

July 9, 2010

Susan Schrader  
Alaska Railroad Corporation  
P.O. Box 107500  
Anchorage, Alaska 99510

**Re: UST Removal Report  
CF/SBS Building  
Anchorage, Alaska**

Dear Ms. Schrader:

Clarus Environmental Services, LLC (Clarus), is pleased to submit this letter report to the Alaska Railroad Corporation (ARRC) summarizing the removal of an unregulated underground storage tank (UST) located at the CF/SBS Building at 801 West 1<sup>st</sup> Avenue in Anchorage, Alaska (Figure 1). The work was conducted in accordance with our April 15, 2010, proposal that you approved on April 16, 2010.

The UST was discovered during inspection of the facility following the purchase of the property. The tank has been identified as a heating oil tank with a large portion of the building expansion built around and over it. In November 2009 after the contents of UST were pumped out, four soil borings were advanced around the UST. Analytical results of soil samples collected from the borings indicated that the soil beneath the UST was impacted with DRO and benzene above the Alaska Department of Environmental Conservation (ADEC) cleanup levels. Based upon the boring logs, the hydrocarbon-impacted soil was interpreted to be localized (Clarus 2010).

## **SUMMARY OF FINDINGS**

The following is a summary of the UST closure activities and associated findings. Please consult the main body of this report for supporting information.

- The 5,000-gallon heating oil UST and its associated piping were removed from the site on May 4, 2010.
- Based upon field-screening results and observations, approximately 40 cubic yards of petroleum impacted soils from the excavation were excavated. The soils were thermally treated at Alaska Soil Recycling (ASR) in Anchorage.

- Additional excavation of petroleum-impacted soils from below the former UST was limited due to the potential of undermining the building foundation and the presence of groundwater at 3.5 feet below grade.
- Clean, imported fill was used to backfill the excavation.
- Analytical results showed that the concentrations of diesel-range organics (DRO) remaining in the ground below the former UST location was above the applicable Alaska Department of Environmental Conservation (ADEC) soil cleanup level.
- The analytical results also showed that the DRO impacted soil north of the former UST location, and north of the footing wall, had been removed to below the ADEC soil cleanup level.

## **UST REMOVAL**

B C Excavating removed the UST on May 4, 2010. The fill port was located directly on top of the UST and the supply and return lines were located on the west end of the UST and entered the building under the concrete floor slab. The concrete wall on the north side of the UST was removed to grade (Attachment A, Photograph 1). The footing of the wall extended below grade and below the groundwater level (3.5 feet). This section of the wall (below grade) was left in place.

The UST was removed and limited petroleum-impacted soils were removed from the immediate vicinity of the former UST location. The bottom of the UST was 4 feet below grade. However, the building was constructed such that the floor slab of the building was 4 feet above grade (making it convenient for trucks to load and unload). The southern edge of the UST was 2 feet north of the building north wall and the western edge of the UST was approximately 1 foot east of the building inset wall.

Limited petroleum-impacted soil was removed from the UST excavation; however, no additional soil was removed because further excavation had potential of undermining the structure. Two soil samples (and a duplicate, EX3) were collected from the excavation for submittal to the laboratory for analyses. These two samples (EX1 and EX2) were collected from the excavated area impounded by footing walls. The samples were collected from the sidewalls due to the presence of groundwater at 3.5 feet below grade (Photograph 2).

The CF/SBS Building Subsurface Soil Sampling Report (Clarus 2010) identified petroleum-impacted soil on the north side on the concrete wall. These soils were

excavated and removed as part of the May 4, 2010 effort. The excavation of soils was guided by visual observation and with field screening using a photoionization detector (PID) calibrated with 100 parts per million (ppm) isobutylene. Soil samples for field screening were collected at a rate of at least one sample per 10 cubic yards of excavated soil. After field screening indicated the absence of hydrocarbons at approximately 10 feet north of the wall, laboratory confirmation samples EX5 and EX6 were collected.

The soil samples were sent to TestAmerica for diesel-range organics (DRO) and benzene, toluene, ethylbenzene and xylenes (BTEX) analyses using Alaska Methods AK 102 and U.S. Environmental Protection Agency (EPA) Method 8021B, respectively.

Sample EX3 was a duplicate of sample EX2 and sample EX4 was collected from the stockpile soils prior to shipment to ASR. The relevant laboratory analytical results for the soil samples are included Attachment B.

## **SITE OBSERVATIONS AND DATA EVALUATION**

Soils around the fill port indicated the presence of hydrocarbons. The UST was slightly rusted and a small pinhole was identified the southeast upper edge.

No BTEX concentrations were observed above the most stringent ADEC Method Two Cleanup Levels. The DRO concentrations within the foundation boundary ranged from 4,430 milligrams per kilogram (mg/kg) to 23,800 mg/kg. No DRO concentrations were observed above the method reporting limit in the final excavation soil samples to the north of the foundation. The analytical laboratory results are summarized in Table 1 and the data quality review is included as Appendix C. Analytical results were compared with ADEC soil cleanup levels obtained from Tables B1 and B2 of 18 AAC 75, dated October 9, 2008.

## **CONCLUSIONS AND RECOMMENDATIONS**

All BTEX compounds were below the most stringent ADEC cleanup levels. All contaminated soil north of the north wall has been removed. DRO concentrations remain in the ground at the location of the former UST above the ADEC Method ATwo Soil Cleanup Level. However, these affected soils have been confined from spreading north by the footing wall and excavation to the south is not reasonable due to the presence of the building foundation.

We recommend that no further action be required at this time. We recommend that if the building were to be demolished, the DRO-impacted soils be excavated and disposed of at that time.

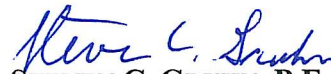
Work for this project was performed and this letter report prepared in accordance with generally accepted professional practices for the nature of the work completed in the same or similar localities at the time the work was performed. It is intended for the exclusive use of the ARRC for specific application to the project site. This report is not meant to represent a legal opinion, and no other warranty, express or implied, is made.

Sincerely,

**CLARUS ENVIRONMENTAL SERVICES, LLC**



**RUSSELL G. GRANDEL**  
SENIOR GEOLOGIST



**STEVEN C. GRUHN, P.E.**  
SENIOR ENGINEER

Attachments: Table 1 - Soil Analytical Results

Figure 1 - Site Location Map

Figure 2 – Site Plan with Sampling Locations

Attachment A	Photographic Log
Attachment B	Laboratory Analytical Results
Attachment C	Data Quality Assessment

**Table 1 - Soil Analytical Results  
CF/SBS Building  
Anchorage, Alaska**

Location	Sample Number	Sample Depth in feet bgs	Organic Vapors in ppmV	EPA Method 8021B				Alaska Method AK 102 DRO in mg/kg
				Benzene in mg/kg	Toluene in mg/kg	Ethyl- benzene in mg/kg	Total Xylenes in mg/kg	
UST Excavation	EX-1	3.5	285	0.0427 U	0.433 J	0.886 J	2.53 J	<b>23,800</b>
	EX-2	3.5	122	0.0195 U	0.0389 U	0.165 J	0.306 J	<b>4,430</b>
	EX3 (Duplicate of EX-2)	3.5	122	0.0359 U	0.0718 U	0.269 J	0.517 J	<b>6,420</b>
	EX-5	3.5	<1	0.0215 U	0.0430 U	0.0430 U	0.120 U,J	21.9 U
	EX-6	3.5	3	0.0208 U	0.0416 U	0.0416 U	0.116 U,J	21.9 U
	Stockpile	EX-4	-	204	0.019 U	0.274 J	1.010 J	3.100 J
<b>ADEC Soil Cleanup Level <sup>1</sup></b>				<b>0.02</b>	<b>5.4</b>	<b>5.5</b>	<b>78</b>	<b>250</b>

Notes:

Results may be rounded

<sup>1</sup> 18 AAC 75.341, Tables B1 and B2, Under-40-Inch Zone, Migration-to-Groundwater Pathway.

ADEC = Alaska Department of Environmental Conservation.

bgs = Below ground surface.

DRO = Diesel range organics.

EPA = Environmental Protection Agency.

J = Estimate concentration.

mg/kg = milligrams per kilogram.

ppmV = parts per million, volumetric.

U = Not detected at concentration shown.



# Site Location Map

CF/SBS Building  
Anchorage, Alaska



Figure 1

# Site Plan with Sampling Locations

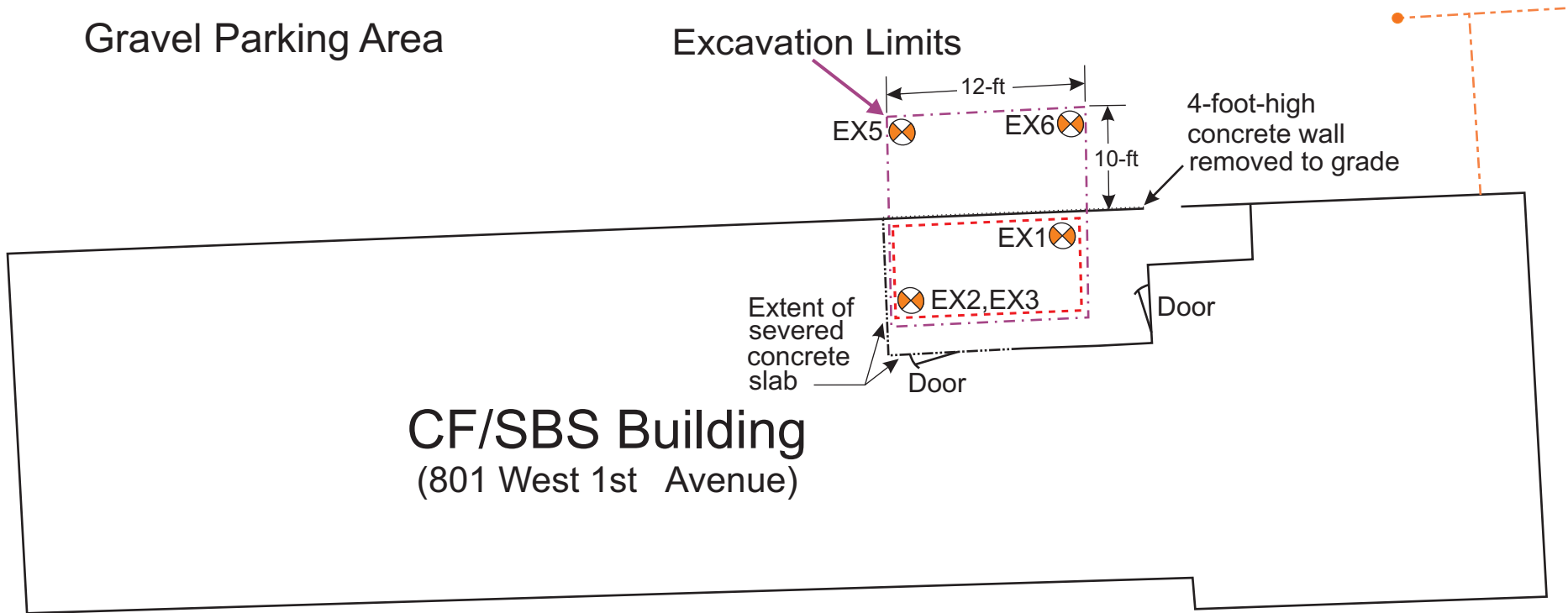
CF/SBS Building  
Anchorage, Alaska

Alaska Railroad Tracks



Gravel Parking Area

Excavation Limits



Note: Drawing not to scale

- Underground gas line
- Sample location and number  
EX2
- Former tank location



D-0013-01  
Figure 2

7/10





Photograph 1: Concrete walls removed and underground storage tank (UST) ready for removal. View looking west



Photograph 2: Location of former UST. Groundwater at 3.5 feet below grade. View looking west.



June 11, 2010

Russell Grandel  
Clarus  
840 K Street  
Anchorage, ALASKA 99501

RE: CF/SBS UST

Enclosed are the results of analyses for samples received by the laboratory on 05/26/10 13:37.  
The following list is a summary of the Work Orders contained in this report, generated on 06/11/10 17:27.

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

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<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
ATE0045	CF/SBS UST	[none]

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TestAmerica Anchorage

*Johanna Dreher*

Johanna L Dreher, Client Services Manager

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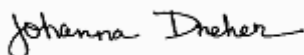


<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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## ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
EX 1	ATE0045-01	Soil	05/25/10 15:45	05/26/10 13:37
EX 2	ATE0045-02	Soil	05/25/10 15:10	05/26/10 13:37
EX 3	ATE0045-03	Soil	05/25/10 15:30	05/26/10 13:37
EX 4	ATE0045-04	Soil	05/26/10 09:45	05/26/10 13:37
EX 5	ATE0045-05	Soil	05/26/10 11:30	05/26/10 13:37
EX 6	ATE0045-06	Soil	05/26/10 11:40	05/26/10 13:37
Trip Blank	ATE0045-07	Soil	05/26/10 11:40	05/26/10 13:37

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Johanna L Dreher, Client Services Manager

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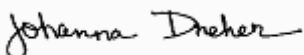
**Analytical Case Narrative**  
TestAmerica - Anchorage, AK

**ATE0045**

**Receipt**

All samples were received in good condition within temperature requirements.

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Johanna L Dreher, Client Services Manager

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<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**Diesel Range Organics (C10-C25) per AK102**  
TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
<b>ATE0045-01 (EX 1)</b>		<b>Soil</b>		<b>Sampled: 05/25/10 15:45</b>							
Diesel Range Organics	AK 102	<b>23800</b>	----	273	mg/kg dry	10x	10E0029	05/27/10 14:24	06/03/10 12:07	JN	<b>RL7</b>
<i>Surrogate(s): 1-Chlorooctadecane</i>			109%		50 - 150 %	"				"	
<b>ATE0045-02 (EX 2)</b>		<b>Soil</b>		<b>Sampled: 05/25/10 15:10</b>							
Diesel Range Organics	AK 102	<b>4430</b>	----	217	mg/kg dry	10x	10E0029	05/27/10 14:24	06/03/10 12:41	JN	<b>RL7</b>
<i>Surrogate(s): 1-Chlorooctadecane</i>			84.7%		50 - 150 %	"				"	
<b>ATE0045-03 (EX 3)</b>		<b>Soil</b>		<b>Sampled: 05/25/10 15:30</b>							
Diesel Range Organics	AK 102	<b>6420</b>	----	292	mg/kg dry	10x	10E0029	05/27/10 14:24	06/03/10 12:41	JN	<b>RL7</b>
<i>Surrogate(s): 1-Chlorooctadecane</i>			96.1%		50 - 150 %	"				"	
<b>ATE0045-04 (EX 4)</b>		<b>Soil</b>		<b>Sampled: 05/26/10 09:45</b>							
Diesel Range Organics	AK 102	<b>5100</b>	----	220	mg/kg dry	10x	10E0029	05/27/10 14:24	06/03/10 13:51	JN	<b>RL7</b>
<i>Surrogate(s): 1-Chlorooctadecane</i>			83.2%		50 - 150 %	"				"	
<b>ATE0045-05 (EX 5)</b>		<b>Soil</b>		<b>Sampled: 05/26/10 11:30</b>							
Diesel Range Organics	AK 102	ND	----	21.9	mg/kg dry	1x	10E0029	05/27/10 14:24	06/01/10 20:41	JN	
<i>Surrogate(s): 1-Chlorooctadecane</i>			95.8%		50 - 150 %	"				"	
<b>ATE0045-06 (EX 6)</b>		<b>Soil</b>		<b>Sampled: 05/26/10 11:40</b>							
Diesel Range Organics	AK 102	ND	----	21.9	mg/kg dry	1x	10E0029	05/27/10 14:24	06/01/10 21:15	JN	
<i>Surrogate(s): 1-Chlorooctadecane</i>			85.4%		50 - 150 %	"				"	

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*Johanna Dreher*

Johanna L Dreher, Client Services Manager

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<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**BTEX by EPA Method 8021B**  
TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
<b>ATE0045-01 (EX 1)</b>		<b>Soil</b>			<b>Sampled: 05/25/10 15:45</b>						
Benzene	EPA 8021B	ND	----	0.0427	mg/kg dry	3x	10F0003	06/02/10 13:38	06/03/10 14:45	JN	
<b>Toluene</b>	"	<b>0.433</b>	----	0.0853	"	"	"	"	"	JN	<b>R1</b>
<b>Ethylbenzene</b>	"	<b>0.886</b>	----	0.0853	"	"	"	"	"	JN	<b>R1</b>
<b>Xylenes (total)</b>	"	<b>2.53</b>	----	0.239	"	"	"	"	"	JN	
<i>Surrogate(s): a,a,a-TFT (PID)</i>				150%		50 - 150 %	"			"	
<b>ATE0045-02 (EX 2)</b>		<b>Soil</b>			<b>Sampled: 05/25/10 15:10</b>						
Benzene	EPA 8021B	ND	----	0.0195	mg/kg dry	2.25x	10F0003	06/02/10 13:38	06/03/10 15:13	JN	
Toluene	"	ND	----	0.0389	"	"	"	"	"	JN	<b>R1</b>
<b>Ethylbenzene</b>	"	<b>0.165</b>	----	0.0389	"	"	"	"	"	JN	<b>R1</b>
<b>Xylenes (total)</b>	"	<b>0.306</b>	----	0.109	"	"	"	"	"	JN	<b>R1</b>
<i>Surrogate(s): a,a,a-TFT (PID)</i>				94.8%		50 - 150 %	"			"	
<b>ATE0045-03 (EX 3)</b>		<b>Soil</b>			<b>Sampled: 05/25/10 15:30</b>						
Benzene	EPA 8021B	ND	----	0.0359	mg/kg dry	2.25x	10F0003	06/02/10 13:38	06/03/10 16:35	JN	
Toluene	"	ND	----	0.0718	"	"	"	"	"	JN	<b>R1</b>
<b>Ethylbenzene</b>	"	<b>0.269</b>	----	0.0718	"	"	"	"	"	JN	<b>R1</b>
<b>Xylenes (total)</b>	"	<b>0.517</b>	----	0.201	"	"	"	"	"	JN	<b>R1</b>
<i>Surrogate(s): a,a,a-TFT (PID)</i>				114%		50 - 150 %	"			"	
<b>ATE0045-04 (EX 4)</b>		<b>Soil</b>			<b>Sampled: 05/26/10 09:45</b>						
Benzene	EPA 8021B	ND	----	0.0191	mg/kg dry	2.25x	10F0003	06/02/10 13:38	06/03/10 17:02	JN	
<b>Toluene</b>	"	<b>0.274</b>	----	0.0383	"	"	"	"	"	JN	<b>R1</b>
<b>Ethylbenzene</b>	"	<b>1.01</b>	----	0.0383	"	"	"	"	"	JN	
<b>Xylenes (total)</b>	"	<b>3.10</b>	----	0.107	"	"	"	"	"	JN	
<i>Surrogate(s): a,a,a-TFT (PID)</i>				148%		50 - 150 %	"			"	
<b>ATE0045-05 (EX 5)</b>		<b>Soil</b>			<b>Sampled: 05/26/10 11:30</b>						
Benzene	EPA 8021B	ND	----	0.0215	mg/kg dry	2.7x	10F0003	06/02/10 13:38	06/03/10 18:51	JN	
Toluene	"	ND	----	0.0430	"	"	"	"	"	JN	
Ethylbenzene	"	ND	----	0.0430	"	"	"	"	"	JN	
<b>Xylenes (total)</b>	"	ND	----	0.120	"	"	"	"	"	JN	
<i>Surrogate(s): a,a,a-TFT (PID)</i>				107%		50 - 150 %	"			"	

TestAmerica Anchorage

*Johanna Dreher*

Johanna L Dreher, Client Services Manager

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<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**BTEX by EPA Method 8021B**  
TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
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ATE0045-06 (EX 6)	Soil		Sampled: 05/26/10 11:40								
Benzene	EPA 8021B	ND	----	0.0208	mg/kg dry	2.25x	10F0003	06/02/10 13:38	06/03/10 19:18	JN	
Toluene	"	ND	----	0.0416	"	"	"	"	"	JN	
Ethylbenzene	"	ND	----	0.0416	"	"	"	"	"	JN	
Xylenes (total)	"	ND	----	0.116	"	"	"	"	"	JN	
<i>Surrogate(s): a,a,a-TFT (PID)</i>				111%		50 - 150 %	"			"	

ATE0045-07 (Trip Blank)	Soil		Sampled: 05/26/10 11:40								
Benzene	EPA 8021B	ND	----	0.0166	mg/kg dry	1x	10F0003	06/02/10 13:38	06/03/10 17:56	JN	
Toluene	"	ND	----	0.0333	"	"	"	"	"	JN	
Ethylbenzene	"	ND	----	0.0333	"	"	"	"	"	JN	
Xylenes (total)	"	ND	----	0.0932	"	"	"	"	"	JN	
<i>Surrogate(s): a,a,a-TFT (PID)</i>				108%		50 - 150 %	"			"	

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**Physical Parameters by APHA/ASTM/EPA Methods**  
TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
<b>ATE0045-01 (EX 1)</b>		<b>Soil</b>			<b>Sampled: 05/25/10 15:45</b>						
Dry Weight	TA-SOP	<b>67.8</b>	----	1.00	%	1x	10E0030	05/27/10 16:14	05/28/10 17:00	jmg	
<b>ATE0045-02 (EX 2)</b>		<b>Soil</b>			<b>Sampled: 05/25/10 15:10</b>						
Dry Weight	TA-SOP	<b>87.9</b>	----	1.00	%	1x	10E0030	05/27/10 16:14	05/28/10 17:00	jmg	
<b>ATE0045-03 (EX 3)</b>		<b>Soil</b>			<b>Sampled: 05/25/10 15:30</b>						
Dry Weight	TA-SOP	<b>67.2</b>	----	1.00	%	1x	10E0030	05/27/10 16:14	05/28/10 17:00	jmg	
<b>ATE0045-04 (EX 4)</b>		<b>Soil</b>			<b>Sampled: 05/26/10 09:45</b>						
Dry Weight	TA-SOP	<b>88.9</b>	----	1.00	%	1x	10E0030	05/27/10 16:14	05/28/10 17:00	jmg	
<b>ATE0045-05 (EX 5)</b>		<b>Soil</b>			<b>Sampled: 05/26/10 11:30</b>						
Dry Weight	TA-SOP	<b>87.9</b>	----	1.00	%	1x	10E0030	05/27/10 16:14	05/28/10 17:00	jmg	
<b>ATE0045-06 (EX 6)</b>		<b>Soil</b>			<b>Sampled: 05/26/10 11:40</b>						
Dry Weight	TA-SOP	<b>87.2</b>	----	1.00	%	1x	10E0030	05/27/10 16:14	05/28/10 17:00	jmg	
<b>ATE0045-07 (Trip Blank)</b>		<b>Soil</b>			<b>Sampled: 05/26/10 11:40</b>						
Dry Weight	TA-SOP	<b>100</b>	----	1.00	%	1x	10E0034	05/28/10 16:11	06/01/10 09:15	JN	

TestAmerica Anchorage

*Johanna Dreher*

Johanna L Dreher, Client Services Manager

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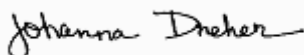
<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**Diesel Range Organics (C10-C25) per AK102 - Laboratory Quality Control Results**  
 TestAmerica Anchorage

**QC Batch: 10E0029      Soil Preparation Method: EPA 3545**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Blank (10E0029-BLK1)</b>							<b>Extracted: 05/27/10 14:24</b>							
Diesel Range Organics	AK 102	ND	---	20.0	mg/kg wet	1x	--	--	--	--	--	--	06/01/10 16:46	
<i>Surrogate(s): 1-Chlorooctadecane</i>		<i>Recovery: 94.3%</i>			<i>Limits: 50-150%</i>	<i>"</i>							<i>06/01/10 16:46</i>	
<b>LCS (10E0029-BS1)</b>							<b>Extracted: 05/27/10 14:24</b>							
Diesel Range Organics	AK 102	105	---	20.0	mg/kg wet	1x	--	129	81.5%	(75-125)	--	--	06/01/10 17:20	
<i>Surrogate(s): 1-Chlorooctadecane</i>		<i>Recovery: 93.4%</i>			<i>Limits: 60-120%</i>	<i>"</i>							<i>06/01/10 17:20</i>	
<b>LCS Dup (10E0029-BSD1)</b>							<b>Extracted: 05/27/10 14:24</b>							
Diesel Range Organics	AK 102	113	---	20.0	mg/kg wet	1x	--	129	87.6%	(75-125)	7.15%	(20)	06/01/10 17:53	
<i>Surrogate(s): 1-Chlorooctadecane</i>		<i>Recovery: 98.6%</i>			<i>Limits: 60-120%</i>	<i>"</i>							<i>06/01/10 17:53</i>	
<b>Duplicate (10E0029-DUP1)</b>							<b>QC Source: ATE0035-03</b>		<b>Extracted: 05/27/10 14:24</b>					
Diesel Range Organics	AK 102	ND	---	21.2	mg/kg dry	1x	ND	--	--	--	12.3%	(20)	06/01/10 16:46	
<i>Surrogate(s): 1-Chlorooctadecane</i>		<i>Recovery: 83.6%</i>			<i>Limits: 50-150%</i>	<i>"</i>							<i>06/01/10 16:46</i>	
<b>Matrix Spike (10E0029-MS1)</b>							<b>QC Source: ATE0035-03</b>		<b>Extracted: 05/27/10 14:24</b>					
Diesel Range Organics	AK 102	95.2	---	20.4	mg/kg dry	1x	9.65	132	65.0%	(75-125)	--	--	06/01/10 17:53	M8
<i>Surrogate(s): 1-Chlorooctadecane</i>		<i>Recovery: 88.7%</i>			<i>Limits: 50-150%</i>	<i>"</i>							<i>06/01/10 17:53</i>	
<b>Matrix Spike Dup (10E0029-MSD1)</b>							<b>QC Source: ATE0035-03</b>		<b>Extracted: 05/27/10 14:24</b>					
Diesel Range Organics	AK 102	103	---	21.3	mg/kg dry	1x	9.65	137	68.2%	(75-125)	8.03%	(25)	06/01/10 18:27	M8
<i>Surrogate(s): 1-Chlorooctadecane</i>		<i>Recovery: 89.6%</i>			<i>Limits: 50-150%</i>	<i>"</i>							<i>06/01/10 18:27</i>	

TestAmerica Anchorage



Johanna L Dreher, Client Services Manager

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<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**BTEX by EPA Method 8021B - Laboratory Quality Control Results**  
 TestAmerica Anchorage

**QC Batch: 10F0003**      **Soil Preparation Method: AK101 Field Prep**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

**Blank (10F0003-BLK1)**

Extracted: 06/02/10 13:38

Benzene	EPA 8021B	ND	---	0.0166	mg/kg wet	1x	--	--	--	--	--	--	06/03/10 12:57	
Toluene	"	ND	---	0.0333	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.0333	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	0.0932	"	"	--	--	--	--	--	--	"	
Surrogate(s): a,a,a-TFT (PID)		Recovery: 214%		Limits: 50-150%	"								06/03/10 12:57	Z2

**LCS (10F0003-BS1)**

Extracted: 06/02/10 13:38

Benzene	EPA 8021B	0.317	---	0.0166	mg/kg wet	1x	--	0.272	117%	(70-130)	--	--	06/03/10 13:24	
Toluene	"	2.40	---	0.0333	"	"	--	2.06	116%	"	--	--	"	
Ethylbenzene	"	0.521	---	0.0333	"	"	--	0.460	113%	"	--	--	"	
Xylenes (total)	"	2.50	---	0.0932	"	"	--	2.32	108%	"	--	--	"	
Surrogate(s): a,a,a-TFT (PID)		Recovery: 114%		Limits: 60-120%	"								06/03/10 13:24	

**LCS Dup (10F0003-BSD1)**

Extracted: 06/02/10 13:38

Benzene	EPA 8021B	0.320	---	0.0166	mg/kg wet	1x	--	0.272	118%	(70-130)	0.784% (20)	--	06/03/10 13:51	
Toluene	"	2.41	---	0.0333	"	"	--	2.06	117%	"	0.696% "	--	"	
Ethylbenzene	"	0.530	---	0.0333	"	"	--	0.460	115%	"	1.81% "	--	"	
Xylenes (total)	"	2.52	---	0.0932	"	"	--	2.32	109%	"	0.796% "	--	"	
Surrogate(s): a,a,a-TFT (PID)		Recovery: 113%		Limits: 60-120%	"								06/03/10 13:51	

**Duplicate (10F0003-DUP1)**

QC Source: ATE0045-01

Extracted: 06/02/10 13:38

Benzene	EPA 8021B	ND	---	0.0427	mg/kg dry	3x	ND	--	--	--	9.90% (200)	--	06/03/10 14:18	
Toluene	"	0.484	---	0.0853	"	"	0.433	--	--	--	11.1% "	--	"	
Ethylbenzene	"	0.942	---	0.0853	"	"	0.886	--	--	--	6.17% "	--	"	
Xylenes (total)	"	2.34	---	0.239	"	"	2.53	--	--	--	7.76% "	--	"	
Surrogate(s): a,a,a-TFT (PID)		Recovery: 161%		Limits: 50-150%	"								06/03/10 14:18	Z1

**Matrix Spike (10F0003-MS1)**

QC Source: ATE0045-02

Extracted: 06/02/10 13:38

Benzene	EPA 8021B	0.860	---	0.0195	mg/kg dry	2.25x	0.00405	0.572	150%	(60-140)	--	--	06/03/10 15:40	M7
Toluene	"	0.875	---	0.0389	"	"	0.0323	"	147%	"	--	--	"	M7
Ethylbenzene	"	0.939	---	0.0389	"	"	0.165	"	135%	"	--	--	"	
Xylenes (total)	"	2.77	---	0.109	"	"	0.306	1.72	143%	"	--	--	"	M7
Surrogate(s): a,a,a-TFT (PID)		Recovery: 72.9%		Limits: 50-150%	"								06/03/10 15:40	

TestAmerica Anchorage

*Johanna Dreher*

Johanna L Dreher, Client Services Manager

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<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**BTEX by EPA Method 8021B - Laboratory Quality Control Results**  
 TestAmerica Anchorage

**QC Batch: 10F0003**      **Soil Preparation Method: AK101 Field Prep**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Matrix Spike Dup (10F0003-MSD1)</b>			QC Source: ATE0045-02				Extracted: 06/02/10 13:38							
Benzene	EPA 8021B	0.782	---	0.0195	mg/kg dry	2.25x	0.00405	0.572	136%	(60-140)	9.50%	(30)	06/03/10 16:07	
Toluene	"	0.811	---	0.0389	"	"	0.0323	"	136%	"	7.61%	"	"	
Ethylbenzene	"	0.867	---	0.0389	"	"	0.165	"	123%	"	7.99%	"	"	
Xylenes (total)	"	2.60	---	0.109	"	"	0.306	1.72	133%	"	6.29%	"	"	
Surrogate(s): a,a,a-TFT (PID)		Recovery: 84.0%		Limits: 50-150%		"		06/03/10 16:07						

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<b>Clarus</b> 840 K Street Anchorage, ALASKA 99501	Project Name: <b>CF/SBS UST</b> Project Number: [none] Project Manager: Russell Grandel	Report Created: 06/11/10 17:27
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**Physical Parameters by APHA/ASTM/EPA Methods - Laboratory Quality Control Results**  
 TestAmerica Anchorage

**QC Batch: 10E0030      Soil Preparation Method: \*\*\* DEFAULT PREP**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Duplicate (10E0030-DUP1)</b>			QC Source: ATE0035-04				Extracted: 05/27/10 16:14							
Dry Weight	TA-SOP	94.3	---	1.00	%	1x	77.4	--	--	--	19.6%	(25)	05/28/10 17:00	

**QC Batch: 10E0034      Soil Preparation Method: \*\*\* DEFAULT PREP**

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Duplicate (10E0034-DUP1)</b>			QC Source: ATE0029-02				Extracted: 05/28/10 16:11							
Dry Weight	TA-SOP	51.3	---	1.00	%	1x	51.4	--	--	--	0.206%	(25)	06/01/10 09:15	

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*Johanna Dreher*

Johanna L Dreher, Client Services Manager

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<b>Clarus</b>	Project Name: <b>CF/SBS UST</b>	
840 K Street	Project Number: [none]	Report Created:
Anchorage, ALASKA 99501	Project Manager: Russell Grandel	06/11/10 17:27

## Notes and Definitions

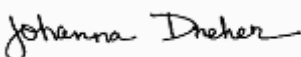
Report Specific Notes:

- M7 - The MS and/or MSD were above the acceptance limits. See Blank Spike (LCS).
- M8 - The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
- R1 - The RPD between the primary and confirmatory analysis exceeded 40%. Per method 8000B, the higher value was reported.
- RL7 - Sample required dilution due to high concentrations of target analyte.
- Z1 - Surrogate recovery was above acceptance limits.
- Z2 - Surrogate recovery was above the acceptance limits. Data not impacted.

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



Johanna L Dreher, Client Services Manager

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# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

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 2000 W International Airport Rd Ste A10, Anchorage, AK 99502-1119

425-420-9200 FAX 420-9210  
 509-924-9200 FAX 924-9290  
 503-906-9200 FAX 906-9210  
 907-563-9200 FAX 563-9210

## CHAIN OF CUSTODY REPORT

Work Order #: **ATF0045**

CLIENT: <b>ARPC/Clarus</b>	INVOICE TO: <b>ARPC</b>	TURNAROUND REQUEST in Business Days *	
REPORT TO: <b>Russ Grande</b>	P.O. NUMBER:	<input type="checkbox"/> 7 <input type="checkbox"/> 8 <input checked="" type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25 <input type="checkbox"/> 26 <input type="checkbox"/> 27 <input type="checkbox"/> 28 <input type="checkbox"/> 29 <input type="checkbox"/> 30 <input type="checkbox"/> 31 <input type="checkbox"/> 32 <input type="checkbox"/> 33 <input type="checkbox"/> 34 <input type="checkbox"/> 35 <input type="checkbox"/> 36 <input type="checkbox"/> 37 <input type="checkbox"/> 38 <input type="checkbox"/> 39 <input type="checkbox"/> 40 <input type="checkbox"/> 41 <input type="checkbox"/> 42 <input type="checkbox"/> 43 <input type="checkbox"/> 44 <input type="checkbox"/> 45 <input type="checkbox"/> 46 <input type="checkbox"/> 47 <input type="checkbox"/> 48 <input type="checkbox"/> 49 <input type="checkbox"/> 50 <input type="checkbox"/> 51 <input type="checkbox"/> 52 <input type="checkbox"/> 53 <input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56 <input type="checkbox"/> 57 <input type="checkbox"/> 58 <input type="checkbox"/> 59 <input type="checkbox"/> 60 <input type="checkbox"/> 61 <input type="checkbox"/> 62 <input type="checkbox"/> 63 <input type="checkbox"/> 64 <input type="checkbox"/> 65 <input type="checkbox"/> 66 <input type="checkbox"/> 67 <input type="checkbox"/> 68 <input type="checkbox"/> 69 <input type="checkbox"/> 70 <input type="checkbox"/> 71 <input type="checkbox"/> 72 <input type="checkbox"/> 73 <input type="checkbox"/> 74 <input type="checkbox"/> 75 <input type="checkbox"/> 76 <input type="checkbox"/> 77 <input type="checkbox"/> 78 <input type="checkbox"/> 79 <input type="checkbox"/> 80 <input type="checkbox"/> 81 <input type="checkbox"/> 82 <input type="checkbox"/> 83 <input type="checkbox"/> 84 <input type="checkbox"/> 85 <input type="checkbox"/> 86 <input type="checkbox"/> 87 <input type="checkbox"/> 88 <input type="checkbox"/> 89 <input type="checkbox"/> 90 <input type="checkbox"/> 91 <input type="checkbox"/> 92 <input type="checkbox"/> 93 <input type="checkbox"/> 94 <input type="checkbox"/> 95 <input type="checkbox"/> 96 <input type="checkbox"/> 97 <input type="checkbox"/> 98 <input type="checkbox"/> 99 <input type="checkbox"/> 100	Organic & Inorganic Analyses Petroleum Hydrocarbon Analyses STD.
PHONE: <b>276-2626</b> FAX:		<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> 16 <input type="checkbox"/> 17 <input type="checkbox"/> 18 <input type="checkbox"/> 19 <input type="checkbox"/> 20 <input type="checkbox"/> 21 <input type="checkbox"/> 22 <input type="checkbox"/> 23 <input type="checkbox"/> 24 <input type="checkbox"/> 25 <input type="checkbox"/> 26 <input type="checkbox"/> 27 <input type="checkbox"/> 28 <input type="checkbox"/> 29 <input type="checkbox"/> 30 <input type="checkbox"/> 31 <input type="checkbox"/> 32 <input type="checkbox"/> 33 <input type="checkbox"/> 34 <input type="checkbox"/> 35 <input type="checkbox"/> 36 <input type="checkbox"/> 37 <input type="checkbox"/> 38 <input type="checkbox"/> 39 <input type="checkbox"/> 40 <input type="checkbox"/> 41 <input type="checkbox"/> 42 <input type="checkbox"/> 43 <input type="checkbox"/> 44 <input type="checkbox"/> 45 <input type="checkbox"/> 46 <input type="checkbox"/> 47 <input type="checkbox"/> 48 <input type="checkbox"/> 49 <input type="checkbox"/> 50 <input type="checkbox"/> 51 <input type="checkbox"/> 52 <input type="checkbox"/> 53 <input type="checkbox"/> 54 <input type="checkbox"/> 55 <input type="checkbox"/> 56 <input type="checkbox"/> 57 <input type="checkbox"/> 58 <input type="checkbox"/> 59 <input type="checkbox"/> 60 <input type="checkbox"/> 61 <input type="checkbox"/> 62 <input type="checkbox"/> 63 <input type="checkbox"/> 64 <input type="checkbox"/> 65 <input type="checkbox"/> 66 <input type="checkbox"/> 67 <input type="checkbox"/> 68 <input type="checkbox"/> 69 <input type="checkbox"/> 70 <input type="checkbox"/> 71 <input type="checkbox"/> 72 <input type="checkbox"/> 73 <input type="checkbox"/> 74 <input type="checkbox"/> 75 <input type="checkbox"/> 76 <input type="checkbox"/> 77 <input type="checkbox"/> 78 <input type="checkbox"/> 79 <input type="checkbox"/> 80 <input type="checkbox"/> 81 <input type="checkbox"/> 82 <input type="checkbox"/> 83 <input type="checkbox"/> 84 <input type="checkbox"/> 85 <input type="checkbox"/> 86 <input type="checkbox"/> 87 <input type="checkbox"/> 88 <input type="checkbox"/> 89 <input type="checkbox"/> 90 <input type="checkbox"/> 91 <input type="checkbox"/> 92 <input type="checkbox"/> 93 <input type="checkbox"/> 94 <input type="checkbox"/> 95 <input type="checkbox"/> 96 <input type="checkbox"/> 97 <input type="checkbox"/> 98 <input type="checkbox"/> 99 <input type="checkbox"/> 100	OTHER Specify: * Turnaround Requests less than standard may incur Rush Charges.
PROJECT NAME: <b>VF/SBS</b>			
PROJECT NUMBER:			
SAMPLED BY: <b>Bradley Gallaway/Russ Grande</b>			
CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME		
1. EX1	5-25-10 1545	✓	
2. EX2	5-25-10 1510	✓	
3. EX3	5-25-10 1530	✓	
4. EX4	5-26-10 0945	✓	
5. EX5	5-26-10 1130	✓	
6. EX6	5-26-10 1140	✓	
7. Trip Blank			
8. Temp Blank			
9.			
10.			
RELEASED BY:	DATE: <b>5-26-10</b>	RECEIVED BY:	DATE: <b>5/26/10</b>
PRINT NAME:	TIME: <b>1337</b>	PRINT NAME: <b>Jason Nall</b>	TIME: <b>1337</b>
RELEASED BY:	DATE:	RECEIVED BY:	DATE:
PRINT NAME:	TIME:	PRINT NAME:	TIME:
ADDITIONAL REMARKS:			

# Test America Anchorage Cooler Receipt Form

(Army Corps. Compliant)

ATE0045

WORK ORDER # \_\_\_\_\_ CLIENT: Chers PROJECT: CF/SBS

Date/Time Cooler Arrived 5/26/10 13:37 Cooler signed for by: Jason W.H.  
(Print name)

## Preliminary Examination Phase:

Date cooler opened:  same as date received or \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_

Cooler opened by (print) Jason W.H. (sign) \_\_\_\_\_

1. Delivered by  ALASKA AIRLINES  Fed-Ex  UPS  NAC  LYNDEN  CLIENT  Other: \_\_\_\_\_

Shipment Tracking # if applicable \_\_\_\_\_ (include copy of shipping papers in file)

2. Number of Custody Seals 6 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: Good

Temperature by Digi-Thermo Probe 5.1 °C Thermometer # rec #5

Acceptance Criteria: 0 - 6°C

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. Conoco Phillips, Alyeska, BP H2O samples only: pH < 2?  Yes  No  N/A

14. Is there adequate volume for the tests requested?  Yes  No

15. 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 5/26/10

Samples logged in by (print) Robert Tim (sign) Robert Tim

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. Was the COC scanned and copied?  Yes  No

## Laboratory Data Review Checklist

Completed by:

Title:  Date:

CS Report Name:  Report Date:

Consultant Firm:

Laboratory Name:  Laboratory Report Number:

ADEC File Number:  ADEC RecKey Number:

### 1. Laboratory

- a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?  
 Yes  No  NA (Please explain.)      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  NA (Please explain.)      Comments:

### 2. Chain of Custody (COC)

- a. COC information completed, signed, and dated (including released/received by)?  
 Yes  No  NA (Please explain.)      Comments:

- b. Correct analyses requested?  
 Yes  No  NA (Please explain.)      Comments:

### 3. Laboratory Sample Receipt Documentation

- a. Sample/cooler temperature documented and within range at receipt ( $4^{\circ} \pm 2^{\circ} \text{C}$ )?  
 Yes  No  NA (Please explain.)      Comments:

- b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?  
 Yes  No  NA (Please explain.)      Comments:

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

Yes       No       NA (Please explain.)      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       NA (Please explain.)      Comments:

e. Data quality or usability affected? (Please explain.)

Comments:

No. The reported and analytical results were accepted without qualification.

#### 4. Case Narrative

a. Present and understandable?

Yes       No       NA (Please explain.)      Comments:

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

Yes       No       NA (Please explain.)      Comments:

c. Were all corrective actions documented?

Yes       No       NA (Please explain.)      Comments:

Four of the six samples required dilution due to high concentrations of diesel-range organics (DRO).

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

Comments:

No effect on data quality/usability.

#### 5. Samples Results

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

Yes       No       NA (Please explain.)      Comments:

b. All applicable holding times met?

Yes     No     NA (Please explain.)

Comments:

c. All soils reported on a dry weight basis?

Yes     No     NA (Please explain.)

Comments:

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

Yes     No     NA (Please explain.)

Comments:

e. Data quality or usability affected?

Comments:

No effect because DRO was detected in all samples with PQLs higher than the Cleanup Level.

## 6. QC Samples

a. Method Blank

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

Yes     No     NA (Please explain.)

Comments:

ii. All method blank results less than PQL?

Yes     No     NA (Please explain.)

Comments:

iii. If above PQL, what samples are affected?

Comments:

N/A

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

Yes     No     NA (Please explain.)

Comments:

No analytes were detected in the method blank; no samples were affected

v. Data quality or usability affected? (Please explain.)

Comments:

No samples were affected by the absence of analytes in the method blank.

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

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

Yes       No       NA (Please explain.)      Comments:

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

Yes     No     NA (Please explain.)      Comments:

Neither metals nor inorganics analyses were performed.

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       NA (Please explain.)      Comments:

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

Yes       No       NA (Please explain.)      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      NA (Please explain.)      Comments:

No samples were affected.

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

Comments:

The data quality or usability was not affected by the LCS/LCSD data being within acceptance criteria.

c. Surrogates – Organics Only

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

Yes       No       NA (Please explain.)      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       NA (Please explain.)      Comments:

The method blank surrogate recovery for benzene, toluene, ethylbenzene, and xylenes (BTEX) analysis was above the acceptance criteria. Data were not impacted. All BTEX concentrations were below the laboratory detection limits.

- iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?  
  Yes       No       NA (Please explain.)      Comments:

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

The data quality or usability was not affected.

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

- i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)  
  Yes       No       NA (Please explain.)      Comments:

- ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)  
  Yes       No       NA (Please explain.)      Comments:

Only one cooler was used to transport the trip blank and samples.

- iii. All results less than PQL?  
  Yes       No       NA (Please explain.)      Comments:



iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

No samples were affected by the results being less than the PQL.

e. Field Duplicate

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

Yes       No       NA (Please explain.)

Comments:

ii. Submitted blind to lab?

Yes       No       NA (Please explain.)

Comments:

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

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

Where  $R_1$  = Sample Concentration  
 $R_2$  = Field Duplicate Concentration

Yes       No       NA (Please explain.)

Comments:

The RPD for xylenes (total) analytical result was 51.2%.

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

Comments:

The analytical results for xylenes are flagged with a "J" to denote an estimated value for samples EX-2, EX-3, EX-4, EX-5, and EX-6. The analytical results for xylenes for EX-1 are not flagged because the RPD of the laboratory duplicate analysis of this sample was within the acceptance criteria.

f. Decontamination or Equipment Blank (If not used explain why).

Yes  No  NA (Please explain.)                      Comments:

An equipment blank was not required in the ADEC-approved work plan.

i. All results less than PQL?

Yes  No  NA (Please explain.)                      Comments:

An equipment blank was not required in the ADEC-approved work plan.

ii. If above PQL, what samples are affected?

Comments:

N/A

iii. Data quality or usability affected? (Please explain.)

Comments:

No data were affected by the absence of an equipment blank.

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

a. Defined and appropriate?

Yes  No  NA (Please explain.)                      Comments:

The RPD between the primary and confirmatory analysis for BTEX analysis in samples EX-1, EX-2, EX-3, and EX-4 exceeded 40%. BTEX analytical results for affected samples with detectable levels are flagged with a "J" to denote the reported concentration is estimated (Table 1).