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Certifications

WBENC: 237019 **HUB:** 1752439743100-86536 **DBE:** VN 20657
NCTRCA WFWB38444Y0909

NELAP Certifications

Lubbock: T104704219-08-TX **El Paso:** T104704221-08-TX **Midland:** T104704392-08-TX
 LELAP-02003 LELAP-02002
 Kansas E-10317

Analytical and Quality Control Report

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Report Date: April 16, 2009

Work Order: 9032309



Project Name: HELSTF Long-Term Supplemental List Groundwater

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
190913	HLSF-0148-DRW-114-0309	water	2009-03-19	12:35	2009-03-19

Comment(s)

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 8 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Notes:

For inorganic analyses, the term MQL should actually read PQL.

Standard Flags

- U** - Not detected. The analyte is not detected above the SDL.
- J** - Estimated. The analyte is positively identified and the value is approximated between the SDL and MQL.
- B** - The sample contains less than ten times the concentration found in the method blank.
- JB** - The analyte is positively identified and the value is approximated between the SDL and MQL.
The sample contains less than ten times the concentration found in the method blank.
The result should be considered non-detect to the SDL.



Dr. Blair Leftwich, Director

Case Narrative

Samples for project HELSTF Long-Term Supplemental List Groundwater were received by TraceAnalysis, Inc. on 2009-03-19 and assigned to work order 9032309. Samples for work order 9032309 were received intact at a temperature of 6.0 deg. C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chromium, Hexavalent	SM 3500-Cr B	49452	2009-03-19 at 18:50	57898	2009-03-19 at 18:50
Cr, Dissolved	S 6010B	49435	2009-03-23 at 13:14	57937	2009-03-25 at 10:44
Cr, Total	S 6010B	49463	2009-03-24 at 11:21	57938	2009-03-25 at 10:51

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9032309 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 190913 - HLSF-0148-DRW-114-0309

Laboratory: El Paso
 Analysis: Chromium, Hexavalent Analytical Method: SM 3500-Cr B Prep Method: N/A
 QC Batch: 57898 Date Analyzed: 2009-03-19 Analyzed By: JR
 Prep Batch: 49452 Sample Preparation: 2009-03-19 Prepared By: JR

Parameter	Flag	SDL	MQL	Method	Units	Dilution	SDL	MQL	MDL
		Based	Based	Blank				(Unadjusted)	(Unadjusted)
Hexavalent Chromium		2.36	2.36	<0.0594	mg/L	10	0.0594	0.0125	0.00594

Sample: 190913 - HLSF-0148-DRW-114-0309

Laboratory: Lubbock
 Analysis: Cr, Dissolved Analytical Method: S 6010B Prep Method: S 3005A
 QC Batch: 57937 Date Analyzed: 2009-03-25 Analyzed By: RR
 Prep Batch: 49435 Sample Preparation: 2009-03-23 Prepared By: KV

Parameter	Flag	SDL	MQL	Method	Units	Dilution	SDL	MQL	MDL
		Based	Based	Blank				(Unadjusted)	(Unadjusted)
Dissolved Chromium		2.05	2.05	<0.000583	mg/L	1	0.000583	0.001	0.000583

Sample: 190913 - HLSF-0148-DRW-114-0309

Laboratory: Lubbock
 Analysis: Cr, Total Analytical Method: S 6010B Prep Method: S 3010A
 QC Batch: 57938 Date Analyzed: 2009-03-25 Analyzed By: RR
 Prep Batch: 49463 Sample Preparation: 2009-03-24 Prepared By: KV

Parameter	Flag	SDL	MQL	Method	Units	Dilution	SDL	MQL	MDL
		Based	Based	Blank				(Unadjusted)	(Unadjusted)
Total Chromium		9.03	9.03	<0.000583	mg/L	1	0.000583	0.005	0.000583

Method Blank (1)

QC Batch: 57898 Date Analyzed: 2009-03-19 Analyzed By: JR
 Prep Batch: 49452 QC Preparation: 2009-03-19 Prepared By: JR

continued ...

method blank continued ...

Parameter	Flag	Result	Units	Reporting Limits
Hexavalent Chromium		<0.0119	mg/L	0.00594

Method Blank (1)

QC Batch: 57937 Date Analyzed: 2009-03-25 Analyzed By: RR
 Prep Batch: 49435 QC Preparation: 2009-03-23 Prepared By: KV

Parameter	Flag	Result	Units	Reporting Limits
Dissolved Chromium		<0.000583	mg/L	0.000583

Method Blank (1)

QC Batch: 57938 Date Analyzed: 2009-03-25 Analyzed By: RR
 Prep Batch: 49463 QC Preparation: 2009-03-24 Prepared By: KV

Parameter	Flag	Result	Units	Reporting Limits
Total Chromium		<0.000583	mg/L	0.000583

Laboratory Control Spike (LCS-1)

QC Batch: 57898 Date Analyzed: 2009-03-19 Analyzed By: JR
 Prep Batch: 49452 QC Preparation: 2009-03-19 Prepared By: JR

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	0.517	mg/L	1	0.500	<0.00594	103	95.4 - 105

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	0.517	mg/L	1	0.500	<0.00594	103	95.4 - 105	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)QC Batch: 57937
Prep Batch: 49435Date Analyzed: 2009-03-25
QC Preparation: 2009-03-23Analyzed By: RR
Prepared By: KV

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Chromium	0.0930	mg/L	1	0.100	<0.000583	93	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Chromium	0.0930	mg/L	1	0.100	<0.000583	93	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)QC Batch: 57938
Prep Batch: 49463Date Analyzed: 2009-03-25
QC Preparation: 2009-03-24Analyzed By: RR
Prepared By: KV

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Chromium	0.0930	mg/L	1	0.100	<0.000583	93	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Chromium	0.0930	mg/L	1	0.100	<0.000583	93	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 190914QC Batch: 57898
Prep Batch: 49452Date Analyzed: 2009-03-19
QC Preparation: 2009-03-19Analyzed By: JR
Prepared By: JR

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Hexavalent Chromium	0.591	mg/L	1.11	0.556	<0.00659	106	80.1 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Hexavalent Chromium	0.588	mg/L	1.11	0.556	<0.00659	106	80.1 - 118	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 190914

QC Batch: 57937 Date Analyzed: 2009-03-25 Analyzed By: RR
 Prep Batch: 49435 QC Preparation: 2009-03-23 Prepared By: KV

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Chromium	0.0910	mg/L	1	0.100	<0.000583	91	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Chromium	0.0900	mg/L	1	0.100	<0.000583	90	75 - 125	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 190831

QC Batch: 57938 Date Analyzed: 2009-03-25 Analyzed By: RR
 Prep Batch: 49463 QC Preparation: 2009-03-24 Prepared By: KV

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Chromium	0.429	mg/L	1	0.100	0.324	105	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Chromium	0.413	mg/L	1	0.100	0.324	89	75 - 125	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (CCV-1)

QC Batch: 57898 Date Analyzed: 2009-03-19 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.517	103	90 - 110	2009-03-19

Standard (CCV-2)

QC Batch: 57898 Date Analyzed: 2009-03-19 Analyzed By: JR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hexavalent Chromium		mg/L	0.500	0.515	103	90 - 110	2009-03-19

Standard (ICV-1)

QC Batch: 57937 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Chromium		mg/L	1.00	1.01	101	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57937 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Chromium		mg/L	1.00	0.982	98	90 - 110	2009-03-25

Standard (ICV-1)

QC Batch: 57938 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Chromium		mg/L	1.00	1.01	101	90 - 110	2009-03-25

Standard (CCV-1)

QC Batch: 57938 Date Analyzed: 2009-03-25 Analyzed By: RR

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Total Chromium		mg/L	1.00	0.992	99	90 - 110	2009-03-25

190913



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9032309

060

CHAIN OF CUSTODY RECORD

PROJECT NO.		PROJECT NAME		NO. OF CONTAINERS		ANALYSIS REQUESTED				REMARKS
SAMPLER'S SIGNATURE		DATE	TIME	SAMPLED	MATRIX	LAB NO.	Total Chromium	Hex. Chromium	Diss. Metals	
		3-19-09	1235	HLSF-0148-D-RM-114-03-09	WATER	190913	X	X	X	NOTE: 24 HR. HOLD TIME ON HEX. CHROME
				HLSF-0148-TB-09-060	WATER					
PROJECT INFORMATION		SAMPLES RECEIVED		1. RECEIVED BY (SIG NATURE)		2. RELINQUISHED BY (SIG NATURE)		3. RECEIVED BY LAB (SIG NATURE)		
PROJECT MANAGER		TOTAL NO. OF CONTAINERS		(PRINTED NAME)		(PRINTED NAME)		(PRINTED NAME)		
Erad Davis		CHAIN OF CUSTODY SENS		GARDNER		DANES		Koby Vasel		
SHIPPING ID NO.		GOOD CONDITION/WHILLED		RECEIVED BY (SIG NATURE)		RECEIVED BY (SIG NATURE)		(COMPANY)		
		By:						Trace 3.9%		
VIN:		CONFORMS TO RECORD		TIME/DATE		TIME/DATE		TIME/DATE		
Lab Courier		N/A		5/6/1600		3/19/09		10:30		
		SPECIAL INSTRUCTIONS/COMMENTS:		PLEASE SEE ATTACHED ANALYTE LIST FOR DETAILS				3/21/09		
								Lonestar 4312369C		

**Analyte List – HELSTF Long-term Groundwater Monitoring
Supplemental Sampling List**

CFW-01, CFW-02, CFW-03, CFW-04, DRW-06, DRW-08, DRW-09, DRW-10, DRW-11, HCF-02, HCF-03, HMW-07, HMW-12, HMW-14, HMW-26, HMW-28, HMW-31, HMW-53, DRW-14, DRW-15, DRW-17, HELSTF-01, HMW-16, HMW-42, HMW-54, HMW-55, HMW-61, HMW-62, HMW-63, HMW-64, HMW-65

Parameter		Reference Method	Container	Maximum hold time	Preservative
Water Quality	Conductivity pH Temperature Dissolved Oxygen ORP Turbidity	Field measured with YSI and turbidimeter	NA	NA	NA
Organics	VOCs	8260	40-mL VOAs (3)	14 days	HCl, pH<2 Chill to 4 °C
Total Metals	Total Chromium	6010	500-mL polyethylene	6 months	HNO ₃ , pH<2 Chill to 4 °C
	Hexavalent Chromium	SM 3500-Cr D	250-mL polyethylene	24 hours	Chill to 4 °C
Dissolved Metals	Dissolved Chromium	6010	500-mL polyethylene	6 months	Field Filter HNO ₃ , pH<2 Chill to 4 °C

**Analyte List – HELSTF Long-term Groundwater Monitoring
Supplemental Sampling List (LNAPL)**

**Product Sampling
HCF-03 and HCF-07**

Parameter		Reference Method	Container	Maximum hold time	Preservative
LNAPL (product)	VOCs simulated distillation viscosity density specific gravity surface tension		500-mL polyethylene		