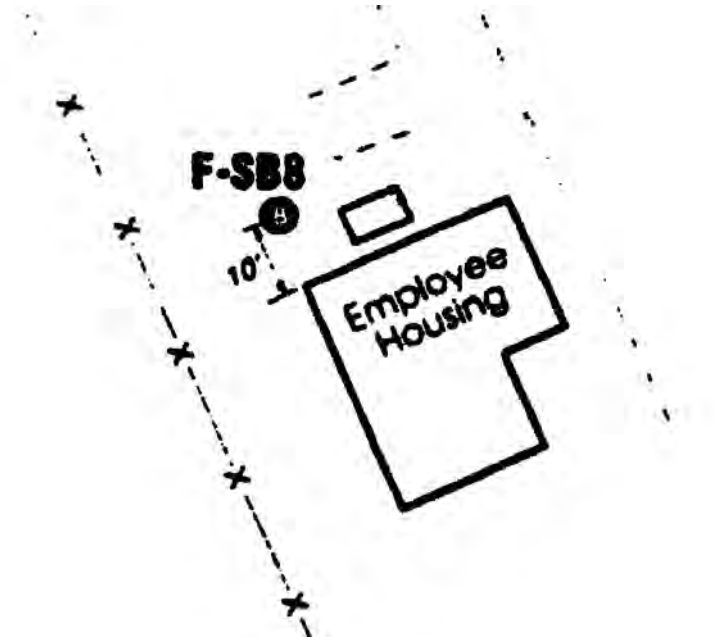
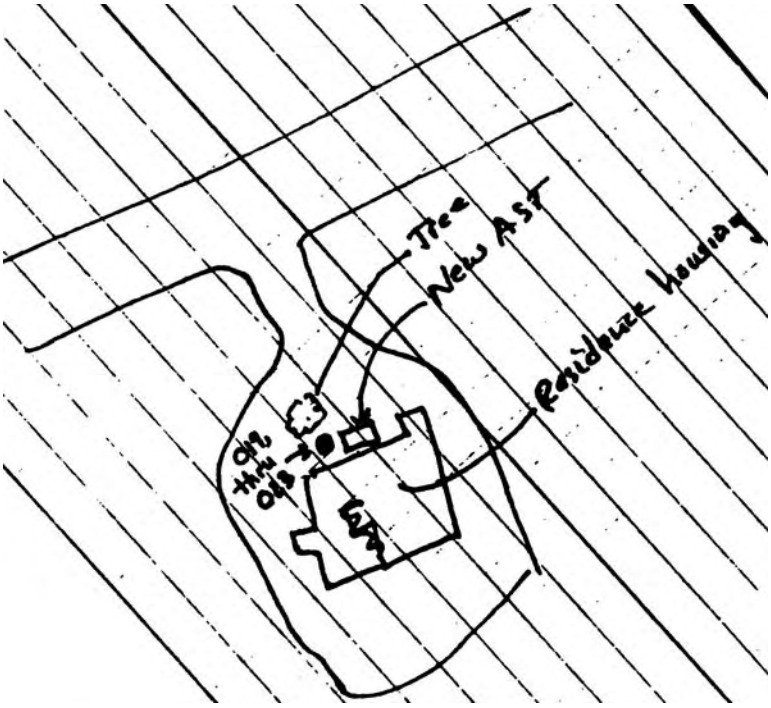
COLD BAY EMPLOYEE HOUSING SITE
COLD BAY, ALASKA

PHOTO LOOKING EAST OF NEW AST ON NORTH SIDE OF HOUSE

FIGURE
5

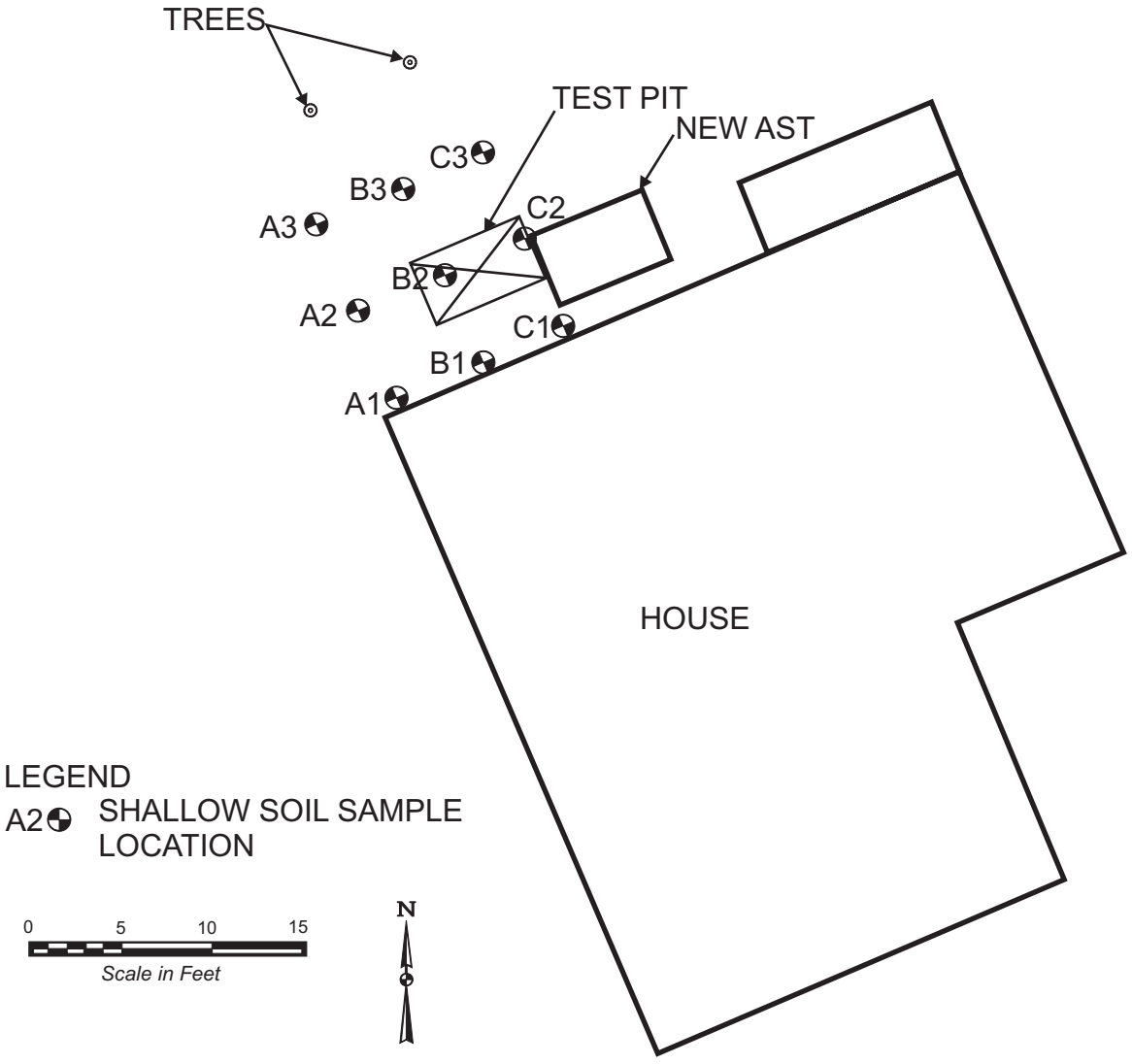


6A LOCATION AS SHOWN ON BORING IN PHASE II REPORT



6B LOCATION AS SHOWN ON FIELD NOTES IN APPENDIX TO PHASE II REPORT

ALTA GEOSCIENCES, INC. *Environmental & Geotechnical Solutions* Bothell, Washington *Prepared for: ScottishPower Holdings, Inc.*	**COLD BAY EMPLOYEE HOUSING SITE** **COLD BAY, ALASKA** **ALTERNATE LOCATIONS OF PHASE II SOIL BORING SB8**	**FIGURE** **6**



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Bothell, Washington

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COLD BAY EMPLOYEE HOUSING SITE
COLD BAY, ALASKA

2006 SOIL SAMPLING LOCATIONS

FIGURE
7

APPENDIX A

Laboratory Reports – 2006 Soil Analyses

Test America Order No: API0048

TestAmerica
ANALYTICAL TESTING CORPORATION

ANCHORAGE, AK 2000 W INTERNATIONAL AIRPORT ROAD, SUITE A-10
ANCHORAGE, AK 99502-1119
ph: (907) 563.9200 fax: (907) 563.9210

October 02, 2006

Alex Tula
ALTA Geosciences, Inc.
22833 Bothell-Everett Hwy., Suite 102 #1168
Bothell, WA/USA 98021-9365

RE: CDB-EH

Enclosed are the results of analyses for samples received by the laboratory on 09/15/06 10:00. The following list is a summary of the Work Orders contained in this report, generated on 10/02/06 19:44.

If you have any questions concerning this report, please feel free to contact me.

Work Order	Project	ProjectNumber
API0048	CDB-EH	[none]

TestAmerica - Anchorage, AK

Jennifer L. Poppe, Chemist I

TestAmerica
ANALYTICAL TESTING CORPORATION

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ALTA Geosciences, Inc.	Project Name:	**CDB-EH**	
22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
A-1	API0048-01	Soil	09/12/06 16:00	09/15/06 10:00
A-2	API0048-02	Soil	09/12/06 16:02	09/15/06 10:00
A-3	API0048-03	Soil	09/12/06 16:04	09/15/06 10:00
B-1	API0048-04	Soil	09/12/06 16:06	09/15/06 10:00
B-2	API0048-05	Soil	09/12/06 16:08	09/15/06 10:00
B-3	API0048-06	Soil	09/12/06 16:10	09/15/06 10:00
C-1	API0048-07	Soil	09/12/06 16:12	09/15/06 10:00
C-2	API0048-08	Soil	09/12/06 16:14	09/15/06 10:00
C-3	API0048-09	Soil	09/12/06 16:16	09/15/06 10:00
TP1-3'	API0048-10	Soil	09/13/06 15:00	09/15/06 10:00
TP1-7'	API0048-11	Soil	09/13/06 15:15	09/15/06 10:00

TestAmerica - Anchorage, AK

Jennifer L. Poppe, Chemist I

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ALTA Geosciences, Inc.	Project Name:	**CDB-EH**	
22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

Diesel Range Organics (C10-C25) per AK102

TestAmerica - Anchorage, AK

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
API0048-01 (A-1)		**Soil**			**Sampled: 09/12/06 16:00**					
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 14:14	
Surrogate(s): 1-Chlorooctadecane			*77.9%*		*50 - 150 %*	"			"	
API0048-02 (A-2)		**Soil**			**Sampled: 09/12/06 16:02**					
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 14:46	
Surrogate(s): 1-Chlorooctadecane			*90.0%*		*50 - 150 %*	"			"	
API0048-03 (A-3)		**Soil**			**Sampled: 09/12/06 16:04**					
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 14:46	
Surrogate(s): 1-Chlorooctadecane			*82.9%*		*50 - 150 %*	"			"	
API0048-04 (B-1)		**Soil**			**Sampled: 09/12/06 16:06**					
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 15:50	
Surrogate(s): 1-Chlorooctadecane			*80.8%*		*50 - 150 %*	"			"	
API0048-05 (B-2)		**Soil**			**Sampled: 09/12/06 16:08**					
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 15:50	
Surrogate(s): 1-Chlorooctadecane			*70.3%*		*50 - 150 %*	"			"	
API0048-06 (B-3)		**Soil**			**Sampled: 09/12/06 16:10**					
Diesel Range Organics	AK 102	ND	-----	22.6	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 16:22	
Surrogate(s): 1-Chlorooctadecane			*91.7%*		*50 - 150 %*	"			"	
API0048-07 (C-1)		**Soil**			**Sampled: 09/12/06 16:12**					
Diesel Range Organics	AK 102	**40.6**	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 16:22	
Surrogate(s): 1-Chlorooctadecane			*69.8%*		*50 - 150 %*	"			"	
API0048-08 (C-2)		**Soil**			**Sampled: 09/12/06 16:14**					
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 16:54	
Surrogate(s): 1-Chlorooctadecane			*75.7%*		*50 - 150 %*	"			"	

TestAmerica - Anchorage, AK

Jennifer L. Poppe, Chemist I

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

TestAmerica
ANALYTICAL TESTING CORPORATION

ANCHORAGE, AK 2000 W. INTERNATIONAL AIRPORT ROAD, SUITE A-10
ANCHORAGE, AK 99502-1119
ph: (907) 563.9200 fax: (907) 563.9210

ALTA Geosciences, Inc.	Project Name:	**CDB-EH**	
22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

Diesel Range Organics (C10-C25) per AK102

TestAmerica - Anchorage, AK

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
API0048-09 (C-3)		**Soil**				**Sampled: 09/12/06 16:16**				
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 16:54	
Surrogate(s): 1-Chlorooctadecane			*85.5%*		*50 - 150 %*	"			"	
API0048-10 (TP1-3')		**Soil**				**Sampled: 09/13/06 15:00**				
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 17:26	
Surrogate(s): 1-Chlorooctadecane			*92.9%*		*50 - 150 %*	"			"	
API0048-11 (TP1-7')		**Soil**				**Sampled: 09/13/06 15:15**				
Diesel Range Organics	AK 102	ND	-----	25.0	mg/kg dry	1x	6090057	09/15/06 13:40	09/19/06 17:26	
Surrogate(s): 1-Chlorooctadecane			*90.4%*		*50 - 150 %*	"			"	

TestAmerica - Anchorage, AK

Jennifer L. Poppe, Chemist I

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ANCHORAGE, AK 2000 W. INTERNATIONAL AIRPORT ROAD, SUITE A-10
ANCHORAGE, AK 99502-1119
ph: (907) 563.9200 fax: (907) 563.9210

ALTA Geosciences, Inc.
22833 Bothell-Everett Hwy., Suite 102 #1168
Bothell, WA/USA 98021-9365

Project Name: **CDB-EH**
Project Number: [none]
Project Manager: Alex Tula

Report Created:
10/02/06 19:44

Physical Parameters by APHA/ASTM/EPA Methods

TestAmerica - Anchorage, AK

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
API0048-01 (A-1)		**Soil**				**Sampled: 09/12/06 16:00**				
Dry Weight	TA-AK-FLS-005 -R01	**78.4**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-02 (A-2)		**Soil**				**Sampled: 09/12/06 16:02**				
Dry Weight	TA-AK-FLS-005 -R01	**77.9**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-03 (A-3)		**Soil**				**Sampled: 09/12/06 16:04**				
Dry Weight	TA-AK-FLS-005 -R01	**86.6**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-04 (B-1)		**Soil**				**Sampled: 09/12/06 16:06**				
Dry Weight	TA-AK-FLS-005 -R01	**77.5**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-05 (B-2)		**Soil**				**Sampled: 09/12/06 16:08**				
Dry Weight	TA-AK-FLS-005 -R01	**73.2**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-06 (B-3)		**Soil**				**Sampled: 09/12/06 16:10**				
Dry Weight	TA-AK-FLS-005 -R01	**80.6**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-07 (C-1)		**Soil**				**Sampled: 09/12/06 16:12**				
Dry Weight	TA-AK-FLS-005 -R01	**73.2**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-08 (C-2)		**Soil**				**Sampled: 09/12/06 16:14**				
Dry Weight	TA-AK-FLS-005 -R01	**71.7**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-09 (C-3)		**Soil**				**Sampled: 09/12/06 16:16**				
Dry Weight	TA-AK-FLS-005 -R01	**90.3**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-10 (TP1-3')		**Soil**				**Sampled: 09/13/06 15:00**				
Dry Weight	TA-AK-FLS-005 -R01	**60.7**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	
API0048-11 (TP1-7')		**Soil**				**Sampled: 09/13/06 15:15**				

TestAmerica - Anchorage, AK

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Jennifer L. Poppe, Chemist I

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ALTA Geosciences, Inc.	Project Name:	**CDB-EH**	
22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

Physical Parameters by APHA/ASTM/EPA Methods

TestAmerica - Anchorage, AK

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
API0048-11 (TP1-7')		**Soil**					**Sampled: 09/13/06 15:15**			
Dry Weight	TA-AK-FLS-005 -R01	**92.7**	-----	1.00	%	1x	6090058	09/15/06 14:10	09/19/06 07:36	

Jennifer L. Poppe, Chemist I

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22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

Diesel Range Organics (C10-C25) per AK102 - Laboratory Quality Control Results

TestAmerica - Anchorage, AK

QC Batch: 6090057 **Soil Preparation Method: EPA 3545**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (6090057-BLK1)								**Extracted: 09/15/06 12:33**						
Diesel Range Organics	AK 102	ND	---	25.0	mg/kg wet	1x	--	--	--	--	--	--	09/22/06 09:22	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 92.2%*			*Limits: 50-150%*	"							*09/22/06 09:22*	
LCS (6090057-BS1)								**Extracted: 09/15/06 12:33**						
Diesel Range Organics	AK 102	112	---	25.0	mg/kg wet	1x	--	126	88.9%	(75-125)	--	--	09/22/06 09:22	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 73.0%*			*Limits: 50-150%*	"							*09/22/06 09:22*	
LCS Dup (6090057-BSD1)								**Extracted: 09/15/06 12:33**						
Diesel Range Organics	AK 102	115	---	25.0	mg/kg wet	1x	--	126	91.3%	(75-125)	2.64%	(20)	09/22/06 09:22	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 76.5%*			*Limits: 50-150%*	"							*09/22/06 09:22*	
Duplicate (6090057-DUP1)							**QC Source: API0049-01**	**Extracted: 09/15/06 12:33**						
Diesel Range Organics	AK 102	ND	---	25.0	mg/kg dry	1x	ND	--	--	--	16.1%	(20)	09/16/06 00:58	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 84.8%*			*Limits: 50-150%*	"							*09/16/06 00:58*	
Matrix Spike (6090057-MS1)							**QC Source: API0049-01**	**Extracted: 09/15/06 12:33**						
Diesel Range Organics	AK 102	103	---	22.1	mg/kg dry	1x	2.45	118	85.2%	(75-125)	--	--	09/16/06 02:02	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 89.3%*			*Limits: 50-150%*	"							*09/16/06 02:02*	
Matrix Spike Dup (6090057-MSD1)							**QC Source: API0049-01**	**Extracted: 09/15/06 12:33**						
Diesel Range Organics	AK 102	115	---	25.0	mg/kg dry	1x	2.45	128	87.9%	(75-125)	11.0%	(25)	09/16/06 02:34	
Surrogate(s): 1-Chlorooctadecane		*Recovery: 86.3%*			*Limits: 50-150%*	"							*09/16/06 02:34*	

TestAmerica - Anchorage, AK

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ALTA Geosciences, Inc.	Project Name:	**CDB-EH**	
22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

Physical Parameters by APHA/ASTM/EPA Methods - Laboratory Quality Control Results

TestAmerica - Anchorage, AK

QC Batch: 6090058 **Soil Preparation Method: *** DEFAULT PREP**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Duplicate (6090058-DUP1)					**QC Source: API0048-01**				**Extracted: 09/15/06 14:10**					
Dry Weight	TA-AK-FLS-005-R01	78.6	---	1.00	%	1x	78.4	--	--	--	0.255%	(25)	09/19/06 07:36	

TestAmerica - Anchorage, AK

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ALTA Geosciences, Inc.	Project Name:	**CDB-EH**	
22833 Bothell-Everett Hwy., Suite 102 #1168	Project Number:	[none]	Report Created:
Bothell, WA/USA 98021-9365	Project Manager:	Alex Tula	10/02/06 19:44

Notes and Definitions

Report Specific Notes:

None

Laboratory Reporting Conventions:

DET	-	Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
ND	-	Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
NR/NA	-	Not Reported / Not Available
dry	-	Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
wet	-	Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
RPD	-	RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
MRL	-	METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
MDL*	-	METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. *MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
Dil	-	Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
Reporting Limits	-	Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
Electronic Signature	-	Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy.* Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Anchorage, AK

Jennifer L. Poppe, Chemist I

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11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210

CHAIN OF CUSTODY REPORT

Work Order #: APL1148

CLIENT: ALTA GEOSCIENCES

INVOICE TO: ALTA

REPORT TO: ALTA GEOSCIENCES
ADDRESS:

PHONE: 425 485-1053 FAX: 425 484-0114

P.O. NUMBER:

PROJECT NAME: CDB-EH

PROJECT NUMBER:

SAMPLED BY: A THA

TURNAROUND REQUEST
in Business Days *

Organic & Inorganic Analyses: ~~10~~ STD | 7 | 5 | 4 | 3 | 2 | 1 | <1

Petroleum Hydrocarbon Analyses: 5 STD | 4 | 3 | 2 | 1 | <1

OTHER Specify:

* *Turnaround Requests less than standard* **may incur Rush Charges.**

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE: DRO	MATRIX (W, S, O)	# OF CONT	LOCATION / COMMENTS	FA WO ID
1	A-1	091206/1600	X	S	1		
2	A-2	091206/1602	X				
3	A-3	091206/1604	X				
4	B-1	091206/1606	X				
5	B-2	091206/1608	X				
6	B-3	091206/1610	X				
7	C-1	091206/1612	X				
8	C-2	091206/1614	X				
9	C-3	091206/1616	X				
10	TP1-3'	091206/1540	X				

RELEASED BY: ALEX THA — DATE: 091306 TIME:
PRINT NAME: ALEX THA FIRM: ALTA

RECEIVED BY: [signature] DATE: 9/15/06
PRINT NAME: [illegible] FIRM: TA-SEA TIME: 1000

RELEASED BY: DATE: TIME:
PRINT NAME: FIRM:

RECEIVED BY: DATE: TIME:
PRINT NAME: FIRM:

ADDITIONAL REMARKS:

COC REV 05/2006

TEMP: 1.1°C

PAGE 1 OF 2

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and for any additional analyses performed on this project.
Payment for services is due within 30 days from the date of invoice unless otherwise contracted. Sample(s) will be disposed of after 30 days unless otherwise contracted.

TestAmerica
ANALYTICAL TESTING CORPORATION

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244 425-420-9200 FAX 420-9210
11922 E. First Ave, Spokane, WA 99206-5302 509-924-9200 FAX 924-9290
9405 SW Nimbus Ave, Beaverton, OR 97008-7145 503-906-9200 FAX 906-9210
2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119 907-563-9200 FAX 563-9210 X

CHAIN OF CUSTODY REPORT

Work Order #: AFI 0494

CLIENT: ALTA GEOSCIENCES

INVOICE TO: ALTA

REPORT TO: ALTA GEOSCIENCES
ADDRESS:

PHONE: FAX:

P.O. NUMBER:

PROJECT NAME: CDB-EH

PROJECT NUMBER:

SAMPLED BY: A. TULLA

TURNAROUND REQUEST
in Business Days *
Organic & Inorganic Analyses: ~~10~~ STD | 7 | 5 | 4 | 3 | 2 | 1 | <1
Petroleum Hydrocarbon Analyses: 5 STD | 4 | 3 | 2 | 1 | <1
OTHER Specify
* *Turnaround Requests less than standard* **may incur Rush Charges.**

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	PRESERVATIVE	REQUESTED ANALYSES: DRO	MATRIX (W, S, O)	# OF CONT.	LOCATION / COMMENTS	TA WO ID
1	TP1-7'	091306/1515		X	S	1		11
2								
3								
4								
5								
6								
7								
8								
9								
10								

RELEASED BY: [signature] DATE: 091306
PRINT NAME: ALEX TULLA FIRM: ALTA TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

RELEASED BY: DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY: DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS:

TEMP:

COC REV 05/2006

PAGE 2 OF 2

Note: By relinquishing samples to TestAmerica, client agrees to pay for the services requested on this chain of custody form and for any additional analyses performed on this project.
Payment for services is due within 30 days from the date of invoice unless otherwise contracted. Sample(s) will be disposed of after 30 days unless otherwise contracted.

Test America Cooler Receipt Form

WORK ORDER # APD0048 CLIENT: ALTA GEOSCI. PROJECT: CDB-EH

Date/Time Cooler Received: 2 15 00 10 00 Cooler signed for by: JEN POPPE (Print name)

Preliminary Examination Phase:

Date Cooler Opened: ~~Same as date received~~ Time: _____

Cooler opened by: (print) JEN POPPE (sign) _____

1. Delivered by: ~~FEDEX~~ CLIENT ☐ Fed-Ex ☐ UPS ☐ Navis ☐ LYNDEN ☐ CLIENT ☐ Other

Shipment tracking # if applicable 1675 7274 (include copy of shipping papers in file)

2. Number of Custody Seals 0 Signed by: _____ Date: ___/___/___

Were custody seals unbroken and intact on arrival? ☐ Yes ☐ No

3. Were custody papers sealed in a plastic bag? ~~Yes~~ ☐ No

4. Were custody papers filled out properly (ink, signed, etc.)? ~~Yes~~ ☐ No

5. Did you sign the custody papers in the appropriate place? ~~Yes~~ ☐ No

6. Was ice used? ~~Yes~~ ☐ No Type of ice: ☐ blue ice ~~gel ice~~ ☐ real ice ☐ dry ice Condition of Ice frozen

Temperature by Digi-Thermo Probe 2.7 °C Thermometer # CW #3

7. Packing in Cooler: ☐ bubble wrap ☐ styrofoam ☐ cardboard ☐ Other: _____

8. Did samples arrive in plastic bags? ~~Yes~~ ☐ No

9. Did all bottles arrive unbroken, and with labels in good condition? ~~Yes~~ ☐ No

10. Are all bottle labels complete (ID, date, time, etc.) ☒ Yes ☐ No

11. Do bottle labels and Chain of Custody agree? ☒ Yes ☐ No

12. Are the containers and preservatives correct for the tests indicated? ☒ Yes ☐ No

13. Is there adequate volume for the tests requested? ☒ Yes ☐ No

14. Were VOA vials free of bubbles? ☒ N/A ☐ Yes ☐ No

If "NO" which containers contained "head space" or bubbles? _____

Log-in Phase:

Date of sample log-in 2 15 00

Samples logged in by: (print) Johanna Dreher (sign) Johanna Dreher

1. Was project identifiable from custody papers? ☒ Yes ☐ No
2. Do Turn Around Times and Due Dates agree ☒ Yes ☐ No
3. Was the Project Manager notified of status? ☒ Yes ☐ No
4. Was the Lab notified of status? ☒ Yes ☐ No
5. Is the COC scanned and copied? ☒ Yes ☐ No

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:

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:

2. Chain of Custody (COC)

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

(•) Yes ( ) No Comments:

b. Correct analyses requested?

(•) Yes ( ) No Comments:

3. Laboratory Sample Receipt Documentation

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

(•) Yes ( ) No Comments:

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 ouside of acceptance range, insufficient or missing samples, etc.?

○ Yes ○ No Comments:

n/a

e. Data quality or usability affected? Explain.

Comments:

4. Case Narrative

a. Present and understandable?

○ Yes ◉ No Comments:

Not supplied by lab

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:

none

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:

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:

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:

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:

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

( ) Yes ( ) No Comments:

vii. Data quality or usability affected? Explain.

Comments:

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:

iv. Data quality or usability affected? Explain.

Comments:

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:

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:

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?

○ Yes ○ No Comments:

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: Alex Tula

Title: Geologist Date:

CS Report Name: Report Date:

Consultant Firm:

Laboratory Name: Laboratory Report Number:

ADEC File Number: ADEC RecKey Number:

Print Form Version 2.1 Reset Form