



ANNUAL 2009 GROUNDWATER MONITORING AND OZONE SYSTEM MAINTENANCE REPORT

**DELTA WESTERN JUNEAU AIRPORT FUEL STORAGE
CHEVRON SITE 8-2307
9203 CESSNA DRIVE
JUNEAU, ALASKA
FILE ID: 1513.26.046**

Prepared For:

Mr. Bruce Wanstall

Alaska Department of Environmental Conservation

**Nicole Taylor
Staff Geologist**

**Jeffrey Cloud
Chemist**

**Andy Ellsmore, P.G.
Project Geologist**

**JANUARY 21, 2010
REF. NO. 622237 (2)**

**Prepared by:
Conestoga-Rovers
& Associates**

2420 West 26th Ave, Suite 450-D
Denver, CO 80211

Office: 720-975-9120
Fax: 720-975-9150



**CONESTOGA-ROVERS
& ASSOCIATES**

RECEIVED

JAN 26 2010

DEC
SPAR-CS

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1
2.0 GROUNDWATER MONITORING AND SAMPLING	2
3.0 ANALYTICAL RESULTS.....	2
4.0 OZONE SYSTEM MAINTENANCE AND GEOCHEMICAL ANALYSIS.....	3
5.0 DATA QUALITY.....	3
6.0 CONCLUSIONS.....	4



**CONESTOGA-ROVERS
& ASSOCIATES**

LIST OF FIGURES
(Following Text)

FIGURE 1	VICINITY MAP
FIGURE 2	GROUNDWATER ELEVATION MAP

LIST OF TABLES
(Following Text)

TABLE 1	GROUNDWATER ANALYTICAL RESULTS
TABLE 2	GEOCHEMICAL ANALYTICAL RESULTS

LIST OF APPENDICES

APPENDIX A	SITE PHOTOGRAPHS
APPENDIX B	WELL SAMPLING FORMS
APPENDIX C	STANDARD OPERATING PROCEDURES FOR GROUNDWATER MONITORING AND SAMPLING
APPENDIX D	PETROLEUM HYDROCARBON CONCENTRATION GRAPHS
APPENDIX E	LABORATORY ANALYTICAL REPORT
APPENDIX F	ADEC LABORATORY DATA REVIEW CHECKLIST AND MEMORANDUM



**CONESTOGA-ROVERS
& ASSOCIATES**

LIST OF ACRONYMS AND ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AST	aboveground storage tank
Chevron	Chevron Environmental Management Company
CRA	Conestoga-Rovers & Associates
°C	degrees Celsius
DO	dissolved oxygen
DRO	Diesel Range Organics
fbg	feet below grade
GRO	Gasoline Range Organics
LCS	laboratory control samples
mg/l	milligrams per liter
MS	matrix spikes
ORP	oxygen reduction potential
P.G.	Professional Geologist
RPD	relative percent difference
UST	underground storage tank



1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) is submitting this *Annual 2009 Groundwater Monitoring and Ozone System Maintenance Report* to the Alaska Department of Environmental Conservation (ADEC) on behalf of the Chevron Environmental Management Company (Chevron) for the Delta Western Juneau Airport Fuel Storage site in Juneau, Alaska. CRA prepared this report summarizing the 2009 ozone injection system maintenance and groundwater sampling; and was generated in accordance with the September 23, 2009 ADEC *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*. The groundwater sampling details, analytical results, ozone system maintenance, geochemical parameters, data quality and conclusions are presented below.

Site Background: The site is a former bulk fuel terminal located on the northern portion of Juneau International Airport property at 9203 Cessna Drive in Juneau, Alaska (Figure 1). The former bulk terminal consisted of two 25,000-gallon aboveground storage tanks (ASTs) and one 25,000-gallon underground storage tank (UST). The ASTs contained jet fuel and the UST contained aviation gasoline. Other fuel distribution equipment consisted of a pump house and two overhead loading racks. Chevron operated the facility from approximately 1958 to 1987. Delta Western purchased the facility equipment in 1987 and resumed operation until November 4, 1998. The ASTs, UST, pump house, loading racks, and associated equipment were removed in November 1998. Prior to demolishing the facilities, Delta Western constructed a new bulk fuel facility approximately 100 feet southeast of the former location consisting of three 30,000-gallon ASTs. Two of the ASTs contain jet fuel and the remaining AST contains aviation gasoline. CRA installed a solar-powered ozone injection system in monitoring well MW-4 on August 28, 2007. The system is currently operating year-round, and has effectively decreased diesel range organics (DRO) concentrations in groundwater. Site photographs are presented as Appendix A.

Hydrogeology: The site is located in southeast Alaska, situated on filled tidal wetlands at the southern terminus of the Mendenhall Valley. Historical static groundwater depths have ranged between 2.23 and 14.34 feet below grade (fbg) according to groundwater data from 2001 to present. Static groundwater depths were approximately 4.61 fbg (MW-4) on June 23, 2009 (Figure 1).



2.0 GROUNDWATER MONITORING AND SAMPLING

CRA gauged and sampled groundwater monitoring well MW-4 on June 23, 2009. The monitoring well was opened and the well cap was removed to allow the groundwater level to stabilize and equilibrate. The monitoring well was purged of approximately three well-casing volumes while measuring temperature, pH, and conductivity. Groundwater samples, including a duplicate sample, were collected using clean disposable bailers and decanted into clean containers supplied by the analytical laboratory. The groundwater monitoring well was gauged and sampled in accordance with the ADEC's *Underground Storage Tanks Procedures Manual, Guidance for Treatment of Petroleum-Contaminated Soil and Water and Standard Sampling Procedures*. The samples were submitted under chain-of-custody to Test America of Anchorage. CRA well sampling forms are presented as Appendix B. CRA's standard operating procedures for groundwater monitoring and sampling are presented as Appendix C.

Purged Groundwater: Purged groundwater was stored in a sealed U.S. Department of Transportation 55-gallon drum. The drum was labeled with contents, date of generation, generator identification and consultant contact information. The purged groundwater was disposed at the Mendenhall Wastewater Treatment Plant on November 13, 2009 with ADEC approval.

3.0 ANALYTICAL RESULTS

Groundwater Analytical Methods: Collected groundwater samples were analyzed for the following:

- DRO by Alaska Series Method AK 102,
- Gasoline Range Organics (GRO) by Alaska Series Method AK 101.

Cleanup Levels: The ADEC Table C Groundwater Cleanup Levels (*Title 18 Alaska Administrative Code (AAC) 75.345*), and ADEC Method II Soil Cleanup Levels (*Title 18 AAC 75.341*) are the established cleanup levels for a site cleanup complete designation.

Groundwater Sampling Results: Groundwater samples collected from monitoring well MW-4 contained 13.1 milligrams per liter (mg/l) DRO and 0.578 mg/l of GRO. Groundwater analytical results are summarized in Table 1. Petroleum hydrocarbon concentration graphs are presented as Appendix D. The laboratory analytical report is presented as Appendix E.



4.0 OZONE SYSTEM MAINTENANCE AND GEOCHEMICAL ANALYSIS

System Maintenance: CRA installed an ozone injection system in monitoring well MW-4 on August 28, 2007 to reduce dissolved-phase DRO concentrations in groundwater. CRA conducted routine system maintenance on October 12, 2009. The support structure and electrical equipment were in operational condition. Each individual solar panel and battery was tested to confirm proper operation. Individual battery output was approximately 12.7 volts per battery. Solar panel output was approximately 0.6 volts per panel. All implemented safety equipment (i.e. orange safety cones, snow poles, and caution tape) were intact and visible. The system is in operable condition and all components are functioning properly with the exception of one solar panel that was damaged during shipping in 2007.

Groundwater Geochemical Results: CRA collected field geochemical parameters and groundwater samples on October 12, 2009 to evaluate natural attenuation, and the ozone injection system's effect on subsurface conditions. Ferrous iron, nitrate, dissolved oxygen (DO), oxygen reduction potential (ORP) and pH were analyzed in the field, and groundwater samples were analyzed for sulfate, nitrite, nitrate, bicarbonate, carbonate and hydroxide alkalinity. The results require additional data to evaluate geochemical trends in the subsurface. The geochemical analytical results are presented in Table 2.

5.0 DATA QUALITY

Groundwater samples from MW-4 were collected on June 23 and October 12, 2009, and submitted under Chain-of-Custody to Test America Laboratories. The data quality was analyzed by a CRA Chemist. Based on the quality assurance/quality control review, the data submitted was judged to be acceptable for use without qualification. Below is a summary of the data quality. The ADEC Laboratory Data Review Checklist and Memorandum are presented as Appendix F.

All samples were prepared and/or analyzed within the required holding times. All samples were properly preserved and maintained at 4 degrees Celsius (°C) ($\pm 2^{\circ}\text{C}$).

All appropriate samples and blanks were spiked with surrogate compounds prior to sample preparation and/or analysis in accordance with the organic methods. All surrogate spike recoveries met the associated method criteria indicating adequate analytical efficiency.



Method blanks were prepared and analyzed with the samples for all parameters. All blank results were non-detect for the analytes of interest.

Laboratory control samples (LCS) were analyzed in all parameters. All recoveries were within required control limits showing adequate analytical accuracy and precision. Laboratory duplicates were analyzed for all parameters. The relative percent difference (RPD) for all duplicate sets were within required control limits showing adequate analytical precision.

Matrix spikes (MS) were prepared and analyzed for all parameters. The MS for method AK102, 353.2, and 300.0. The recoveries for methods AK102 and 353.2 were within required control limits showing adequate analytical accuracy and precision. The RPD for method 300.0 was within the required control limit showing adequate analytical precision. The recoveries for method 300.0 were outside the required control limits. The method 300.0 result for sample MW-4 should be considered estimated.

Trip blanks were collected and analyzed with the investigative samples for DRO and GRO. All trip blank results were non-detect for the compounds of interest.

A field duplicate was collected and submitted blind to the laboratory. The sample identification was MW-4 and its duplicate was DUP-1. A comparison of the results showed good analytical and sampling precision.

6.0 CONCLUSIONS

DRO concentrations in MW-4 have been generally decreasing since the ozone injection system installation. The system is in operational condition and appears to be effectively reducing dissolved-phase DRO from groundwater. CRA will repair the solar panel damage, and continue monitoring and sampling during 2010. CRA will collect groundwater samples for geochemical analyses in 2010 to evaluate natural attenuation, and the ozone injection system effectiveness.

July 09, 2009

Andrew Ellsmore
Conestoga-Rovers & Associates
2828 North Speer Blvd., Suite 140
Denver, CO 80211

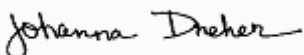
RE: 8-2307

Enclosed are the results of analyses for samples received by the laboratory on 06/23/09 18:20.
The following list is a summary of the Work Orders contained in this report, generated on 07/09/09 15:10.

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

<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
ASF0067	8-2307	622237

TestAmerica Anchorage



Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

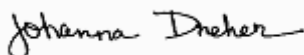
Report Created:

07/09/09 15:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-4	ASF0067-01	Water	06/23/09 07:18	06/23/09 18:20
DUP-1	ASF0067-02	Water	06/23/09 00:00	06/23/09 18:20
Trip Blank	ASF0067-03	Water	06/23/09 00:00	06/23/09 18:20

TestAmerica Anchorage



Johanna L. Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

Report Created:

07/09/09 15:10

Analytical Case Narrative

TestAmerica - Anchorage, AK

ASF0067

The samples in this report were analyzed by a laboratory that was certified by the State of Alaska at the time of analysis.

1.0 COMMENTS ON SAMPLE RECEIPT

Three water samples were received by TestAmerica- Anchorage on 06/23/09 for the analysis of AK 101 (GRO) and AK102 (DRO). The cooler temperature was 1.6 degree C. All sample containers were received in proper condition and preservation.

2.0 PREPARATION AND ANALYSIS

No anomalies were associated with sample preparation and analysis.

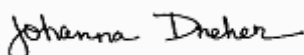
3.0 QC SUMMARY

All associated QC (including Blank, LCS, matrix spikes and sample duplicates) meet QC goals unless otherwise noted in the Notes and Definitions located in the last page of this report.

4.0 STATEMENT OF NOTES & DEFINITIONS

No additional anomalies, discrepancies, or issues were associated with sample preparation, analysis and quality control other than othes already qualified in the data and described in the Notes and Definitions page at the end of this report.

TestAmerica Anchorage



Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
 Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

Report Created:

07/09/09 15:10

Diesel Range Organics (C10-C25) per AK102
 TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ASF0067-01 (MW-4)		Water		Sampled: 06/23/09 07:18							
Diesel Range Organics	AK 102	12.2	0.152	0.400	mg/l	1x	9060079	06/25/09 13:34	06/28/09 16:20	JN	
<i>Surrogate(s): 1-Chlorooctadecane</i>			90.4%			50 - 150 %	"			"	
ASF0067-02 (DUP-1)		Water		Sampled: 06/23/09 00:00							
Diesel Range Organics	AK 102	13.1	0.150	0.394	mg/l	1x	9060079	06/25/09 13:34	06/28/09 16:20	JN	
<i>Surrogate(s): 1-Chlorooctadecane</i>			84.2%			50 - 150 %	"			"	

TestAmerica Anchorage

Johanna Dreher

Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
 Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

Report Created:

07/09/09 15:10

Gasoline Range Organics (C6-C10) per AK101-MS

TestAmerica Anchorage

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Analyst	Notes
ASF0067-01 (MW-4)		Water		Sampled: 06/23/09 07:18							
Gasoline Range Organics	AK101 - MS	578	10.0	50.0	ug/l	1x	9070009	07/02/09 08:02	07/02/09 18:26	kc	
Surrogate(s): 4-BFB			106%		85 - 115 %	"				"	
Dibromofluoromethane			89.7%		81 - 124 %	"				"	
Toluene-d8			95.6%		83 - 115 %	"				"	
ASF0067-02 (DUP-1)		Water		Sampled: 06/23/09 00:00							
Gasoline Range Organics	AK101 - MS	476	10.0	50.0	ug/l	1x	9070009	07/02/09 08:02	07/02/09 17:56	kc	
Surrogate(s): 4-BFB			103%		85 - 115 %	"				"	
Dibromofluoromethane			92.8%		81 - 124 %	"				"	
Toluene-d8			93.4%		83 - 115 %	"				"	
ASF0067-03 (Trip Blank)		Water		Sampled: 06/23/09 00:00							
Gasoline Range Organics	AK101 - MS	ND	10.0	50.0	ug/l	1x	9070009	07/02/09 08:02	07/02/09 17:26	kc	
Surrogate(s): 4-BFB			103%		85 - 115 %	"				"	
Dibromofluoromethane			93.6%		81 - 124 %	"				"	
Toluene-d8			95.0%		83 - 115 %	"				"	

TestAmerica Anchorage

Johanna Dreher

Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
 Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

Report Created:

07/09/09 15:10

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

TestAmerica Anchorage

QC Batch: 9060079

Water Preparation Method: EPA 3510

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Blank (9060079-BLK1)							Extracted: 06/25/09 13:34							
Diesel Range Organics	AK 102	ND	0.190	0.500	mg/l	1x	--	--	--	--	--	--	06/26/09 13:01	
Surrogate(s): 1-Chlorooctadecane		Recovery:	75.9%	Limits: 50-150%		"		06/26/09 13:01						
LCS (9060079-BS1)							Extracted: 06/25/09 13:34							
Diesel Range Organics	AK 102	9.05	0.190	0.500	mg/l	1x	--	10.6	85.4%	(75-125)	--	--	06/26/09 12:29	
Surrogate(s): 1-Chlorooctadecane		Recovery:	80.4%	Limits: 60-120%		"		06/26/09 12:29						
LCS Dup (9060079-BSD1)							Extracted: 06/25/09 13:34							
Diesel Range Organics	AK 102	9.21	0.190	0.500	mg/l	1x	--	10.6	86.9%	(75-125)	1.72%	(20)	06/26/09 11:57	
Surrogate(s): 1-Chlorooctadecane		Recovery:	82.2%	Limits: 60-120%		"		06/26/09 11:57						
Duplicate (9060079-DUP1)				QC Source: ASF0032-18			Extracted: 06/25/09 13:34							
Diesel Range Organics	AK 102	5.84	0.150	0.394	mg/l	1x	5.73	--	--	--	2.01%	(20)	06/26/09 12:29	
Surrogate(s): 1-Chlorooctadecane		Recovery:	72.0%	Limits: 50-150%		"		06/26/09 12:29						
Matrix Spike (9060079-MS1)				QC Source: ASF0032-32			Extracted: 06/25/09 13:34							
Diesel Range Organics	AK 102	8.65	0.150	0.394	mg/l	1x	0.173	8.35	102%	(75-125)	--	--	06/26/09 14:05	
Surrogate(s): 1-Chlorooctadecane		Recovery:	72.4%	Limits: 50-150%		"		06/26/09 14:05						
Matrix Spike Dup (9060079-MSD1)				QC Source: ASF0032-32			Extracted: 06/25/09 13:34							
Diesel Range Organics	AK 102	8.67	0.150	0.394	mg/l	1x	0.173	8.35	102%	(75-125)	0.229%	(25)	06/26/09 14:38	
Surrogate(s): 1-Chlorooctadecane		Recovery:	74.1%	Limits: 50-150%		"		06/26/09 14:38						

TestAmerica Anchorage

Johanna Dreher

Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

Report Created:

07/09/09 15:10

Gasoline Range Organics (C6-C10) per AK101-MS - Laboratory Quality Control Results

TestAmerica Anchorage

QC Batch: 9070009

Water Preparation Method: EPA 5030B

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

Blank (9070009-BLK1)

Extracted: 07/02/09 08:02

Gasoline Range Organics	AK101 - MS	ND	10.0	50.0	ug/l	1x	--	--	--	--	--	--	07/02/09 16:57	
Surrogate(s): 4-BFB		Recovery: 103%		Limits: 85-115%		"							07/02/09 16:57	
Dibromofluoromethane		91.8%		81-124%		"							"	
Toluene-d8		95.3%		83-115%		"							"	

LCS (9070009-BS1)

Extracted: 07/02/09 08:02

4-BFB		101%		85-115%	1x								07/02/09 12:40	
Surrogate(s): Dibromofluoromethane		Recovery: 89.0%		Limits: 81-124%		"							07/02/09 12:40	
Toluene-d8		104%		83-115%		"							"	

LCS (9070009-BS2)

Extracted: 07/02/09 08:02

Gasoline Range Organics	AK101 - MS	562	10.0	50.0	ug/l	1x	--	550	102%	(60-120)	--	--	07/02/09 14:09	
Surrogate(s): 4-BFB		Recovery: 92.2%		Limits: 85-115%		"							07/02/09 14:09	
Dibromofluoromethane		77.8%		81-124%		"							"	Z5
Toluene-d8		87.0%		83-115%		"							"	

LCS Dup (9070009-BSD1)

Extracted: 07/02/09 08:02

4-BFB		107%		85-115%	1x								07/02/09 23:53	
Surrogate(s): Dibromofluoromethane		Recovery: 90.6%		Limits: 81-124%		"							07/02/09 23:53	
Toluene-d8		99.8%		83-115%		"							"	

LCS Dup (9070009-BSD2)

Extracted: 07/02/09 08:02

Gasoline Range Organics	AK101 - MS	518	10.0	50.0	ug/l	1x	--	550	94.1%	(60-120)	8.18%	(20)	07/02/09 23:24	
Surrogate(s): 4-BFB		Recovery: 107%		Limits: 85-115%		"							07/02/09 23:24	
Dibromofluoromethane		83.4%		81-124%		"							"	
Toluene-d8		97.8%		83-115%		"							"	

Duplicate (9070009-DUP1)

QC Source: ASF0074-01

Extracted: 07/02/09 08:02

Gasoline Range Organics	AK101 - MS	ND	10.0	50.0	ug/l	1x	11.5	--	--	--	--	(12)	07/03/09 02:21	
Surrogate(s): 4-BFB		Recovery: 103%		Limits: 85-115%		"							07/03/09 02:21	
Dibromofluoromethane		86.6%		81-124%		"							"	
Toluene-d8		95.7%		83-115%		"							"	

Matrix Spike (9070009-MS1)

QC Source: ASF0074-02

Extracted: 07/02/09 08:02

4-BFB		106%		85-115%	1x								07/03/09 03:20	
Surrogate(s): Dibromofluoromethane		Recovery: 84.4%		Limits: 81-124%		"							07/03/09 03:20	
Toluene-d8		95.8%		83-115%		"							"	

TestAmerica Anchorage

Johanna Dreher

Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
 Denver, CO 80211

Project Name: **8-2307**

Project Number: 622237

Project Manager: Andrew Ellsmore

Report Created:

07/09/09 15:10

Gasoline Range Organics (C6-C10) per AK101-MS - Laboratory Quality Control Results

TestAmerica Anchorage

QC Batch: 9070009

Water Preparation Method: EPA 5030B

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
Matrix Spike Dup (9070009-MSD1)			QC Source: ASF0074-02					Extracted: 07/02/09 08:02						
4-BFB		107%			85-115%	1x							07/03/09 03:50	
Surrogate(s):	Dibromofluoromethane	Recovery:	85.6%		Limits: 81-124%	"							07/03/09 03:50	
	Toluene-d8		96.0%		83-115%	"							"	

TestAmerica Anchorage

Johanna Dreher

Johanna L Dreher, Client Services Manager

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.



Conestoga-Rovers & Associates

2828 North Speer Blvd., Suite 140
 Denver, CO 80211

Project Name: **8-2307**
 Project Number: 622237
 Project Manager: Andrew Ellsmore

Report Created:
 07/09/09 15:10

Notes and Definitions

Report Specific Notes:

- Z5 - Due to sample matrix effects, the surrogate recovery was outside acceptance limits. Secondary surrogate recovery was within the acceptance limits.

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 Dreher

Johanna L Dreher, Client Services Manager

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.



THE LEADER IN ENVIRONMENTAL TESTING

11720 North Creek Pkwy N Suite 400, Bothell, WA 98011-8244
11922 E. First Ave, Spokane, WA 99206-5302
9405 SW Nimbus Ave, Beaverton, OR 97008-7145
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

[illegible]

Test America Anchorage Cooler Receipt Form

(Army Corps. Compliant)

WORK ORDER # AST0007 CLIENT: Chevron EMC PROJECT: 8-2307
Date /Time Cooler Arrived 6/23/09 18:20 Cooler signed for by: Kelsey Gerbrandt
(Print name)

Preliminary Examination Phase:

Date cooler opened: ☒ same as date received or / /

Cooler opened by (print) Kelsey Gerbrandt (sign) [Signature]

1. Delivered by ☒ ALASKA AIRLINES ☐ Fed-Ex ☐ UPS ☐ NAC ☐ LYNDEN ☐ CLIENT ☐ Other:

Shipment Tracking # if applicable 027-73058926 (include copy of shipping papers in file)

2. Number of Custody Seals 1 Signed by Siobhan Euckelman Date 6/23/09

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

3. Were custody papers sealed in a plastic bag? ☒ Yes ☐ No → not sealed

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: melting

Temperature by Digi-Thermo Probe 1.6 °C Thermometer # 3
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 6/24/09

Samples logged in by (print) Kelsey Gerbrandt (sign) [Signature]

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

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Custody Seal
DATE 26 JUN 09
SIGNATURE [Signature]

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
46271

Alaska Air Cargo

Goldstreak

ANC

027 JNU 7305 8926

Date	23 JUN 09	SHIPPER	PHONE #	503 906 9200
Pieces	1	CONSIGNEE	PHONE #	907 - 563 - 9200
Total Weight	20	TEST AMERICA		
Piece Weight				
Box Number	1			

AS	065	ANC	1255

Goldstreak

AS Feo 07