SEPTEMBER 2013

On-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

January 2014

EXECUTIVE SUMMARY

- Thirty-three wells were scheduled for sampling in September 2013 and 7 wells were not sampled due to the water level falling below the sampling pump.
- Average groundwater elevations in September 2013 decreased 43.40 feet from the elevations measured in June 2013. Since May 1, 2012, the San Antonio area (Edwards Aquifer) has been in Stage 2 water restrictions. The Trinity Glenn Rose Groundwater Conservation District and CSSA remain under stage 2 severe drought water restrictions, which went into effect June 1, 2011. The average depth to water in the wells completed in the Lower Glen Rose (LGR) was 301.54 feet below top of casing (BTOC) or 949.27 feet above mean sea level (msl).
- The maximum contaminant level (MCL) was exceeded in monitoring wells CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC and CS-MW36-LGR for tetrachloorethene (PCE), trichloroethene (TCE), and/or *cis*-1,2-dichloroethene (DCE) in September 2013.
- One well (CS-MW9-LGR) sampled had a chromium detection (0.24 mg/L) above the MCL (0.1 mg/L) in September 2013.
- Eight Westbay zones were sampled in September 2013. Of the 8 samples collected, 5 zones reported PCE and TCE above the MCL.

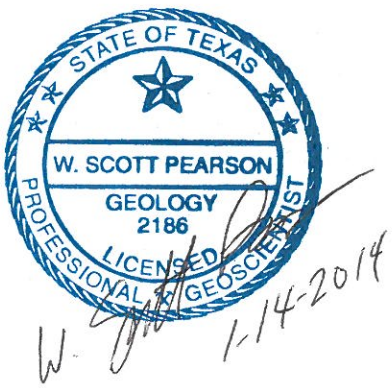
GEOSCIENTIST CERTIFICATION

September 2013 On-Post Quarterly Groundwater Monitoring Report

For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

I, W. Scott Pearson, P.G., hereby certify that the September 2013 On-Post Quarterly Groundwater Monitoring Report for the Camp Stanley Storage Activity installation in Boerne, Texas accurately represents the site conditions of the subject area. This certification is limited only to geoscientific products contained in the subject report and is made on the basis of written and oral information provided by the CSSA Environmental Office, laboratory data provided by APPL Laboratories, and field data obtained during groundwater monitoring conducted at the site in September 2013, and is true and accurate to the best of my knowledge and belief.



W. Scott Pearson, P.G.
State of Texas
Geology License No. 2186

1-14-2014
Date

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ACRONYMS AND ABBREVIATIONS

µg/L	microgram per liter
1,1-DCE	1,1-dichloroethene
§3008(h) Order	RCRA 3008(h) Administrative Order on Consent
AL	Action Level
AOC	Area of Concern
APPL	Agriculture and Priority Pollutants Laboratories, Inc.
BS	Bexar Shale
BTOC	below top of casing
CC	Cow Creek
cis-1,2-DCE	*cis*-1,2-Dichloroethene
COC	contaminants of concern
CSSA	Camp Stanley Storage Activity
DQO	Data Quality Objectives
GPM	gallons per minute
LGR	Lower Glen Rose
LTMO	Long Term Monitoring Optimization
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MSL	mean sea level
PCE	Tetrachloroethene
P.G.	Project Geologist
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation Recovery Act
RL	Reporting Limit
SAWS	San Antonio Water System
SCADA	Supervisory Control and Data Acquisition
SS	Secondary Standard
SWMU	Solid Waste Management Units
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
TGRGCD	Trinity-Glen Rose Groundwater Conservation District
trans-1,2-DCE	*trans*-1,2-Dichloroethene
UGR	Upper Glen Rose
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
WS	Weather Station

SEPTEMBER 2013 GROUNDWATER MONITORING REPORT CAMP STANLEY STORAGE ACTIVITY, TEXAS

1.0 INTRODUCTION

This report presents results from the on-post quarterly sampling performed at Camp Stanley Storage Activity (CSSA) in September 2013. Laboratory analytical results are presented along with potentiometric contour maps. Results from all four 2013 quarterly monitoring events (March, June, September, and December) will be described in detail in an 2013 Annual Report. The Annual Report will also provide an interpretation of all analytical results and an evaluation of any temporal or spatial trends observed in the groundwater contaminant plume during investigations. For this specific quarter, groundwater monitoring was performed September 3-24, 2013.

Current objectives of the groundwater monitoring program are to determine groundwater flow direction and elevations, determine groundwater contaminant concentrations for characterization purposes, and identify meteorological and seasonal variations in physical and chemical properties. **Appendix A** identifies the data quality objectives (DQO) for CSSA's groundwater monitoring program, along with an evaluation of whether each DQO was attained. The objectives listed in **Appendix A** also reference appropriate sections of the **3008(h) Administrative Order on Consent** (Order).

The CSSA groundwater monitoring program follows the provisions of the groundwater monitoring program DQOs as well as the recommendations of the **Three-Tiered Long Term Monitoring Network Optimization Evaluation (Parsons, 2010)** which provided recommendations for sampling based on a long-term monitoring optimization (LTMO) study performed for the CSSA groundwater monitoring program. LTMO study sampling frequencies were implemented on-post in December 2005, as approved by the Texas Commission on Environmental Quality (TCEQ) and the United States Environmental Protection Agency (USEPA). The LTMO evaluation was updated in 2010 using groundwater data from monitoring conducted between 2005 and 2009. It has been approved by the TCEQ and USEPA and was implemented on- and off-post in June 2011.

2.0 POST-WIDE FLOW DIRECTION AND GRADIENT

Fifty-five water level measurements were recorded on September 3, 2013 from on-post monitoring wells completed in the Lower Glen Rose (LGR), Bexar Shale (BS), and Cow Creek (CC) formational members of the Middle Trinity Aquifer. The groundwater potentiometric surface maps illustrating groundwater elevations from the LGR, BS, and CC zones in September 2013 are shown in **Figures 2.1, 2.2, and 2.3**, respectively.

The June 2013 potentiometric surface map for LGR-screened wells **(Figure 2.1)** exhibited a wide range of groundwater elevations, from a minimum of 880.98 feet above mean sea level (MSL) at CS-MW11A-LGR to a maximum of 1006.63 feet above MSL at CS-MWH-LGR. Groundwater elevations are generally higher in the northern and central portions of CSSA, and decrease to the southwest and southeast. As measured in all non-pumping wells, the average groundwater elevation in September 2013 decreased 43.40 feet from the elevations measured in June 2013. From June 26 to September 24, 2013, the southern weather station at AOC-65 (WS AOC-65) recorded 3.92 inches of rainfall during 16 rainfall events in this timeframe. The rainfall was sporadic with a majority of the rain falling in September, with only one event having greater than one inch of rain on September 10th. The northern or B-3 weather station recorded 5.03 inches of precipitation for the same time period. The aquifer fell with less than 1/2 inch of total rainfall in July and August. San Antonio fell back into stage 2 water restrictions on May 1, 2012 and the Trinity Glen Rose Groundwater Conservation District remains in Stage 2 severe drought water restrictions, effective since June 1, 2011.

Well CS-MW4-LGR, located in the central portion of CSSA, typically has one of the highest groundwater elevations of LGR-screened wells. Under average and above-average aquifer elevations, the groundwater level is 20 to 30 feet higher than the nearest comparable wells (CS-MW2-LGR and CS-MW5-LGR), creating a pronounced groundwater mound in the central portion of the facility. In September 2013 this mounding effect was muted, as the elevation in CS-MW4-LGR was only 5 and 8 feet higher than CS-MW2-LGR and CS-MW5-LGR, respectively. Long-term monitoring has ascertained that when groundwater in the vicinity of CS-MW4-LGR rises above about 970 feet msl, the mounding effect is evident. As measured in September 2013, the water elevation at CS-MW4-LGR was 971.63 feet msl, and the typical mounding effect was less evident.

It should be noted that well pumping on and around CSSA affects the potentiometric surface. On-post wells CS-MW16-LGR, CS-MW16-CC, B3-EXW01, B3-EXW02, B3-EXW03, B3-EXW04, and B3-EXW05 are cyclically pumped as part of the Bioreactor remediation system at SWMU B-3. This continuous pumping action creates a notable “cone of depression” in the central portion of the post. These remediation wells provide groundwater to the Bioreactor system, and are automatically operated based upon water level within each well. CSSA drinking water wells CS-1, CS-10, and CS-12 are cycled on and off to maintain the drinking water system currently in place at CSSA. Influence from the pumping of wells B3-EXW03 and B3-EXW5 is evident in **Figure 2.1,** and CS-MW16-CC in **Figure 2-3**. Off-post water supply wells along Ralph Fair Road may also exert a subtle influence to gradients along the western and southern boundaries of the post.

Historical groundwater monitoring at CSSA has demonstrated that the aquifer gradient typically slopes in a south-southeast direction (**Figure 2.1**). The potentiometric surface in both

the BS and CC members of the aquifer generally trend in an easterly or southerly direction (**Figures 2.2 and 2.3**). However, variable aquifer levels and well-pumping scenarios all can affect the localized and regional gradients. In particular, pumping action at wells CS-1, CS-10, CS-MW16-LGR/CC, B3-EXW01 through B3-EXW05, CS-I, and even off-post wells (Fair Oaks Ranch) can significantly alter the LGR groundwater gradient. The regional gradient calculation, an overall groundwater gradient averaged across CSSA, is measured from CS-MWH-LGR to CS-MW21-LGR. For September 2013, the overall LGR groundwater gradient is to the south-southeast at 0.0054 ft/ft.

Groundwater elevations have been measured and recorded since 1992. Previous droughts resulted in water levels decreasing substantially in 1996, 1999, 2000, 2006, 2008, 2009, 2011, 2012, and now 2013. A notable lack of rainfall between June and August 2013 resulted in a 44-foot average decrease in elevation in LGR-only screened monitoring wells across the post. The aquifer level as measured in the LGR-screened wells is 88 feet below the 10.5-year average of 1,032 ft msl. The LGR has not been above the long-term "average" water elevation since December 2010.

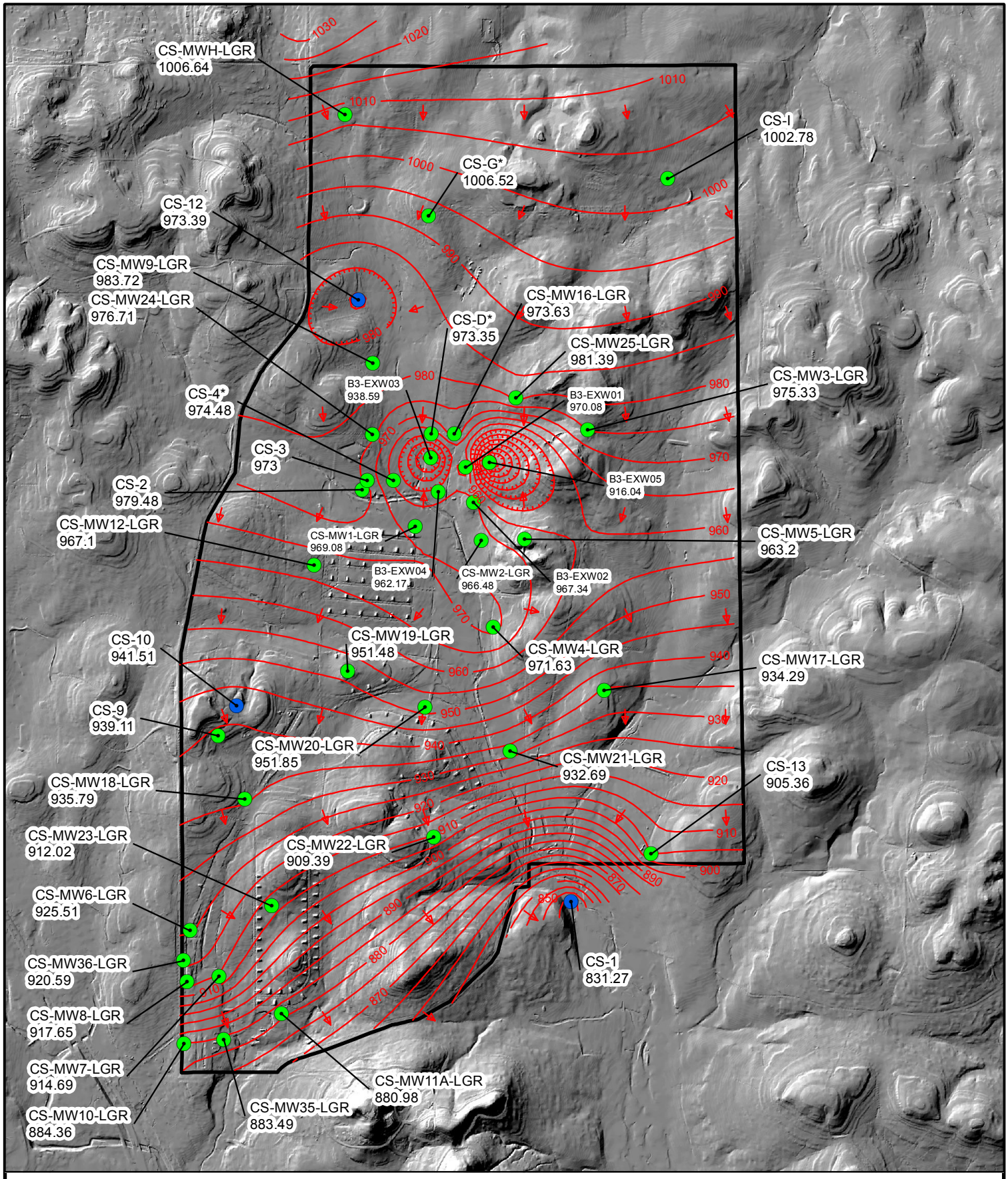

Figure 2.1

September 2013 Potentiometric Surface Map, LGR Wells

Camp Stanley Storage Activity

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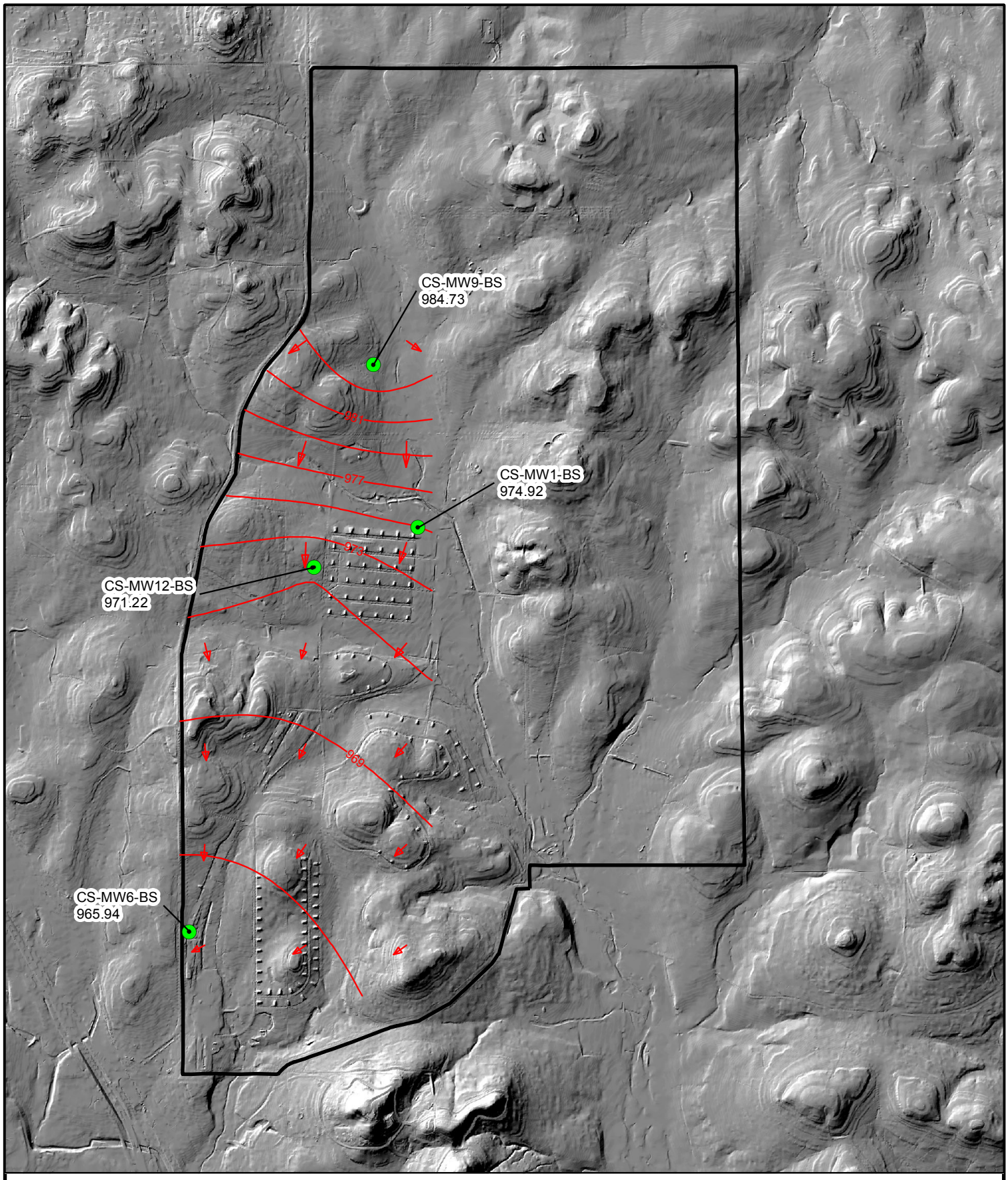

Figure 2.2

September 2013 Potentiometric Surface Map, BS Wells

Camp Stanley Storage Activity

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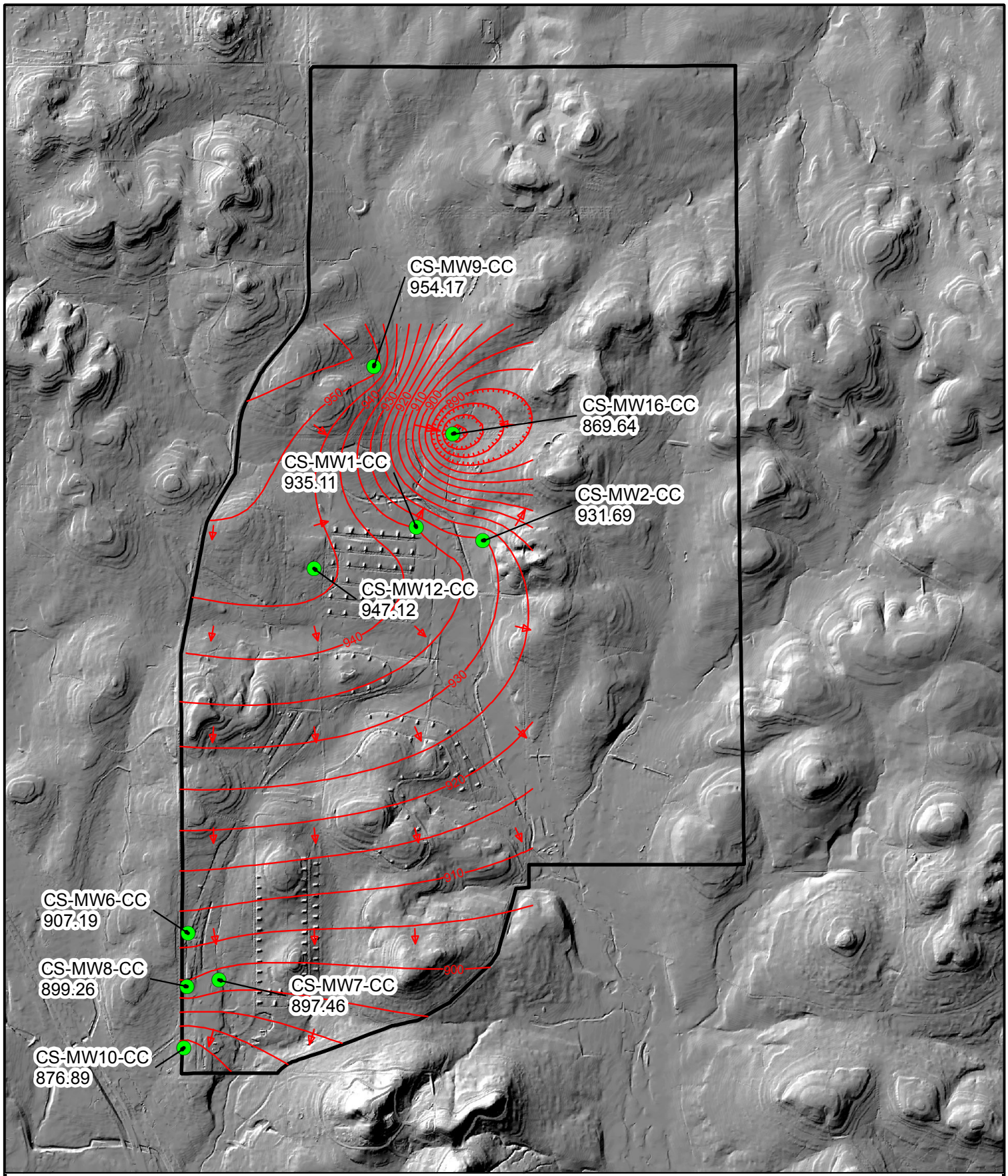

Figure 2-3

September 2013 Potentiometric Surface Map, CC Wells

Camp Stanley Storage Activity

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3.0 SEPTEMBER ANALYTICAL RESULTS

3.1 Monitoring Wells

Under the provisions of the groundwater monitoring DQOs and the 2010 LTMO evaluation, the schedule for sampling on-post in September 2013 included 33 wells. The samples included three production wells (CS-1, CS-10, and CS-12), one inactive production well (CS-9), and 29 on-post monitoring wells, see **Table 3.1**. Seven wells were not sampled in September 2013. Wells CS-MW4-LGR, CS-MW10-LGR, CS-MW11B-LGR, CS-MW17-LGR, CS-MW18-LGR, CS-4, and CS-D were not sampled due to the water level falling below the sampling pump. **Tables 3.1** and **3.2** provide a sampling overview for September 2013 and the schedule under the LTMO recommendations. The above-listed monitoring wells were sampled using dedicated low-flow gas-operated bladder pumps. Wells CS-1, CS-9, CS-10, CS-12, CS-MW16-LGR, and CS-MW16-CC were sampled using dedicated submersible pumps. **Figure 3.1** shows well sampling locations.

Wells sampled by low-flow pumps were purged until the field parameters of pH, temperature, and conductivity stabilized. The on-post monitoring wells were sampled in September 2013 for the short list of volatile organic compounds (VOC) and metals (chromium, cadmium, lead, and mercury). Active drinking water wells CS-1, CS-10, and CS-12 were analyzed for the short list VOCs and metals (arsenic, barium, chromium, copper, zinc, cadmium, mercury, and lead).

Samples were analyzed by APPL Laboratories in Clovis, California. All detected concentrations of VOCs and metals are presented in **Table 3.3** and **Table 3.4**. Full analytical results are presented in **Appendix B** and **Appendix C**.

Tetrachloroethene (PCE), Trichloroethene (TCE), and/or *cis*-1,2-Dichloroethene (DCE) were detected above the Maximum Contaminant Level (MCL) in four on-post wells sampled this quarter, CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, and CS-MW36-LGR. A comparison of VOC concentrations versus water level for select wells is presented in **Figure 3.2**. The overall trend for wells sampled in September 2013 was a reduction in VOC concentrations (with the exception of CS-MW36-LGR) with a modest decrease in elevation. In September 2013, chromium was detected above the MCL in well CS-MW9-LGR.

Results from on-post monitoring wells are considered definitive data and are subject to data validation and verification under provisions of the CSSA Quality Assurance Project Plan (QAPP). Parsons data packages numbered 748350-#147, -#150, -#155, and -#159, containing the analytical results from this sampling event were received by Parsons October 1-18, 2013. Data validation was conducted and the data validation reports are presented in **Appendix D**.

Table 3-1
Overview of the On-Post Monitoring Program

Count	Well ID	*Analytes*	*Last Sample Date*	*Mar-13*	*Jun-13*	*Sep-13 (snapshot)*	*Dec-13*	*Sampling Frequency **
1	CS-MW1-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	S	NS	Semi-annual + 9 month snapshot
	CS-MW1-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-MW1-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	NS	NS	Every 18 months
2	CS-MW2-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Semi-annual + 9 month snapshot
	CS-MW2-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	NS	NS	Every 18 months
3	CS-MW3-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
4	CS-MW4-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	NSWL	NS	Every 9 months
5	CS-MW5-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
6	CS-MW6-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW6-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-MW6-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
7	CS-MW7-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW7-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
8	CS-MW8-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	S	NS	Semi-annual + 9 month snapshot
	CS-MW8-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
9	CS-MW9-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW9-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-MW9-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
10	CS-MW10-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	NSWL	NS	Semi-annual + 9 month snapshot
	CS-MW10-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
11	CS-MW11A-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	S	NS	Semi-annual + 9 month snapshot
12	CS-MW11B-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	NS	NSWL	NS	Every 9 months
13	CS-MW12-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW12-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-MW12-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
14	CS-MW16-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
15	CS-MW16-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
16	CW-MW17-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	NSWL	NS	Every 9 months
17	CS-MW18-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NSWL	NS	Every 9 months
18	CS-MW19-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
19	CS-1	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Jun-13	S	S	S	S	Quarterly
20	CS-2	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
21	CS-4	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	NSWL	NS	Semi-annual + 9 month snapshot
22	CS-9	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	S	S	S	S	Quarterly
23	CS-10	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Jun-13	S	S	S	S	Quarterly
24	CS-12	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Jun-13	S	S	S	S	Quarterly
	CS-13	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Jun-13		S	NS	NS	installtion in progress
25	CS-D	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NSWL	NSWL	NS	Semi-annual + 9 month snapshot
	CS-MWG-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-MWH-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-I	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
26	CS-MW20-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
27	CS-MW21-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	S	NS	Every 9 months
28	CS-MW22-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
29	CS-MW23-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
30	CS-MW24-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	S	NS	Semi-annual + 9 month snapshot
31	CS-MW25-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
32	CS-MW35-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	NS	S	S	NS	Semi-annual + 9 month snapshot
33	CS-MW36-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Jun-13	S	S	S	S	Quarterly

* New LTMO sampling frequency implemented June 2011
S = Sample
NS = No Sample
NSWL = No Sample due to low water level

Table 3-2 Westbay Sampling Frequency

Westbay Interval	Last Sample Date	Mar-13	Jun-13	Sep-13 (snapshot)	Dec-13	LTMO Sampling Frequency (as of June '11)
CS-WB01-UGR-01	Dec-04	NS	NSWL	NS	NS	Every 9 months
CS-WB01-LGR-01	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-02	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-03	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-04	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-05	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-06	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-07	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-08	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-09	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB02-UGR-01	Dec-04	NS	NSWL	NS	NS	Every 9 months
CS-WB02-LGR-01	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-02	Mar-10	NS	NSWL	NS	NS	Every 9 months
CS-WB02-LGR-03	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-04	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-05	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-06	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-07	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-08	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-09	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB03-UGR-01	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-01	Sep-10	NS	NSWL	NS	NS	Every 9 months
CS-WB03-LGR-02	Oct-07	NS	NSWL	NS	NS	Every 9 months
CS-WB03-LGR-03	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-04	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-05	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-06	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-07	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-08	Jun-13	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-09	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-UGR-01	Mar-04	NS	NSWL	NS	NS	Every 9 months
CS-WB04-LGR-01	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-02	Mar-10	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-03	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-04	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-LGR-06	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-07	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-08	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB04-LGR-09	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-10	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-11	Jun-13	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-BS-01	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-BS-02	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-CC-01	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-CC-02	Sep-12	NS	NS	NS	NS	Every 18 months
CS-WB04-CC-03	Sep-12	NS	NS	NS	NS	Every 18 months

Profiling performed quarterly, in conjunction with post wide water levels.

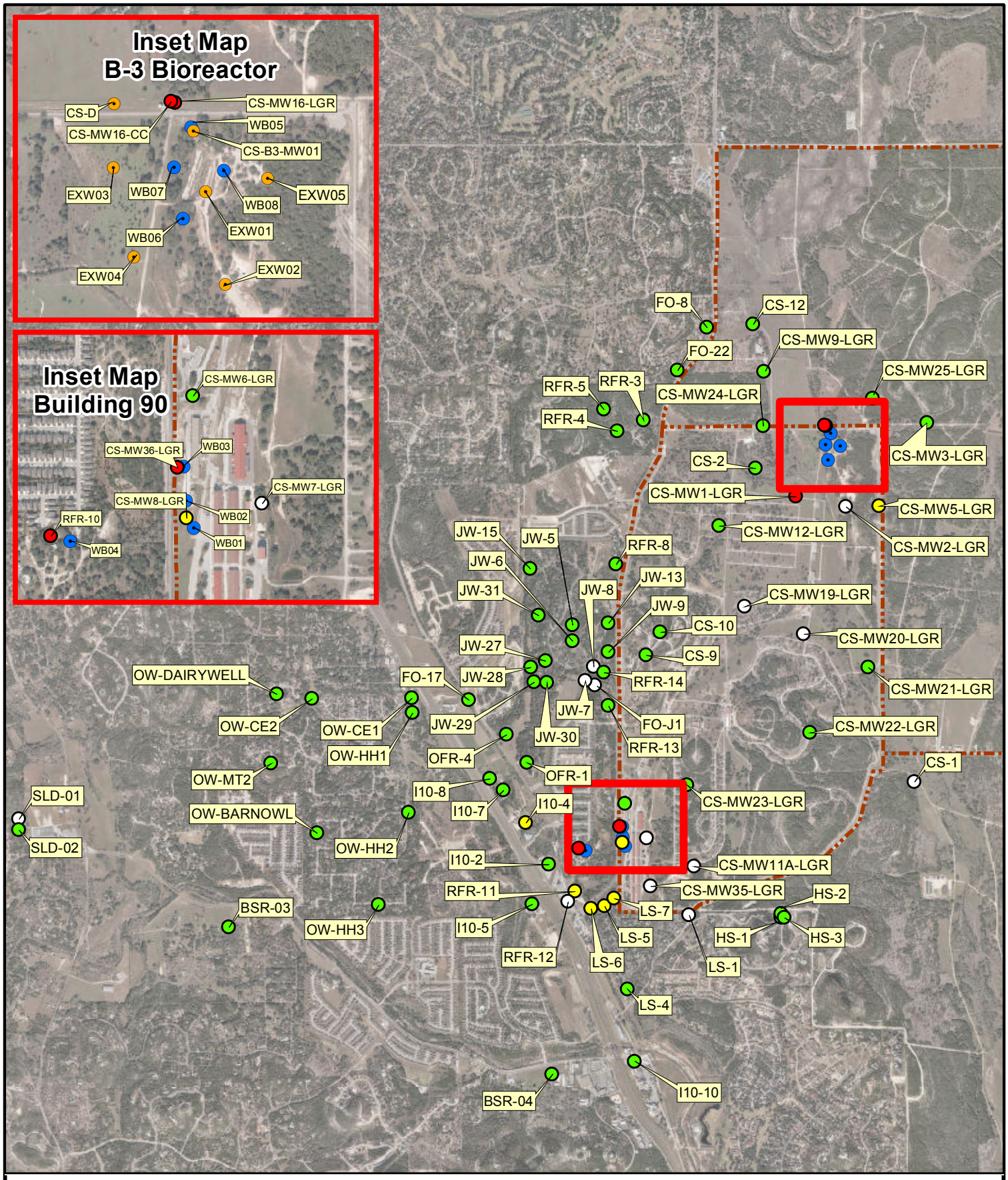


Figure 3-1

On-Post and Off-Post Well Sampling Locations for September 2013
Camp Stanley Storage Activity

PARSONS

Table 3.3
September 2013 On-Post Quarterly Groundwater Results, Detected Analytes

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-MW1-LGR	9/4/2013	NA	NA	--	**0.0045F**	NA	--	NA	--
CS-MW2-LGR	9/4/2013	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-MW3-LGR	9/4/2013	NA	NA	--	**0.0035F**	NA	--	NA	--
CS-MW5-LGR	9/4/2013	NA	NA	--	**0.0042F**	NA	--	NA	--
CS-MW6-LGR	9/17/2013	NA	NA	--	**0.0023F**	NA	--	NA	--
CS-MW7-LGR	9/19/2013	NA	NA	--	**0.0016F**	NA	--	NA	--
CS-MW8-LGR	9/17/2013	NA	NA	--	**0.0014F**	NA	--	NA	--
CS-MW9-LGR	9/19/2013	NA	NA	--	**0.2369**	NA	--	NA	--
CS-MW11A-LGR	9/5/2013	NA	NA	--	**0.0022F**	NA	--	NA	--
CS-MW12-LGR	9/19/2013	NA	NA	--	**0.0020F**	NA	--	NA	
CS-MW16-LGR	9/5/2013	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-MW16-CC	9/5/2013	NA	NA	--	**0.0014F**	NA	--	NA	--
CS-MW19-LGR	9/5/2013	NA	NA	--	**0.0027F**	NA	--	NA	--
CS-MW20-LGR	9/16/2013	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-MW21-LGR	9/16/2013	NA	NA	--	**0.0019F**	NA	--	NA	--
CS-MW21-LGR FD	9/16/2013	NA	NA	--	**0.0019F**	NA	--	NA	
CS-MW22-LGR	9/16/2013	NA	NA	--	--	NA	--	NA	--
CS-MW23-LGR	9/16/2013	NA	NA	--	**0.0015F**	NA	--	NA	--
CS-MW24-LGR	9/4/2013	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-MW25-LGR	9/4/2013	NA	NA	--	**0.0098F**	NA	--	NA	--
CS-MW35-LGR	9/5/2013	NA	NA	--	**0.0025F**	NA	--	NA	--
CS-MW36-LGR	9/17/2013	NA	NA	--	--	NA	--	NA	
CS-2	9/5/2013	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-2 FD	9/5/2013	NA	NA	--	**0.0011F**	NA	--	NA	--
CS-9	9/23/2013	NA	NA	--	**0.0022F**	NA	**0.0124F**	NA	**0.0018**
CSSA Drinking Water Well System									
CS-1	9/23/2013	--	**0.0314**	--	--	**0.004F**	--	**0.407**	--
CS-10	9/23/2013	--	**0.0403**	--	--	**0.005F**	--	**0.049F**	--
CS-10 FD	9/23/2013	--	**0.0397**	--	--	**0.008F**	--	**0.067**	--
CS-12	9/23/2013	--	**0.0305**	--	--	**0.036**	--	**0.124**	--
Comparison Criteria									
Method Detection Limit (MDL)		**0.00022**	**0.0003**	**0.0005**	**0.001**	**0.003**	**0.0019**	**0.008**	**0.0001**
Reporting Limit (RL)		**0.03**	**0.005**	**0.007**	**0.01**	**0.01**	**0.025**	**0.05**	**0.001**
Max. Contaminant Level (MCL)		**0.01**	**2**	**0.005**	**0.1**	**AL=1.3**	**AL=0.015**	**SS=5.0**	**0.002**

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L & metals data reported in mg/L.

Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard
NA	Not Analyzed for this parameter

Data Qualifiers:

--The analyte was analyzed for, but not detected. The associated numerical value is at or below the

F-The analyte was positively identified but the associated numerical value is below the RL.

Table 3.3
September 2013 On-Post Quarterly Groundwater Results, Detected Analytes

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW1-LGR	9/4/2013	--	**14.37**	**0.29F**	**11.92**	**17.69**	--
CS-MW2-LGR	9/4/2013	--	**0.51F**	--	--	--	--
CS-MW3-LGR	9/4/2013	--	--	--	--	--	--
CS-MW5-LGR	9/4/2013	--	**0.76F**	--	**0.96F**	**1.03**	--
CS-MW6-LGR	9/17/2013	--	--	--	--	--	--
CS-MW7-LGR	9/19/2013	--	--	--	**0.68F**	--	--
CS-MW8-LGR	9/16/2013	--	--	--	**1.40**	--	--
CS-MW9-LGR	9/19/2013	--	--	--	--	--	--
CS-MW11A-LGR	9/5/2013	--	--	--	**0.97F**	--	--
CS-MW12-LGR	9/19/2013	--	--	--	--	--	--
CS-MW16-LGR	9/5/2013	--	**84.59**	--	**83.04**	**98.38**	--
CS-MW16-CC	9/5/2013	**0.13F**	**16.27**	**6.75**	**0.40F**	**8.89**	--
CS-MW19-LGR	9/5/2013	--	--	--	**0.52F**	--	--
CS-MW20-LGR	9/16/2013	--	--	--	**1.19F**	--	--
CS-MW21-LGR	9/16/2013	--	--	--	--	--	--
CS-MW21-LGR FD	9/16/2013	--	--	--	--	--	--
CS-MW22-LGR	9/16/2013	--	--	--	--	--	--
CS-MW23-LGR	9/16/2013	--	--	--	--	--	--
CS-MW24-LGR	9/4/2013	--	--	--	--	--	--
CS-MW25-LGR	9/4/2013	--	--	--	--	--	--
CS-MW35-LGR	9/5/2013	--	--	--	**0.69F**	--	--
CS-MW36-LGR	9/17/2013	--	--	**0.78F**	**16.44**	**29.20**	--
CS-2	9/5/2013	--	--	--	--	--	--
CS-2 FD	9/5/2013	--	--	--	--	--	--
CS-9	9/23/2013	--	--	--	--	--	--
CSSA Drinking Water Well System							
CS-1	9/23/2013	--	--	--	--	**0.32F**	--
CS-10	9/23/2013	--	--	--	--	--	--
CS-10 FD	9/23/2013	--	--	--	--	--	--
CS-12	9/23/2013	--	--	--	--	--	--
Comparison Criteria							
Method Detection Limit (MDL)		**0.12**	**0.07**	**0.08**	**0.06**	**0.05**	**0.08**
Reporting Limit (RL)		**1.2**	**1.2**	**0.6**	**1.4**	**1**	**1.1**
Max. Contaminant Level (MCL)		**7**	**70**	**100**	**5**	**5**	**2**

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

Precipitation per Quarter:	**Mar-13**	**Jun-13**	**Sep-13**
SWMU B-3 Weather Station (WS-B3):	4.88	12.76	5.03
AOC-65 Weather Station (WS-AOC65):	4.79	9.57	3.92

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L & metals data reported in mg/L.

Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard
NA	Not Analyzed for this parameter

Data Qualifiers:

--The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
F-The analyte was positively identified but the associated numerical value is below the RL.

Table 3.4
September 2013 Westbay Analytical Results, Detected Analytes

Well ID	Date Sampled	1,1-DCE (1,1-dichloroethene)	cis-1,2-DCE (cis-1,2-dichloroethene)	TCE (trichloroethene)	PCE (tetrachloroethene)	trans-1,2-DCE (trans-1,2-dichloroethene)	Vinyl Chloride
CS-WB01-LGR-09	9/23/2013	--	**0.40F**	**11.49**	**6.97**	--	--
CS-WB02-LGR-09	9/18/2013	--	**0.27F**	**11.11**	**259.55***	--	--
CS-WB03-LGR-09	9/18/2013	--	**9.56**	**2.2**	**1.32F**	--	--
CS-WB04-LGR-06	9/23/2013	--	**2.72**	**9.41**	**27.52**	**0.25F**	--
CS-WB04-LGR-07	9/23/2013	--	**2.08**	**7.02**	**20.11**	**0.18F**	--
CS-WB04-LGR-09	9/23/2013	--	--	**8.31**	**8.42**	--	--
CS-WB04-LGR-10	9/23/2013	--	--	**0.58F**	**1.25F**	--	--
CS-WB04-LGR-11	9/23/2013	--	--	--	**0.27F**	--	--
Comparison Criteria							
Method Detection Limit	**MDL**	**0.12**	**0.07**	**0.05**	**0.06**	**0.08**	**0.08**
Reporting Limit	**RL**	**1.2**	**1.2**	**1**	**1.4**	**0.6**	**1.1**
Max. Contaminant Level	**MCL**	**7**	**70**	**5**	**5**	**100**	**2**

Data Qualifiers

'--' indicates the result was non-detect.

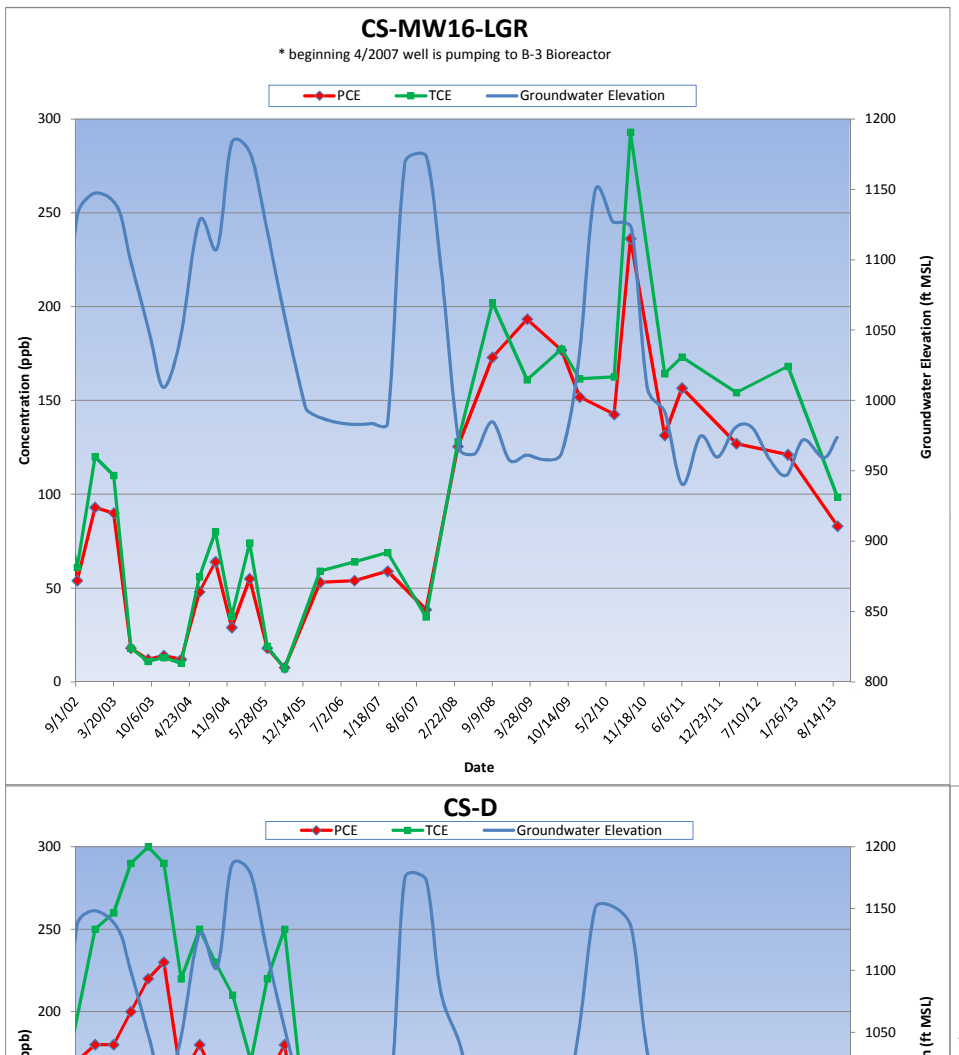
F-The analyte was positively identified but the associated numerical value is below the RL.

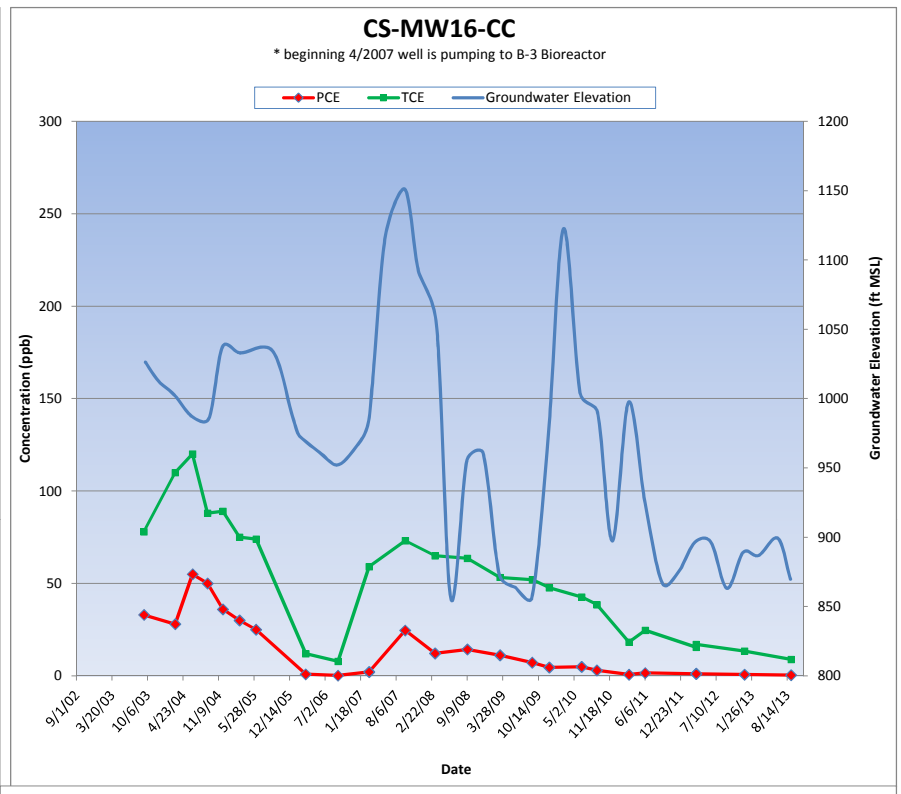
* dilution of 5 run for this sample.

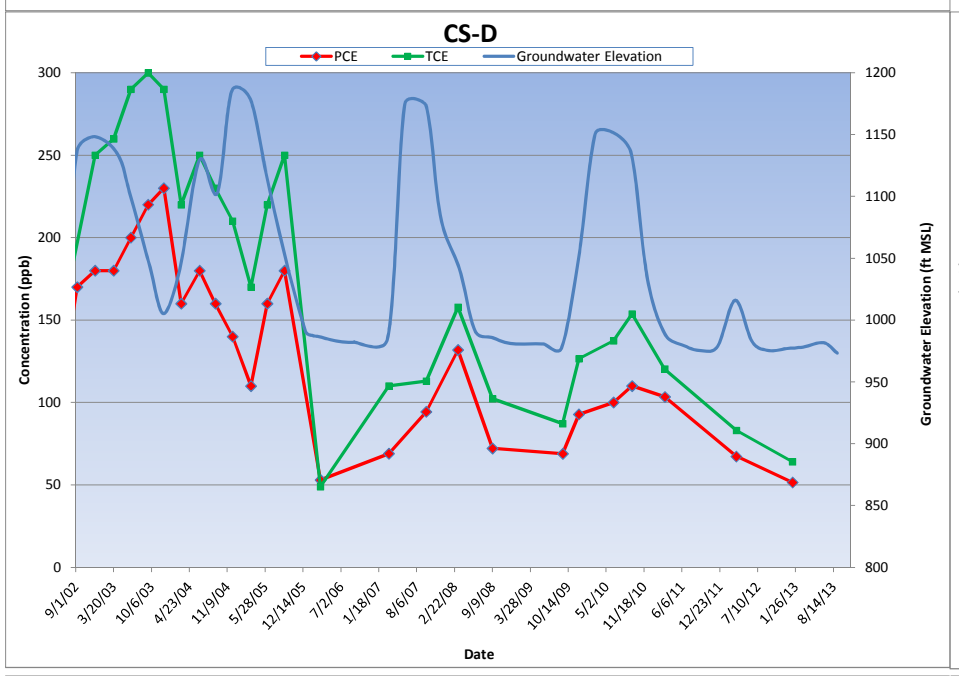
All values are reported in µg/L.

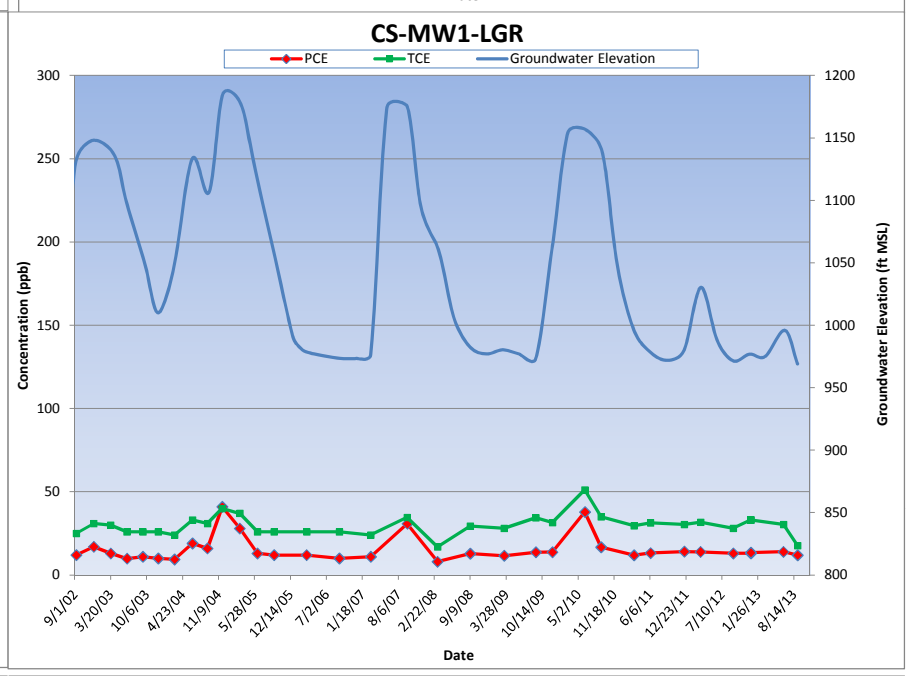
BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

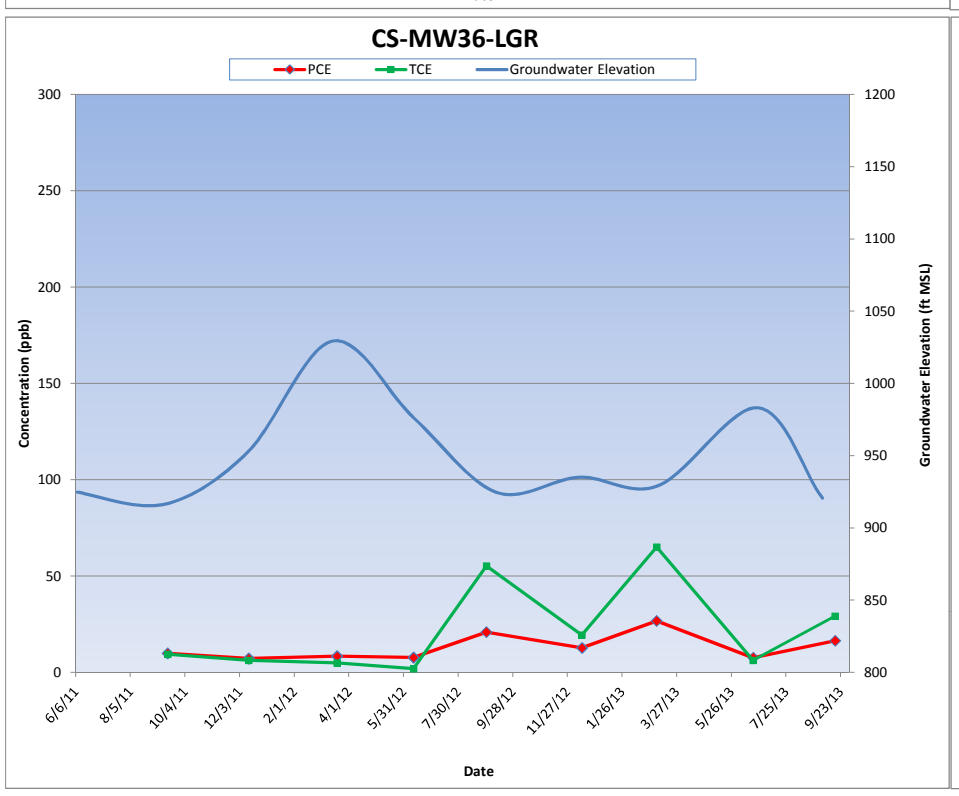
Figure 3.2
Cumulative VOC Concentrations vs Groundwater Elevations

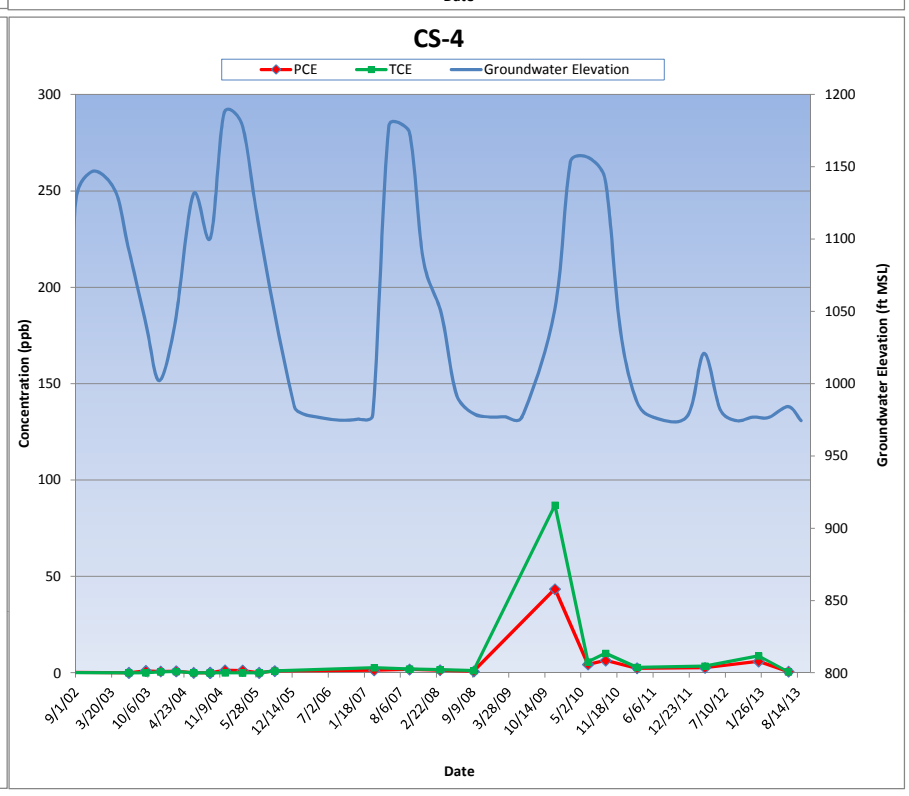












NOTE: Sampling dates are indicated by the squares on the trend line.

3.2 Westbay-equipped Wells

Under the provisions of the groundwater monitoring LTMO recommendations, 8 zones in the AOC-65 Westbay wells (CS-WB01, CS-WB02, CS-WB03, and CS-WB04) were scheduled for sampling in September 2013. These wells were also profiled to capture water level readings. These Westbay wells are located in the vicinity of AOC-65, and are part of the basewide quarterly groundwater monitoring program. The (Upper Glen Rose (UGR)/LGR zones are sampled on a 9-month schedule, and the BS/CC zones are sampled on an 18-month schedule, as recommended in the LTMO. The sampling of these wells began in September 2003.

Of the 8 zones scheduled for sampling in September 2013, all 8 samples were collected. Five zones had detections of PCE and TCE above the MCL. Zone CS-WB02-LGR-09 reported its highest concentration of PCE since sampling began in 2003. *Cis*-1,2-DCE was detected, below the MCL, in 5 of the 8 zones sampled.

There are four other Westbay wells (CS-WB05, CS-WB06, CS-WB07, and CS-WB08) that are located at the SWMU B-3 remediation site. Those wells are sampled on a separate schedule in association with the SWMU B-3 bioreactor monitoring. Results for those wells are presented in the SWMU B-3 Performance Status Reports.

4.0 SEPTEMBER 2013 SUMMARY

- Thirty-three wells were scheduled for sampling in September 2013. Seven wells (CS-MW4-LGR, CS-MW10-LGR, CS-MW11B-LGR, CS-MW17-LGR, CS-MW18-LGR, CS-4, and CS-D) were not sampled due to water levels falling below the pump.
- From June 26 to September 24, 2013, CSSA's AOC-65 weather station recorded 3.92 inches of rain. The rainfall was sporadic with one event having greater than one inch of rainfall on September 10th. The SWMU B-3 weather station measured 5.03 inches of precipitation for the same time period.
- Water levels decreased an average of 43.19 feet per non-pumping well since last quarter. This is the largest quarterly decrease since December 2010. The average water level in September 2013 (excluding pumping wells) was 299.02 feet below top of casing.
- VOCs were detected above the MCL in wells CS-MW1-LGR, CS-MW16-LGR, CS-MW16-CC, and CS-MW36-LGR. The VOC levels in CS-MW1-LGR, CS-MW16-LGR, and CS-MW16-CC decreased moderately from the previous sampling event while the VOC levels in CS-MW36-LGR increased slightly **(see Figure 3.2)**.
- Well CS-MW9-LGR had a chromium detection above the MCL in September 2013. This is the first chromium detection above the MCL since well sampling began in 2001.
- Of the 8 Westbay zones scheduled for sampling in September 2013, all 8 samples were collected. Five of the 8 zones had PCE and TCE above the MCL. Zone CS-WB02-LGR-09 reported its highest detection of PCE; this well has been sampled since 2003.

APPENDIX A

EVALUATION OF DATA QUALITY OBJECTIVES ATTAINMENT

Appendix A Evaluation of Data Quality Objectives Attainment

Activity	Objectives	Action	Objective Attained?	Recommendations
Field Sampling	Conduct field sampling in accordance with procedures defined in the project work plan, SAP, QAPP, HSP, and LTMO recommendations.	All sampling was conducted in accordance with the procedures described in the project plans.	Yes.	NA
Characterization of Environmental Setting (Hydrogeology)	Prepare water-level contour and/or potentiometric maps for each formation of the Middle Trinity Aquifer (3.5.3).	Potentiometric surface maps were prepared based on water levels measured in each of CSSA's wells screened in three formations on September 3, 2013.	To the extent possible with data available. Due to the limited data available and the fact that wells are completed across multiple water-bearing units, potentiometric maps should only be used for regional water flow direction, not local. Ongoing pumping in the CSSA area likely affects the natural groundwater flow direction.	As additional wells are installed screened in distinct formations, future evaluations will eliminate reliance on wells screened across multiple formations.
	Describe the flow system, including the vertical and horizontal components of flow (2.1.9).	Potentiometric maps were created using September 3, 2013 water level data, and horizontal flow direction was tentatively identified. Insufficient data are currently available to determine vertical component of flow.	As described above, due to the lack of aquifer-specific water level information, potentiometric surface maps should only be used as an estimate of regional flow direction.	Same as above.
	Define formation(s) in the Middle Trinity Aquifer are impacted by the VOC contaminants (2.1.3).	Quarterly groundwater monitoring provides information on Middle Trinity Aquifer impacts. Monitoring wells equipped with Westbay® - multi-port samplers are sampled every 9 or 18 months and 8 selected zones are sampled during the 'snapshot' event.	Yes.	Continue sampling.

Activity	Objectives	Action	Objective Attained?	Recommendations
	Identify any temporal changes in hydraulic gradients due to seasonal influences (2.1.5).	Downloaded data from continuous-reading transducers in wells: CS-MW4-LGR, CS-MW-2-LGR, CS-MW18-LGR, and CS-MW24-LGR. Additional continuous reading transducers were added to the program through the SCADA project. The following wells can be uploaded to see real time water level data: CS-MW1-LGR, CS-MW1-BS, CS-MW1-CC, CS-MW16-LGR, CS-MW16-CC, CS-1, CS-12, and CS-10. Data was also downloaded from the AOC-65 & B-3 weather stations. Water levels will be graphed at these wells against precipitation data through December 2013 and included in the annual groundwater report.	Yes.	Continue collection of transducer data and possibly install transducers in other cluster wells.
Contamination Characterization (Ground Water Contamination)	Characterize the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility (3.1.2).	Samples for laboratory analysis were collected from 26 of 46 CSSA wells. Wells CS-D, CS-MW4-LGR, CS-MW10-LGR, S-MW11B-LGR, CS-MW17-LGR, CS-MW18-LGR, and CS-4 were not sampled due to the water level falling below the pump.	The horizontal and vertical extent of groundwater contamination is continuously monitored.	Continue groundwater monitoring and construct additional wells as necessary.
	Determine the horizontal and vertical concentration profiles of all constituents of concern (COC) in the groundwater that are measured by USEPA-approved procedures (3.1.2). COCs are those chemicals that have been detected in groundwater in the past and their daughter (breakdown) products.	Groundwater samples were collected from wells: CS-MW1-LGR, CS-MW2-LGR, CS-MW3-LGR, CS-MW5-LGR, CS-MW6-LGR, CS-MW7-LGR, CS-MW8-LGR, CS-MW9-LGR, CS-MW11A-LGR, CS-MW12-LGR, CS-MW16-LGR, CS-MW16-CC, CS-MW19-LGR, CS-MW20-LGR, CS-MW21-LGR, CS-MW22-LGR, CS-MW23-LGR, CS-MW24-LGR, CS-MW25-LGR, CS-MW35-LGR, CS-MW36-LGR, CS-2, CS-1, CS-10, CS-12, and CS-9. Samples were analyzed for the short list of VOCs using USEPA method SW8260B, and metals (cadmium, lead, mercury, chromium). The drinking water wells (CS-1, CS-10, and CS-12) were sampled for the short list of VOCs and additional metals (arsenic, barium, copper, and zinc). Analyses were conducted in accordance with the AFCEE QAPP and approved variances. All RLs were below MCLs, as listed below:	Yes.	Continue sampling.

Activity	Objectives	Action	Objective Attained?	Recommendations
		ANALYTE / **RL (µg /L)** / **MCL(µg/L)** 1,1-DCE 1.2 7 *cis*-1,2-DCE 1.2 70 *trans*-1,2-DCE 0.6 100 PCE 1.4 5 TCE 1.0 5 Vinyl chloride 1.1 2		
		ANALYTE / **RL (µg/L)** / **MCL/AL (µg /L)** Barium 5 2,000 Chromium 10 100 Copper 10 1,300 Zinc 50 5,000 Arsenic 30 10 Cadmium 7 5 Lead 25 15 Mercury 1 2		
Contamination Characterization (Ground Water Contamination) (Continued)	Meet AFCEE QAPP quality assurance requirements.	Samples were analyzed in accordance with the CSSA QAPP and approved variances. Parsons chemists verified all data.	Yes.	NA
		All data flagged with a "U," "J," "M," and "F" are usable for characterizing contamination. All "R" flagged data are considered unusable.	Yes.	NA

Activity	Objectives	Action	Objective Attained?	Recommendations
		Previously, a method detection limit (MDL) study for arsenic, cadmium, and lead was not performed within a year of the analyses, as required by the AFCEE QAPP.	The laboratory performed new MDL studies in February 2001 for these metals and the new MDL values were found to be almost identical to the previous MDLs and all met the associated AFCEE QAPP requirements. MDLs for these three metals are well below MCLs. In addition, the laboratory performed daily calibrations and RL verifications for these metals, both of which demonstrate the laboratory's ability to detect and quantitate these metals at RL levels. These daily analyses also indicate that concentrations above the laboratory RL for these compounds were not affected by the expired MDL study.	Use results for groundwater characterization purposes.
Remediation	Determine goals and create cost-effective and technologically appropriate methods for remediation (2.2.1).	Continued data collection will provide analytical results for accomplishing this objective.	Ongoing.	Continue sampling and evaluation, including quarterly groundwater monitoring teleconferences to address remediation.
	Determine placement of new wells for monitoring (2.3.1, 3.6)	Sampling frequency and sample locations to be monitored (including any new wells) will be based on trend data from monitoring event(s) (3.1.5).	Ongoing.	Continue quarterly groundwater teleconferences to discuss sampling frequency and placement of new monitor wells.
Project schedule/ Reporting	Produce a quarterly monitoring project schedule as a road map for sampling, analysis, validation, verification, reviews, and reports.	Prepare schedules and sampling guidelines prior to each quarterly sampling event.	Yes.	Continue sampling schedule preparation each quarter.

APPENDIX B

QUARTERLY ON-POST GROUNDWATER MONITORING ANALYTICAL RESULTS SEPTEMBER 2013

Appendix B
September 2013 Quarterly On-Post Groundwater Monitoring Analytical Results

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-MW1-LGR	9/4/2013	NA	NA	0.0005U	**0.0045F**	NA	0.0019U	NA	0.0001U
CS-MW2-LGR	9/4/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW3-LGR	9/4/2013	NA	NA	0.0005U	**0.0035F**	NA	0.0019U	NA	0.0001U
CS-MW5-LGR	9/4/2013	NA	NA	0.0005U	**0.0042F**	NA	0.0019U	NA	0.0001U
CS-MW6-LGR	9/17/2013	NA	NA	0.0005U	**0.0023F**	NA	0.0019U	NA	0.0001U
CS-MW7-LGR	9/19/2013	NA	NA	0.0005U	**0.0016F**	NA	0.0019U	NA	0.0001U
CS-MW8-LGR	9/17/2013	NA	NA	0.0005U	**0.0014F**	NA	0.0019U	NA	0.0001U
CS-MW9-LGR	9/19/2013	NA	NA	0.0005U	**0.2369**	NA	0.0019U	NA	0.0001U
CS-MW11A-LGR	9/5/2013	NA	NA	0.0005U	**0.0022F**	NA	0.0019U	NA	0.0001U
CS-MW12-LGR	9/19/2013	NA	NA	0.0005U	**0.0020F**	NA	0.0019U	NA	0.0001U
CS-MW16-LGR	9/5/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW16-CC	9/5/2013	NA	NA	0.0005U	**0.0014F**	NA	0.0019U	NA	0.0001U
CS-MW19-LGR	9/5/2013	NA	NA	0.0005U	**0.0027F**	NA	0.0019U	NA	0.0001U
CS-MW20-LGR	9/16/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW21-LGR	9/16/2013	NA	NA	0.0005U	**0.0019F**	NA	0.0019U	NA	0.0001U
CS-MW21-LGR FD	9/16/2013	NA	NA	0.0005U	**0.0019F**	NA	0.0019U	NA	0.0001U
CS-MW22-LGR	9/16/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW23-LGR	9/16/2013	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW24-LGR	9/4/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW25-LGR	9/4/2013	NA	NA	0.0005U	**0.0098F**	NA	0.0019U	NA	0.0001U
CS-MW35-LGR	9/5/2013	NA	NA	0.0005U	**0.0025F**	NA	0.0019U	NA	0.0001U
CS-MW36-LGR	9/17/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-2	9/5/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-2 FD	9/5/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-9	9/23/2013	NA	NA	0.0005U	**0.0022F**	NA	**0.0124F**	NA	**0.0018**
CSSA Drinking Water Well System									
CS-1	9/23/2013	0.0002U	**0.0314**	0.0005U	0.0010U	**0.004F**	0.0019U	**0.407**	0.0001U
CS-10	9/23/2013	0.0002U	**0.0403**	0.0005U	0.0010U	**0.005F**	0.0019U	**0.049F**	0.0001U
CS-10 FD	9/23/2013	0.0002U	**0.0397**	0.0005U	0.0010U	**0.008F**	0.0019U	**0.067**	0.0001U
CS-12	9/23/2013	0.0002U	**0.0305**	0.0005U	0.0010U	**0.036**	0.0019U	**0.124**	0.0001U

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW1-LGR	9/4/2013	0.12U	**14.37**	**0.29F**	**11.92**	**17.69**	0.08U
CS-MW2-LGR	9/4/2013	0.12U	**0.51F**	0.08U	0.06U	0.05U	0.08U
CS-MW3-LGR	9/4/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW5-LGR	9/4/2013	0.12U	**0.76F**	0.08U	**0.96F**	**1.03**	0.08U
CS-MW6-LGR	9/17/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW7-LGR	9/19/2013	0.12U	0.07U	0.08U	**0.68F**	0.05U	0.08U
CS-MW8-LGR	9/17/2013	0.12U	0.07U	0.08U	**1.4**	0.05U	0.08U
CS-MW9-LGR	9/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW11A-LGR	9/5/2013	0.12U	0.07U	0.08U	**0.97F**	0.05U	0.08U
CS-MW12-LGR	9/19/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW16-LGR	9/5/2013	0.12U	**84.59**	0.08U	**83.04**	**98.38**	0.08U
CS-MW16-CC	9/5/2013	**0.13F**	**16.27**	**6.75**	**0.40F**	**8.89**	0.08U
CS-MW19-LGR	9/5/2013	0.12U	0.07U	0.08U	**0.52F**	0.05U	0.08U
CS-MW20-LGR	9/16/2013	0.12U	0.07U	0.08U	**1.19F**	0.05U	0.08U
CS-MW21-LGR	9/16/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW21-LGR FD	9/16/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW22-LGR	9/16/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW23-LGR	9/16/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW24-LGR	9/4/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW25-LGR	9/4/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW35-LGR	9/5/2013	0.12U	0.07U	0.08U	**0.69F**	0.05U	0.08U
CS-MW36-LGR	9/17/2013	0.12U	**0.78F**	0.08U	**16.44**	**29.2**	0.08U
CS-2	9/5/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-2 FD	9/5/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-9	9/23/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CSSA Drinking Water Well System							
CS-1	9/23/2013	0.12U	0.07U	0.08U	0.06U	**0.32F**	0.08U
CS-10	9/23/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-10 FD	9/23/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12	9/23/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

All samples were analyzed by APPL, Inc.
VOC data reported in ug/L & metals data reported in mg/L.
Abbreviations/Notes:

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard
NA	Not Analyzed for this parameter

Data Qualifiers
U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.
F-The analyte was positively identified but the associated numerical value is below the RL.

APPENDIX C

SEPTEMBER 2013 WESTBAY ANALYTICAL RESULTS

Appendix C
September 2013 Westbay Analytical Results

Well ID	Date Sampled	1,1-DCE (1,1-dichloroethene)	cis-1,2-DCE (cis-1,2-dichloroethene)	TCE (trichloroethene)	PCE (tetrachloroethene)	trans-1,2-DCE (trans-1,2-dichloroethene)	Vinyl Chloride
CS-WB01-LGR-09	9/23/2013	<0.12	**0.40F**	**11.49**	**6.97**	<0.08	<0.08
CS-WB02-LGR-09	9/18/2013	<0.12	**0.27F**	**11.11**	**259.55***	<0.08	<0.08
CS-WB03-LGR-09	9/18/2013	<0.12	**9.56**	**2.2**	**1.32F**	<0.08	<0.08
CS-WB04-LGR-06	9/23/2013	<0.12	**2.72**	**9.41**	**27.52**	**0.25F**	<0.08
CS-WB04-LGR-07	9/23/2013	<0.12	**2.08**	**7.02**	**20.11**	**0.18F**	<0.08
CS-WB04-LGR-09	9/23/2013	<0.12	<0.07	**8.31**	**8.42**	<0.08	<0.08
CS-WB04-LGR-10	9/23/2013	<0.12	<0.07	**0.58F**	**1.25F**	<0.08	<0.08
CS-WB04-LGR-11	9/23/2013	<0.12	<0.07	<0.05	**0.27F**	<0.08	<0.08

Data Qualifiers

F-The analyte was positively identified but the associated numerical value is below the RL.

* The analyte was run at a dilution of 5.

All values are reported in µg/L.

BOLD	≥ MDL
BOLD	≥ RL
BOLD	≥ MCL

APPENDIX D

DATA VALIDATION REPORT

(Laboratory data packages are submitted to CSSA electronically.)

SDG 71570
SDG 71673
SDG 71718
SDG 71782

DATA VERIFICATION SUMMARY REPORT

for on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on September 4 and 5, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including cadmium, chromium, lead, and mercury.

71570

The field QC samples associated with this SDG were one set of parent/field duplicate (FD) and a trip blank (TB). TB was analyzed for VOC only. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.0ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of fourteen (14) samples, including thirteen (13) on-site groundwater samples and one TB. All samples were collected on September 4 and 5, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one batch (#180997) under one set of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the parent/FD samples. Sample CS-2 was collected in duplicate.

Since none of the target compounds had concentrations greater than the reporting limits (RLs), the %RPD calculations were not applicable.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met for both sets of curves.

- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one method blank and one TB associated with the VOC analyses in this SDG. Both blanks were non-detect for all target VOCs. No target VOC was detected at or above the associated MDL in the blanks.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of thirteen (13) on-post groundwater samples which were collected on September 4 and 5, 2013 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #181060. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the parent/FD set of sample CS-2.

None of the target metals were detected at or above the reporting limit, therefore, the %RPD calculation was not applicable.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of thirteen (13) on-post groundwater samples collected on September 4 and 5, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #181523. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the parent/FD samples.

Mercury was not detected above the RL in both parent and FD samples.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for on- and off-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples and the associated field quality control (QC) samples collected from on and off-post Camp Stanley Storage Activity (CSSA) on September 13 and 16, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including cadmium, chromium, lead, and mercury.

71673

The field QC samples associated with this SDG were two sets of parent/field duplicate (FD), one set of matrix spike/matrix spike duplicate (MS/MSD) and a trip blank (TB). TB was analyzed for VOC only. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.0ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of fifteen (15) samples, including six (6) on-site groundwater samples, four (4) on-site groundwater samples, two (2) FDs, one pair of MS/MSD and one TB. All samples were collected on September 13 and 16, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one batch (#181516) under one set of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample, one set of MS/MSD, and the surrogate spikes. Sample BSR-03 was designated as the parent sample for the MS/MSD analyses on the chain of custody.

All LCS, MS/MSD, and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of MS/MSD and the two pairs of parent/FD samples. Samples OFR-1 and CS-MW21-LGR were collected in duplicate.

Since none of the target compounds had concentrations greater than the reporting limits (RLs) in the two pairs of parent/FD samples, the %RPD calculations were not applicable.

All %RPDs of MS/MSD were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met for both sets of curves.
- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one method blank and one TB associated with the VOC analyses in this SDG. Both blanks were non-detect for all target VOCs. No target VOC was detected at or above the associated MDL in the blanks.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of five (5) on-post groundwater samples including one FD which were collected on September 16, 2013 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #181779. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the parent/FD set of sample CS-MW21-LGR.

Since none of the target metals were detected at or above the reporting limit in the parent/FD samples, therefore, the %RPD calculation was not applicable.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of five (5) on-post groundwater samples including one FD collected on September 16, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #181797. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the parent/FD samples. Sample CS-MW21-LGR was collected in duplicate.

Mercury was not detected above the RL in both parent and FD samples.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples and the associated field quality control (QC) sample collected from on-post Camp Stanley Storage Activity (CSSA) on September 19, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including cadmium, chromium, lead, and mercury.

71718

The field QC sample associated with this SDG were a trip blank (TB). TB was analyzed for VOC only. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.0ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of four (4) samples, including three (3) on-site groundwater samples and one TB. All samples were collected on September 19, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one batch (#181519) under one set of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses involved in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met for both sets of curves.
- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.

- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one method blank and one TB associated with the VOC analyses in this SDG. Both blanks were non-detect for all target VOCs. No target VOC was detected at or above the associated MDL in the blanks.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of three (3) on-post groundwater samples which were collected on September 19, 2013 and were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #181961. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses involved in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;

- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of three (3) on-post groundwater samples collected on September 19, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #181961. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses involved in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for on-post samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers groundwater samples and the associated field quality control (QC) samples collected from on-post Camp Stanley Storage Activity (CSSA) on September 23, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and metals including arsenic, barium, cadmium, chromium, copper, lead, zinc, and mercury. Not all samples were analyzed for the full list of metals.

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The field QC samples associated with this SDG were one set of parent/field duplicate (FD), one set of matrix spike/matrix spike duplicate (MS/MSD), and a trip blank (TB). TB was analyzed for VOC only. No ambient blanks were collected. During the initiation of this project, it was determined that ambient blanks were not necessary due to the absence of a source at these sites.

All samples were collected by Parsons and analyzed by APPL, Inc. following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0. The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.5ºC, which was within the 2-6ºC range recommended by the CSSA QAPP.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data package included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and the sample receipt checklist. The findings presented in this report are based on the reviewed information, and whether the guidelines in the CSSA QAPP, Version 1.0, were met.

VOLATILES

General

The volatiles portion of this data package consisted of eight (8) samples, including four (4) on-site groundwater samples, one FD, one pair of MS/MSD, and one TB. All samples were collected on September 23, 2013 and analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one batch (#181608) under one set of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control spike (LCS) sample, MS/MSD and the surrogate spikes. Sample CS-1 was designated as the parent sample for the MS/MSD analyses.

All LCS, MS, MSD, and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the parent/FD samples and MS/MSD results. Sample CS-10 was collected in duplicate.

Since none of the target compounds had concentrations greater than the reporting limits (RLs), the %RPD calculations were not applicable.

All %RPDs of the MS/MSD results were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining trip and laboratory blanks for cross contamination of samples during transit or analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.

- All initial calibration criteria were met for both sets of curves.
- The LCS was prepared using a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There were one method blank and one TB associated with the VOC analyses in this SDG. Both blanks were non-detect for all target VOCs. No target VOC was detected at or above the associated MDL in the blanks.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All VOC results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

ICP-AES METALS

General

The ICP-AES portion of this SDG consisted of five (5) on-post groundwater samples including one FD and one set of MS/MSD which were collected on September 23, 2013 and were analyzed for arsenic, barium, cadmium, chromium, copper, lead, and zinc. Sample CS-9 has a shorter list of metals which include cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method.

The samples for ICP-AES metals were digested in batch #181963. All analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD. Sample CS-1 was designated as the parent sample for the MS/MSD analyses

All LCS, MS, and MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPDs of the parent/FD set of sample CS-10 and MS/MSD results.

Since only barium was detected above the reporting limit in both parent and FD samples, the %RPD calculation was only applicable for barium. %RPD = 1.5% which met the acceptance criteria.

All %RPDs of MS/MSD were also compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating preservation and holding times; and
- Examining laboratory blank for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0, prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All CCV criteria were met.
- All interference check (ICSA/ICSAB) criteria were met.
- No dilution test was required, as per the CSSA QAPP.

One method blank and several calibration blanks were analyzed in association with the ICP-AES analyses in this SDG. All blanks were free of target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP-AES metals results for the samples in this SDG were considered usable. The completeness for the ICP metals portion of this SDG is 100%, which meets the minimum acceptance criteria of 95%.

MERCURY

General

The mercury portion of this SDG consisted of seven (7) on-post groundwater samples including one FD and one set of MS/MSD which were collected on September 23, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. These on-post well samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #181797. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS, MS, and MSD.

The LCS, MS, and MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of the parent/FD samples and MS/MSD.

Mercury was not detected above the RL in both parent and FD samples.

%RPD of MS/MSD was compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

All samples were analyzed following the COC and the analytical procedures described in the CSSA QAPP, prepared and analyzed within the holding times required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All mercury result for the samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.