JUNE 2013

On-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

October 2013

EXECUTIVE SUMMARY

- Fourteen wells were scheduled for sampling in June 2013 and 6 wells were added to collect background data prior to bringing new drinking water well CS-13 online.
- Average groundwater elevations in June 2013 increased 33.15 feet from the elevations measured in March 2013. Since May 1, 2012, the San Antonio area (Edwards Aquifer) has been in Stage 2 water restrictions. Locally around the CSSA area, the Trinity Glen Rose Groundwater Conservation District remains 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 260.32 feet below top of casing (BTOC) or 989.43 feet above mean sea level (msl).
- The maximum contaminant level (MCL) was exceeded in monitoring wells CS-MW1-LGR and CS-MW36-LGR for tetrachlorethene (PCE) and trichloroethene (TCE) in June 2013.
- No wells sampled had metals detections above the action level (AL), secondary standard (SS), or MCL in June 2013.
- Thirty-one Westbay zones were sampled in June 2013 and 6 zones were dry. Of the 31 samples collected, 14 zones reported PCE and/or TCE above the MCL.
- A 36-hour pumping test at future production well CS-13 was completed in June 2013. The pumping test confirmed that the well can sustain 110 gallons per minute (gpm) with a net drawdown of 167 feet below grade. Groundwater sampling did not indicate the presence of volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), coliforms, or *e. coli*. Metals, cation, and anion concentrations were all below their established regulatory limits.

GEOSCIENTIST CERTIFICATION

June 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 June 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 June 2013, and is true and accurate to the best of my knowledge and belief.

W. Scott

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

10-25-2013

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.
BACT	bacteriological
Bexar Met	Bexar Metropolitan Water District
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
DCP	Drought Contingency Plan
DQO	Data Quality Objectives
GAC	Granular Activated Carbon
GPM	gallons per minute
GUI	Groundwater Under the Influence (of Surface Water)
ISCO	In-Situ Chemical Oxidation
LGR	Lower Glen Rose
LTMO	Long Term Monitoring Optimization
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MSL	mean sea level
PCE	Tetrachloroethene
Plan	CSSA Off-post Monitoring Program and Response Plan
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
SVOC	Semivolatile Organic Compound
SWMU	Solid Waste Management Units
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
TGRGCD	Trinity-Glen Rose Groundwater Conservation District

ACRONYMS AND ABBREVIATIONS *(continued)*

TO	Task Order
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

JUNE 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 June 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 June 12-25, 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 June 24, 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 June 2013 are shown in **Figures 2.1, 2.2, and 2.3**, respectively.

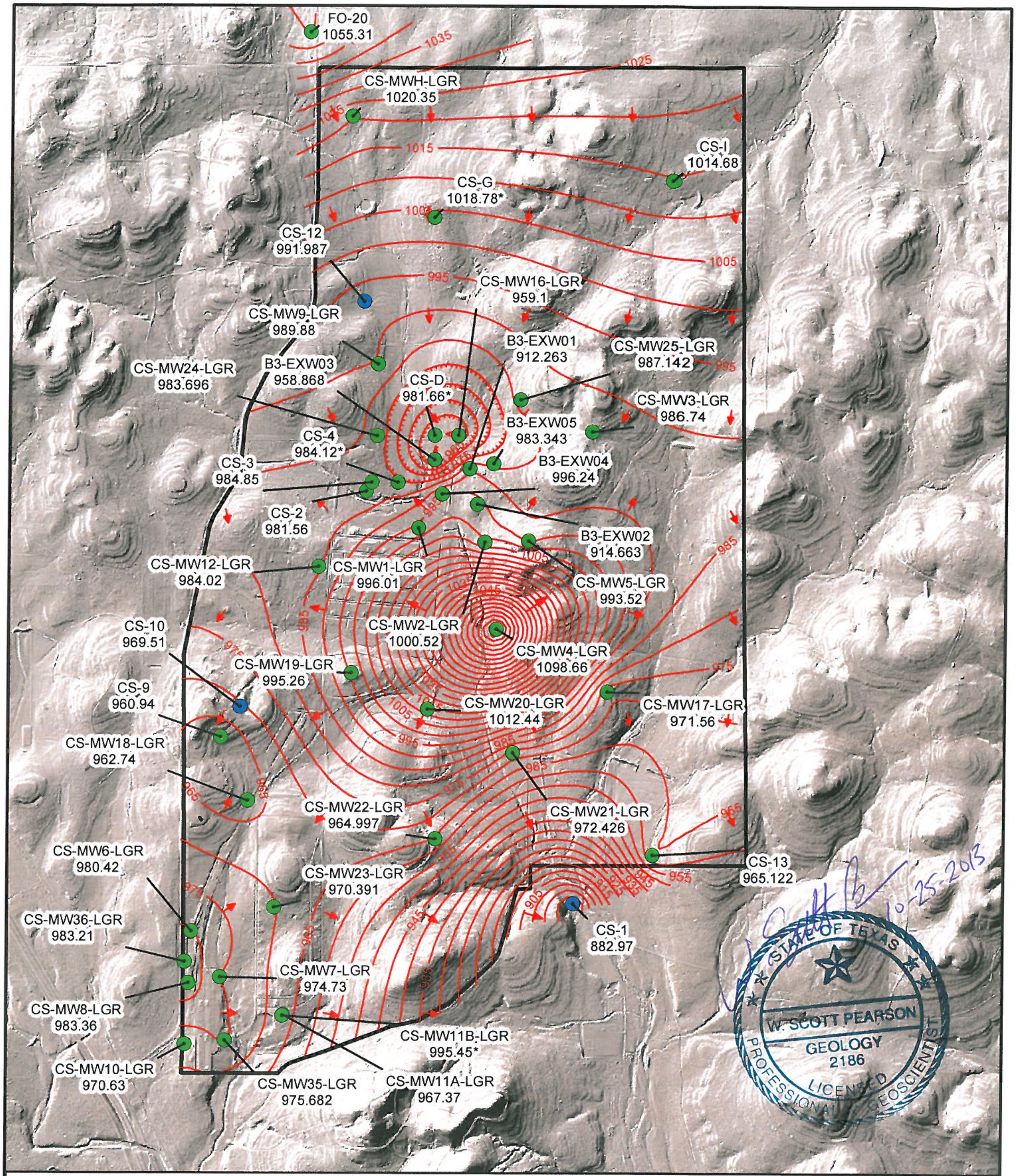
The June 2013 potentiometric surface map for LGR-screened wells **(Figure 2.1)** exhibited a wide range of groundwater elevations, from a minimum of 882.97 feet above mean sea level (MSL) at CS-1 to a maximum of 1098.66 feet above MSL at CS-MW4-LGR. Groundwater elevations are generally higher in the 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 June 2013 increased 33.15 feet from the elevations measured in March 2013. From March 28 – June 25, 2013, the southern weather station at AOC-65 (WS AOC-65) recorded 9.57 inches of rainfall during 25 rainfall events in this timeframe. The rainfall was sporadic with two events having greater than one inch of rainfall in late May and early June. The northern or B-3 weather station recorded measured 12.76 inches of precipitation for the same time period. The aquifer rebounded with 5.13 inches of rainfall in May; this is the highest monthly rainfall total since September 2012. 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 June 2013 this mounding effect was extremely pronounced, as the elevation in CS-MW4-LGR was 98 and 105 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 June 2013, the water elevation at CS-MW4-LGR was 1098.66 feet msl, and the typical mounding effect was fully developed.

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-EXW01, B3-EXW02, B3-EXW03, B3-EXW5, and CS-MW16-LGR 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 June 2013, the overall LGR groundwater gradient is to the south-southeast at 0.0035 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, and 2012. Approximately 10 inches of rainfall between March and June 2013 resulted in a 38-foot average increase in elevation in LGR-only screened monitoring wells across the post. While the increase in groundwater level provided a welcome change, the drought conditions still persist in Central Texas. The aquifer level as measured in the LGR-screened wells is still 45 feet below the 10.5-year average of 1,033 ft msl.



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Flow direction	LGR Groundwater Contours
Outer fence	● LGR Wells and groundwater elevation (ft above msl)
	● Drinking water wells (may be completed in LGR, BS, and/or CC)

* Not a fully penetrating well into LGR. Groundwater elevation not used in contouring

Figure 2.1

June 2013 Potentiometric Surface Map, LGR Wells

Camp Stanley Storage Activity

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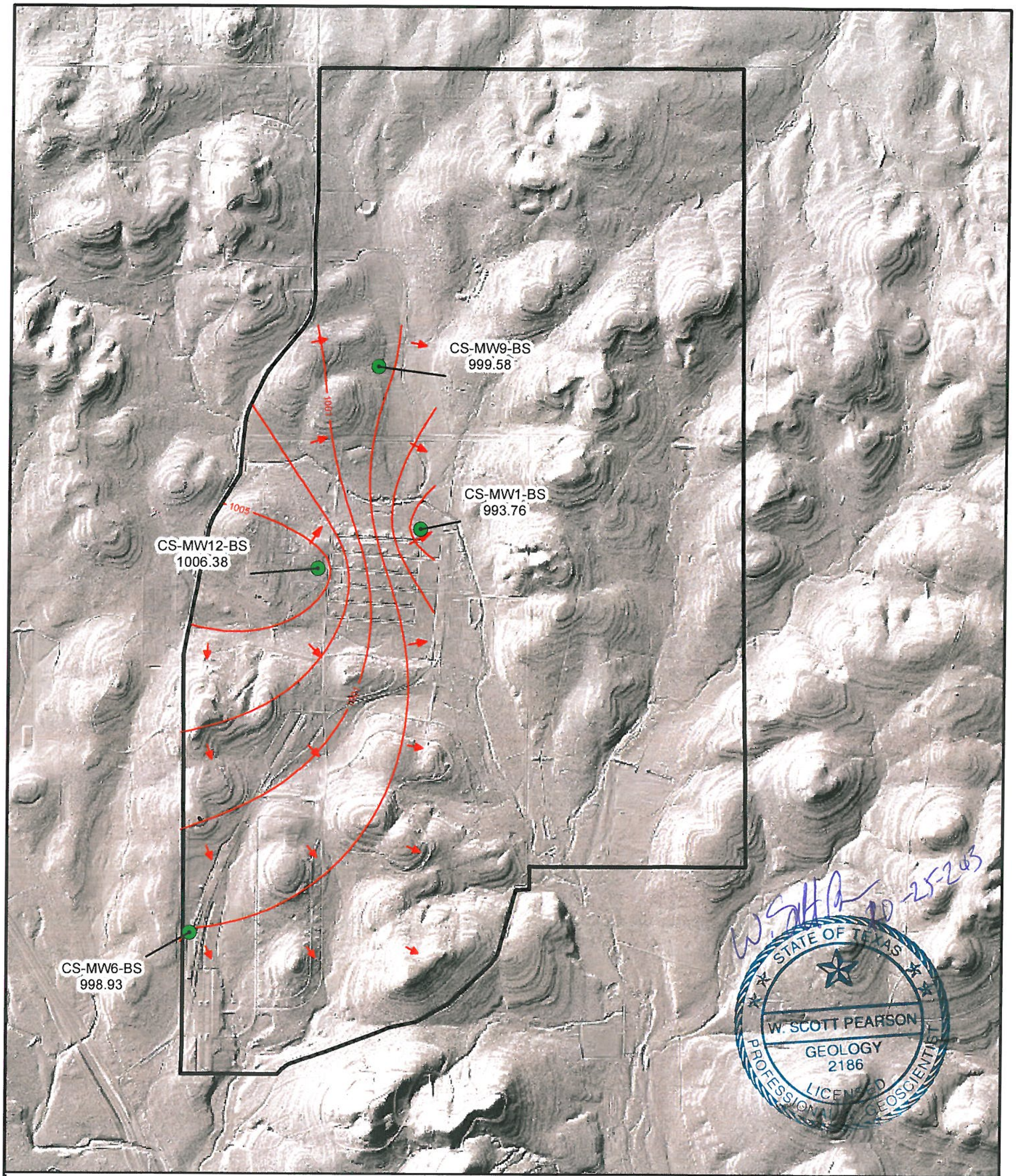

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Figure 2.2

June 2013 Potentiometric Surface Map, BS Wells

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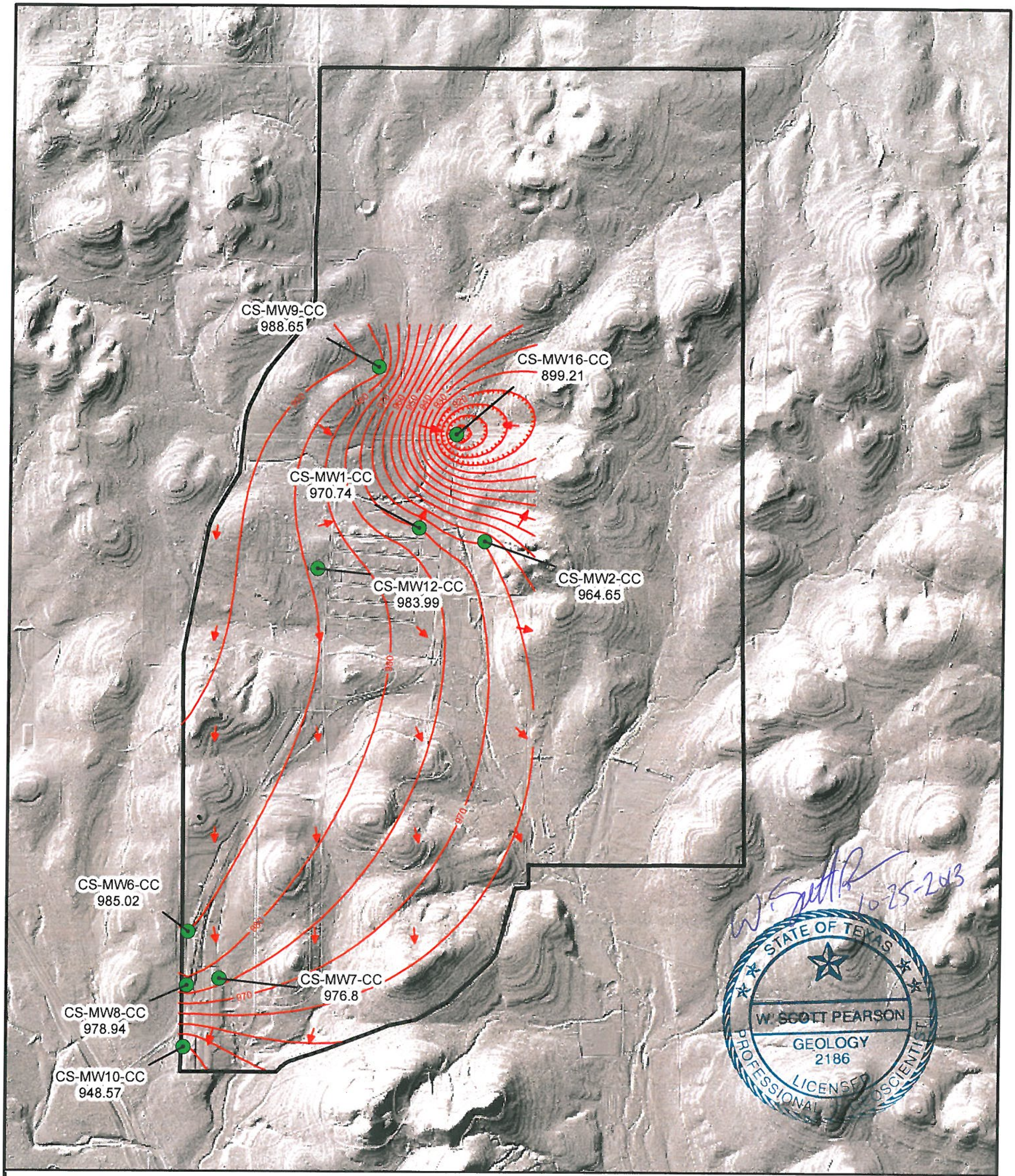

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Figure 2.3

June 2013 Potentiometric Surface Map, CC Wells

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3.0 JUNE 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 June 2013 included 14 wells. The samples included three production wells (CS-1, CS-10, and CS-12), one inactive production well (CS-9), and ten on-post monitoring wells (CS-MW1-LGR, CS-MW2-LGR, CS-MW8-LGR, CS-MW10-LGR, CS-MW11A-LGR, CS-4, CS-D, CS-MW24-LGR, CS-MW35-LGR, and CS-MW36-LGR). Six wells (CS-MW1-CC, CS-MW2-CC, CS-MW4-LGR, CS-MW17-LGR, CS-MW21-LGR, and CS-13) were added to the schedule to collect background data for future sample requirements when the drinking water well CS-13 is put into service. Two wells were not sampled in June 2013. Well CS-D was not sampled due to the water level falling below the sampling pump and well CS-MW2-LGR was not sampled due to field crew oversight. **Tables 3.1** and **3.2** provide a sampling overview for June 2013 and the schedule under the LTMO recommendations. The above-listed monitoring wells were sampled using a dedicated low-flow gas-operated bladder pump. Wells CS-1, CS-9, CS-10, CS-12, and CS-13 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 June 2013 for the short list of volatile organic compounds (VOC) and metals (chromium, cadmium, lead, and mercury). Active and inactive drinking water wells CS-1, CS-9, CS-10, and CS-12 were analyzed for the short list VOCs and metals (arsenic, barium, chromium, copper, zinc, cadmium, mercury, and lead). Depending on the location, the 6 additional samples were analyzed for VOCs, metals, or microbial presence (total coliforms and e. coli). In addition, CS-13 was sampled for semivolitile organic compounds (SVOCs) and radionuclides.

Samples were analyzed by APPL Laboratories in Clovis, California with the exception of the microbial analyses, which were performed by San Antonio Testing in San Antonio, TX. 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) and Trichloroethene (TCE) were detected above the Maximum Contaminant Level (MCL) in two on-post wells sampled this quarter, CS-MW1-LGR 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 June 2013 was a reduction in VOC concentrations with a modest increase in elevation. In June 2013, no metals were detected above the MCL/Action Level (AL). No VOCs or SVOCs were detected in future supply well CS-13. Likewise, no metals, cations, anions, or radionuclides were reported above their applicable MCL, Secondary Standard (SS), or AL at CS-13. Finally, no coliforms or e. coli were present in the wells tested (CS-13, CS-MW1-CC, and CS-MW2-CC).

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-#137, -#138, -#141, and -#142, containing the analytical results from this sampling event were received by Parsons July 1-25, 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)	Dec-12	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)	Dec-12	NS	S**	NS	NS	Every 18 months
2	CS-MW2-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	NS	Semi-annual + 9 month snapshot
	CS-MW2-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S**	NS	NS	Every 18 months
	CS-MW3-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW4-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S**	S	NS	Every 9 months
	CS-MW5-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	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
	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
3	CS-MW8-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	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
	CS-MW9-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
	CS-MW9-BS	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW9-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
4	CS-MW10-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	NS	Semi-annual + 9 month snapshot
	CS-MW10-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	NS	NS	Every 18 months
5	CS-MW11A-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	NS	Semi-annual + 9 month snapshot
	CS-MW11B-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-12	NS	NS	S	NS	Every 9 months
	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
	CS-MW16-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW16-CC	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CW-MW17-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S**	S	NS	Every 9 months
	CS-MW18-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW19-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
6	CS-1	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-13	S	S	S	S	Quarterly
	CS-2	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
7	CS-4	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	NS	Semi-annual + 9 month snapshot
8	CS-9	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-13	S	S	S	S	Quarterly
9	CS-10	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-13	S	S	S	S	Quarterly
10	CS-12	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-13	S	S	S	S	Quarterly
	CS-13	VOCs & metals (As,Ba,Cr, Cu,Cd,Hg,Pb,Zn)	Mar-12	NS	S**	NS	NS	installtion in progress
11	CS-D	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	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
	CS-MW20-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW21-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S**	S	NS	Every 9 months
	CS-MW22-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
	CS-MW23-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
12	CS-MW24-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	NS	Semi-annual + 9 month snapshot
	CS-MW25-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	NS	S	NS	Every 9 months
13	CS-MW35-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Dec-12	NS	S	S	NS	Semi-annual + 9 month snapshot
14	CS-MW36-LGR	VOCs & metals (Cr, Cd, Hg, Pb)	Mar-13	S	S	S	S	Quarterly

* New LTMO sampling frequency implemented June 2011

** Sampled in June 2013 to establish TCEQ baseline for future CS-13 water production operations

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	S	NS	NS	Every 9 months
CS-WB01-LGR-01	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-02	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-03	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-04	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-05	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-06	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-07	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-08	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB01-LGR-09	Dec-12	NS	S	S	NS	Every 9 months + snapshot
CS-WB02-UGR-01	Dec-04	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-01	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-02	Mar-10	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-03	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-04	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-05	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-06	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-07	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-08	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB02-LGR-09	Dec-12	NS	S	S	NS	Every 9 months + snapshot
CS-WB03-UGR-01	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-01	Sep-10	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-02	Oct-07	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-03	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-04	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-05	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-06	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-07	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-08	Sep-12	NS	S	NS	NS	Every 9 months
CS-WB03-LGR-09	Dec-12	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-UGR-01	Mar-04	NS	S	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	Dec-12	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-07	Dec-12	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	Dec-12	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-10	Dec-12	NS	S	S	NS	Every 9 months + snapshot
CS-WB04-LGR-11	Dec-12	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.

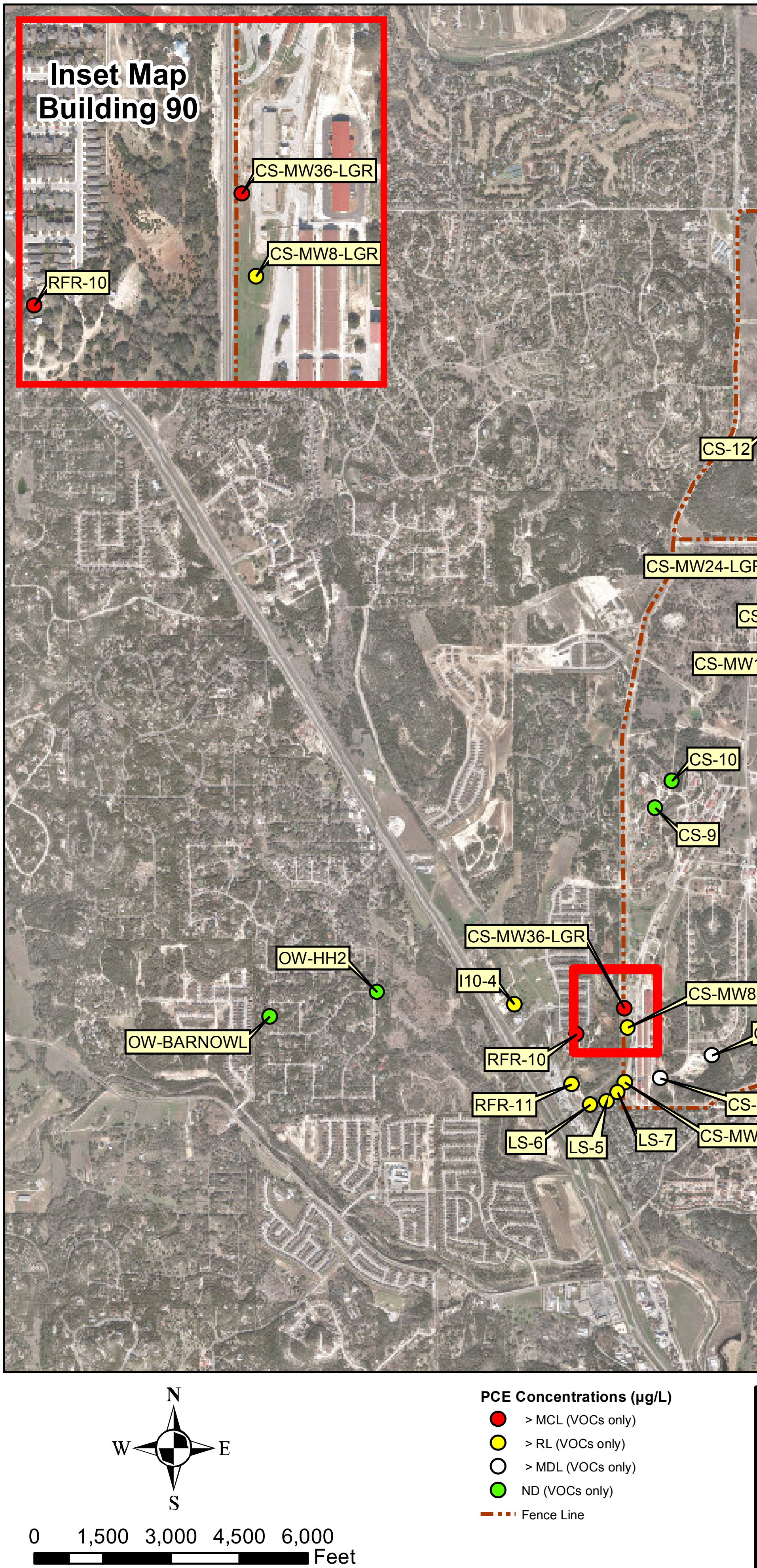

Figure 3.1

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

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

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury	Comments
CS-MW1-LGR	6/17/2013	NA	NA	--	**0.0011F**	NA	--	NA	--	Sporadic chromium detections.
CS-MW1-CC*	6/17/2013	NA	NA	--	--	NA	--	NA	--	No historic metals detection above the MCL.
CS-MW2-CC*	6/17/2013	NA	NA	--	--	NA	--	NA	--	
CS-MW4-LGR	6/17/2013	NA	NA	--	**0.0023F**	NA	--	NA	--	Chromium is the only metal detected sporadically since 2008.
CS-MW8-LGR	6/19/2013	NA	NA	--	**0.0012F**	NA	--	NA	--	Consistent chromium detections since 2008.
CS-MW8-LGR FD	6/19/2013	NA	NA	--	**0.0013F**	NA	--	NA	--	
CS-MW10-LGR	6/18/2013	NA	NA	--	**0.0015F**	NA	--	NA	--	
CS-MW11A-LGR	6/18/2013	NA	NA	--	**0.0015F**	NA	--	NA	--	Sporadic metals detections.
CS-MW17-LGR	6/18/2013	NA	NA	--	**0.0012F**	NA	--	NA	--	
CS-MW21-LGR	6/18/2013	NA	NA	--	--	NA	--	NA	--	No metals detections ever above the MCL/AL/SS.
CS-MW24-LGR	6/25/2013	NA	NA	--	--	NA	--	NA	--	
CS-MW35-LGR	6/25/2013	NA	NA	--	--	NA	--	NA	--	No metals detections since September 2012.
CS-MW35-LGR FD	6/25/2013	NA	NA	--	--	NA	--	NA	--	
CS-MW36-LGR	6/19/2013	NA	NA	--	--	NA	--	NA	--	
CS-4	6/25/2013	NA	NA	--	--	NA	--	NA	--	No metals detections since December 2008.
CS-9	6/25/2013	NA	NA	--	--	NA	**0.0093F**	NA	**0.0012**	Mercury and lead last above the MCL/AL in 2012.
CSSA Drinking Water Well System										
CS-1	6/25/2013	--	**0.0352**	--	--	**0.005F**	--	**0.268**	--	
CS-10	6/25/2013	--	**0.0378**	--	--	--	--	**0.050**	--	
CS-12	6/25/2013	--	**0.0304**	--	--	**0.015**	--	**0.125**	--	No metals detections above the AL since Dec. 2010.
CS-12 FD	6/25/2013	--	**0.0308**	--	--	**0.008F**	--	**0.104**	--	
CS-13*	6/17/2013	**0.0015F**	**0.0326**	--	--	--	NA	**0.48**	--	No metals ever detected above the MCL, AL, or SS.
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.

* Additional analytes were tested from these wells and included in Appendix B.

Table 3.3
June 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	Comments
CS-MW1-LGR	6/17/2013	--	**18.74**	**0.19F**	**13.97**	**30.39**	--	PCE, TCE, and cis-1,2-DCE consistently detected.
CS-MW1-CC*	6/17/2013	--	--	--	--	--	--	No historic VOC detections.
CS-MW2-CC*	6/17/2013	--	--	--	--	--	--	
CS-MW4-LGR	6/17/2013	--	--	--	--	--	--	
CS-MW6-LGR	6/19/2013	--	--	--	--	--	--	Only 2 f-flagged VOC detections since well installed (2001 & 2012).
CS-MW7-LGR	6/19/2013	--	--	--	**0.39F**	--	--	Sporadic PCE detections, below the RL.
CS-MW8-LGR	6/19/2013	--	--	--	**2.48**	--	--	Highest PCE detection since well sampling began in June 2001.
CS-MW8-LGR FD	6/19/2013	--	--	--	**2.56**	--	--	
CS-MW10-LGR	6/18/2013	--	--	--	**2.08**	**0.42F**	--	PCE consistently above the RL and TCE below the RL.
CS-MW11A-LGR	6/18/2013	--	--	--	**0.81F**	--	--	Consistent PCE detections.
CS-MW17-LGR	6/18/2013	--	--	--	**0.48F**	--	--	Consistent PCE detections, below the RL.
CS-MW21-LGR	6/18/2013	--	--	--	--	--	--	One PCE detection ever in December 2009, below the RL.
CS-MW24-LGR	6/25/2013	--	--	--	--	--	--	No VOC detections since well sampling began in June 2007.
CS-MW35-LGR	6/25/2013	--	--	--	**0.79F**	--	--	Consistent PCE detections just above and below the RL.
CS-MW35-LGR FD	6/25/2013	--	--	--	**0.84F**	--	--	
CS-MW36-LGR	6/19/2013	--	--	--	**7.65**	**6.3**	--	Significant decrease in PCE and TCE concentrations since last quarter.
CS-4	6/25/2013	--	--	--	**0.64F**	**0.55F**	--	
CS-9	6/25/2013	--	--	--	--	--	--	No VOC detections since 2004.
CSSA Drinking Water Well System								
CS-1	6/25/2013	--	--	--	--	--	--	Sporadic TCE detections, below the RL.
CS-10	6/25/2013	--	--	--	--	--	--	No VOC detections in the last 3 years.
CS-12	6/25/2013	--	--	--	--	--	--	No VOC detections since well was installed in 2009.
CS-12 FD	6/25/2013	--	--	--	--	--	--	
CS-13*	6/17/2013	--	--	--	--	--	--	No historic VOC detections.

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
SWMU B-3 Weather Station (WS-B3):	4.88	12.76
AOC-65 Weather Station (WS-AOC65):	4.79	9.57

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.
* Additional analytes were tested from these wells and included in Appendix B.

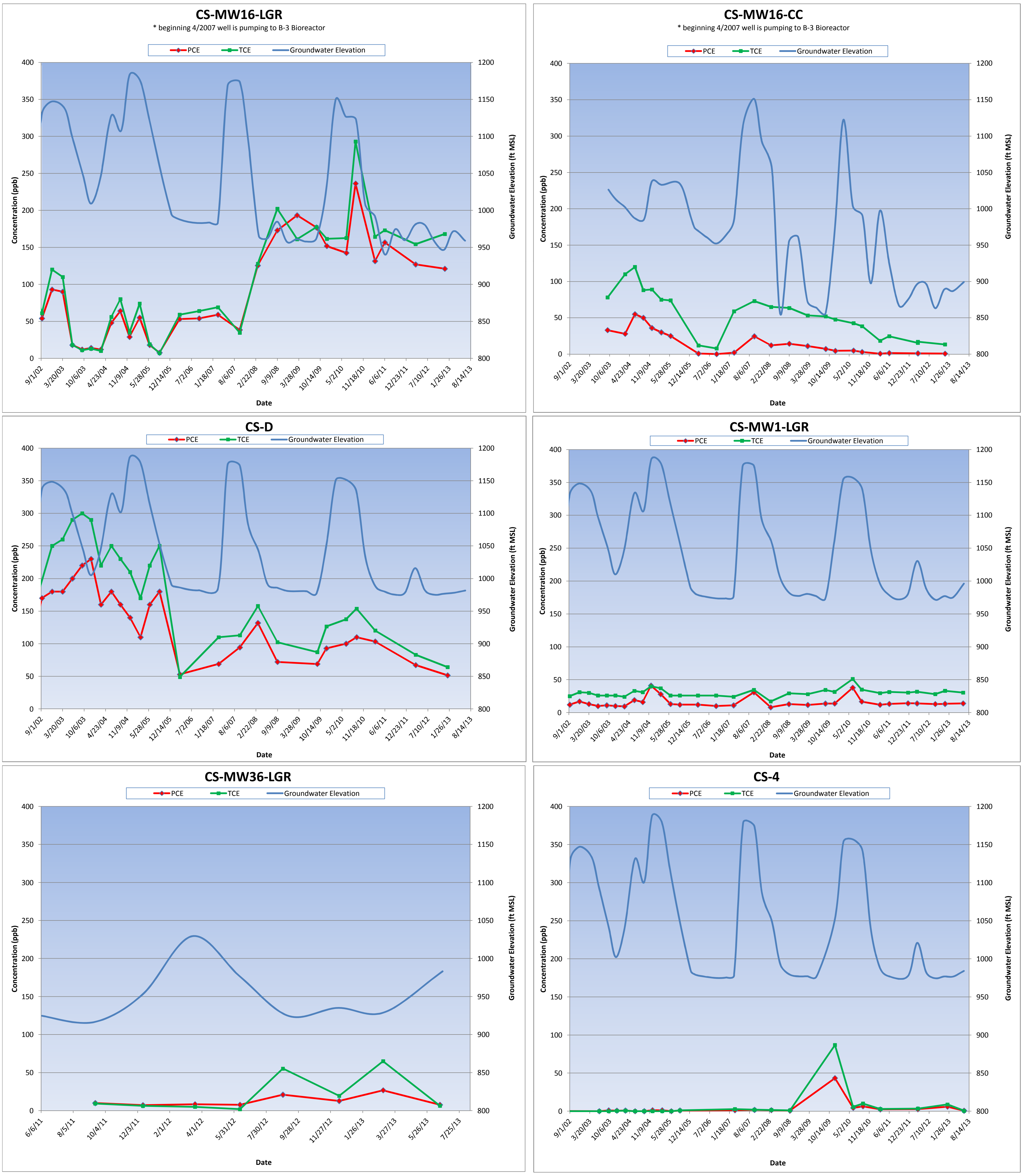
Table 3.4
June 2013 Westbay Analytical Results, Detected Analytes

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-01	6/13/2013	--	--	**0.28F**	**2.79**	--	--
CS-WB01-LGR-02	6/13/2013	--	--	**2.76**	**9.29**	--	--
CS-WB01-LGR-03	6/13/2013	--	--	**9.77**	**2.54**	--	--
CS-WB01-LGR-04	6/13/2013	--	**0.11F**	**0.13F**	--	--	--
CS-WB01-LGR-05	6/13/2013	--	--	--	**0.33F**	--	--
CS-WB01-LGR-06	6/13/2013	--	**0.55F**	**0.82F**	**0.29F**	--	--
CS-WB01-LGR-07	6/13/2013	--	**0.21F**	**11.51**	**11.25**	--	--
CS-WB01-LGR-08	6/13/2013	--	**1.59**	**9.45**	**5.57**	--	--
CS-WB01-LGR-09	6/13/2013	--	**0.53F**	**12.24**	**8.57**	--	--
CS-WB02-LGR-01	6/12/2013	--	--	**0.36F**	**2.38**	--	--
CS-WB02-LGR-03	6/12/2013	--	--	**1.91**	**4.73**	--	--
CS-WB02-LGR-04	6/12/2013	--	--	**8.79**	**4.18**	--	--
CS-WB02-LGR-05	6/12/2013	--	--	**2.66**	**2.58**	--	--
CS-WB02-LGR-06	6/12/2013	--	**0.23F**	**3.37**	**3.04**	**0.21F**	--
CS-WB02-LGR-07	6/12/2013	--	**0.32F**	**0.72F**	**2.13**	--	--
CS-WB02-LGR-08	6/12/2013	--	**1.96**	**0.73F**	**4.05**	**0.54F**	--
CS-WB02-LGR-09	6/12/2013	--	**0.32F**	**11.04**	**105.84***	--	--
CS-WB03-UGR-01	6/12/2013	--	--	**70.67****	**8678.10*****	--	--
CS-WB03-LGR-03	6/12/2013	--	**0.15F**	**7.21**	**13.32**	--	--
CS-WB03-LGR-04	6/12/2013	--	--	**5.86**	**11.96**	--	--
CS-WB03-LGR-05	6/12/2013	--	--	**5.35**	**13.88**	--	--
CS-WB03-LGR-06	6/12/2013	--	**0.75F**	**1.16**	**1.62**	--	--
CS-WB03-LGR-07	6/12/2013	--	**9.77**	**1.89**	**0.48F**	--	--
CS-WB03-LGR-08	6/12/2013	--	**4.46**	**0.96F**	**0.21F**	--	**0.42F**
CS-WB03-LGR-09	6/12/2013	--	**8.93**	**2.07**	**1.59**	--	--
CS-WB04-LGR-06	6/20/2013	--	**3.54**	**12.62**	**39.18**	**0.40F**	--
CS-WB04-LGR-07	6/20/2013	--	**2.51**	**7.02**	**19.07**	**0.23F**	--
CS-WB04-LGR-08	6/20/2013	--	--	**0.98F**	**0.39F**	--	--
CS-WB04-LGR-09	6/20/2013	--	--	**5.86**	**6.05**	--	--
CS-WB04-LGR-10	6/20/2013	--	--	**0.73F**	**1.37F**	--	--
CS-WB04-LGR-11	6/20/2013	--	--	--	**0.24F**	--	--
Comparison Criteria							
Method Detection Limit	**MDL**	**0.3**	**0.16**	**0.16**	**0.15**	**0.19**	**0.23**
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.
** dilution of 25 run for this sample.
*** dilution of 200 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, 37 zones in the AOC-65 Westbay wells (CS-WB01, CS-WB02, CS-WB03, and CS-WB04) were scheduled for sampling in June 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 37 zones scheduled for sampling in June 2013, 31 samples were collected and 6 zones were dry. Fourteen zones had detections of PCE and/or TCE above the MCL. Vinyl chloride was detected for the first time in CS-WB03-LGR-08. Zones CS-WB01-LGR-04, and CS-WB04-LGR-04 had F-flagged detections of *cis*-1,2-DCE for the first time. PCE was above the MCL in zone CS-WB01-LGR-08 for the first time.

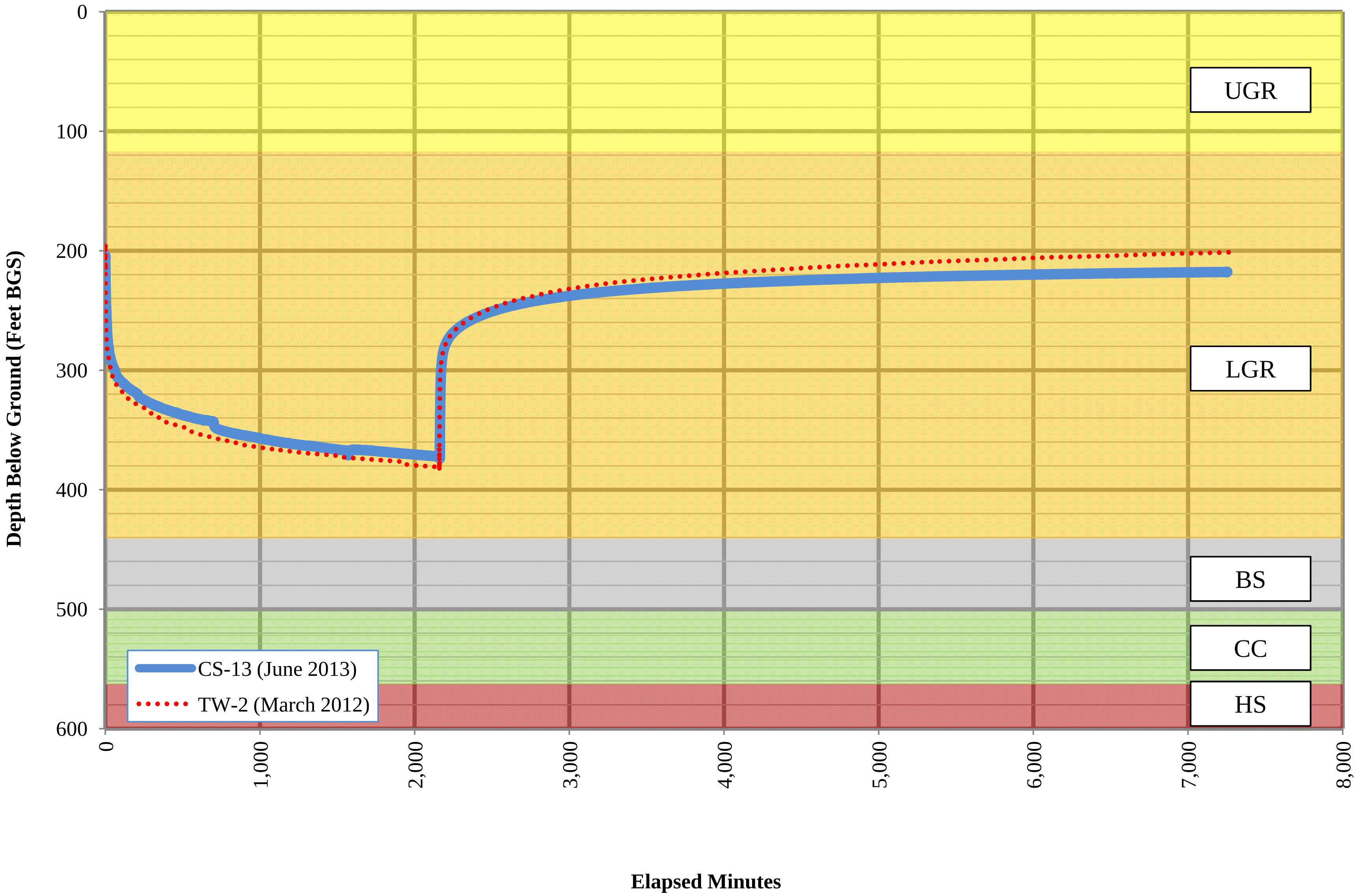
There are four other Westbay wells (CS-WB05, CS-WB06, CS-WB07, and CS-WB08) that are located at the SWMU B-3 remediation site. Those wells are sampled on a separate schedule in association with the SWMU B-3 bioreactor monitoring. Results for those wells are presented in the SWMU B-3 Performance Status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

3.3 CS-13 Pumping Test

In compliance with TCEQ regulations, a 36-hour pumping test was performed at CS-13 after its final construction and pumping equipment had been installed. Beginning June 12, 2013, the well was pumped for 36-hours at its designed flowrate of 110 gallons per minute (gpm). Groundwater level measurements were continuously collected with a datalogging pressure transducer deployed within the well. At the end of 36 hours, the well had maintained the 110 gpm flowrate with a maximum water level drawdown of 167.85 feet below static water level. In comparison to the original pumping test conducted in the test well (TW-2) in March 2012, the well drawdown was approximately 14 feet less for the same discharge rate. The increase in efficiency can be attributed to the 2-inch well diameter increase in the final completed well.

Upon completion of the 36-hour pumping phase, the recovery period was logged by the downhole transducer for 3.5 days. Surprisingly, the water level recovery is quite slow considering its ample production rate of 110 gpm. After 3.5 days, the water level was still approximately 13 feet below its initial static level. The same prolonged recovery period was also noted during the pumping test in the test well in March 2012. It is likely that the groundwater system declined regionally over the course of five days, but that data may also suggest that groundwater is being “mined” from a localized groundwater system with a finite storage capacity. **Figure 3.3** shows the hydrograph from the pumping and recovery tests performed in June 2013. The measured data from the March 2012 pumping test of TW-2 is also included for comparision.

Figure 3.3
CS-13 Drawdown and Recovery Test (110 GPM)
June 12-17, 2013



4.0 JUNE 2013 SUMMARY

- Fourteen wells were scheduled for sampling in June 2013 and 6 wells were added to collect background data prior to bringing new drinking water well CS-13 online. One well (CS-D) was not sampled due to water levels falling below the pump and well CS-MW2-LGR was not sampled due to field crew oversight.
- From March 28 to June 25, 2013, CSSA's AOC-65 weather station recorded 9.57 inches of rain. The rainfall was sporadic with two events having greater than one inch of rainfall in late May and early June. The SWMU B-3 weather station measured 12.76 inches of precipitation for the same time period.
- Water levels increased an average of 33.15 feet per non-pumping well since last quarter. This is the largest quarterly increase since March 2012. The average water level in June 2013 (excluding pumping wells) was 256.77 feet below top of casing.
- VOCs were detected above the MCL in wells CS-MW1-LGR and CS-MW36-LGR. The VOC levels in CS-MW36-LGR decreased significantly from March 2013 while the VOC levels in CS-MW1-LGR remained steady **(see Figure 3.2)**.
- No wells sampled had metals detections above the AL, SS, or MCL in June 2013.
- Of the 37 zones scheduled for sampling in June 2013, 31 samples were collected and 6 zones were dry. Fourteen zones had detections of PCE and/or TCE above the MCL.
- A 36-hour pumping test of the final completion of future supply well CS-13 resulted in the well sustaining 110 gpm with 167 feet of drawdown. The testing result is consistent with the findings conducted in March 2012 on the original test well, TW-2.

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 June 24, 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 June 24, 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 18 of 46 CSSA wells. Well CS-D was not sampled due to the water level falling below the pump and CS-MW2-LGR was not sampled due to field crew oversight.	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-MW1-CC, CS-MW2-CC, CS-MW4-LGR, CS-MW8-LGR, CS-MW10-LGR, CS-MW11A-LGR, CS-MW17-LGR, CS-MW21-LGR, CS-MW24-LGR, CS-MW35-LGR, CS-MW36-LGR, CS-4, CS-1, CS-10, CS-12, CS-13, 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, CS-13, 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.

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

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 JUNE 2013

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

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
CS-MW1-LGR	6/17/2013	NA	NA	0.0005U	**0.0011F**	NA	0.0019U	NA	0.0001U
CS-MW1-CC	6/17/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW2-CC	6/17/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW4-LGR	6/17/2013	NA	NA	0.0005U	**0.0023F**	NA	0.0019U	NA	0.0001U
CS-MW8-LGR	6/19/2013	NA	NA	0.0005U	**0.0012F**	NA	0.0019U	NA	0.0001U
CS-MW8-LGR FD	6/19/2013	NA	NA	0.0005U	**0.0013F**	NA	0.0019U	NA	0.0001U
CS-MW10-LGR	6/18/2013	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW11A-LGR	6/18/2013	NA	NA	0.0005U	**0.0015F**	NA	0.0019U	NA	0.0001U
CS-MW17-LGR	6/18/2013	NA	NA	0.0005U	**0.0012F**	NA	0.0019U	NA	0.0001U
CS-MW21-LGR	6/18/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW24-LGR	6/25/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW35-LGR	6/25/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW35-LGR FD	6/25/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-MW36-LGR	6/19/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-4	6/25/2013	NA	NA	0.0005U	0.0010U	NA	0.0019U	NA	0.0001U
CS-9	6/25/2013	NA	NA	0.0005U	0.0010U	NA	**0.0093F**	NA	**0.0012**
CSSA Drinking Water Well System									
CS-1	6/25/2013	0.0002U	**0.0352**	0.0005U	0.0010U	**0.005F**	0.0019U	**0.268**	0.0001M
CS-10	6/25/2013	0.0002U	**0.0378**	0.0005U	0.0010U	0.003U	0.0019U	**0.050**	0.0001U
CS-12	6/25/2013	0.0002U	**0.0304**	0.0005U	0.0010U	**0.015**	0.0019U	**0.125**	0.0001U
CS-12 FD	6/25/2013	0.0002U	**0.0308**	0.0005U	0.0010U	**0.008F**	0.0019U	**0.104**	0.0001U
CS-13	6/17/2013	**0.0015F**	**0.0326**	0.0005U	0.0010U	0.003U	NA	**0.48**	0.0001U

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW1-LGR	6/17/2013	0.12U	**18.74**	**0.19F**	**13.97**	**30.39**	0.08U
CS-MW1-CC	6/17/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW2-CC	6/17/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW4-LGR	6/17/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW8-LGR	6/19/2013	0.12U	0.07U	0.08U	**2.48**	0.05U	0.08U
CS-MW8-LGR FD	6/19/2013	0.12U	0.07U	0.08U	**2.56**	0.05U	0.08U
CS-MW10-LGR	6/18/2013	0.12U	0.07U	0.08U	**2.08**	**0.42F**	0.08U
CS-MW11A-LGR	6/18/2013	0.12U	0.07U	0.08U	**0.81F**	0.05U	0.08U
CS-MW17-LGR	6/18/2013	0.12U	0.07U	0.08U	**0.48F**	0.05U	0.08U
CS-MW21-LGR	6/18/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW24-LGR	6/25/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-MW35-LGR	6/25/2013	0.12U	0.07U	0.08U	**0.79F**	0.05U	0.08U
CS-MW35-LGR FD	6/25/2013	0.12U	0.07U	0.08U	**0.84F**	0.05U	0.08U
CS-MW36-LGR	6/19/2013	0.12U	0.07U	0.08U	**7.65**	**6.3**	0.08U
CS-4	6/25/2013	0.12U	0.07U	0.08U	**0.64F**	**0.55F**	0.08U
CS-9	6/25/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CSSA Drinking Water Well System							
CS-1	6/25/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-10	6/25/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12	6/25/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-12 FD	6/25/2013	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
CS-13	6/17/2013	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 B
June 2013 Quarterly On-Post Groundwater Monitoring Analytical Results

SAMPLE ID:		CS-13		CS-MW1-CC		CS-MW2-CC	
DATE SAMPLED:		6/17/2013		6/17/2013		6/17/2013	
Coliforms - A9223	**Units**	**Result**	**Flag**	**Result**	**Flag**	**Result**	**Flag**
E. Coli	F/NF	NF	U	NF	U	NF	U
Total Coliforms	F/NF	NF	U	NF	U	NF	U
Volatile Organics - SW8260B							
1,1,1,2-Tetrachloroethane	µg/L	0.090	U	NA		NA	
1,1,1-Trichloroethane	µg/L	0.030	U	NA		NA	
1,1,2,2-Tetrachloroethane	µg/L	0.070	U	NA		NA	
1,1,2-Trichloroethane	µg/L	0.060	U	NA		NA	
1,1-Dichloroethane	µg/L	0.070	U	NA		NA	
1,1-Dichloroethene	µg/L	0.12	U	NA		NA	
1,1-Dichloropropene	µg/L	0.10	U	NA		NA	
1,2,3-Trichlorobenzene	µg/L	0.24	U	NA		NA	
1,2,3-Trichloropropane	µg/L	0.17	U	NA		NA	
1,2,4-Trichlorobenzene	µg/L	0.16	U	NA		NA	
1,2,4-Trimethylbenzene	µg/L	0.040	U	NA		NA	
1,2-Dibromo-3-chloropropane	µg/L	0.76	U	NA		NA	
1,2-Dibromoethane (EDB)	µg/L	0.060	U	NA		NA	
1,2-Dichlorobenzene	µg/L	0.020	U	NA		NA	
1,2-Dichloroethane	µg/L	0.050	U	NA		NA	
1,2-Dichloropropane	µg/L	0.060	U	NA		NA	
1,3,5-Trimethylbenzene (Mesitylene)	µg/L	0.040	U	NA		NA	
1,3-Dichlorobenzene	µg/L	0.030	U	NA		NA	
1,3-Dichloropropane	µg/L	0.050	U	NA		NA	
1,4-Dichlorobenzene	µg/L	0.070	U	NA		NA	
1-Chlorohexane	µg/L	0.040	U	NA		NA	
2,2-Dichloropropane	µg/L	0.10	U	NA		NA	
2-Chlorotoluene	µg/L	0.040	U	NA		NA	
4-Chlorotoluene	µg/L	0.040	U	NA		NA	
Benzene	µg/L	0.070	U	NA		NA	
Bromobenzene	µg/L	0.060	U	NA		NA	
Bromochloromethane	µg/L	0.11	U	NA		NA	
Bromodichloromethane	µg/L	0.060	U	NA		NA	
Bromoform	µg/L	0.13	U	NA		NA	
Bromomethane	µg/L	0.080	U	NA		NA	
Carbon tetrachloride	µg/L	0.060	U	NA		NA	
Chlorobenzene	µg/L	0.040	U	NA		NA	
Chloroethane	µg/L	0.070	U	NA		NA	
Chloroform	µg/L	0.060	U	NA		NA	
Chloromethane	µg/L	0.16	U	NA		NA	
cis-1,2-Dichloroethene	µg/L	0.070	U	NA		NA	
cis-1,3-Dichloropropene	µg/L	0.030	U	NA		NA	
Dibromochloromethane	µg/L	0.060	U	NA		NA	
Dibromomethane	µg/L	0.060	U	NA		NA	
Dichlorodifluoromethane	µg/L	0.11	U	NA		NA	
Ethylbenzene	µg/L	0.050	U	NA		NA	
Hexachlorobutadiene	µg/L	0.17	U	NA		NA	
Isopropylbenzene	µg/L	0.040	U	NA		NA	
m,p-Xylene	µg/L	0.070	U	NA		NA	
Methylene chloride	µg/L	0.35	U	NA		NA	
Naphthalene	µg/L	0.070	U	NA		NA	

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

	SAMPLE ID:	CS-13		CS-MW1-CC	CS-MW2-CC
	DATE SAMPLED:	6/17/2013		6/17/2013	6/17/2013
n-Butylbenzene	µg/L	0.17	U	NA	NA
n-Propylbenzene	µg/L	0.030	U	NA	NA
o-Xylene	µg/L	0.060	U	NA	NA
p-Cymene (p-Isopropyltoluene)	µg/L	0.050	U	NA	NA
sec-Butylbenzene	µg/L	0.050	U	NA	NA
Styrene	µg/L	0.080	U	NA	NA
tert-Butylbenzene	µg/L	0.040	U	NA	NA
Tetrachloroethene (PCE)	µg/L	0.060	U	NA	NA
Toluene	µg/L	0.060	U	NA	NA
trans-1,2-Dichloroethene	µg/L	0.080	U	NA	NA
trans-1,3-Dichloropropene	µg/L	0.040	U	NA	NA
Trichloroethene (TCE)	µg/L	0.050	U	NA	NA
Trichlorofluoromethane	µg/L	0.070	U	NA	NA
Vinyl chloride	µg/L	0.080	U	NA	NA
Semi-Volatile Organics - SW8270C					
1,2,4-Trichlorobenzene	µg/L	1.5	U	NA	NA
1,2-Dichlorobenzene	µg/L	1.6	U	NA	NA
1,3-Dichlorobenzene	µg/L	1.2	U	NA	NA
1,4-Dichlorobenzene	µg/L	1.6	U	NA	NA
2,4,5-Trichlorophenol	µg/L	1.9	U	NA	NA
2,4,6-Trichlorophenol	µg/L	1.8	U	NA	NA
2,4-Dichlorophenol	µg/L	1.6	U	NA	NA
2,4-Dimethylphenol	µg/L	1.2	U	NA	NA
2,4-Dinitrophenol	µg/L	1.6	U	NA	NA
2,4-Dinitrotoluene	µg/L	1.7	U	NA	NA
2,6-Dinitrotoluene	µg/L	2.1	U	NA	NA
2-Chloronaphthalene	µg/L	2.0	U	NA	NA
2-Chlorophenol	µg/L	1.1	U	NA	NA
2-Methyl-4,6-dinitrophenol	µg/L	2.0	U	NA	NA
2-Methylnaphthalene	µg/L	1.1	U	NA	NA
2-Methylphenol	µg/L	1.4	U	NA	NA
2-Nitroaniline	µg/L	2.0	U	NA	NA
2-Nitrophenol	µg/L	1.9	U	NA	NA
3,3'-Dichlorobenzidine	µg/L	2.6	U	NA	NA
3-Nitroaniline	µg/L	2.4	U	NA	NA
4-Bromophenyl phenyl ether	µg/L	2.0	U	NA	NA
4-Chloro-3-methyl phenol	µg/L	1.4	U	NA	NA
4-Chloroaniline	µg/L	3.0	U	NA	NA
4-Chlorophenyl phenyl ether	µg/L	1.9	U	NA	NA
4-Methylphenol (p-cresol)	µg/L	1.1	U	NA	NA
4-Nitroaniline	µg/L	2.4	U	NA	NA
4-Nitrophenol	µg/L	1.1	U	NA	NA
Acenaphthene	µg/L	1.8	U	NA	NA
Acenaphthylene	µg/L	1.4	U	NA	NA
Anthracene	µg/L	2.2	U	NA	NA
Benzo(a)anthracene	µg/L	1.7	U	NA	NA
Benzo(a)pyrene	µg/L	1.9	U	NA	NA
Benzo(b)fluoranthene	µg/L	3.1	U	NA	NA
Benzo(g,h,i)perylene	µg/L	2.5	U	NA	NA
Benzoic acid	µg/L	2.4	U	NA	NA

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

SAMPLE ID:		CS-13		CS-MW1-CC	CS-MW2-CC
DATE SAMPLED:		6/17/2013		6/17/2013	6/17/2013
Benzyl alcohol	µg/L	1.2	U	NA	NA
Benzyl butyl phthalate	µg/L	1.7	U	NA	NA
bis(2-Chloroethoxy)methane	µg/L	1.3	U	NA	NA
bis(2-Chloroethyl)ether	µg/L	1.4	U	NA	NA
bis(2-Chloroisopropyl)ether	µg/L	1.1	U	NA	NA
bis(2-Ethylhexyl) phthalate	µg/L	1.7	U	NA	NA
Chrysene	µg/L	1.6	U	NA	NA
Dibenzo(a,h)anthracene	µg/L	2.5	U	NA	NA
Dibenzofuran	µg/L	1.6	U	NA	NA
Diethyl phthalate	µg/L	1.8	U	NA	NA
Dimethyl phthalate	µg/L	1.9	U	NA	NA
Di-n-butyl phthalate	µg/L	2.2	U	NA	NA
Di-n-octyl phthalate	µg/L	1.8	U	NA	NA
Fluoranthene	µg/L	2.3	U	NA	NA
Fluorene	µg/L	1.8	U	NA	NA
Hexachlorobenzene	µg/L	1.8	U	NA	NA
Hexachlorobutadiene	µg/L	1.7	U	NA	NA
Hexachlorocyclopentadiene	µg/L	1.1	U	NA	NA
Hexachloroethane	µg/L	1.5	U	NA	NA
Indeno(1,2,3-cd)pyrene	µg/L	2.4	U	NA	NA
Isophorone	µg/L	1.3	U	NA	NA
Naphthalene	µg/L	1.9	U	NA	NA
Nitrobenzene	µg/L	1.6	U	NA	NA
n-Nitrosodi-n-propylamine	µg/L	1.9	U	NA	NA
n-Nitrosodiphenylamine	µg/L	5.2	U	NA	NA
Pentachlorophenol	µg/L	2.7	U	NA	NA
Phenanthrene	µg/L	2.0	U	NA	NA
Phenol	µg/L	0.79	U	NA	NA
Pyrene	µg/L	1.5	U	NA	NA
Metals -SW6010B					
Aluminum	mg/L	**0.03**	F	NA	NA
Antimony	mg/L	0.0018	U	NA	NA
Arsenic	mg/L	**0.0015**	F	NA	NA
Barium	mg/L	**0.0326**		NA	NA
Beryllium	mg/L	0.00020	U	NA	NA
Cadmium	mg/L	0.00050	U	NA	NA
Chromium	mg/L	0.0010	U	NA	NA
Copper	mg/L	0.0030	U	NA	NA
Iron	mg/L	**0.08**	F	NA	NA
Manganese	mg/L	**0.005**		NA	NA
Mercury	mg/L	0.00010	U	NA	NA
Selenium	mg/L	0.0032	U	NA	NA
Silver	mg/L	0.0010	U	NA	NA
Thallium	mg/L	0.0010	U	NA	NA
Zinc	mg/L	**0.48**		NA	NA
Anions - SW9056					
Chloride	mg/L	**18.23**		NA	NA
Fluoride	mg/L	**1.2**		NA	NA
Nitrate as N	mg/L	0.030	U	NA	NA
Nitrite as N	mg/L	0.040	U	NA	NA

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

SAMPLE ID:		CS-13		CS-MW1-CC	CS-MW2-CC
DATE SAMPLED:		6/17/2013		6/17/2013	6/17/2013
Sulfate	mg/L	**84.18**		NA	NA
TDS - E160.1					
Total Dissolved Solids	mg/L	**386**		NA	NA
Gross Alpha/Beta - E900					
Alpha, Gross	PCI/L	**2.81 ± 0.89**	LT	NA	NA
Beta, Gross	PCI/L	**5.8 ± 1.3**		NA	NA
Radium-228 - E904.0					
Radium-228	PCI/L	0.14 ± 0.20	U	NA	NA

Abbreviations/Notes:

NA - Not analyzed for this parameter
NF - Not Found
F - Found
µg/L - micrograms per liter
mg/L - milligrams per liter
PCI/L - picocuries per liter

Data Qualifiers/Flags:

No Flag & **Bold** = Confirmed identification
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

JUNE 2013 WESTBAY ANALYTICAL RESULTS

Appendix C
June 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-01	6/13/2013	<0.12	<0.07	**0.28F**	**2.79**	<0.08	<0.08
CS-WB01-LGR-02	6/13/2013	<0.12	<0.07	**2.76**	**9.29**	<0.08	<0.08
CS-WB01-LGR-03	6/13/2013	<0.12	<0.07	**9.77**	**2.54**	<0.08	<0.08
CS-WB01-LGR-04	6/13/2013	<0.12	**0.11F**	**0.13F**	<0.06	<0.08	<0.08
CS-WB01-LGR-05	6/13/2013	<0.12	<0.07	<0.05	**0.33F**	<0.08	<0.08
CS-WB01-LGR-06	6/13/2013	<0.12	**0.55F**	**0.82F**	**0.29F**	<0.08	<0.08
CS-WB01-LGR-07	6/13/2013	<0.12	**0.21F**	**11.51**	**11.25**	<0.08	<0.08
CS-WB01-LGR-08	6/13/2013	<0.12	**1.59**	**9.45**	**5.57**	<0.08	<0.08
CS-WB01-LGR-09	6/13/2013	<0.12	**0.53F**	**12.24**	**8.57**	<0.08	<0.08
CS-WB02-LGR-01	6/12/2013	<0.12	<0.07	**0.36F**	**2.38**	<0.08	<0.08
CS-WB02-LGR-03	6/12/2013	<0.12	<0.07	**1.91**	**4.73**	<0.08	<0.08
CS-WB02-LGR-04	6/12/2013	<0.12	<0.07	**8.79**	**4.18**	<0.08	<0.08
CS-WB02-LGR-05	6/12/2013	<0.12	<0.07	**2.66**	**2.58**	<0.08	<0.08
CS-WB02-LGR-06	6/12/2013	<0.12	**0.23F**	**3.37**	**3.04**	**0.21F**	<0.08
CS-WB02-LGR-07	6/12/2013	<0.12	**0.32F**	**0.72F**	**2.13**	<0.08	<0.08
CS-WB02-LGR-08	6/12/2013	<0.12	**1.96**	**0.73F**	**4.05**	**0.54F**	<0.08
CS-WB02-LGR-09	6/12/2013	<0.12	**0.32F**	**11.04**	**105.84***	<0.08	<0.08
CS-WB03-UGR-01	6/12/2013	<3.00**	<1.75**	**70.67****	**8678.10*****	<2.00**	<2.00**
CS-WB03-LGR-03	6/12/2013	<0.12	**0.15F**	**7.21**	**13.32**	<0.08	<0.08
CS-WB03-LGR-04	6/12/2013	<0.12	<0.07	**5.86**	**11.96**	<0.08	<0.08
CS-WB03-LGR-05	6/12/2013	<0.12	<0.07	**5.35**	**13.88**	<0.08	<0.08
CS-WB03-LGR-06	6/12/2013	<0.12	**0.75F**	**1.16**	**1.62**	<0.08	<0.08
CS-WB03-LGR-07	6/12/2013	<0.12	**9.77**	**1.89**	**0.48F**	<0.08	<0.08
CS-WB03-LGR-08	6/12/2013	<0.12	**4.46**	**0.96F**	**0.21F**	<0.08	**0.42F**
CS-WB03-LGR-09	6/12/2013	<0.12	**8.93**	**2.07**	**1.59**	<0.08	<0.08
CS-WB04-LGR-06	6/20/2013	<0.12	**3.54**	**12.62**	**39.18**	**0.40F**	<0.08
CS-WB04-LGR-07	6/20/2013	<0.12	**2.51**	**7.02**	**19.07**	**0.23F**	<0.08
CS-WB04-LGR-08	6/20/2013	<0.12	<0.07	**0.98F**	**0.39F**	<0.08	<0.08
CS-WB04-LGR-09	6/20/2013	<0.12	<0.07	**5.86**	**6.05**	<0.08	<0.08
CS-WB04-LGR-10	6/20/2013	<0.12	<0.07	**0.73F**	**1.37F**	<0.08	<0.08
CS-WB04-LGR-11	6/20/2013	<0.12	<0.07	<0.05	**0.24F**	<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.

** The analyte was run at a dilution of 25.

*** The analyte was run at a dilution of 200.

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 71019
SDG 71044
SDG 71046
SDG 71075

DATA VERIFICATION SUMMARY REPORT

for CS-13 and other on-post groundwater samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one new well sample (CS-13), eight on-post groundwater samples and the associated field quality control (QC) samples collected from Camp Stanley Storage Activity (CSSA) on June 17, 2013. New well CS-13 in the following Sample Delivery Group (SDG) was analyzed for a full list of volatile organic compounds (VOCs), semi-VOCs (SVOCs), metals, total dissolved solids (TDS), anions, and radiological parameters; all other on-post groundwater samples were analyzed for a reduced list of VOCs and metals:

71019

The field QC samples associated with this SDG were two trip blanks (TBs). TBs were 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 radiochemistry analyses were performed by ALS, Fort Collins, CO. All samples in this SDG were shipped to APPL in two coolers. The coolers were received by the laboratory both at temperatures of 2.5ºC, which were 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 packages included sample results; field and laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) forms and 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 eleven (11) water samples, including CS-13, eight on-post groundwater samples, and two TBs. All sampless were collected on June 17, 2013 and were analyzed for a full list of VOCs for one TB and CS-13, and a short list of VOCs for all other samples.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. All samples were analyzed in two batches (#178701 for full list VOC and #178702 for short list of VOC) under one set of initial calibration (ICALs). 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 sample (LCS) and the surrogate spikes. There was only one LCS to cover samples for both full list and short list of VOCs.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analysis.

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.
- 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 two TBs associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs at reporting limits. Parsons data validator also concluded that both two method blanks had no target VOCs detected at or above the method detection limits.

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

SEMI-VOLATILES

General

This data package consisted of one (1) water sample for the full list of SVOCs analysis.

The SVOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8270C. This sample was analyzed in analytical batch #179160 under one set of initial calibration (ICAL) curves. This sample was analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed undiluted within the holding time required by the method.

Accuracy

Accuracy was evaluated using the %R obtained from the LCS 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 analysis.

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 blank for cross contamination of samples during sample analysis.

CS-13 was analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. This sample was prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- The LCS was prepared with 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 MB and a few calibration blanks associated with the SVOC analyses in this SDG. All blanks were non-detect for all target SVOCs.

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 SVOC results for CS-13 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 one (1) new well sample and eight on-post groundwater samples which were collected on June 17, 2013. CS-13 was analyzed for aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, copper, iron, manganese, selenium, silver, thallium, and zinc. All on-post groundwater samples were analyzed for cadmium, chromium, and lead.

The ICP-AES metals analyses were performed using USEPA SW846 Method 6010B. 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 samples for ICP-AES metals were digested in batch #178944 under a single ICAL. All sample 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 analysis.

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

MERCURY

General

The mercury portion of this SDG consisted of one (1) new well sample and eight on-post groundwater samples which were collected on June 17, 2013 and were analyzed for mercury.

The mercury analyses were performed using USEPA SW846 Method 7470A. This sample was analyzed following the procedures outlined in the CSSA QAPP. This sample was prepared and analyzed within the holding time required by the method.

The mercury samples were prepared in batch #178913 under a single ICAL. The analysis was 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 analysis.

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 in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. This sample was 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 results for all 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%.

WET CHEMISTRY

General

The wet chemistry portion of this SDG consisted of CS-13 which was collected on June 17, 2013 and was analyzed for total dissolved solid (TDS) and anion including nitrate, nitrite, chloride, fluoride, and sulfate.

The TDS analysis was performed using EPA Method 160.1 and anion analysis was performed according to USEPA Method 9056. CS-13 was analyzed following the procedures outlined in the CSSA QAPP. This sample was prepared and analyzed within the holding time required by the method. Only sulfate analysis involved a two-fold dilution.

TDS was analyzed in batch #178657, nitrate and nitrite were analyzed in batch #179133, chloride, fluoride, and sulfate were analyzed in batch #179134.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the three LCSs.

All LCS recoveries were within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analysis.

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.

CS-13 was analyzed following the COC and the analytical procedures described in the CSSA QAPP. This sample was 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 applicable ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There were three method blanks and several calibration blanks associated with each of the analyses in this SDG. All blanks were free of target analytes 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 wet chemistry results for CS-13 were considered usable. The completeness for the wet chemistry portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

Gross Alpha/Beta Analysis by GFPC

This section of discussion is based on laboratory's SOP.

Sample CS-13 was analyzed for the gross alpha and gross beta by gas flow proportional counting according to SOP 724 Rev. 11. The samples were not filtered prior to the analysis and were prepared according to SOP 702 Rev. 20. Gross alpha results are referenced to Am-24 and gross beta results are referenced to Sr-90/Y. All results were reported in units of pCi/L

Radium-228 was determined with preparation method of SOP 749 Rev. 1 and analysis method of SOP 724 Rev. 11.

Method Blank: nothing detected at the minimum detectable concentration (MDC) of 0.54 pCi/L for gross alpha, 1.10 pCi/L for gross beta.

Lab control sample: All three %Rs were compliant. There was an LCSD involved in the Ra-228 analysis and the %R was compliant.

Lab analyzed CS-13 in duplicate, results are listed below:

Parameter	**Parent, pCi/L**	**FD, pCi/L**
Gross Alpha	2.81 ± 0.89	2.38 ± 0.76
Cross Beta	5.8 ± 1.3	6.7 ± 1.4
Ra-228	9.0 ± 2.1	9.9 ± 2.3

CSSA QAPP does not have specific %RPD requirement for radioactive parameters, however, lab has limit set up for duplicate error ration (DER). All DERs were compliant.

Instrument calibration, daily instrument performance checks, weekly and daily background calibration were performed according to the SOP.

Initial efficiency calibration and standards traceability reports were included in the data package.

Internal calculation for blanks and verification samples were verified.

All results are usable.

DATA VERIFICATION SUMMARY REPORT
for off-post and 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 off-post and on-post Camp Stanley Storage Activity (CSSA) on June 19, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs). In addition, all on-post samples were analyzed for metals including cadmium, chromium, lead, and mercury.

71044

The field QC samples associated with this SDG were a set of parent/field duplicate (FD) 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 1.5ºC, which was slightly below the 2-6ºC range recommended by the CSSA QAPP. All water samples were arrived lab with no sign of freeze; therefore, there was minimal impact to the data.

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 nine (9) samples, including five (5) off-post groundwater samples, three (3) on-site groundwater samples and one TB. All samples were collected on June 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 two (2) batches (#178728 and #178787) under one set of initial calibration (ICAL) with the same instrument. 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 two laboratory control spike (LCS) samples and the surrogate spikes.

Both LCSs 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-MW8-LGR was collected in duplicate. All target compounds were non-detect except for PCE.

CS-MW8-LGR

Analayte	Parent, µg/L	FD, µg/L	%RPD	Criteria, %RPD
PCE	2.48	2.56	3.2	≤ 20

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.
- The two LCS samples were 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 two method blanks and one TB associated with the VOC analyses in this SDG. All 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 June 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 #179072. 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

Sample CS-MW8-LGR was collected in duplicate. Since none of the target metals 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 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 June 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 #178915. 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

Sample CS-MW8-LGR was collected in duplicate. Since mercury was non-detected in both samples, 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 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 off-post and 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 collected from off-post and on-post Camp Stanley Storage Activity (CSSA) on June 19, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs) and other ISCO related parameters. This data validation report only covers the VOC results.

71046

There were no field quality control samples involved in this SDG. Trip blank was not included. 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 two coolers. The coolers were received by the laboratory at a temperature of 1.0ºC and 1.5 ºC, which were below the 2-6ºC range recommended by the CSSA QAPP. None of the water samples was received frozen, the low cooler temperature should have no impact to the data quality.

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 six (6) off-post groundwater samples and two (2) on-site groundwater samples. All samples were collected on June 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 batch #178728 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 analysis.

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 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 was one method blank in this SDG. The blank was non-detect for all target VOCs.

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%.

DATA VERIFICATION SUMMARY REPORT
for off-post and 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 off-post and on-post Camp Stanley Storage Activity (CSSA) on June 25, 2013. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs). In addition, all on-post samples were analyzed for metals including cadmium, chromium, lead, and mercury, drinking water well samples were also analyzed for arsenic, barium, copper, and zinc.

71075

The field QC samples associated with this SDG were two sets of parent/field duplicate (FD), a 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 thirteen (13) samples, including three (3) off-post groundwater samples, nine (9) on-site groundwater samples and one TB. All samples were collected on June 25, 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 two (2) batches (#179027 and #179048) under two sets of initial calibration (ICAL) with the same instrument. 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 two laboratory control spike (LCS) samples, MS/MSD, and the surrogate spikes. Sample CS-1 was designated as the parent sample for MS/MSD analyses.

Both LCSs and surrogate spike recoveries were within acceptance criteria.

All %R of the MS and MSD were compliant.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the parent/FD samples and MS/MSD. CS-1 was designated as the parent sample for MS and MSD analyses.

Sample CS-MW35-LGR and CS-12 were 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 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 two LCS samples were 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 two method blanks and one TB associated with the VOC analyses in this SDG. All 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 nine (9) on-post groundwater samples which were collected on June 25, 2013 and were analyzed for cadmium, chromium, and lead. All drinking water well samples were also analyzed for arsenic, barium, copper, and zinc.

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 #179461. 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 two sets of parent/FD samples and MS/MSD.

None of the target metals were detected in the parent/FD set of sample CS-MW35-LGR.

CS-12

Metals	Parent, mg/L	FD, mg/L	%RPD	Criteria, %RPD
Barium	0.0304	0.0308	0.65	≤20
Zinc	0.125	0.104	18	

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 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 nine (9) on-post groundwater samples collected on June 25, 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 #179480. 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 two sets of parent/FD samples and MS/MSD.

Mercury was not detected above the RL in both sets of parent/FD samples.

The %RPD of the MS/MSD was 16.5% which exceeded the 15% limit. "M" flag was applied to the parent sample result, CS-1.

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%.