2100.26.064
ADEC File No.

FIRST SEMIANNUAL 2010 GROUNDWATER MONITORING REPORT

CHEVRON BRANDED SERVICE STATION 9-0932
2200 WEST DIMOND BOULEVARD
ANCHORAGE, ALASKA
ADEC FILE ID: 2100.26.064

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SEPTEMBER 28, 2010
REF. NO. 060349 (9)

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CONESTOGA-ROVERS
& ASSOCIATES

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& ASSOCIATES

LIST OF ACRONYMS AND ABBREVIATIONS

ADEC	Alaska Department of Environmental Conservation
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CRA	Conestoga-Rovers & Associates
EPA	Environmental Protection Agency
fbg	Feet below grade
GRO	Gasoline range organics
mg/l	Milligrams per liter
PAHs	Polynuclear aromatic hydrocarbons
P.G.	Professional Geologist
SVOC	Semivolatile organic compounds
UST	Underground storage tank
VOCs	Volatile organic compounds

CONESTOGA-ROVERS
& ASSOCIATES

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) is submitting this *First Semiannual Groundwater Sampling Report* to the Alaska Department of Environmental Conservation (ADEC) on behalf of Chevron Environmental Management Company (Chevron) for Chevron-branded service station 9-0932. Site sampling was completed in accordance with the May 2010 *Draft Field Sampling Guidance.* The site history, groundwater monitoring and sampling details, analytical results, data quality, and conclusions are presented below.

1.1 SITE HISTORY AND DESCRIPTION

The site is an active Chevron-branded service station located at 2200 West Dimond Boulevard on the southeast corner of West Dimond Boulevard and Victor Road in Anchorage, Alaska (Figure 1). The property legal description is Lakeview Terrace TR-A1. The site latitude and longitude is 61.137344 North and 149.920493 West. The site consists of a station building, three underground storage tanks (USTs), four product dispenser islands, and associated piping. Six onsite groundwater monitoring wells are monitored semiannually and four are sampled semiannually (Figure 2). Site photographs are presented as Appendix A.

1.2 HYDROGEOLOGY

The site is located in south central Alaska, between the northern Knik Arm and the southern Turnagain Arm of the Cook Inlet. Groundwater depths have ranged between 1.32 to 4.96 feet below grade (fbg) according to groundwater data from 1998 to present. Static groundwater depths ranged from 2.19 to 4.43 fbg on June 18, 2010. Groundwater flow was to the northwest with a gradient of 0.03 (Figure 2).

2.0 GROUNDWATER MONITORING AND SAMPLING

CRA gauged MW-1, MW-2, MW-3R, MW-4, MW-5R and MW-6R on June 18, 2010. Monitoring wells MW-3R, MW-4, MW-5R and MW-6R were sampled on June 22, 2010. Groundwater samples containing volatile organic compounds (VOCs) were collected using HydraSleeve groundwater samplers to minimize volatilization. CRA deployed HydraSleeves in monitoring wells MW-3R, MW-4, MW-5R and MW-6R on June 18, 2010. HydraSleeves were set approximately 36-inches below groundwater. Non-volatile no-purge samples were collected using Teflon bailers. All groundwater samples were

collected using clean disposable sampling equipment and decanted into clean containers supplied by the analytical laboratory.

The samples were submitted under chain-of-custody to Lancaster Laboratories of Pennsylvania. CRA well sampling forms are presented as Appendix B.

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 drum is stored onsite in a secure location and is awaiting transportation to the disposal facility.

3.0 ANALYTICAL RESULTS

3.1 GROUNDWATER ANALYTICAL METHODS

Collected groundwater samples were analyzed for one or more of the following:

- Gasoline range organics (GRO) by Alaska Series AK101
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B.
- Polynuclear aromatic hydrocarbons (PAHs) by SW-846 8270B.

3.2 GROUNDWATER SAMPLING RESULTS

No GRO, BTEX, or PAHs were detected above cleanup levels in groundwater samples collected from MW-4, MW-5R, and MW-6R. Groundwater samples collected from MW-3R contained 16 milligrams per liter (mg/l) GRO, 4.4 mg/l benzene, and 1.3 mg/l toluene. Groundwater analytical results are presented in Table 1. PAH analytical results are presented in Table 2. Petroleum hydrocarbon concentration graphs are presented as Appendix C. The laboratory analytical report is presented as Appendix D.

4.0 DATA QUALITY

Groundwater samples and duplicate from MW-6R were collected on June 22, 2010 and submitted under Chain-of-Custody to Lancaster Laboratories. The data quality was analyzed by a CRA chemist. Based on the quality assurance/quality control review, the data submitted were judged to be acceptable for use with the qualifications noted. The ADEC Laboratory Data Review Checklist and Memorandum are presented as Attachment E.

All samples were prepared and/or analyzed within the required holding times. All samples were properly preserved and cooled after collection.

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.

Benzo(b)fluoranthene and benzo(k)fluoranthene were not resolved under the sample analysis conditions. The result reported for benzo(b)fluoranthene represents the combined total of both isomers.

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 were analyzed in duplicate for all parameters. All recoveries were within required control limits showing adequate analytical accuracy and precision.

Matrix spikes were prepared and analyzed in duplicate for BTEX and GRO. All recoveries were within required control limits showing adequate analytical accuracy and precision. Precision for semivolatile organic compounds (SVOCs) was determined to be acceptable based on LCS/LCSD recoveries.

Trip blanks were collected and analyzed with the investigative samples for all parameters. 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-6R and its duplicated was DUP-1. A comparison of the results showed good analytical and sampling precision with few exceptions. Benzo(a)anthracene, benzo(g,h,i)perylene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pryene, and the combined total of benzo(b)fluoranthene and benzo(k)fluoranthene had calculated RPDs outside the acceptable limit. The result for these compounds should be considered estimated for samples MW-6R and DUP-1.

5.0 CONCLUSIONS

All monitoring wells were gauged and sampled in accordance with ADEC's May 2010 *Draft Field Sampling Guidance.* Alaska Qualified Personnel in accordance with *18 AAC 75 Article 3, and 18 AAC 78 Article 2, 6, and 9* conducted all project work.

Samples collected from monitoring well MW-3R contained GRO, benzene and toluene above Table C cleanup levels. No PAHs were detected above Table C cleanup levels in samples collected from MW-6R. CRA will continue monitoring and sampling during 2010 to evaluate site groundwater conditions.

FIGURES

FIGURE 1: VICINITY MAP

FIGURE 2: GROUNDWATER ELEVATION MAP

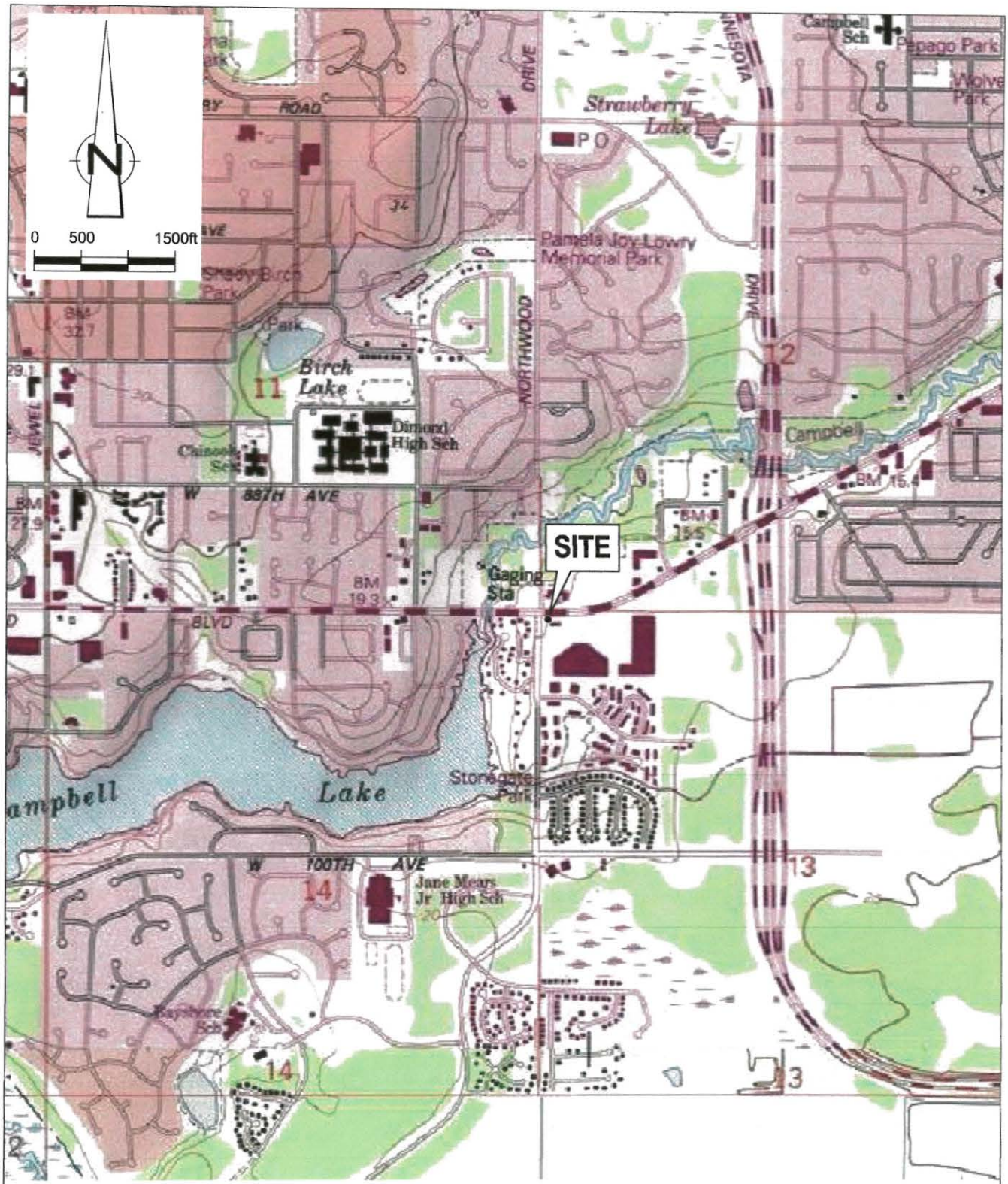

Figure 1

VICINITY MAP
CHEVRON SERVICE STATION 9-0932
2200 WEST DIMOND BOULEVARD
Anchorage, Alaska

Z:\Denver\6-CHAR\0603--\060349 9-0932 ANCHORAGE\060349-FIGURES\060349-EM001_VMAP.DWG

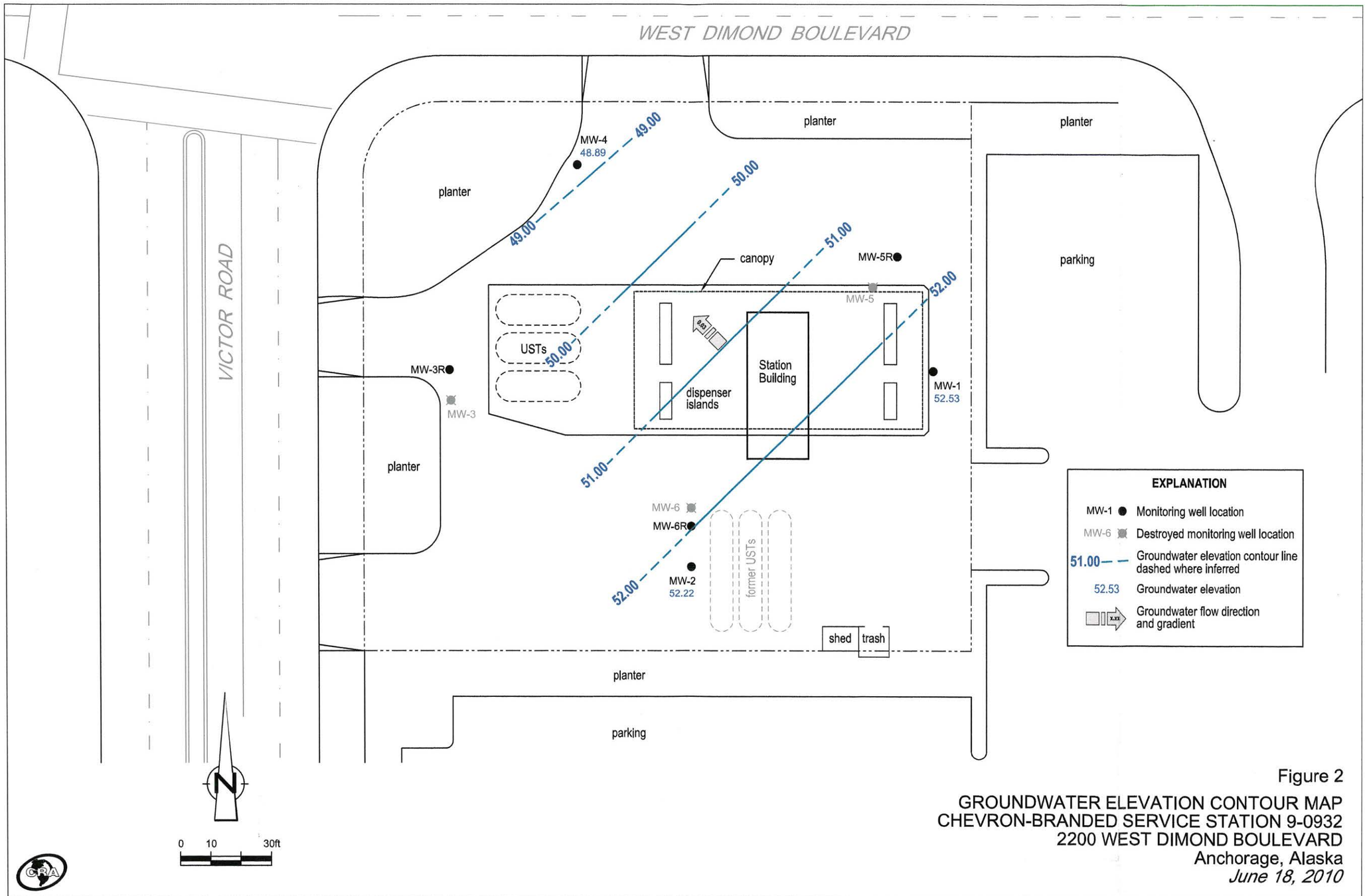

Figure 2

GROUNDWATER ELEVATION CONTOUR MAP
CHEVRON-BRANDED SERVICE STATION 9-0932
2200 WEST DIMOND BOULEVARD
Anchorage, Alaska
June 18, 2010

Z:\Denver\6-CHAR\0603--\060349 9-0932 ANCHORAGE\060349-FIGURES\060349-DN002-1SA10 GW.DWG

TABLES

TABLE 1: GROUNDWATER ANALYTICAL RESULTS

TABLE 2: POLYNUCLEAR AROMATIC HYDROCARBON ANALYTICAL RESULTS

Table 1
Groundwater Analytical Results
Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska

					HYDROCARBONS	PRIMARY VOCS				
Location	Date	TOC	DTW	GWE	GRO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
	Units	ft msl	fbg	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels[a]					2.2	0.005	1.0	0.7	10.0	0.47
MW-1	09/25/1998	56.36	-	-	<0.05	<0.0005	0.000534	<0.0005	<0.001	-
MW-1	10/28/1998	56.36	4.55	51.58	-	-	-	-	-	-
MW-1	04/26/1999	56.36	4.21	52.15	<0.05 / <0.05	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.005 / <0.005
MW-1	10/11/1999	56.36	4.11	52.25	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
MW-1	05/20/2000	56.36	4.01	52.35	<0.08	<0.0005	<0.0005	<0.0005	<0.001	<0.002
MW-1	09/20/2000	56.36	4.24	52.12	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
MW-1	05/05/2001	56.36	4.40	51.96	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
MW-1	09/26/2001	56.36	4.36	52.00	<0.05 / <0.05	<0.0002 / <0.0002	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	<0.001 / <0.001
MW-1	05/06/2002	56.36	4.96	51.40	<0.05	<0.0002	0.000619	<0.0005	<0.001	<0.001
MW-1	09/18/2002	56.36	3.95	52.41	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
MW-1	05/20/2003	56.59	3.93	52.66	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-1	10/01/2003	56.59	4.12	52.47	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-1	06/01/2004	56.59	3.71	52.88	0.71	**0.031**	0.14	0.008	0.086	<0.002
MW-1	09/24/2004	56.59	4.38	52.21	0.016	0.003	0.002	<0.0005	0.001	<0.002
MW-1	05/09/2005	56.59	3.75	52.84	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-1	09/22/2005	56.59	3.61	52.98	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-1	05/08/2006	56.59	4.34	52.25	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-1	08/22/2006	56.51	3.45	53.06	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
MW-1	05/16/2007	56.51	4.05	52.46	<0.01	<0.0005	<0.0005	<0.0005	0.001	<0.002
MW-1	09/25/2007	56.51	4.39	52.12	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-1	05/16/2008	56.51	3.60	52.91	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-1	09/12/2008	56.51	3.66	52.85	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-1	06/19/2009	56.51	3.85	52.66	<0.010	0.0011 J	0.001 J	<0.0005	<0.0015	-
MW-1	09/07/2009	56.51	3.73	52.78	-	-	-	-	-	-
MW-1	06/22/2010	56.51	3.98	52.53	-	-	-	-	-	-
MW-2	09/25/1998	55.40	-	-	<0.05	<0.0005	0.000534	<0.0005	<0.001	-
MW-2	10/28/1998	55.40	3.48	51.92	-	-	-	-	-	-
MW-2	04/26/1999	55.40	2.96	52.44	<0.05	<0.0005	<0.0005	<0.0005	0.00347	0.0077 / 0.00631
MW-2	10/11/1999	55.40	3.40	52.00	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
MW-2	05/20/2000	55.40	3.49	51.91	<0.08 / <0.08	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	0.00393 / 0.0107 / 0.00616
MW-2	09/20/2000	55.40	3.68	51.72	<0.05	<0.0002	<0.0005	<0.0005	<0.001	0.00443 / 0.00754
MW-2	05/05/2001	55.40	3.78	51.62	<0.05	<0.0002	<0.0005	<0.0005	<0.001	0.00383 / 0.00684
MW-2	09/26/2001	55.40	3.81	51.59	<0.05	<0.0002	<0.0005	<0.0005	<0.001	0.00569 / 0.00536
MW-2	05/06/2002	55.40					INACCESSIBLE			
MW-2	09/18/2002	55.40	3.33	52.07	<0.05 / <0.05	<0.0002 / <0.0002	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	0.00423 / <0.002 / 0.00401 / <0.005
MW-2	05/20/2003	55.77	3.47	52.30	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.009 / 0.006
MW-2	10/01/2003	55.77	3.52	52.25	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.006
MW-2	06/01/2004	55.77	4.55	51.22	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.004 / 0.004
MW-2	09/24/2004	55.77	4.79	50.98	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.005
MW-2	05/09/2005	55.77	3.41	52.36	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.006 / 0.004
MW-2	09/22/2005	55.77	3.71	52.06	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.003 / 0.012
MW-2	05/08/2006	55.77	3.41	52.36	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-2	08/22/2006	55.57	2.86	52.71	0.13	<0.0005	0.0006	<0.0005	0.046	0.001
MW-2	05/16/2007	55.57	3.58	51.99	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002

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					HYDROCARBONS	PRIMARY VOCS				
Location	Date	TOC	DTW	GWE	GRO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
	Units	ft msl	fbg	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels[a]					2.2	0.005	1.0	0.7	10.0	0.47
MW-2	09/25/2007	55.57	3.04	52.53	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.006
MW-2	05/16/2008	55.57	3.25	52.32	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-2	09/12/2008	55.57	3.30	52.27	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-2	06/19/2009	55.57	3.38	52.19	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-2	09/07/2009	55.57	3.02	52.55	-	-	-	-	-	-
MW-2	06/22/2010	55.57	3.35	52.22	-	-	-	-	-	-
MW-3	09/25/1998	52.11	-	-	<0.05 / <0.05	0.00468 / 0.00468	0.000534 / 0.000534	<0.0005 / <0.0005	<0.001 / <0.001	-
MW-3	10/28/1998	52.11	3.14	48.97	-	-	-	-	-	-
MW-3	04/26/1999	52.11	2.15	49.96	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	0.00527 / <0.005
MW-3	10/11/1999	52.11	2.24	49.87	<0.05 / <0.05	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.0279 / 0.0302 / 0.0268
MW-3	05/20/2000	52.11	1.81	50.30	<0.08	<0.0005	<0.0005	<0.0005	0.00147	0.00484
MW-3	09/20/2000	52.11	2.75	49.36	<0.05 / <0.05	<0.0002 / <0.0002	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.001 / <0.001	0.0216 / 0.0398 / 0.0222 / 0.0397
MW-3	05/05/2001	52.11	1.75	50.36	<0.05	0.000263	<0.0005	<0.0005	<0.001	0.0237 / 0.0344
MW-3	09/26/2001	52.11	2.98	49.13	<0.05	<0.0002	<0.0005	<0.0005	<0.001	0.0794 / 0.0768
MW-3	05/06/2002	52.11	-	-	-	-	-	-	-	-
MW-3	09/18/2002	52.11	2.27	49.84	<0.05	<0.0002	<0.0005	<0.0005	<0.001	0.0676 / 0.0663
MW-3	05/20/2003	52.27	2.26	50.01	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.045
MW-3	10/01/2003	52.27	2.80	49.47	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.03 / 0.039
MW-3	06/01/2004	52.27	2.04	50.23	<0.01	0.002	<0.0005	<0.0005	<0.0005	0.063
MW-3	09/24/2004	52.27	2.87	49.40	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.046
MW-3	05/09/2005	52.27	1.82	50.45	0.026	0.001	0.005	0.0006	0.004	0.02
MW-3	09/22/2005	52.27	1.78	50.49	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.049
MW-3	05/08/2006	52.27	1.77	50.50	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.003
MW-3	08/22/2006	52.24	1.45	50.79	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.021
MW-3	05/16/2007	52.24	1.50	50.74	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.002
MW-3	09/25/2007	52.24	1.45	50.79	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.011
MW-3	05/16/2008	52.24	1.32	50.92	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.007
MW-3	09/12/2008	52.24	1.54	50.70	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.011
MW-3	06/19/2009	52.24	2.03	50.21	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-3	09/07/2009	52.24	1.49	50.75	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-3R	06/22/2010	-	2.19	-	**16**	**4.4**	**1.3**	0.50	0.85	-
MW-4	09/18/2002	-	4.12	-	<0.05	<0.0002 / <0.001	<0.0005 / <0.001	<0.0005 / <0.001	<0.001 / <0.003	- / <0.005
MW-4	05/20/2003	52.59	3.59	49.00	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	10/01/2003	52.59	4.75	47.84	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	06/01/2004	52.59	3.37	49.22	0.042	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	09/24/2004	52.59	4.67	47.92	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-4	05/09/2005	52.59	3.29	49.30	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	09/22/2005	52.59	4.09	48.50	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	05/08/2006	52.59	3.07	49.52	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	08/22/2006	52.80	3.53	49.27	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.001
MW-4	05/16/2007	52.80	3.11	49.69	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-4	09/25/2007	52.80	2.86	49.94	<0.01 / <0.01	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.002 / <0.002
MW-4	05/16/2008	52.80	2.51	50.29	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002

Table 1
Groundwater Analytical Results
Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska

					HYDROCARBONS	PRIMARY VOCS				
Location	Date	TOC	DTW	GWE	GRO	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE
	Units	ft msl	fbg	ft msl	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Groundwater Cleanup Levels[a]					2.2	0.005	1.0	0.7	10.0	0.47
MW-4	09/12/2008	52.80	3.11	49.69	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
MW-4	06/19/2009	52.80	3.42	49.38	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-4	09/07/2009	52.80	3.36	49.44	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-4	06/22/2010	52.80	3.91	48.89	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-5	08/22/2006	55.96	4.10	51.86	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.007
MW-5	05/16/2007	55.96	4.38	51.58	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.005
MW-5	09/25/2007	55.96	4.22	51.74	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.092
MW-5	05/16/2008	55.96	4.23	51.73	0.05	0.001	0.005	<0.0005	0.009	0.056
MW-5	09/12/2008	55.96	4.26	51.70	0.001	<0.0005	<0.0005	<0.0005	0.0006	0.052
MW-5	06/19/2009	55.96	4.54	51.42	<0.010 / <0.010	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.049 / 0.055
MW-5	09/07/2009	55.96	4.36	51.60	<0.010	<0.0005	<0.0005	<0.0005	<0.0005	0.078
MW-5R	06/22/2010	-	4.43	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
MW-6	08/22/2006	55.02	2.72	52.30	<0.01 / <0.01	0.0006 / 0.0007	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.031 / 0.03
MW-6	05/16/2007	55.02	3.09	51.93	0.02	0.004	<0.0005	<0.0005	<0.0005	0.021
MW-6	09/25/2007	55.02	3.76	51.26	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.04
MW-6	05/16/2008	55.02	2.96	52.06	<0.01	0.001	<0.0005	<0.0005	<0.0005	0.021
MW-6	09/12/2008	55.02	3.03	51.99	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	0.032
MW-6	06/19/2009	55.02	3.24	51.78	<0.010	0.003	<0.0005	<0.0005	<0.0005	0.023
MW-6	09/07/2009	55.02	3.18	51.84	<0.010 / <0.010	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0005 / <0.0005	0.025 / 0.027
MW-6R	06/22/2010	-	3.08	-	<0.010 / <0.010	0.0033 / 0.0027	<0.0005 / <0.0005	<0.0005 / <0.0005	<0.0015 / <0.0015	-
Trip Blanl	04/26/1999	-	-	-	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
Trip Blanl	10/11/1999	-	-	-	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
Trip Blanl	05/20/2000	-	-	-	<0.08	<0.0005	<0.0005	<0.0005	<0.001	<0.002
Trip Blanl	09/20/2000	-	-	-	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
Trip Blanl	09/26/2001	-	-	-	<0.05	<0.0002	<0.0005	<0.0005	<0.001	<0.001
Trip Blanl	09/18/2002	-	-	-	<0.05	<0.0002	0.000569	<0.0005	<0.001	<0.001
Trip Blanl	05/20/2003	-	-	-	0.014	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	10/01/2003	-	-	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	06/01/2004	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	09/24/2004	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	05/09/2005	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	09/22/2005	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	05/08/2006	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	08/22/2006	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blanl	05/16/2007	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	09/25/2007	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	05/16/2008	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	09/12/2008	-	-	-	<0.01	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
Trip Blanl	06/10/2009	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Trip Blanl	09/07/2009	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-
Trip Blanl	06/10/2010	-	-	-	<0.010	<0.0005	<0.0005	<0.0005	<0.0015	-

Table 2
Polynuclear Aromatic Hydrocarbon Analytical Results
Chevron-branded Service Station 9-0932
2200 West Dimond Boulevard
Anchorage, Alaska

Location	Date	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Levels		0.73	2.2	2.2	1.5	11	11	1.5	1.1
MW-6R	06/22/2010	0.000030 J / 0.00018 J	<0.000010 / 0.000014 J	<0.000010 / 0.000011 J	<0.000010 UJ / 0.000061 J	0.000031 J / 0.00028 J	<0.000010 / 0.000011 J	0.000014 J / 0.000088 J	0.000019 J / 0.00011 J

Table 2
Polynuclear Aromatic Hydrocarbon Analytical Results
Chevron-branded Service Station 9-0932
2200 West Dimond Boulevard
Anchorage, Alaska

Location	Date	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene
	Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
ADEC Levels		0.0012	0.12	0.0012	0.012	0.002	0.0012	0.00012	1.1
MW-6R	06/22/2010	<0.000010 UJ / 0.000025 J	<0.000010 UJ / 0.000077 J	<0.000010 UJ / 0.000054 J	<0.000010 UJ / <0.000010 UJ	<0.000010 / 0.000014 J	<0.000010 / 0.000013 J	<0.000010 / 0.000014 J	<0.000010 UJ / 0.000035 J

Table 2
Polynuclear Aromatic Hydrocarbon Analytical Results
Chevron-branded Service Station 9-0932
2200 West Dimond Boulevard
Anchorage, Alaska

Notes and Abbreviations

TOC = Top of Casing
DTW = Depth to Water
GWE = Groundwater Elevation
GRO = Gasoline Range Organics by Alaska Series Method AK101
Benzene, Toluene, Ethylbenzene, and Total Xylenes by Environmental Protection Agency (EPA) Method 8021B or 8260B
Total Xylenes = Sum of m-, o-, and p-xylenes
MTBE = Methyl Tertiary-Butyl Ether
ADEC = Alaska Department of Environmental Conservation
* = Levels established in ADEC Table C Groundwater Cleanup Levels (18 AAC 75.345)
BOLD = Indicates concentration above the ADEC Table C Groundwater Cleanup Level
NA = Not Applicable
ft msl = Feet Above Mean Sea Level
fbg = Feet Below Grade
mg/L = Milligrams per Liter
- = Not Measured/Not Analyzed
<x = Constituent not detected above x milligrams per liter
x / y = Sample Results / Blind Duplicate Results

APPENDIX A

SITE PHOTOGRAPHS

1. MW-3

2. MW-4

3. MW-5

4. MW-6

Appendix A

PHOTOS
CHEVRON-BRANDED SERVICE STATION 9-0932
2200 WEST DIMOND BOULEVARD
Anchorage, Alaska

APPENDIX B

WELL SAMPLING FORMS

HYDRASLEEVE SAMPLING FORM

SITE ID: 9-0932 CRA PROJECT NO. 0e0349 CRA PM: A. Ellsmore WELL ID: MW-3R
ADDRESS: 2200 W. Dimond Blvd CITY, STATE: Anchorage, AK STAFF: SF, DE

6-18-2010	6-22-10	6-22-10
PREVIOUS DEPLOY DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	RE-DEPLOY DATE (MM DD YY)

SAMPLER DETAILS

HYDRASLEEVE DEPLOYMENT METHOD: X SUSPENDED O BOTTOM SET O BOTH SUSPENDED AND BOTTOM SET

DEDICATED WEIGHT(S): (yes) / no O TOP WEIGHT X BOTTOM WEIGHT

DEDICATED TETHER: (yes) / no

DEDICATED SAMPLER: yes / (no) SAMPLER LENGTH: X 30 inches O 36 inches

SAMPLER MODIFIED (e.g. tied off): yes / (no) SAMPLE INTERVAL: 3 6 0 0 (inches)

(Sample Interval = Depth to water - Depth to top of sampler)

WELL / SAMPLE DETAILS

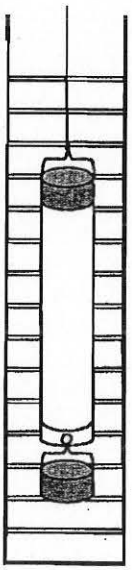
SAMPLE ID	DATE	TIME	ANALYTES / ANALYTIC METHOD
MW-3R-062210	6-22-10	1301	GRO by AK101 X; BTEX by 8021B X; BTEX by 8260B O; HVOCs by 8260B O; MtBE by 8260B O; EDB by 8011 O; 1,2-DCA by 8260B O

DEPTH TO WATER: 2 2 4 (ft)
(Sample interval must lie within well screen.)

LENGTH OF AVAILABLE WATER COLUMN: 1 0 4 2
(Available water column must be greater than or equal to total length of the sample interval.)

BOTTOM OF SAMPLE INTERVAL: 5 2 2 (ft)
(The top of the sampler prior to collection is the bottom of the sample interval. Must be a minimum of 2.5 inches from the bottom of well.)

DEPTH TO BOTTOM: 1 2 6 4 (ft)



SPECIFIC COMMENTS

HYDRASLEEVE SAMPLING FORM

SITE ID: 9-0932 CRA PROJECT NO. 060349 CRA PM: A. Ellsmore WELL ID: MW-4
ADDRESS: 2200 W. Dimond Blvd CITY, STATE: Anchorage, AK STAFF: SF, DE

6-18-10	6-22-10	6-22-10
PREVIOUS DEPLOY DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	RE-DEPLOY DATE (MM DD YY)

SAMPLER DETAILS

HYDRASLEEVE DEPLOYMENT METHOD: O SUSPENDED X BOTTOM SET O BOTH SUSPENDED AND BOTTOM SET

DEDICATED WEIGHT(S): (yes) / no — X TOP WEIGHT — X BOTTOM WEIGHT

DEDICATED TETHER: (yes) / no

DEDICATED SAMPLER: yes / (no)

SAMPLER LENGTH: X 30 inches O 36 inches

SAMPLER MODIFIED (e.g. tied off): yes / (no)

SAMPLE INTERVAL: 3 6 0 (inches)
(Sample Interval = Depth to water - Depth to top of sampler)

WELL / SAMPLE DETAILS

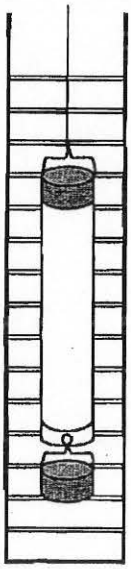
SAMPLE ID	DATE	TIME	ANALYTES / ANALYTIC METHOD
MW-4-062210	6-22-10	1305	GRO by AK101 X; BTEX by 8021B X; BTEX by 8260B O; HVOCs by 8260B O; MtBE by 8260B O; EDB by 8011 O; 1,2-DCA by 8260B O; _____ O; _____ O

DEPTH TO WATER: 1 3 9 6 (ft)
(Sample interval must lie within well screen.)

LENGTH OF AVAILABLE WATER COLUMN: 8 5 7
(Available water column must be greater than or equal to total length of the sample interval.)

BOTTOM OF SAMPLE INTERVAL: 1 2 3 3 (ft)
(The top of the sampler prior to collection is the bottom of the sample interval. Must be a minimum of 2.5 inches from the bottom of well.)

DEPTH TO BOTTOM: 1 2 5 3 (ft)



SPECIFIC COMMENTS

HYDRASLEEVE SAMPLING FORM

SITE ID: 9-0932 CRA PROJECT NO. 016349 CRA PM: A. Elsmore WELL ID: MW-5R
ADDRESS: 2200 W. Dimond Blvd CITY, STATE: Anchorage, AK STAFF: SF, DE

12-18-10	6-22-10	6-22-10
PREVIOUS DEPLOY DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	RE-DEPLOY DATE (MM DD YY)

SAMPLER DETAILS

HYDRASLEEVE DEPLOYMENT METHOD: X SUSPENDED ○ BOTTOM SET ○ BOTH SUSPENDED AND BOTTOM SET

DEDICATED WEIGHT(S): (yes) / no ○ TOP WEIGHT X BOTTOM WEIGHT

DEDICATED TETHER: (yes) / no

DEDICATED SAMPLER: yes / (no) SAMPLER LENGTH: X 30 inches ○ 36 inches

SAMPLER MODIFIED (e.g. tied off): yes / (no) SAMPLE INTERVAL: 3 6 0 0 (inches)
(Sample Interval = Depth to water - Depth to top of sampler)

WELL / SAMPLE DETAILS

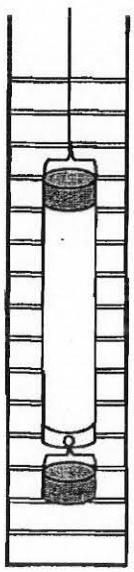
SAMPLE ID	DATE	TIME	ANALYTES / ANALYTIC METHOD
MW-5R-062210	6-22-10	1311	GRO by AK101 X BTEX by 8260B ○ MtBE by 8260B ○ BTEX by 8021B X HVOCs by 8260B ○ EDB by 8011 ○ 1,2-DCA by 8260B ○ _____ ○ _____ ○

DEPTH TO WATER: 14.43 (ft)
(Sample interval must lie within well screen.)

LENGTH OF AVAILABLE WATER COLUMN: 10.12
(Available water column must be greater than or equal to total length of the sample interval.)

BOTTOM OF SAMPLE INTERVAL: 17.43 (ft)
(The top of the sampler prior to collection is the bottom of the sample interval. Must be a minimum of 2.5 inches from the bottom of well.)

DEPTH TO BOTTOM: 14.55 (ft)



SPECIFIC COMMENTS

HYDRASLEEVE SAMPLING FORM

SITE ID: 9-0932 CRA PROJECT NO. 060349 CRA PM: A. Ellsmore WELL ID: MW-6R
ADDRESS: 2200 W. Dimond Blvd CITY, STATE: Anchorage, AK STAFF: SF, DE

6-18-10	6-22-10	6-22-10
PREVIOUS DEPLOY DATE (MM DD YY)	SAMPLE DATE (MM DD YY)	RE-DEPLOY DATE (MM DD YY)

SAMPLER DETAILS

HYDRASLEEVE DEPLOYMENT METHOD: X SUSPENDED O BOTTOM SET O BOTH SUSPENDED AND BOTTOM SET

DEDICATED WEIGHT(S): (yes) / no — O TOP WEIGHT — X BOTTOM WEIGHT

DEDICATED TETHER: (yes) / no

DEDICATED SAMPLER: yes / (no) — SAMPLER LENGTH: X 30 inches O 36 inches

SAMPLER MODIFIED (e.g. tied off): yes / (no) — SAMPLE INTERVAL: 3 6 0 (inches)

(Sample Interval = Depth to water - Depth to top of sampler)

WELL / SAMPLE DETAILS

SAMPLE ID	DATE	TIME	ANALYTES / ANALYTIC METHOD
MW-6R-062210	6-22-10	1323	GRO by AK101 X — BTEX by 8260B O — MtBE by 8260B O
DUP-1-062210	6-22-10	—	BTEX by 8021B X — HVOCs by 8260B O — EDB by 8011 O
			1,2-DCA by 8260B O
			O
			O

DEPTH TO WATER: 3 0 8 (ft)

(Sample interval must lie within well screen.)

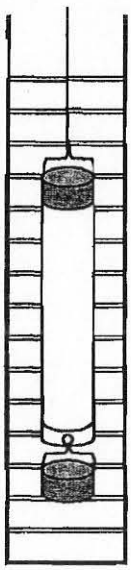
LENGTH OF AVAILABLE WATER COLUMN: 1 0 5 2

(Available water column must be greater than or equal to total length of the sample interval.)

BOTTOM OF SAMPLE INTERVAL: 6 0 8 (ft)

(The top of the sampler prior to collection is the bottom of the sample interval. Must be a minimum of 2.5 inches from the bottom of well.)

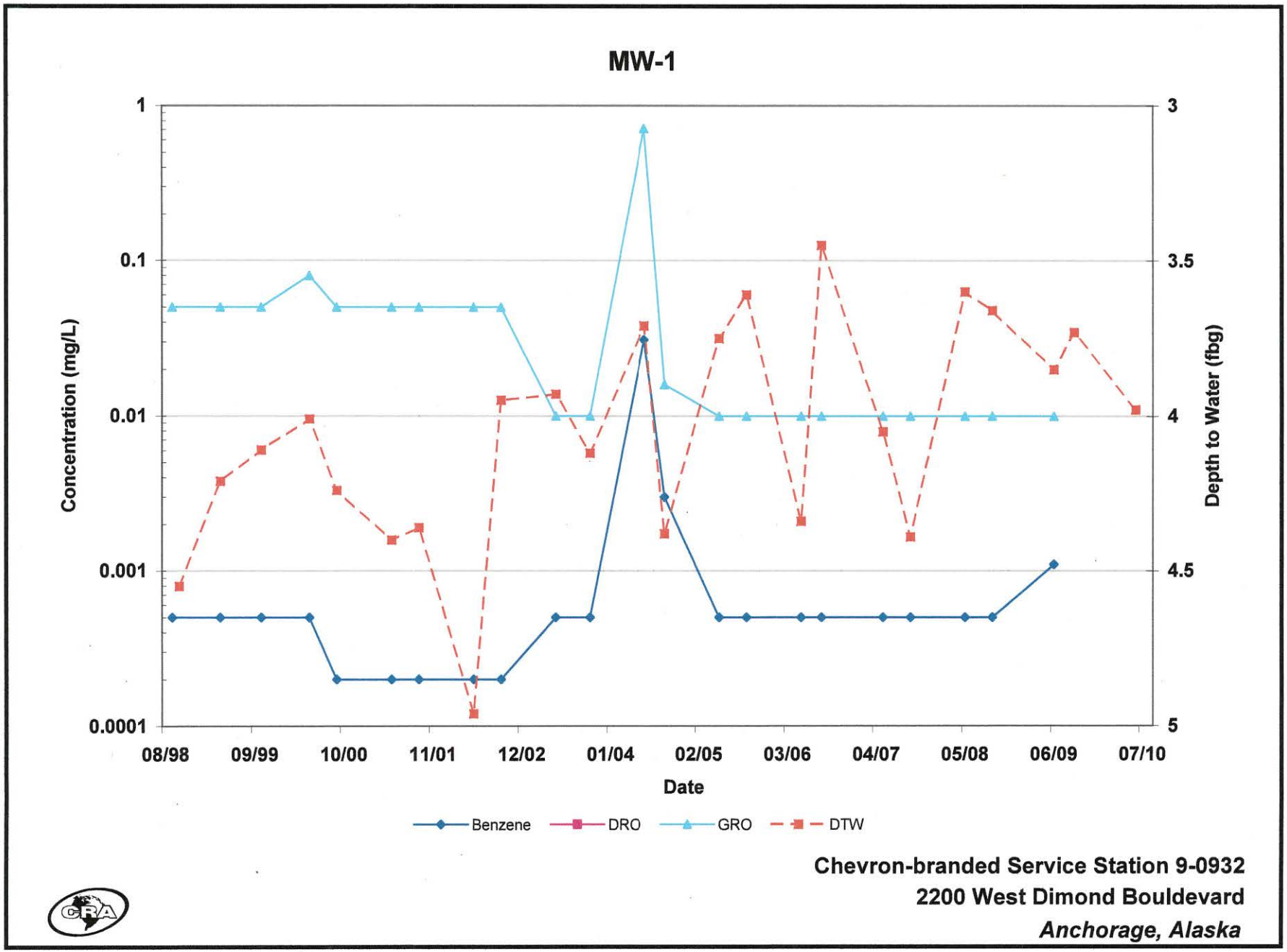
DEPTH TO BOTTOM: 1 3 6 0 (ft)



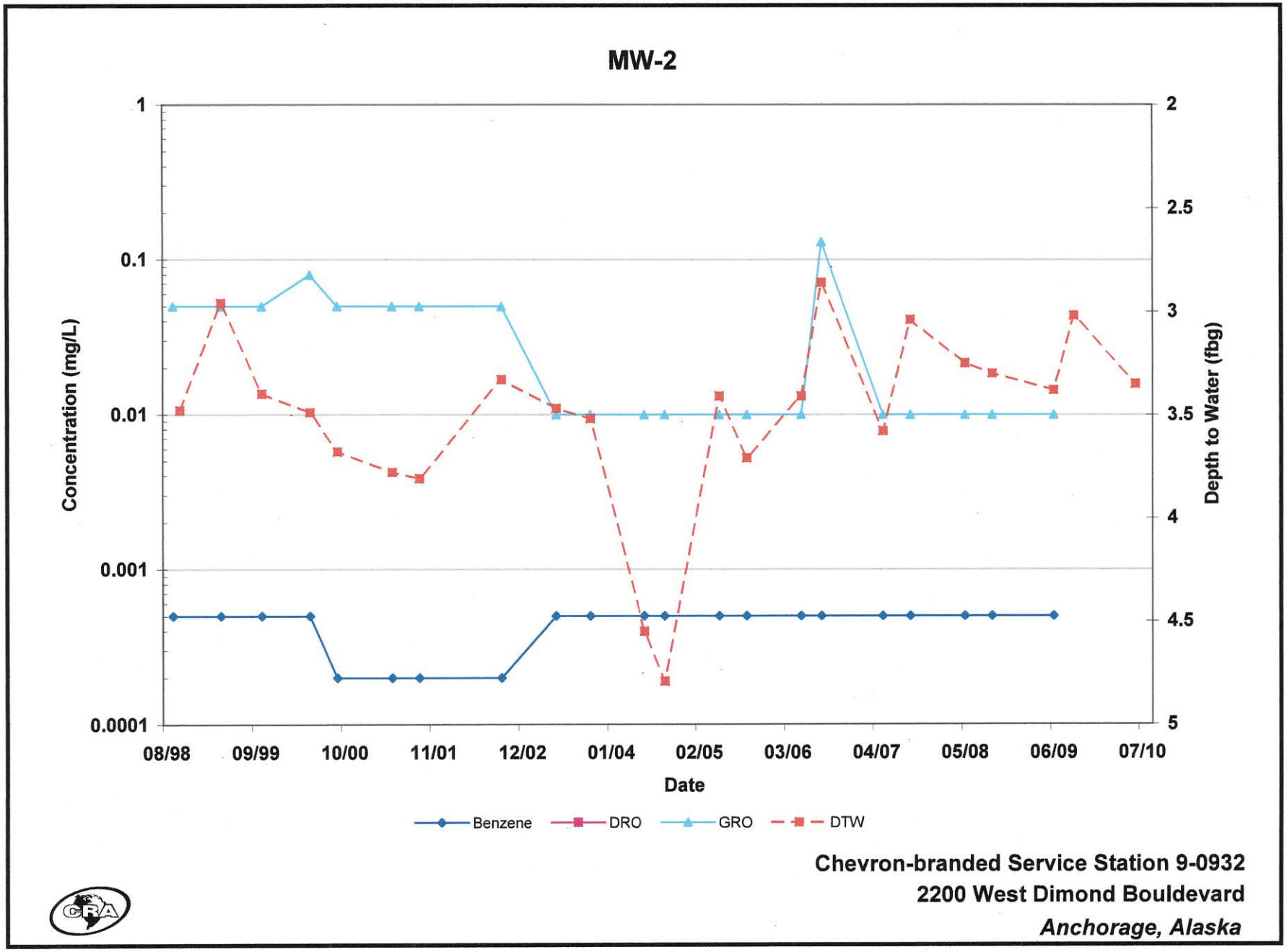
SPECIFIC COMMENTS

APPENDIX C

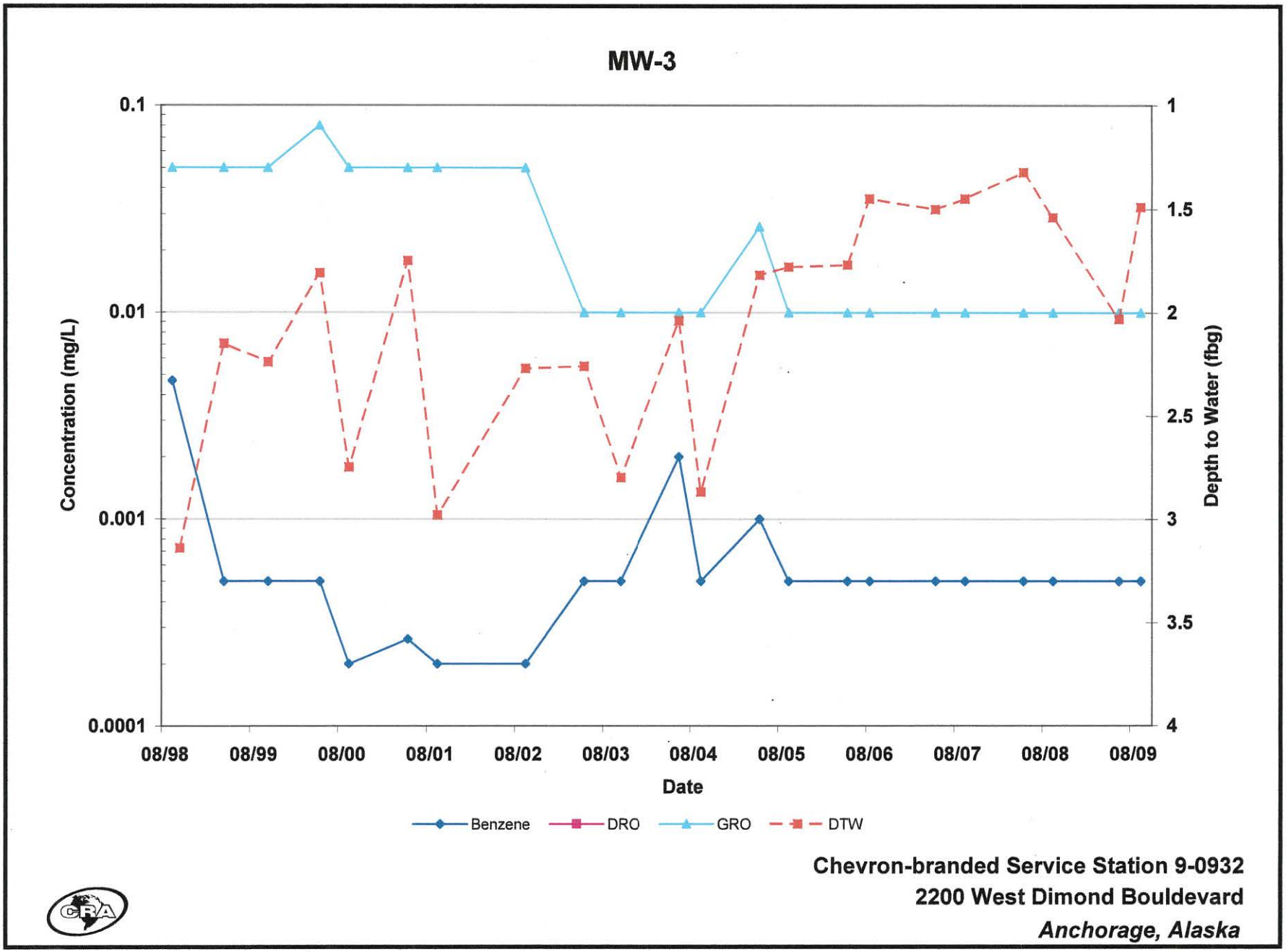
PETROLEUM HYDROCARBON CONCENTRATION GRAPHS



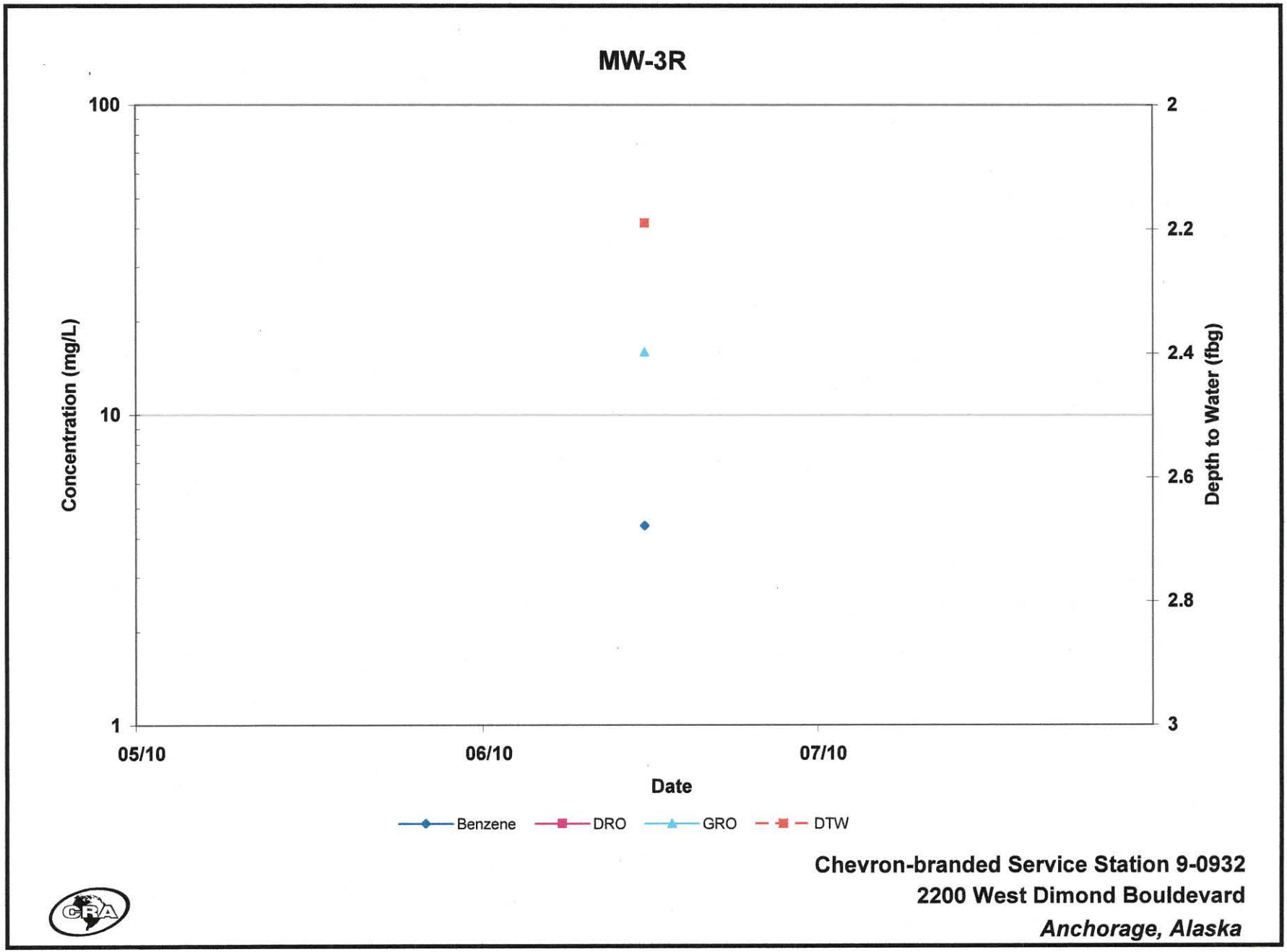
Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska



Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska

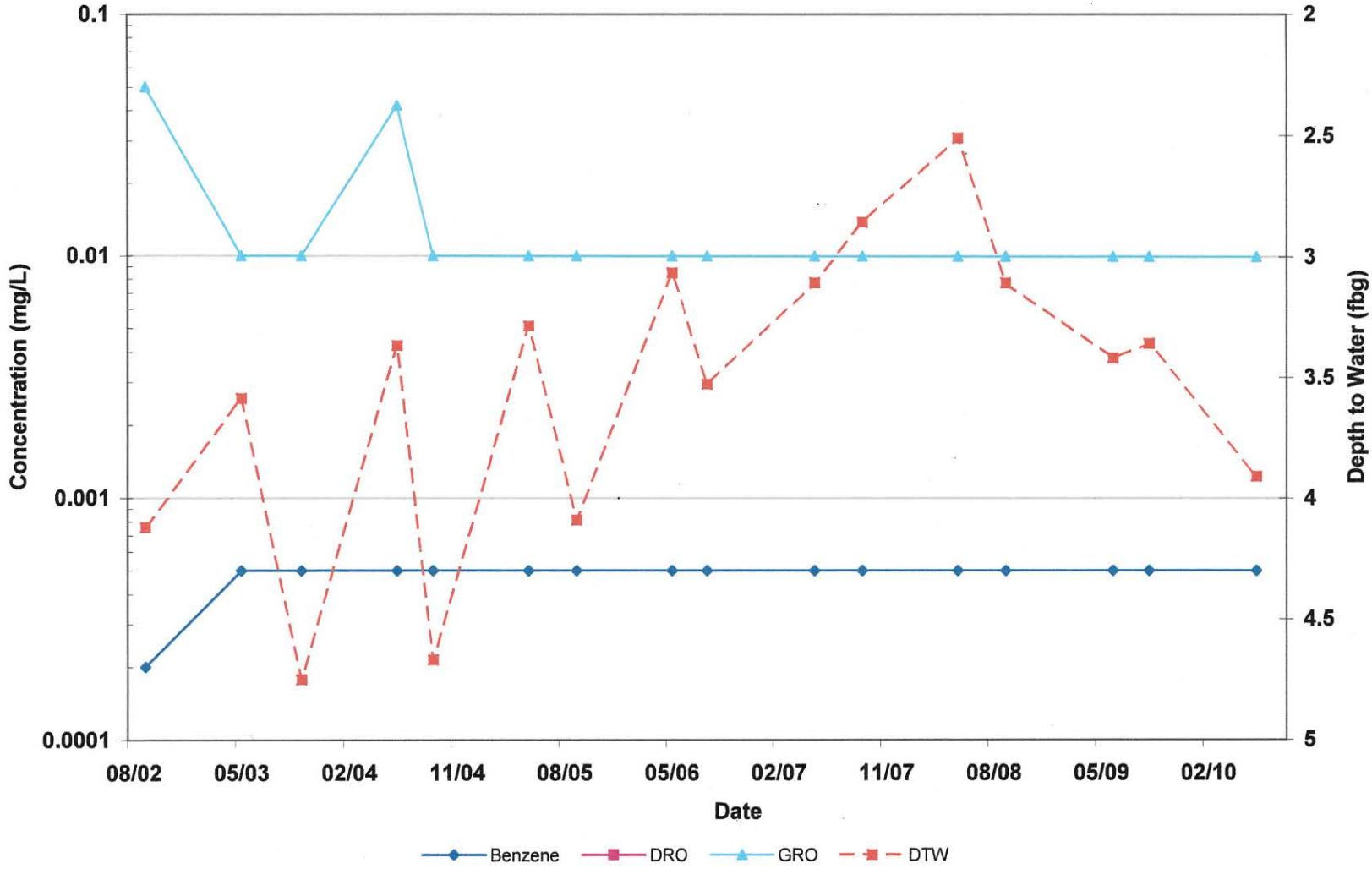


Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska

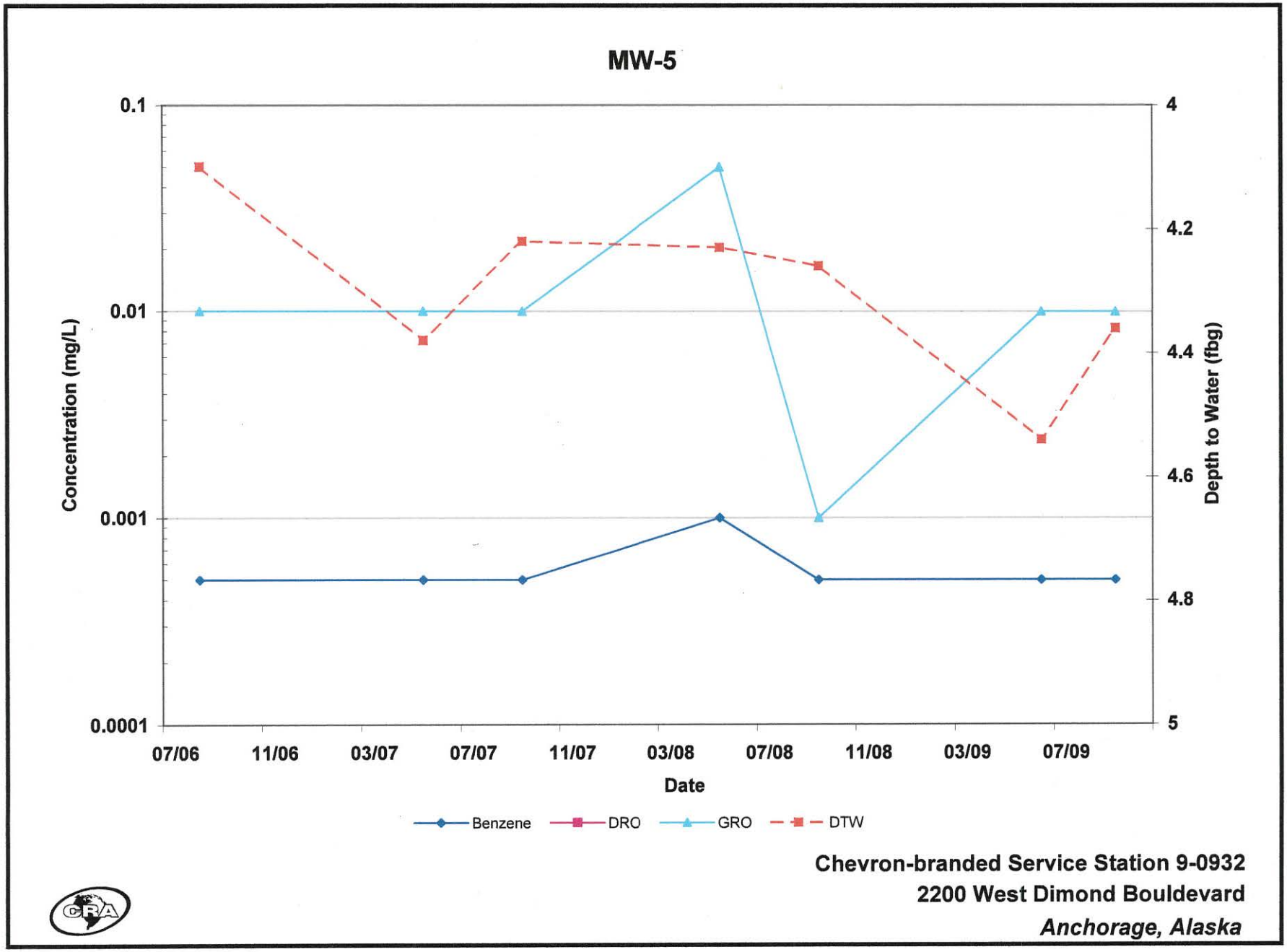


Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska

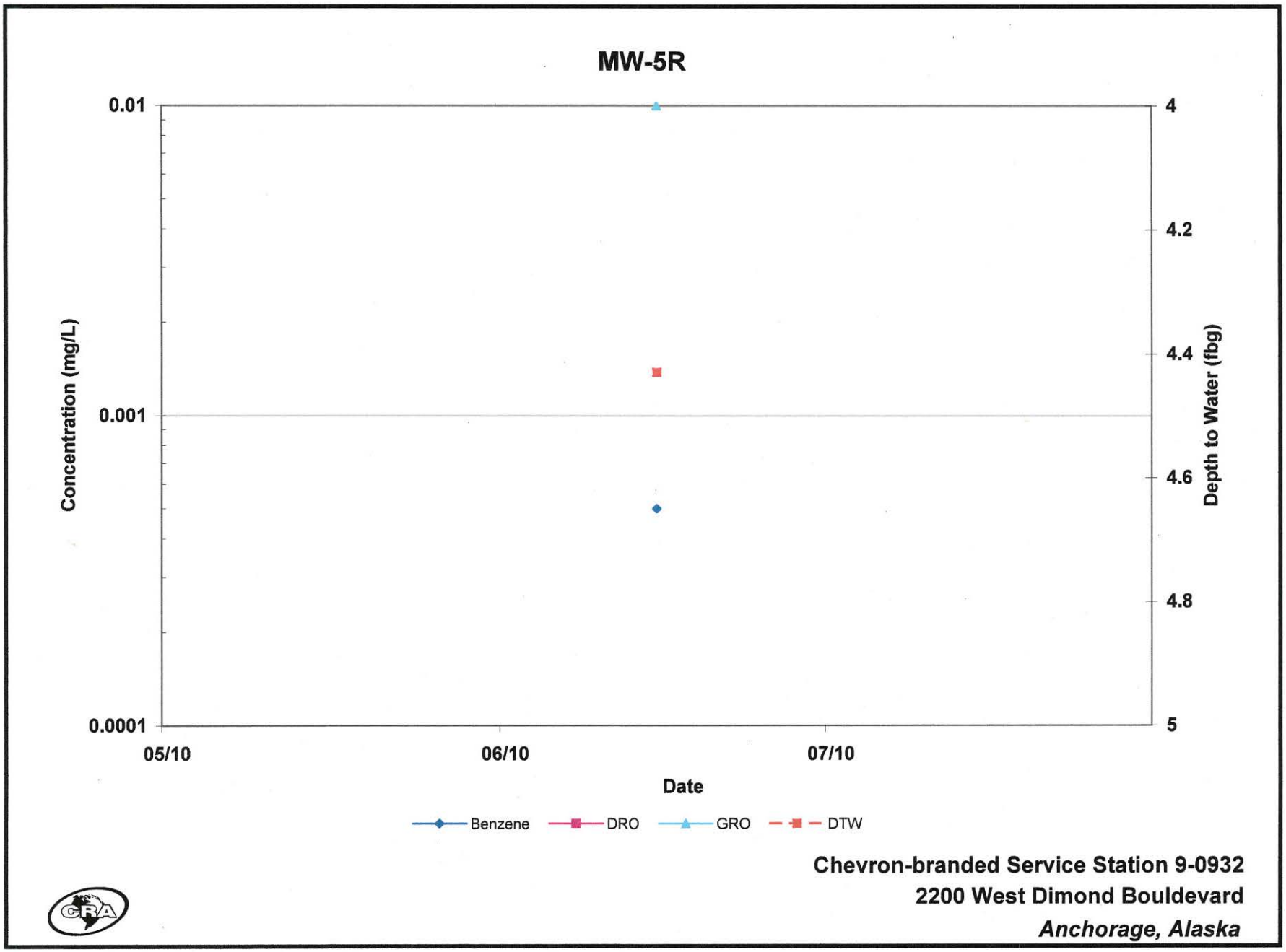
MW-4



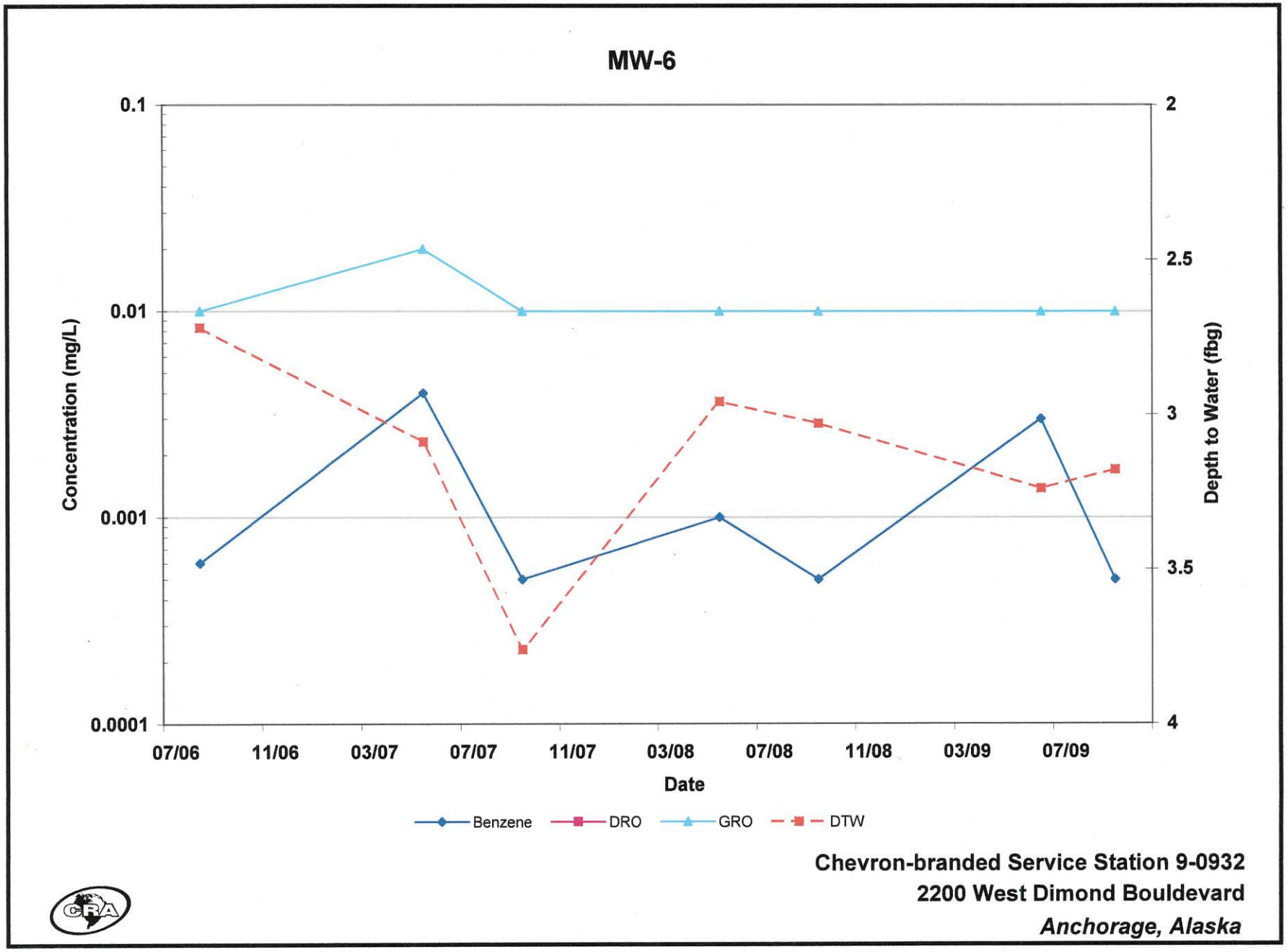
Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska



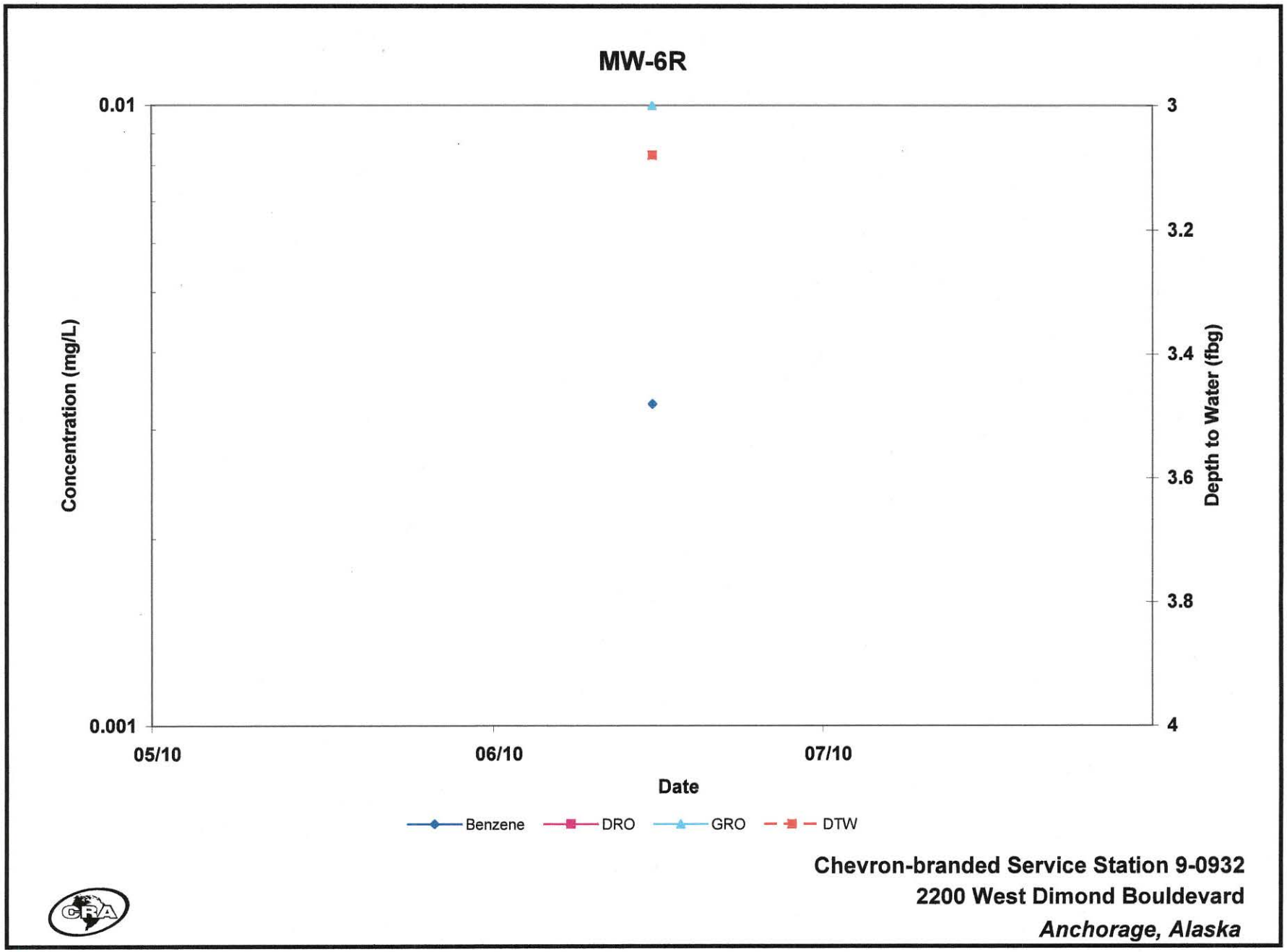
Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska



Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska



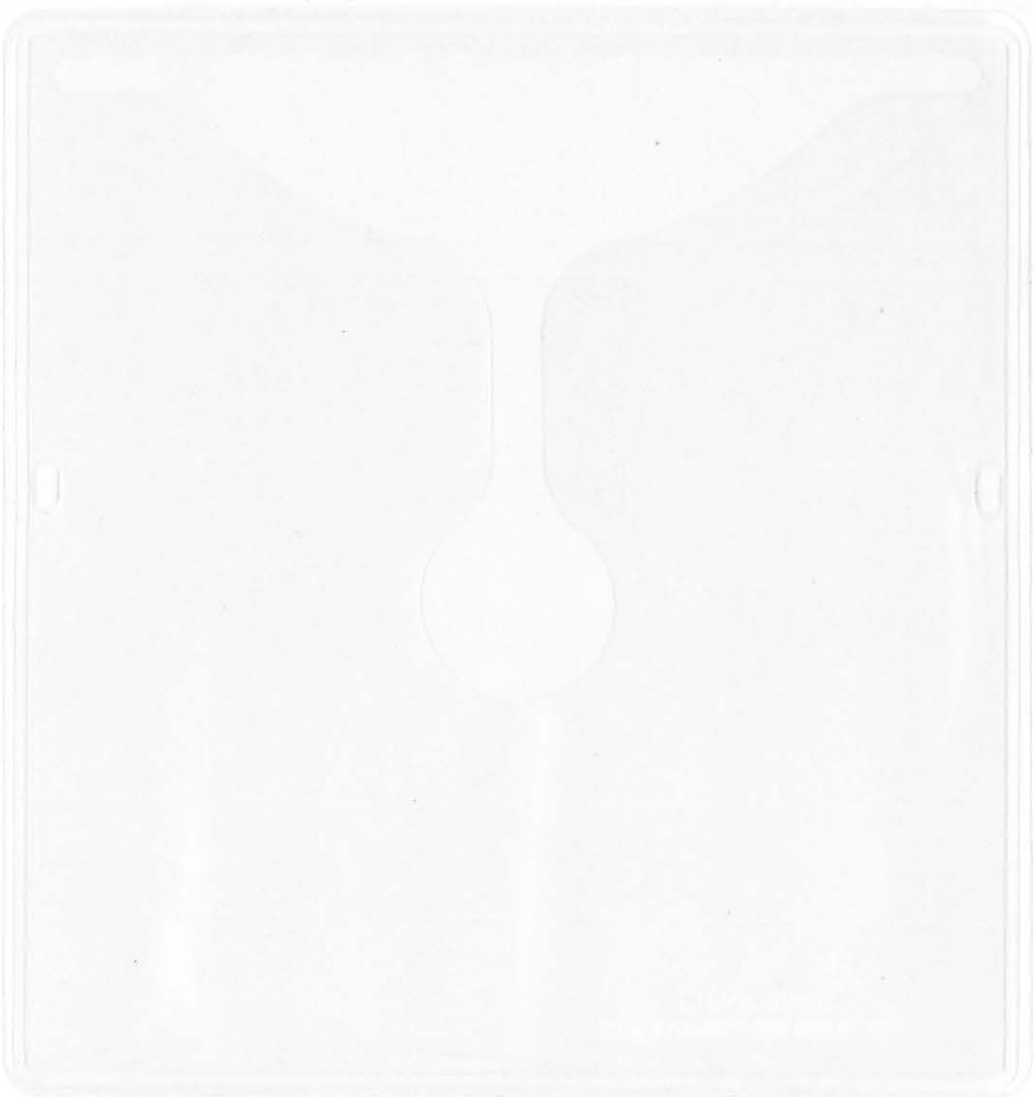
Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska



Chevron-branded Service Station 9-0932
2200 West Dimond Bouldevard
Anchorage, Alaska

APPENDIX D

LANCASTER LABORATORIES ANALYTICAL DATA



APPENDIX E

ADEC LABORATORY DATA REVIEW CHECKLIST AND MEMORANDUM

Laboratory Data Review Checklist

Completed by: J Cloud

Title: Project Chemist Date: September 28, 2010

CS Report Name: Report Date: 7/5/10

Consultant Firm: Conestoga-Rovers & Associates

Laboratory Name: Lancaster Laboratories Laboratory Report Number: 1200358

ADEC File Number: ADEC RecKey Number:

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X 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 X NA (Please explain.) Comments:

      Samples not transferred

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

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

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

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

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?
X 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 X NA (Please explain.) Comments:

No discrepancies

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

No discrepancies

4. Case Narrative
a. Present and understandable?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

c. Were all corrective actions documented?
X Yes ☐ No ☐NA (Please explain.) Comments:

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

Benzo(b)fluoranthene and benzo(k)fluoranthene were not resolved under the sample analysis conditions. The result reported for benzo(b)fluoranthene represents the combined total of both isomers.

5. Samples Results
a. Correct analyses performed/reported as requested on COC?
X Yes ☐ No ☐NA (Please explain.) Comments:

b. All applicable holding times met?
X Yes ☐ No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
☐Yes ☐ No X NA (Please explain.) Comments:

No soils

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes ☐ No ☐NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

None

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes ☐ No ☐NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

None

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

No samples affected

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

No samples affected

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

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?
☐Yes ☐ No X NA (Please explain.) Comments:

No metals/inorganics

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

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

None

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?
☐Yes ☐ No X NA (Please explain.) Comments:

No samples affected

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

None

c. Surrogates – Organics Only

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

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

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

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

No failed recoveries

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

Comments:

None

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.)

X 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)

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

iii. All results less than PQL?

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

iv. If above PQL, what samples are affected?

Comments:

None

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

Comments:

None

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?
X Yes ☐ No ☐NA (Please explain.) Comments:

ii. Submitted blind to lab?
X Yes ☐ No ☐NA (Please explain.) Comments:

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

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

Where R_1 = Sample Concentration
R_2 = Field Duplicate Concentration

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

Benzo(a)anthracene, benzo(g,h,i)perylene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene and the combined total of benzo(b)fluoranthene and benzo(k)fluoranthene had calculated RPDs outside the acceptable limit.

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

Comments:

The results for these compounds should be considered estimated for samples MW-6R and DUP-1.

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

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

Not collected

i. All results less than PQL?

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

Not collected

ii. If above PQL, what samples are affected?

Comments:

Not collected

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

Comments:

Not collected

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      ☐Yes ☐ No X NA (Please explain.) Comments:

No "other" flags/qualifiers

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MEMORANDUM

TO: ADEC

REF. NO.: 060349

FROM: Jeffrey Cloud

DATE: September 28, 2010

CC: Andrew Ellsmore

Send via E-Mail and U.S. Mail

RE: QA/QC Review
ChevronTexaco Site # 9-0932
Job #1200358
June 2010

INTRODUCTION

Groundwater samples were submitted to Lancaster Laboratories, located in Lancaster, Pennsylvania. Samples were analyzed for the methods requested on the Chain of Custody.

A full Level III data package was received from Lancaster Laboratories. The final results and supporting quality assurance/quality control (QA/QC) data were reviewed. Evaluation of the data was based on information obtained from the Chain of Custody forms, finished report forms, blank data, and spike recoveries.

QA/QC REVIEW

All samples were prepared and/or analyzed within the required holding times. All samples were properly preserved and cooled after collection.

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.

Benzo(b)fluoranthene and benzo(k)fluoranthene were not resolved under the sample analysis conditions. The result reported for benzo(b)fluoranthene represents the combined total of both isomers.

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 duplicate for all parameters. All recoveries were within required control limits showing adequate analytical accuracy and precision.

Matrix spikes (MS) were prepared and analyzed in duplicate for BTEX and GRO. All recoveries were within required control limits showing adequate analytical accuracy and precision. Precision for SVOCs was determined to be acceptable based on LCS/LCSD recoveries.

Trip blanks were collected and analyzed with the investigative samples for all parameters. 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 ID was MW-6R and its duplicate was DUP-1. A comparison of the results showed good analytical and sampling precision with a few exceptions. Benzo(a)anthracene, benzo(g,h,i)perylene, chrysene, fluoranthene, fluorene, naphthalene, phenanthrene, pyrene and the combined total of benzo(b)fluoranthene and benzo(k)fluoranthene had calculated RPDs outside the acceptable limit. The results for these compounds should be considered estimated for samples MW-6R and DUP-1.

CONCLUSION

Based on the QA/QC review, the data submitted were judged to be acceptable for use with the qualifications noted.

2100.26.064

Laboratory Data Review Checklist

Completed by: J Cloud

Title: Project Chemist Date: September 28, 2010

CS Report Name: Report Date: 7/5/10

Consultant Firm: Conestoga-Rovers & Associates

Laboratory Name: Lancaster Laboratories Laboratory Report Number: 1200358

ADEC File Number: 2100.26.064 ADEC RecKey Number:

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      X Yes ☐ No ☐NA (Please explain.) Comments:
      Lancaster Labs
   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 X NA (Please explain.) Comments:
      Samples not transferred

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      X Yes ☐ No ☐NA (Please explain.) Comments:
   b. Correct analyses requested?
      X Yes ☐ No ☐NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      X Yes ☐ No ☐NA (Please explain.) Comments:
   b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?
      X Yes ☐ No ☐NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?
□Yes □ No X NA (Please explain.) Comments:

No soils

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?
X Yes □ No □NA (Please explain.) Comments:

e. Data quality or usability affected?
Comments:

None ND

6. QC Samples
a. Method Blank
i. One method blank reported per matrix, analysis and 20 samples?
X Yes □ No □NA (Please explain.) Comments:

ii. All method blank results less than PQL?
X Yes □ No □NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?
Comments:

None

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?
□Yes □ No X NA (Please explain.) Comments:

No samples affected

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

No samples affected

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)

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

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

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

No failed recoveries

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

Comments:

None NO

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.)

X 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)

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

iii. All results less than PQL?

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

iv. If above PQL, what samples are affected?

Comments:

None

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

Comments:

None NO

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

Comments:

Not collected NB

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

a. Defined and appropriate?

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

No "other" flags/qualifiers

Checked by Robert Weimer - ADEC 3/10/11