GW-199

Chromium Data Report

DATE:
2007

WSP
ENVIRONMENTAL STRATEGIES

4600 South Ulster Street, Suite 930 • Denver, Colorado 80237 • (303) 850-9200 • Fax (303) 850-9214

GW-199, Hobbs

October 11, 2007

Mr. Wayne Price
Environmental Bureau Chief
New Mexico Oil Conservation Division
1220 South St Francis Drive
Santa Fe, NM 87505

Re: Chromium Data Compared with Modeling Results, Champion Technologies, Inc., Site (AP-14), 4001 South Highway 18, Hobbs, New Mexico

Dear Mr. Price:

As stated in our letter summarizing the chromium modeling results, dated January 29, 2007, for the Champion Technologies, Inc., site located at 4001 South Highway 18 in Hobbs, New Mexico, WSP Environmental Strategies LLC has prepared this comparison of semiannual sampling results to the model results. That model simulated offsite transport and attenuation of chromium as it relates to the entire saturated thickness of the Ogallala Aquifer. Based on the conditional approval of the July 12, 2006 site investigation report, the New Mexico Oil Conservation Division (NMOCD) concurred that chromium in groundwater is the one remaining environmental problem at the site. This letter recapitulates a description of the modeling effort and presents our interpretation of site data in relation to the model.

Model Simulation

The purpose of the modeling was to estimate future behavior of chromium in groundwater using the site-specific data. The site data suggest that a finite release occurred, and that, on the site, there is not a continuing source of chromium to the groundwater. The primary attenuation mechanism in groundwater is likely dispersion and, to a lesser degree, sorption and diffusion.

The groundwater modeling software used for this analysis is AT123D, originally developed at Oak Ridge National Laboratory, Oak Ridge, Tennessee, by Gour-Tsyh Yeh, Ph.D. AT123D is based on an analytical solution for transient one-, two-, or three-dimensional transport of a dissolved chemical in a homogeneous aquifer with uniform, stationary regional flow. This model allows for an instantaneous, or continuous, release of organic or inorganic compounds to groundwater. It calculates the distribution of chemicals of concern (COCs) in groundwater over time taking into account dispersion, diffusion, sorption, and biodegradation, as warranted. The program predicts the concentration distribution in space and time in milligrams per liter (mg/l or ppm). The aquifer can be bounded (finite extent) or of infinite extent in the Y- and/or Z-direction; it is defined as an infinite extent in the positive X-direction. The X-direction is west to east, in the direction of groundwater flow; the Y-direction is north to south, perpendicular to groundwater flow; and the Z-direction is the vertical depth into the water table, in other words,

the top of the water table is Z=0, and 30 meters below the water table is Z=30. The simulated source is centered at X=0, Y=0, and Z=0 to 3 meters.

Model Inputs

Based on information from previous site investigations, the subsurface geologic deposits at the site are characterized as a poorly–graded fine sand with trace silt. Perennial groundwater is encountered in the unconfined sand unit at a depth of approximately 17 meters below ground surface with a saturated thickness of at least 24 meters. A saturated thickness of 30 meters was defined for the modeling effort. Overall, the water level data from recent site investigations indicate a hydraulic gradient of 0.003 feet per foot to the east-southeast. There are no known groundwater recharge areas or sinks in the immediate area.

The release was modeled as a 50-year long, continuous release of chromium into groundwater. The results of historical soil investigations did not identify affected soils or a continuing source, suggesting that the source area currently has a low mass of chromium, within the range of background concentrations; however, in the past, the source area may have had elevated chromium concentrations that already migrated to the water table. The best-fit model input for the source was an area of approximately 10 meters by 10 meters, located at MW-13; this location and source dimensions yielded an output most closely fitting the historical groundwater data. The following table presents the primary model input values and the rationale or source of the values.

Parameter	Value	Comment
Aquifer depth	30 m (98 ft)	Based on review of NMOSE well records
Source dimensions	10 m x 10 m	Inferred from site data
Hydraulic conductivity	1 m/hr (2.8×10^{-2} cm/s)	Consistent with grain-size observed and TWDB literature
Hydraulic gradient	0.003	Based on site data 2003 to 2006
Longitudinal dispersivity, α_x	10 m	Based on length of plume observed
Lateral dispersivity, α_y	1 m	0.1 α_x
Vertical dispersivity, α_z	0.5 m	0.05 α_x
Partitioning/Distribution coefficient, K_d	0.001 m^3/kg (1 ml/g)	EPA literature value
Molecular diffusion	1×10^{-5} m^2/hr (2.8×10^{-5} cm^2/s)	Tortuosity factor x FDEP literature value
Discharge duration	438,000 hr (50 years)	Based on site operation and regional oil-production history
Discharge rate	1.1×10^{-4} kg/hr (0.96 kg/yr)	Inferred from model output

Table Notes:
NMOSE: New Mexico Office of the State Engineer records for available water well logs in Township 19 South Range 38 East. http://iwaters.ose.state.nm.us:7001/iWATERS/
TWDB: Texas Water Development Board, Report 288, *Evaluating the Ground Water Resources of the High Plains of Texas.* May 1984.
EPA: United States Environmental Protection Agency. *Understanding Variation in Partitioning Coefficient, K_d, Values (402-R-99-004B).* August 1999.
FDEP: Florida Department of Environmental Protection. *Technical Report: Development of Cleanup Target Levels (CTLs), For Chapter 62-777, F.A.C.* University of Florida Center for Environmental & Toxicology. February 2005.

The historical groundwater analytical results from monitoring wells MW-13 and MW-20 were the primary calibration targets along the longitudinal axis of the model. Additionally, the analytical data from monitoring wells MW-3 and MW-5 (located approximately 25 meters north of the plume's longitudinal axis, and having chromium concentrations below 0.01 mg/l), were used to calibrate the transverse axis of the model. Figure 1 depicts the location of the monitoring wells. The analytical data used for calibration are as follows:

DATE	MW-19	MW-13	MW-4	MW-4D	MW-20
February-03	--	**0.151**	**0.271**	--	--
May-03	--	**0.158**	**0.201**	--	--
August-03	--	**0.191**	**0.187**	--	--
November-03	--	**0.180**	**0.161**	--	--
March-04	--	**0.179**	**0.163**	--	--
June-04	--	**0.166**	**0.117**	--	--
October-04	--	**0.199**	**0.161**	--	--
July-05	0.001	**0.092**	**0.058**	**0.110**	**0.054**
October-05	0.003	**0.100**	**0.063**	**0.089**	**0.057**
January-06	ND	**0.110**	0.047	**0.060**	0.047
April-06	ND	0.044	0.035	0.043	**0.072**
February-07	--	**0.110**	--	0.016	0.042
July-07	--	0.009	--	0.019	0.048

Table Notes: Dissolved chromium is presented in mg/l
MW-4D, MW-19 and MW-20 were installed in July 2005.
Data from MW-4D and all data collected after April 2006 were not used in the model calibration

WSP Environmental Strategies applied AT123D by first calibrating the model using traditional trial and error methods to approximate the field observations. During the calibration, various combinations of input parameters were used to simulate the observed plume behavior; and the final calibrated model represents the scenario with the most plausible combination of input parameters and the best match to the observed analytical data. The final calibrated model output shows a continuous or sustained release, steady-state dispersing plume. This can be considered to be the upper-bound envelope of chromium concentrations in groundwater (calibrated to the maximum historical concentrations).

Simulated Plume Behavior

The series of model outputs simulating a steady-state plume were developed in the January 2007 letter summarizing the modeling effort. The model output indicated that the plume reaches a steady state after 10 years, in other words, the output for a 10-year release duration would attain the same plume dimensions as a release of 50 years or more, as long as it had a steady contaminant flux from the soil to groundwater. The maximum pre-2007 concentrations are represented as the "Baseline" curve, on Figure 2.

Figure 2 depicts the longitudinal profile along the centerline, at a depth of 1.5 meters below the water table, for steady-state sources of varying magnitudes ranging from ½ to ⅛ times the

Baseline curve. These curves simulate the concentrations along the plume's centerline, caused by an attenuating source, reducing in half, then quarter, then eighth. Because there are infinite gradations between these points, these intervals were selected only for reference. The general shape of the infinite number of curves would be similar, though. Because it takes approximately ten years for each profile to attain steady state, a source that has a half-life of less than ten years would exhibit slightly different profiles, but would not exceed the upper-bound envelope represented by the Baseline curve.

Data Comparison

Figures 3 and 4 show the data from MW-13, MW-4 and MW-20 from July and October 2005. They correspond very well to the ½ Baseline curve. The error bars shown are +/- 20%, which is the acceptable tolerance, referred to as relative percent difference (RPD), for two measurements of the same sample using EPA Method 6010, which was the analytical method used in this project.

Figures 5 and 6 show the data from January and April 2006. They correspond well with the ½ and ¼ Baseline curves, with the upgradient part of the plume corresponding better with the ¼ Baseline curve, and the downgradient part still corresponding with the ½ Baseline curve.

Figures 7 and 8 show data from February and July 2007. The upgradient data correspond well with the ⅛ Baseline curve, the middle of the plume corresponds with the ¼ Baseline, and the downgradient data still corresponds with the ½ Baseline.

As predicted in the January modeling letter, there appears to be a lag in response between decreases in the concentrations near the source area compared with concentrations at distal wells. These comparisons indicate that the source is attenuating faster than the downgradient plume can equilibrate with.

WSP Environmental Strategies tabulated data points for MW-13, MW-4, MW-4D and MW-20, using the Mann Kendall statistical method to evaluate trends in the dissolved chromium data. The method is valid for up to ten data points, in chronological order and includes an estimate of the percent confidence level that a data set is decreasing or increasing. As shown on Table 1, the overall concentrations trends are declining or stable. There is at least 90 percent confidence that MW-13, MW-4 and MW-4D are decreasing and MW-20 is stable. Furthermore, the concentrations have attenuated to less than the New Mexico Water Quality Control Commission standard for groundwater protection 0.05 mg/l in all of the wells monitored.

Conclusions

The site data correspond reasonably well with the model simulation of a declining source, including some lag time between changes in groundwater concentrations in the source area compared with those at distal wells. The chromium concentrations in soil suggest the source has depleted itself.

Recommendations

Because dissolved chromium concentrations at MW-13 and MW-4D statistically decreasing (with more than 90% confidence) and are currently less than 0.05 mg/l, and concentrations at MW-20 are stable and less than 0.05 mg/l, Champion Technologies and WSP Environmental Strategies recommend that abatement activities at the site be terminated.

If you have any questions regarding this matter, please contact us at (303) 850-9200 or manley.tom@wspgroup.com.

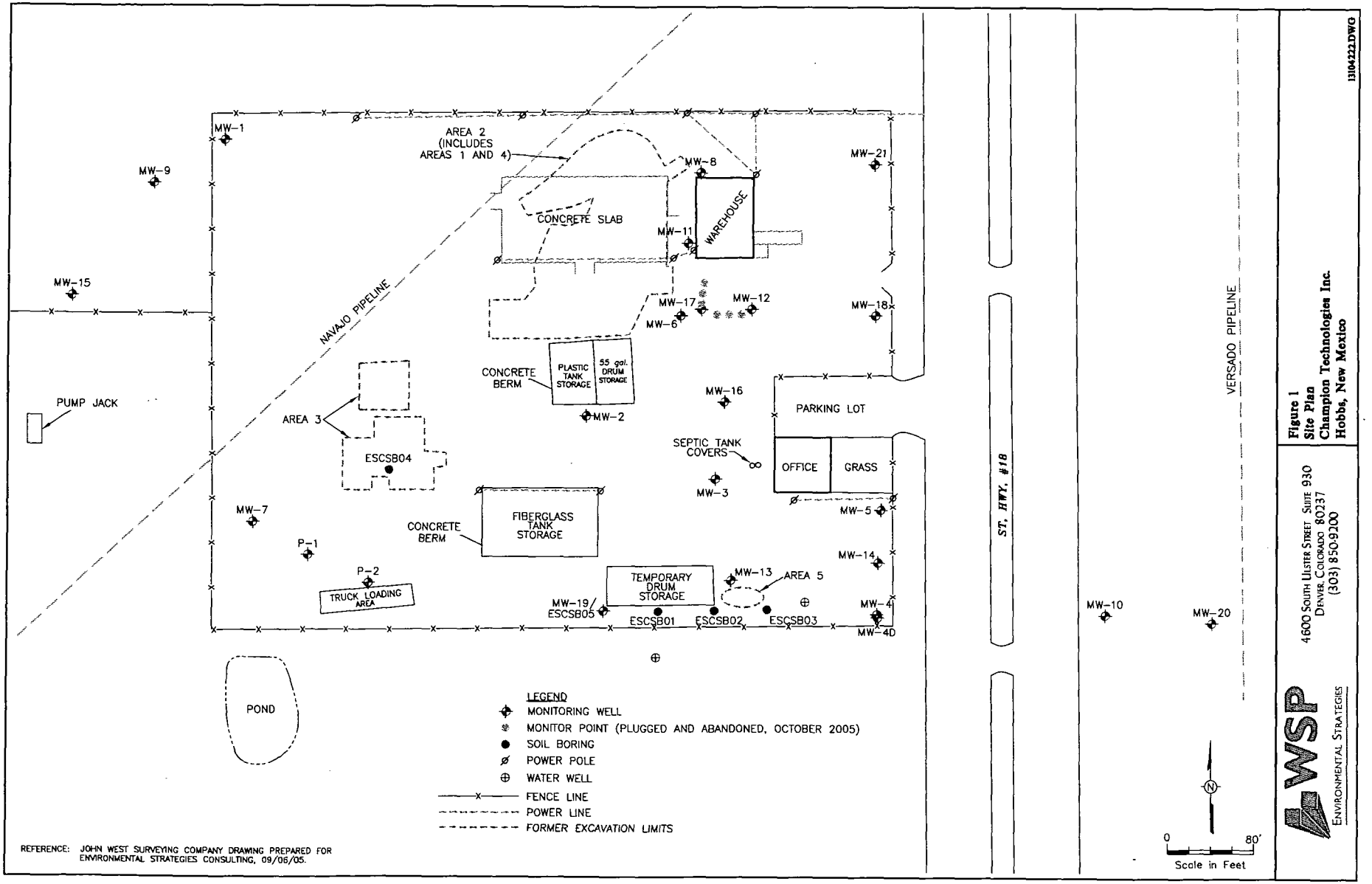
Sincerely yours,

Manley Tom, P.E.
Technical Manager

Enclosure

cc/encl: Mr. Chris Williams, New Mexico Oil Conservation Division
Mr. Marty Brown, Champion Technologies Inc.
Mr. Dwight Vorpahl, Champion Technologies Inc.
Mr. Brian Friedman, Champion Technologies Inc.
Mr. Juan Alvarado, Champion Technologies Inc.
Mr. John Simon, WSP Environmental Strategies LLC

Figures



REFERENCE: JOHN WEST SURVEYING COMPANY DRAWING PREPARED FOR ENVIRONMENTAL STRATEGIES CONSULTING, 09/06/05.

Figure 1
Site Plan
Champion Technologies Inc.
Hobbs, New Mexico

13104222.DWG

WSP
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DENVER, COLORADO 80237
(303) 850-9200

Figure 2

Theoretical Curves for Declining Sources: Longitudinal Profile at the Centerline
Champion Technologies, Inc. Site
Hobbs, New Mexico

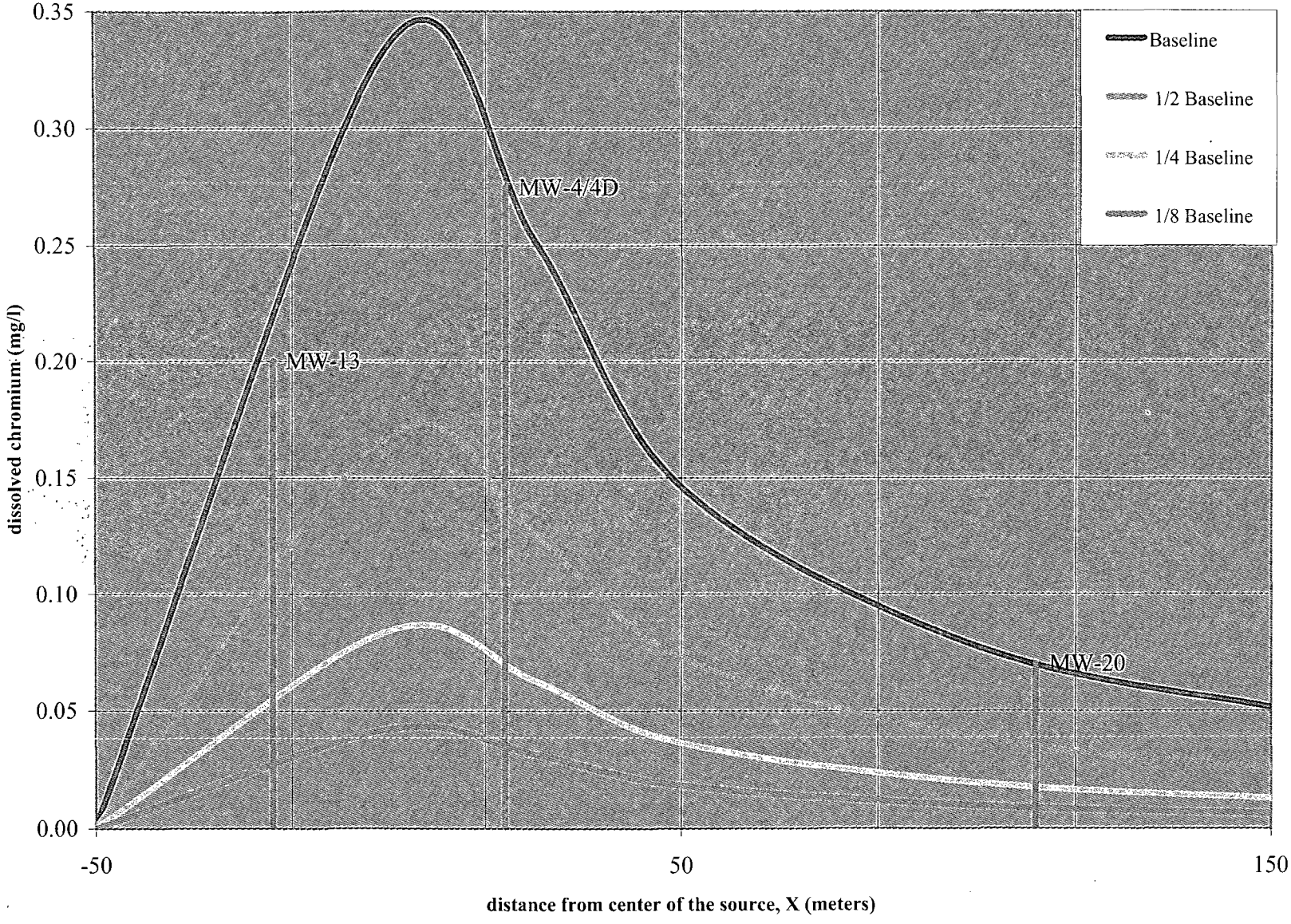


Figure 3

July 2005 Data Compared with Theoretical Curves
Champion Technologies, Inc. Site
Hobbs, New Mexico

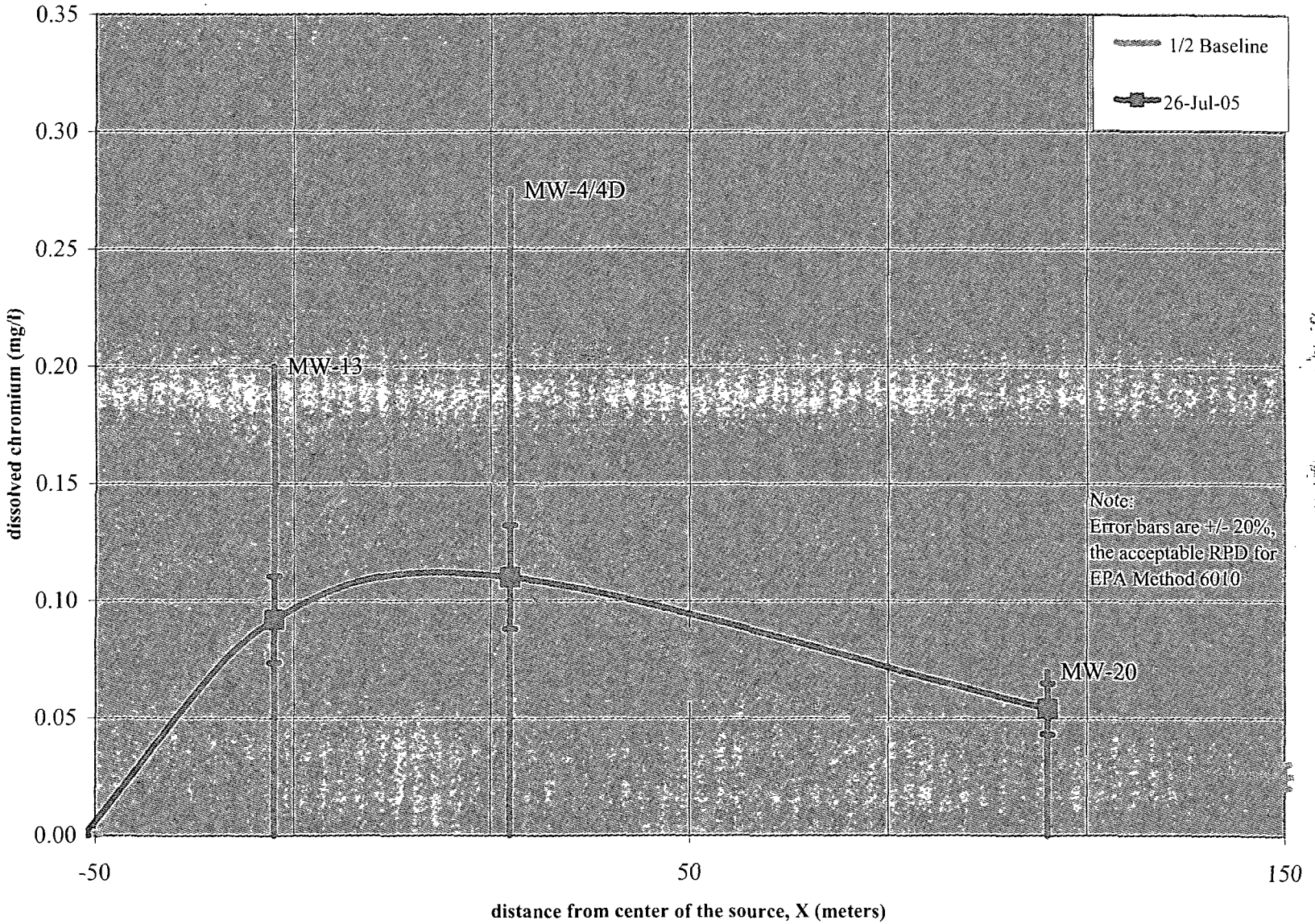


Figure 4

October 2005 Data Compared with Theoretical Curves
Champion Technologies, Inc. Site
Hobbs, New Mexico

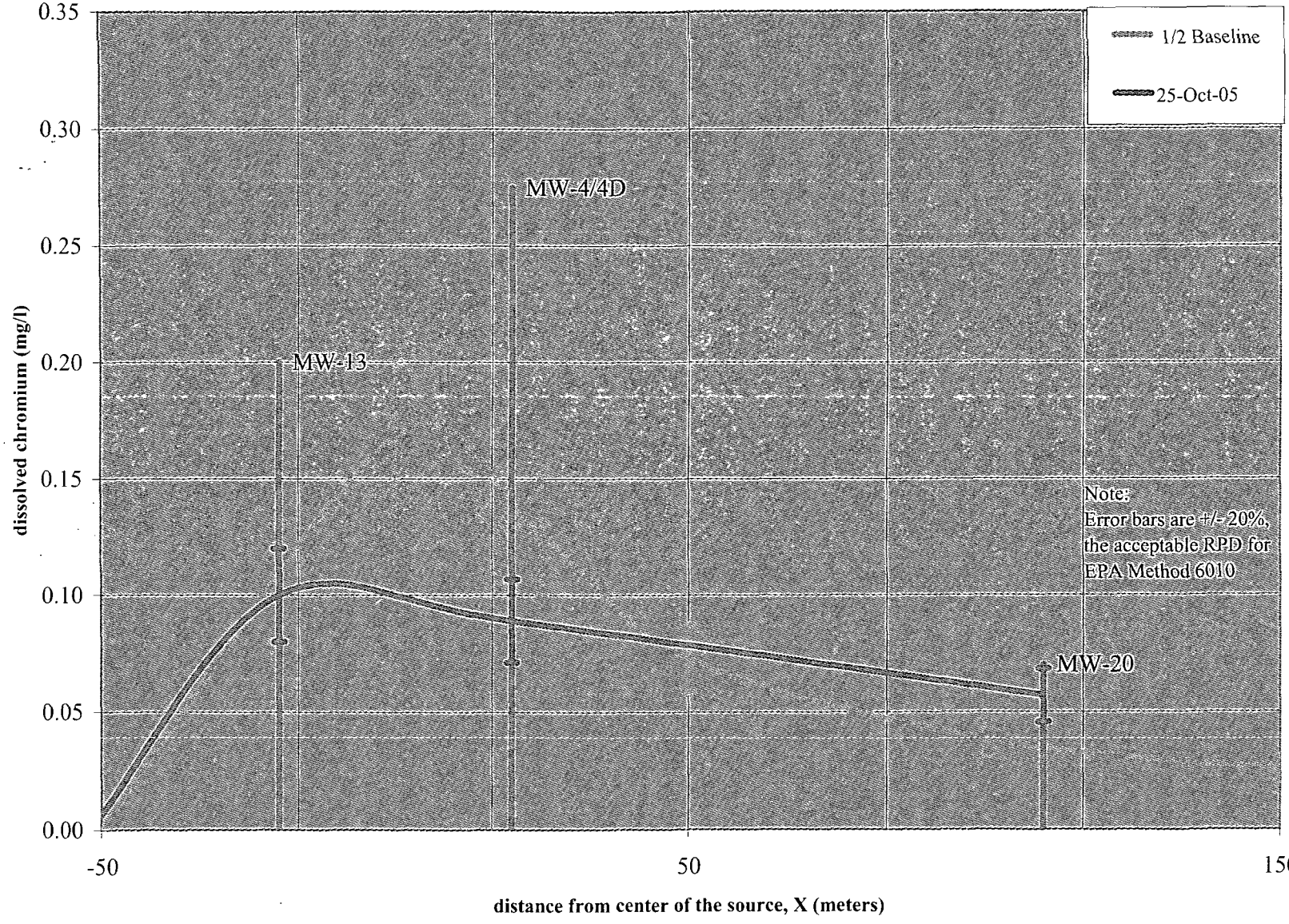


Figure 5

January 2006 Data Compared with Theoretical Curves
Champion Technologies, Inc. Site
Hobbs, New Mexico

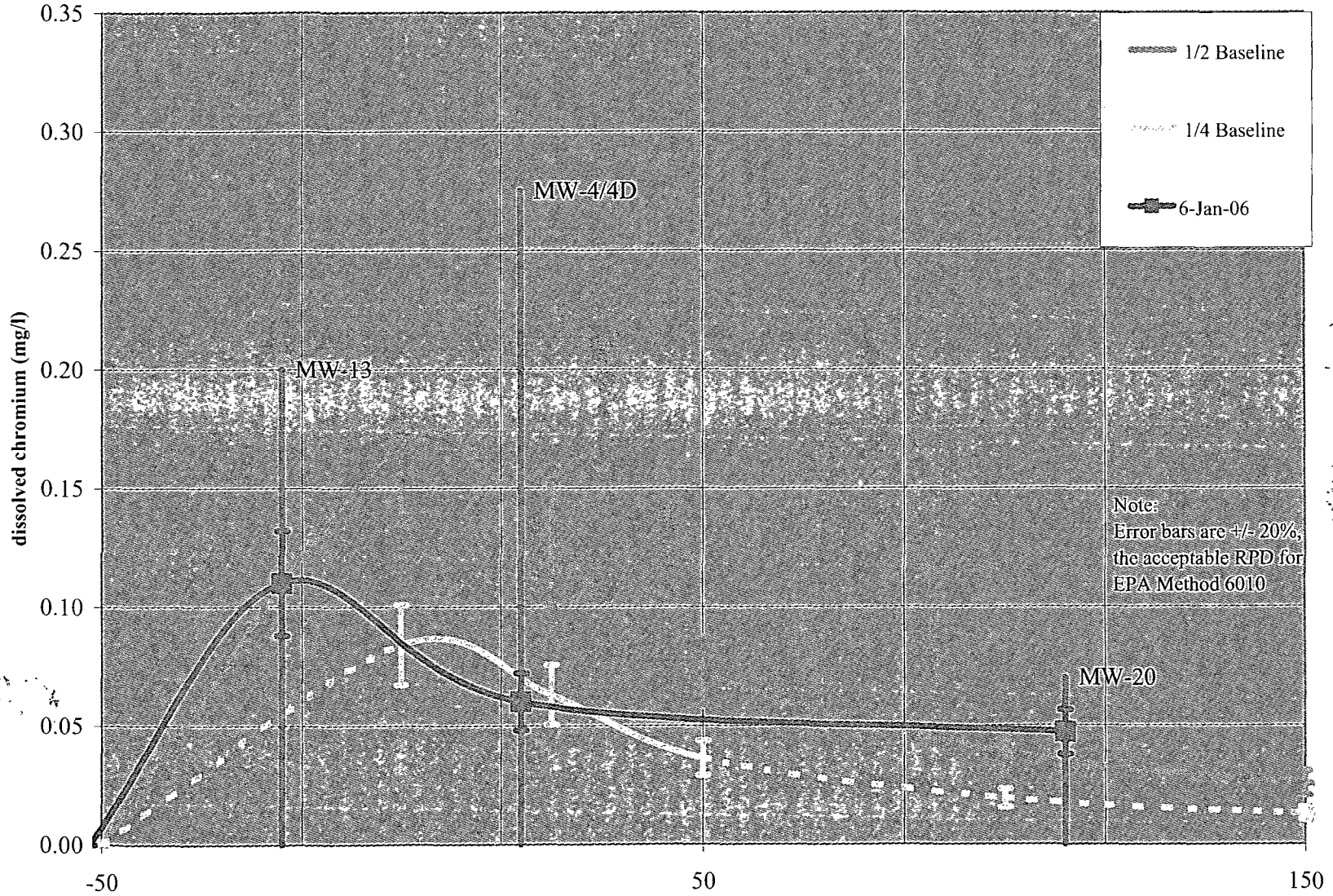


Figure 6

April 2006 Data Compared with Theoretical Curves
Champion Technologies, Inc. Site
Hobbs, New Mexico

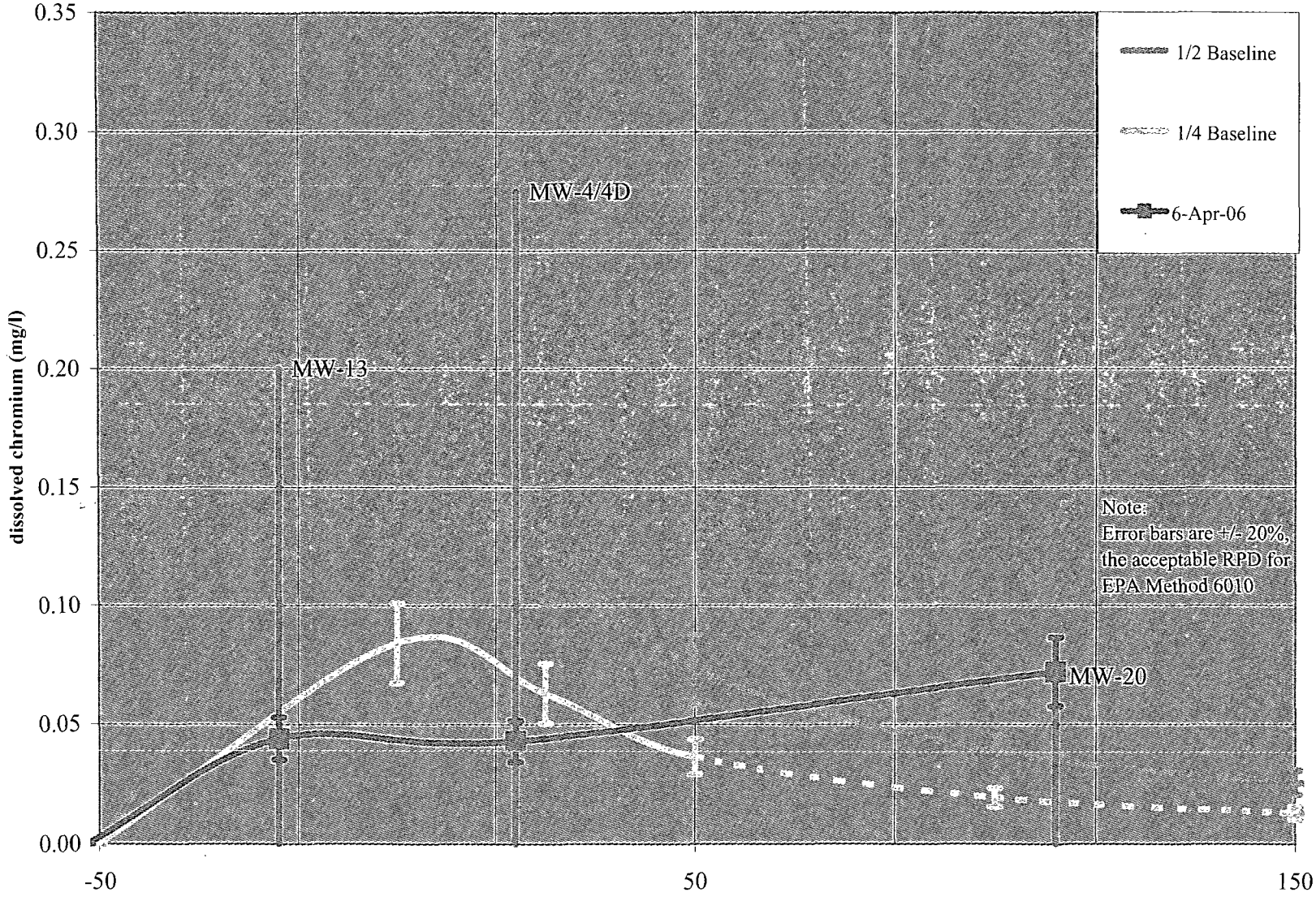


Figure 7

February 2007 Data Compared with Theoretical Curves
Champion Technologies, Inc. Site
Hobbs, New Mexico

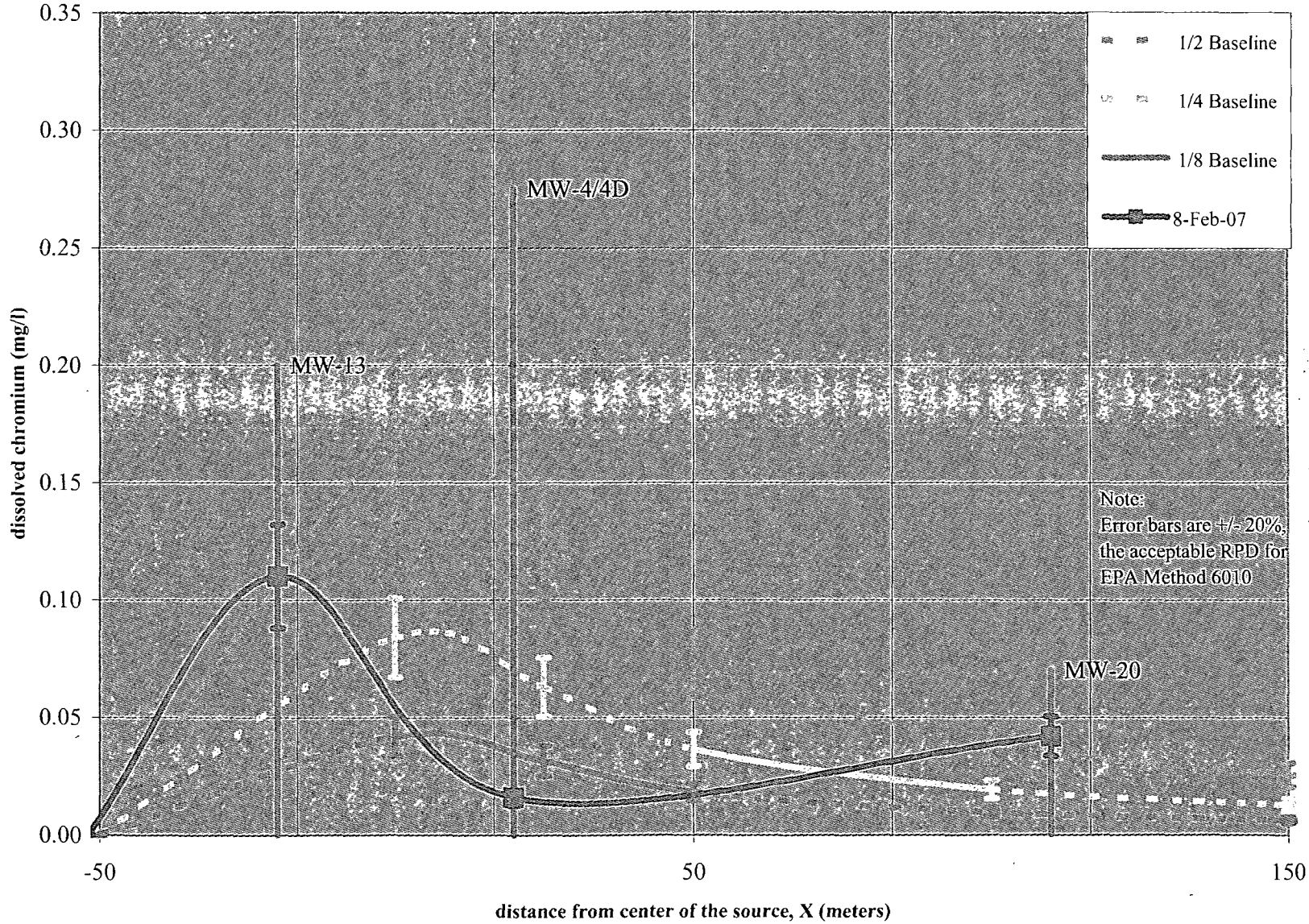
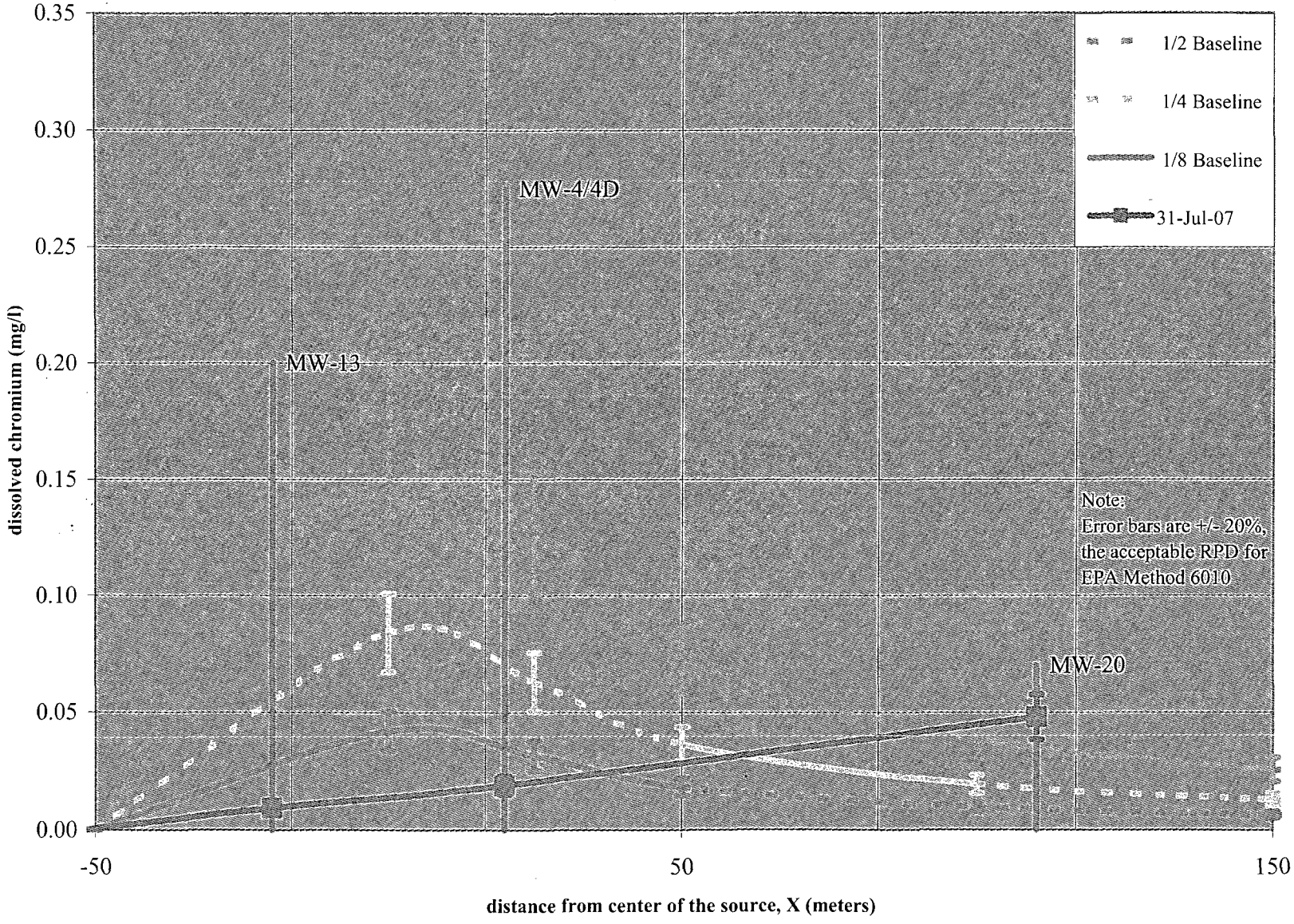


Figure 8

July 2007 Data Compared with Theoretical Curves
Champion Technologies, Inc. Site
Hobbs, New Mexico



Tables

Table 1
Mann Kendall Trend Analysis - Chromium (µg/L)
Champion Technologies Inc. Site
Hobbs, New Mexico

Event	Well -> / Sampling Date	MW-13	MW-4D	MW-20	MW-4		
1	4-Nov-03	180			161		
2	17-Mar-04	179			163		
3	25-Jun-04	166			117		
4	5-Oct-04	199			161		
5	26-Jul-05	92	110	54	58		
6	25-Oct-05	100	89	57	63		
7	6-Jan-06	110	60	47	47		
8	6-Apr-06	43	43	72	35		
9	8-Feb-07	110	16	42			
10	31-Jul-07	ND 9.3	19	48			
	Mann Kendall Statistic (S) =	-26.0	-13.0	-3.0	-21.0	0.0	0.0
	Number of Rounds (n) =	10	6	6	8	0	0
	Average =	118.93	56.17	53.33	100.63	#DIV/0!	#DIV/0!
	Standard Deviation =	62.219	37.839	10.377	55.887	#DIV/0!	#DIV/0!
	Coefficient of Variation(CV)=	0.523	0.674	0.198	0.555	#DIV/0!	#DIV/0!
Error Check, Blank if No Errors Detected						n<4	n<4
Trend ≥ 80% Confidence Level		DECREASING	DECREASING	No Trend	DECREASING	n<4	n<4
Trend ≥ 90% Confidence Level		DECREASING	DECREASING	No Trend	DECREASING	n<4	n<4
Stability Test, If No Trend Exists at 80% Confidence Level		NA	NA	CV <= 1 STABLE	NA	n<4 n<4	n<4 n<4
	Data Entry By = MT		Date = 26-Aug-07		Checked By = MT		

WQCC standard is 50 µg/L.
Concentration exceeding the standard are **BOLDFACE**

THIS BLOCK OF CELLS IS USED TO SEARCH FOR DATA ENTRY ERRORS							
DATA ERR	Event Number	MW-13	MW-4D	MW-20	MW-4	0	0
CHECKS	1	-1	-1	-1	-1	-1	-1
Checks	2	-1	-1	-1	-1	-1	-1
for data with	3	-1	-1	-1	-1	-1	-1
values less	4	-1	-1	-1	-1	-1	-1
than zero or	5	-1	-1	-1	-1	-1	-1
text (a space	6	-1	-1	-1	-1	-1	-1
is seen as	7	-1	-1	-1	-1	-1	-1
text in Excel).	8	-1	-1	-1	-1	-1	-1
Minus one (-1)	9	-1	-1	-1	-1	-1	-1
shown if no	10	-1	-1	-1	-1	-1	-1
error.	Data error in column?	no err	no err	no err	no err	no err	no err

THIS BLOCK OF CELLS USED TO FIND ERRORS IN DATES				
DATE ERR	Date	Text in Date?	Consecutive?	Data w no date?
CHECKS	4-Nov-03	-1	-1	-1
	17-Mar-04	-1	-1	-1
Checks	25-Jun-04	-1	-1	-1
include	5-Oct-04	-1	-1	-1
a test for	26-Jul-05	-1	-1	-1
consecutive	25-Oct-05	-1	-1	-1
dates and	6-Jan-06	-1	-1	-1
text. Minus	6-Apr-06	-1	-1	-1
one (-1)	8-Feb-07	-1	-1	-1
shown if no	31-Jul-07	-1	-1	-1
error.	Date Error?	no err	no err	no err

S Values From Lookup Table in MNA Guidance		
Values of n	Smax@0.2	Smax@0.1
4	-4	-6
5	-5	-7
6	-6	-8
7	-7	-10
8	-8	-11
9	-10	-14
10	-11	-16

TEST FOR INCREASING OR DECREASING TREND @ 80 %	Number of Rounds	MW-13	MW-4D	MW-20	MW-4	0	0
	4						
	5						
	6		-1	0			
	7						
	8				-1		
If +1, Incrsng	9						
If -1, decrsng	10	-1					
If 0, neither.		Decreasing	Decreasing	Neither	Decreasing	Neither	Neither

TEST FOR INCREASING OR DECREASING TREND @ 90 %	Number of Rounds	MW-13	MW-4D	MW-20	MW-4	0	0
	4						
	5						
	6		-1	0			
	7						
	8				-1		
If +1, Incrsng	9						
If -1, decrsng	10	-1					
If 0, neither.		Decreasing	Decreasing	Neither	Decreasing	Neither	Neither

MW-13

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
180	179	166	199	92	100	110	###	###	9.30	Sum Rows
	-1	-1	1	-1	-1	-1	-1	-1	-1	-7
		-1	1	-1	-1	-1	-1	-1	-1	-6
			1	-1	-1	-1	-1	-1	-1	-5
				-1	-1	-1	-1	-1	-1	-6
					1	1	-1	1	-1	1
						1	-1	1	-1	0
							-1	0	-1	-2
								1	-1	0
									-1	-1
							Mann Kendall Statistic (S) =			-26

MW-4D

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
				110	89	60	###	###	19.00	Sum Rows
										0
										0
										0
										0
					-1	-1	-1	-1	-1	-5
						-1	-1	-1	-1	-4
							-1	-1	-1	-3
								-1	-1	-2
									1	1
							Mann Kendall Statistic (S) =			-13

MW-20

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
				54	57	47	###	###	48.00	Sum Rows
										0
										0
										0
										0
					1	-1	1	-1	-1	-1
						-1	1	-1	-1	-2
							1	-1	1	1
								-1	-1	-2
									1	1
							Mann Kendall Statistic (S) =			-3

MW-4

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
161	163	117	161	58	63	47	###			Sum Rows
	1	-1	0	-1	-1	-1	-1			-4
		-1	-1	-1	-1	-1	-1			-6
			1	-1	-1	-1	-1			-3
				-1	-1	-1	-1			-4
					1	-1	-1			-1
						-1	-1			-2
							-1			-1
										0
										0
							Mann Kendall Statistic (S) =			-21

0

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
										Sum Rows
										0
										0
										0
										0
										0
										0
										0
										0
							Mann Kendall Statistic (S) =			0

0

#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	
										Sum Rows
										0
										0
										0
										0
										0
										0
										0
										0
							Mann Kendall Statistic (S) =			0

February 2007 Laboratory Report

SEVERN TRENT STL

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ANALYTICAL REPORT

Champion, Hobbs NM
Project # 131042/1

Lot #: D7B090307

Manley Tom
WSP Environmental Strategies, LLC
4600 South Ulster Street
Suite 930
Denver, CO 80237

Severn Trent Laboratories, Inc./STL Denver

for Gail DeRuzzo
Project Manager

February 20, 2007

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages

Standard Deliverables

*The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*

Case Narrative

Enclosed is the report for three samples that arrived at STL's Denver laboratory on February 9, 2007. The results included in this report have been reviewed for compliance with STL's Laboratory Quality Manual (LQM). The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

STL utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. A summary of quality control parameters is provided below.

Quality Control Summary for Lot D7B090307

Sample Receiving

The cooler temperature upon receipt at the Denver laboratory was 4.3°C.

The dissolved metals were filtered and preserved at the laboratory.

No anomalies were observed.

Dissolved Metals – Method 6010B

Laboratory generated matrix spike analysis data have been provided. The MS/MSD associated with batch 7041064 exhibited spike compound recoveries outside the QC limits. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were observed.

EXECUTIVE SUMMARY - Detection Highlights

D7B090307

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
MW-13 02/08/07 11:15 001				
Chromium - DISSOLVED	110	10	ug/L	SW846 6010B
MW-4D 02/08/07 12:45 002				
Chromium - DISSOLVED	16	10	ug/L	SW846 6010B
MW-20 02/08/07 13:30 003				
Chromium - DISSOLVED	42	10	ug/L	SW846 6010B

METHODS SUMMARY

D7B090307

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3005A

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D7B090307

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 6010B	Janel Motichka	2862

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D7B090307

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
JN8FD	001	MW-13	02/08/07	11:15
JN8FF	002	MW-4D	02/08/07	12:45
JN8FG	003	MW-20	02/08/07	13:30

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

WSP Environmental Strategies LLC

Client Sample ID: MW-13

DISSOLVED Metals

Lot-Sample #...: D7B090307-001 **Matrix.....:** WATER
Date Sampled...: 02/08/07 11:15 **Date Received..:** 02/09/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7041064						
Chromium	**110**	**10**	**ug/L**	**SW846 6010B**	**02/13/07**	**JN8FD1AA**
		Dilution Factor: 1		Analysis Time..: 17:39	MDL.....: 2.6	

WSP Environmental Strategies LLC

Client Sample ID: MW-4D

DISSOLVED Metals

Lot-Sample #...: D7B090307-002 **Matrix.....:** WATER
Date Sampled...: 02/08/07 12:45 **Date Received..:** 02/09/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7041064						
Chromium	**16**	**10**	**ug/L**	**SW846 6010B**	**02/13/07**	**JN8FF1AA**
		Dilution Factor: 1		Analysis Time..: 17:43	MDL.....: 2.6	

WSP Environmental Strategies LLC

Client Sample ID: MW-20

DISSOLVED Metals

Lot-Sample #...: D7B090307-003 **Matrix.....:** WATER
Date Sampled...: 02/08/07 13:30 **Date Received..:** 02/09/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7041064						
Chromium	**42**	**10**	**ug/L**	**SW846 6010B**	**02/13/07**	**JN8FG1AA**
		Dilution Factor: 1		Analysis Time..: 17:48	MDL.....: 2.6	

QC DATA ASSOCIATION SUMMARY

D7B090307

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 6010B		7041064	7041045
002	WATER	SW846 6010B		7041064	7041045
003	WATER	SW846 6010B		7041064	7041045

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: D7B090307 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: D7B100000-064 **Prep Batch #...:** 7041064						
Chromium	ND	10	ug/L	SW846 6010B	02/13/07	JN8TP1AF
		Dilution Factor: 1				
		Analysis Time..: 16:35				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: D7B090307 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: D7B100000-064 **Prep Batch #...:** 7041064					
Chromium	103	(90 - 113)	SW846 6010B	02/13/07	JN8TP1AU
		Dilution Factor: 1		Analysis Time..: 16:40	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: D7B090307 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: D7B100000-064 **Prep Batch #...:** 7041064							
Chromium	200	206	ug/L	103	SW846 6010B	02/13/07	JN8TP1AU
		Dilution Factor: 1		Analysis Time..: 16:40			

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: D7B090307 **Matrix.....:** WATER
Date Sampled...: 02/06/07 14:00 **Date Received..:** 02/08/07

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: D7B080160-001 **Prep Batch #...:** 7041064							
Chromium	70 N	(73 - 135)			SW846 6010B	02/13/07	JN4191CD
	74	(73 - 135)	3.5	(0-25)	SW846 6010B	02/13/07	JN4191CE

Dilution Factor: 1
Analysis Time..: 16:54

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

MATRIX SPIKE SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: D7B090307 **Matrix.....:** WATER
Date Sampled...: 02/06/07 14:00 **Date Received..:** 02/08/07

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: D7B080160-001 **Prep Batch #...:** 7041064									
Chromium									
	52	200	193 N	ug/L	70		SW846 6010B	02/13/07	JN4191CI
	52	200	200	ug/L	74	3.5	SW846 6010B	02/13/07	JN4191CI
			Dilution Factor: 1						
			Analysis Time..: 16:54						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

N Spiked analyte recovery is outside stated control limits.

STL Denver

Sample Receiving Checklist

Lot #: D7B090302 Date/Time Received: 2.9.07 1600

Company Name & Sampling Site: WSP - Champion Hobbs

PM to Complete This Section:	*Yes*	*No*		*Yes*	*No*
Residual chlorine check required:	☐	☑	Quarantined :	☐	☐

Quote #: 65831-E

Special Instructions:

Time Zone:
• EDT/EST • CDT/CST • MDT/MST • PDT/PST • OTHER

Unpacking Checks:

Cooler #(s): 1

Temperatures (°C): 4.3

N/A	*Yes*	*No*		*Initials*
☑	☐	☐	1. Cooler seals intact? (N/A if hand delivered) If no, document on CUR.	
	☑	☐	2. Chain of custody present? If no, document on CUR.	
	☐	☑	3. Bottles broken and/or are leaking? If yes, document on CUR.	
	☐	☑	4. Multiphasic samples obvious? If yes, document on CUR.	
	☑	☐	5. Proper container & preservatives used? (ref. Attachment D of SOP# DEN-QA-0003) If no, document on CUR.	
☑	☐	☐	6. pH of all samples checked and meet requirements? If no, document on CUR.	
	☑	☐	7. Sufficient volume provided for all analysis requested? (ref. Attachment D of SOP# DEN-QA-0003) If no, document on CUR, and contact PM before proceeding.	
	☑	☐	8. Did chain of custody agree with labels ID and samples received? If no, document on CUR.	
☑	☐	☐	9. Were VOA samples without headspace? If no, document on CUR.	
☑	☐	☐	10. Were VOA vials preserved? Preservative ☐HCl ☐4±2°C ☐Sodium Thiosulfate ☐ Ascorbic Acid	
	☐	☑	11. Did samples require preservation with sodium thiosulfate?	
☑	☐	☐	12. If yes to #11, did the samples contain residual chlorine? If yes, document on CUR.	
☑	☐	☐	13. Sediment present in dissolved/filtered bottles? If yes, document on CUR.	
☑	☐	☐	14. Is sufficient volume provided for client requested MS, MSD or matrix duplicates? If no, document on CUR, and contact PM before proceeding.	
	☐	☑	15. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
	☐	☑	16. Are analyses with short holding times requested?	
	☐	☑	17. Was a quick Turn Around (TAT) requested?	

STL Denver

Sample Receiving Checklist

Lot # D7309037

Login Checks:

N/A	Yes	No		Initials
	☑	☐	18. Sufficient volume provided for all analysis requested? (ref. Attachment D of SOP# DEN-QA-0003) If no, document on CUR, and contact PM before proceeding.	MB
☑	☐	☐	19. Is sufficient volume provided for client requested MS, MSD or matrix duplicates? If no, document on CUR, and contact PM before proceeding.	
	☑	☐	20. Did the chain of custody includes "received by" and "relinquished" by signatures, dates, and times?	
☐	☑	☐	21. Were special log in instructions read and followed?	
☑	☐	☐	22. Were AFCEE metals logged for refrigerated storage?	
	☑	☐	23. Were tests logged checked against the COC? Which samples were confirmed? 1	
☐	☐	☐	24. Was a Rush form completed for quick TAT?	
☐	☐	☐	25. Was a Short Hold form completed for any short holds?	
	☐	☐	26. Is "Strict ICOC" required?	
	☐	☐	27. Were special archiving instructions indicated in the General Comments? If so, what were they?	

Labeling and Storage Checks:

				Initials
☐	☐	☐	28. Was the subcontract COC signed and sent with samples to bottle prep?	PS
	☑	☐	29. Were sample labels double-checked by a second person?	
☑	☐	☐	30. Were sample bottles and COC double checked for dissolved/filtered metals by a second person?	
	☑	☐	31. Did the sample ID, Date, and Time from label match what was logged?	
☐	☐	☐	32. Were stickers for special archiving instructions affixed to each box and to the ICOC? See #27	
☐	☐	☐	33. Were AFCEE metals stored refrigerated?	
☐	☐	☐	34. Were "Strict ICOC" copies given to satellite storage areas?	

Document any problems or discrepancies and the actions taken to resolve them on a Condition Upon Receipt Anomaly Report (CUR).

4.3' 2/9/07 ZAR

CHAIN OF CUSTODY RECORD

Project Number:	Site and Location:
131042|1	CHAMPION, HOBBS NM

Sampler's Name(s): DAVID CARSTENS

Sampler's Signature(s):

Matrices: S = Soil; Aq = Water; A = Air; Bu = Bulk; W = Wipe; Bi = Biota; OW = Oily Waste; O = Other

Requested Analyses

Sample Identification:	Date	Time	Matrix	Number of Containers	Dissolved Chromium EPA Method 6010	No.	Remarks
MW-13	2|8|07	1115	AQ	1	X		STL SHALL FILTER
MW-4D	"	1245	AQ	1	X		THE SAMPLES PRIOR
MW-20	"	1330	AQ	1	X		TO ACIDIFYING

Relinquished by (Signature):	Date | Time	Received by (Signature):	Laboratory Name: STL
	2|9 1600		Laboratory Location: ARVADA
Relinquished by (Signature):	Date | Time	Received by (Signature):	Custody Seal Numbers:
Turn-Around Time:		Tracking Number:	Method of Shipment: HAND

WSP ENVIRONMENTAL STRATEGIES ~~CONSULTING LLC~~ ~~A QUANTA TECHNICAL SERVICES COMPANY~~

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☒ Denver Office: 4600 South Ulster, # 930, Denver, CO 80237
Tel: (303) 850-9200, Fax: (303) 850-9214

☐ Minneapolis Office: 123 North 3rd St, #706, Minneapolis, MN 55401
Tel: (612) 343-0510, Fax: (612) 343-0506

August 2007 Laboratory Report

STL

STL Denver
4955 Yarrow Street
Arvada, CO 80002

Tel: 303 736 0100 Fax: 303 431 7171
www.stl-inc.com

ANALYTICAL REPORT

Champion, Hobbs NM
Project # 131042/1

Lot #: D7H010218

Manley Tom
WSP Environmental Strategies, LLC
4600 South Ulster Street
Suite 930
Denver, CO 80237

TestAmerica Denver

Gail DeRuzzo
Project Manager

August 14, 2007

Table Of Contents

Standard Deliverables

Report Contents	Total Number of Pages
Standard Deliverables *The **Cover Letter** and the **Report Cover** page are considered integral parts of this Standard Deliverable package. This report is incomplete unless all pages indicated in this Table of Contents are included.*	

Case Narrative

Enclosed is the report for four samples that arrived at TestAmerica's Denver laboratory on August 1, 2007. The results included in this report have been reviewed for compliance with TestAmerica's Laboratory Quality Manual (LQM). The test results shown in this report meet all requirements of NELAC and any exceptions are noted below.

Dilution factors and footnotes have been provided to assist in the interpretation of the results. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at concentrations above the linear calibration curve, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica utilizes USEPA approved methods in all analytical work. The samples presented in this report were analyzed for the parameters listed on the analytical methods summary page in accordance with the methods indicated. A summary of quality control parameters is provided below.

Quality Control Summary for Lot D7H010218

Sample Receiving
The cooler temperature upon receipt at the Denver laboratory was 3.4°C.

The dissolved metals were filtered and preserved at the laboratory.

No anomalies were observed.

Dissolved Metals – Method 6010B
No anomalies were observed.

EXECUTIVE SUMMARY - Detection Highlights

D7H010218

PARAMETER	RESULT	REPORTING LIMIT	UNITS	ANALYTICAL METHOD
MW-13 07/31/07 09:45 001				
Chromium - DISSOLVED	9.3 B	10	ug/L	SW846 6010B
MW-99 07/31/07 09:30 002				
Chromium - DISSOLVED	11	10	ug/L	SW846 6010B
MW-4D 07/31/07 10:45 003				
Chromium - DISSOLVED	19	10	ug/L	SW846 6010B
MW-20 07/31/07 11:30 004				
Chromium - DISSOLVED	48	10	ug/L	SW846 6010B

METHODS SUMMARY

D7H010218

PARAMETER	ANALYTICAL METHOD	PREPARATION METHOD
Inductively Coupled Plasma (ICP) Metals	SW846 6010B	SW846 3005A

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

METHOD / ANALYST SUMMARY

D7H010218

ANALYTICAL METHOD	ANALYST	ANALYST ID
SW846 6010B	Lynn-Anne Trudell	6645

References:

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

SAMPLE SUMMARY

D7H010218

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
J3099	001	MW-13	07/31/07	09:45
J31AA	002	MW-99	07/31/07	09:30
J31AC	003	MW-4D	07/31/07	10:45
J31AD	004	MW-20	07/31/07	11:30

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

WSP Environmental Strategies LLC

Client Sample ID: MW-13

DISSOLVED Metals

Lot-Sample #...: D7H010218-001 Matrix.....: WATER
Date Sampled...: 07/31/07 09:45 Date Received..: 08/01/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7218455						
Chromium	9.3 B	10	ug/L	SW846 6010B	08/09-08/10/07	J30991AA
		Dilution Factor: 1		Analysis Time..: 00:59	MDL.....: 2.6	

NOTE(S):

B Estimated result. Result is less than RL.

WSP Environmental Strategies LLC

Client Sample ID: MW-99

DISSOLVED Metals

Lot-Sample #...: D7H010218-002 Matrix.....: WATER
Date Sampled...: 07/31/07 09:30 Date Received..: 08/01/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7218455						
Chromium	11	10	ug/L	SW846 6010B	08/09-08/10/07	J31AA1AA
		Dilution Factor: 1		Analysis Time..: 01:04	MDL.....: 2.6	

WSP Environmental Strategies LLC

Client Sample ID: MW-4D

DISSOLVED Metals

Lot-Sample #...: D7H010218-003 **Matrix.....:** WATER
Date Sampled...: 07/31/07 10:45 **Date Received..:** 08/01/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7218455						
Chromium	19	10	ug/L	SW846 6010B	08/09-08/10/07	J31AC1AA
		Dilution Factor: 1		Analysis Time..: 01:09	MDL.....: 2.6	

WSP Environmental Strategies LLC

Client Sample ID: MW-20

DISSOLVED Metals

Lot-Sample #...: D7H010218-004 Matrix.....: WATER
Date Sampled...: 07/31/07 11:30 Date Received..: 08/01/07

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 7218455						
Chromium	48	10	ug/L	SW846 6010B	08/09-08/10/07	J31AD1AA
		Dilution Factor: 1		Analysis Time..: 01:14	MDL.....: 2.6	

QC DATA ASSOCIATION SUMMARY

D7H010218

Sample Preparation and Analysis Control Numbers

SAMPLE#	MATRIX	ANALYTICAL METHOD	LEACH BATCH #	PREP BATCH #	MS RUN#
001	WATER	SW846 6010B		7218455	7218258
002	WATER	SW846 6010B		7218455	7218258
003	WATER	SW846 6010B		7218455	7218258
004	WATER	SW846 6010B		7218455	7218258

METHOD BLANK REPORT

DISSOLVED Metals

Client Lot #...: D7H010218 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MB Lot-Sample #: D7H060000-455 **Prep Batch #...:** 7218455						
Chromium	ND	10	ug/L	SW846 6010B	08/09-08/10/07	J39491AD
		Dilution Factor: 1				
		Analysis Time..: 00:48				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: D7H010218 **Matrix.....:** WATER

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: D7H060000-455 **Prep Batch #...:** 7218455					
Chromium	101	(90 - 113)	SW846 6010B	08/09-08/10/07	J39491AE
		Dilution Factor: 1		Analysis Time..: 00:54	

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

LABORATORY CONTROL SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: D7H010218 **Matrix.....:** WATER

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCNT RECVRY	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
LCS Lot-Sample#: D7H060000-455 **Prep Batch #...:** 7218455							
Chromium	200	202	ug/L	101	SW846 6010B	08/09-08/10/07	J39491AE

Dilution Factor: 1 Analysis Time..: 00:54

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE EVALUATION REPORT

DISSOLVED Metals

Client Lot #...: D7H010218 **Matrix.....:** WATER
Date Sampled...: 07/30/07 12:40 **Date Received..:** 08/01/07

PARAMETER	PERCENT RECOVERY	RECOVERY LIMITS	RPD	RPD LIMITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: D7H010212-001 **Prep Batch #...:** 7218455							
Chromium	100	(73 - 135)			SW846 6010B	08/09-08/10/07	J309H1A3
	100	(73 - 135)	0.05	(0-25)	SW846 6010B	08/09-08/10/07	J309H1A4
		Dilution Factor: 1					
		Analysis Time..: 01:45					

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

MATRIX SPIKE SAMPLE DATA REPORT

DISSOLVED Metals

Client Lot #...: D7H010218 **Matrix.....:** WATER
Date Sampled...: 07/30/07 12:40 **Date Received..:** 08/01/07

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCNT RECVRY	RPD	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
MS Lot-Sample #: D7H010212-001 **Prep Batch #...:** 7218455									
Chromium									
	ND	200	201	ug/L	100		SW846 6010B	08/09-08/10/07	J309H1A3
	ND	200	201	ug/L	100	0.05	SW846 6010B	08/09-08/10/07	J309H1A4
			Dilution Factor: 1						
			Analysis Time..: 01:45						

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

3.40
8107 I.R.

CHAIN OF CUSTODY RECORD

Project Number:	Site and Location:
131042/1	CHAMPION- HOBBS NM

Sampler's Name(s): DAVID CARSTENS

Sampler's Signature(s):

Matrices: S = Soil; Aq = Water; A = Air; Bu = Bulk; W = Wipe; Bi = Biota; OW = Oily Waste; O = Other

No. 036765

Sample Identification:	Date	Time	Matrix	Number of Containers	Dissolved Chromium EPA Method 6010 (Requested Analyses)	Remarks
MW-13	7/31/07	0945	AQ	1	X	STL SHALL FILTER
MW-99		0930	AQ	1	X	SAMPLES PRIOR TO
MW-4D		1045	AQ	1	X	ACIDIFYING
MW-20		1130	AQ	1	X	

Relinquished by (Signature):	8/1/07 1135 Date Time	Received by (Signature):	Laboratory Name: STL
Relinquished by (Signature):	8/1/07 1135 Date Time	Received by (Signature):	Laboratory Location: CO
			Custody Seal Numbers:
Turn-Around Time: STANDARD		Tracking Number:	Method of Shipment: HAND

WSP

ENVIRONMENTAL STRATEGIES CONSULTING LLC
A QUANTA TECHNICAL SERVICES COMPANY

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Tel: (303) 850-9200, Fax: (303) 850-9214

☐ Minneapolis Office: 123 North 3rd St, #706, Minneapolis, MN 55401
Tel: (612) 343-0510, Fax: (612) 343-0506

STL Denver

Sample Receiving Checklist

Lot #: D7H010218 Date/Time Received: 8/1/07 1135

Company Name & Sampling Site: WSP - Champion Hobbs

PM to Complete This Section:	*Yes*	*No*		*Yes*	*No*
Residual chlorine check required:	☐	☒	Quarantined :	☐	☐

Quote #:

Special Instructions:

Time Zone:
• EDT/EST • CDT/CST • MDT/MST • PDT/PST • OTHER

Unpacking Checks:

Cooler #(s): 1

Temperatures (°C): 3.4

N/A	*Yes*	*No*		*Initials*
☒	☐	☐	1. Cooler seals intact? (N/A if hand delivered) If no, document on CUR.	PS
	☒	☐	2. Chain of custody present? If no, document on CUR.	
	☐	☒	3. Bottles broken and/or are leaking? If yes, document on CUR.	
	☐	☒	4. Multiphasic samples obvious? If yes, document on CUR.	
	☒	☐	5. Proper container & preservatives used? (ref. Attachment D of SOP# DEN-QA-0003) If no, document on CUR.	
☒	☐	☐	6. pH of all samples checked and meet requirements? If no, document on CUR.	
	☒	☐	7. Sufficient volume provided for all analysis requested? (ref. Attachment D of SOP# DEN-QA-0003) If no, document on CUR, and contact PM before proceeding.	
	☒	☐	8. Did chain of custody agree with labels ID and samples received? If no, document on CUR.	
☐	☐	☐	9. Were VOA samples without headspace? If no, document on CUR.	
☐	☐	☐	10. Were VOA vials preserved? Preservative ☐HCl ☐4±2°C ☐Sodium Thiosulfate ☐ Ascorbic Acid	
	☐	☒	11. Did samples require preservation with sodium thiosulfate?	
☐	☐	☐	12. If yes to #11, did the samples contain residual chlorine? If yes, document on CUR.	
☐	☐	☐	13. Sediment present in dissolved/filtered bottles? If yes, document on CUR.	
☐	☐	☐	14. Is sufficient volume provided for client requested MS, MSD or matrix duplicates? If no, document on CUR, and contact PM before proceeding.	
	☐	☐	15. Receipt date(s) > 48 hours past the collection date(s)? If yes, notify PA/PM.	
	☐	☐	16. Are analyses with short holding times requested?	
	☐	☐	17. Was a quick Turn Around (TAT) requested?	

STL Denver

Sample Receiving Checklist

Lot # D7H010218

Login Checks:

Initials MB

N/A	Yes	No		
	☑	☐	18.	Sufficient volume provided for all analysis requested? (ref. Attachment D of SOP# DEN-QA-0003) If no, document on CUR, and contact PM before proceeding.
☑	☐	☐	19.	Is sufficient volume provided for client requested MS, MSD or matrix duplicates? If no, document on CUR, and contact PM before proceeding.
	☑	☐	20.	Did the chain of custody includes "received by" and "relinquished" by signatures, dates, and times?
☐	☑	☐	21.	Were special log in instructions read and followed?
☑	☐	☐	22.	Were AFCEE metals logged for refrigerated storage?
	☑	☐	23.	Were tests logged checked against the COC? Which samples were confirmed? 1
☑	☐	☐	24.	Was a Rush form completed for quick TAT?
☑	☐	☐	25.	Was a Short Hold form completed for any short holds?
	☐	☑	26.	Were special archiving instructions indicated in the General Comments? If so, what were they?

Labeling and Storage Checks:

Initials PS

☑	☐	☐	28.	Was the subcontract COC signed and sent with samples to bottle prep?
	☑	☐	29.	Were sample labels double-checked by a second person?
☑	☐	☐	30.	Were sample bottles and COC double checked for dissolved/filtered metals by a second person?
	☑	☐	31.	Did the sample ID, Date, and Time from label match what was logged?
☐	☐	☐	32.	Were stickers for special archiving instructions affixed to each box and to the ICOC? See #27
☐	☐	☐	33.	Were AFCEE metals stored refrigerated?

Document any problems or discrepancies and the actions taken to resolve them on a Condition Upon Receipt Anomaly Report (CUR).