

September 2011

Off-Post

Quarterly Groundwater Monitoring Report



Prepared For

**Department of the Army
Camp Stanley Storage Activity
Boerne, Texas**

November 2011

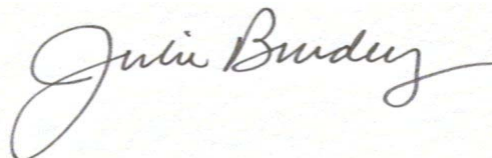
GEOSCIENTIST CERTIFICATION

September 2011 Off-post Quarterly Groundwater Monitoring Report

For

**Department of the Army
Camp Stanley Storage Activity
Boerne, Texas**

I, Julie Burdey, P.G., hereby certify that the September 2011 Off-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, and field data obtained during groundwater monitoring conducted at the site in September 2011, and is true and accurate to the best of my knowledge and belief.



Julie Burdey, P.G.
State of Texas
Geology License No. 1913

11/26/2011

Date

TABLE OF CONTENTS

GEOSCIENTIST CERTIFICATION	i
ABBREVIATIONS AND ACRONYMS	iii
EXECUTIVE SUMMARY	ES-1
1.0 Introduction.....	1-1
2.0 September 2011 Analytical Results.....	2-1
3.0 Summary And Recommendations	3-1

LIST OF TABLES

Table 2-1 Sampling Rationale for September 2011	2-3
Table 2-2 September 2011 Off-Post Groundwater Results, Detected Analytes Only	2-5
Table 3-1 Sampling Rationale for December 2011	3-3

LIST OF FIGURES

Figure 2-1 On-Post & Off-Post Well Sampling Locations for September 2011	2-4
--	-----

LIST OF APPENDICES

Appendix A Evaluation of Data Quality Objectives Attainment	
Appendix B September 2011 Quarterly Off-post Groundwater Analytical Results	
Appendix C Data Validation Report	
Appendix D Additional Wells for Future Sampling	

ABBREVIATIONS AND ACRONYMS

AOC	Area of Concern
APPL	Agriculture & Priority Pollutant Laboratory
BRAC	Base realignment and closure
CSSA	Camp Stanley Storage Activity
CESWF	Corps of Engineers Fort Worth District
DCE	dichloroethene
DQO	Data quality objective
FD	Field duplicate
FO	Fair Oaks
GAC	granular activated carbon
HS	Hidden Springs
I10	Interstate Highway 10
JW	Jackson Woods
LS	Leon Springs
MCL	maximum contaminant level
MDL	method detection limit
MS/MSD	matrix spike/matrix spike duplicate
N/A	not applicable
OFR	Old Fredericksburg Road
OW	The Oaks Water Supply Corporation
Parsons	Parsons Infrastructure and Technology Group
PCE	tetrachloroethene
P.G.	Professional Geologist
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RFR	Ralph Fair Road
RL	Reporting limit
SAP	Sampling and Analysis Plan
SDWA	Safe Drinking Water Act
SWMU	Solid Waste Management Unit
SLD	Scenic Loop Drive
TCE	trichloroethene
USACE	United States Army Corps of Engineers
VOC	volatile organic compound

EXECUTIVE SUMMARY

- A total of 18 off-post wells and 6 granular activated carbon (GAC) filtered samples were collected during the September 2011 monitoring event. All off-post wells scheduled for sampling that had current access agreements were sampled during this event.
- Well LS-5 exceeded 90% of the applicable maximum contaminant level (MCL) during the September sampling event. A GAC treatment system was installed on this well on October 6, 2011, in accordance with the Data Quality Objectives Groundwater Monitoring Program Report (November 2010).
- The eight Oaks Water Supply System wells on the west side of IH-10 were sampled for the third consecutive quarter in September 2011. No volatile organic compounds (VOCs) were detected in these wells. In March 2011, wells OW-BARNOWL and OW-HH2 had low levels (less than the reporting limit) of tetrachloroethene (PCE). These wells will be sampled quarterly for 4 consecutive quarters in accordance with project data quality objectives (DQOs).
- Eight privately owned wells were identified south and west of CSSA on the west side IH-10. Two of these wells were sampled during this event; SLD-01 and I10-9. Well I10-9 reported a detection of PCE only, at a concentration below the RL. This well will be sampled on a quarterly basis. Well SLD-01 was non-detect, this well is a significant distance west of CSSA (~ 2.5 miles) and could be considered for sampling in the future or on an as needed basis.
- Analyses indicated off-post wells OFR-3 and RFR-10 exceeded the MCL for PCE and/or trichloroethene (TCE). Both wells are equipped with GAC filtration systems.
- GAC-filtered samples were also collected in September 2011. No VOCs were detected in any of these samples, indicating the GAC systems are functioning properly. GAC-filtered samples will be collected again during the March 2012 event.
- Semi-annual GAC maintenance was performed in July 2011. This involved replacing the first carbon canister in each GAC unit and other routine maintenance. This carbon exchange is performed semi-annually; the next carbon change-out will be due in January 2012.
- Wells LS-5, LS-7, and RFR-11 were sampled on October 12, 2011 after a significant rain event in which the CSSA weather station at AOC-65 recorded 4.84 inches of rain on October 9, 2011. PCE and TCE levels were reduced in all 3 wells after the rainfall.

SEPTEMBER 2011 OFF-POST GROUNDWATER MONITORING REPORT CAMP STANLEY STORAGE ACTIVITY

1.0 INTRODUCTION

This report presents results from the off-post quarterly sampling performed for Camp Stanley Storage Activity (CSSA) in September 2011 as required by the Administrative Order on Consent dated May 5, 1999. The purpose of this report is to present a summary of the sampling results. Results from all four 2011 quarterly monitoring events (March, June, September, and December) will be described in detail in an Annual Report to be submitted after December 2011. 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.

Groundwater monitoring was performed September 6 through 15, 2011. The quarterly off-post groundwater monitoring program was initiated in September 2001 in accordance with the **Off-Post Monitoring Program and Response Plan (CSSA, 2002)**, herein referred to as the “Plan”). Action levels for detection of volatile organic compounds (VOCs) and the rationale for sampling off-post wells are located in the Plan.

The CSSA groundwater monitoring program also follows the provisions of the groundwater monitoring program DQOs as well as the recommendations of all applicable project-specific work plans. **Appendix A** provides an evaluation of the Data Quality Objective Attainment for this sampling event.

The primary objective of the off-post groundwater monitoring program is to determine whether concentrations of chlorinated VOCs detected in off-post public and private drinking water wells exceed safe drinking water standards. Other objectives are to determine the lateral and vertical extent of the contaminant plumes and identify trends (decreasing or increasing) in contaminant levels over time in the sampled wells.

2.0 SEPTEMBER 2011 ANALYTICAL RESULTS

During the September 2011 event, a groundwater sample was collected from each of 18 off-post wells shown in **Figure 2-1**. GAC (granular activated carbon) filtered samples (LS-6-A2, LS-7-A2, OFR-3-A2, RFR-10-A2, RFR-10-B2, and RFR-11-A2) are collected semi-annually and were also collected this event. **Table 2-1** includes the rationale for selection of the wells sampled in September 2011, and **Figure 2-1** provides well locations for the following sampled wells:

- Two privately-owned wells (I10-4 [unused] and I10-9) in the Interstate-10 area;
- One public supply well in the Scenic Loop Drive area, SLD-01;
- Three wells in the Leon Springs Villa area (one public well: LS-6; two privately-owned wells: LS-5 and LS-7);
- One privately-owned well on Old Fredericksburg Road (OFR-3);
- One privately-owned well (RFR-10) and 2 public supply wells (RFR-11 and RFR-12) in the Ralph Fair Road area; and
- Eight public supply wells from The Oaks Water Supply System (OW-BARNOWL, OW-CE1, OW-CE2, OW-DAIRYWELL, OW-HH1, OW-HH2, OW-HH3, and OW-MT2).

All active wells with submersible pumps were sampled from a tap located as close to the wellhead as possible. Most taps were previously installed by CSSA to obtain a representative groundwater sample before pressurization or storage of groundwater in the water supply distribution system. Water was purged to engage the well pump prior to sample collection. Conductivity, pH, and temperature readings were recorded to confirm adequate purging while the well was pumping. Generally, this required an average of 20 gallons to be purged prior to sample collection. One well, I10-4 was sampled using a disposable bailer. The sample from this well is not subject to purging/sample parameter requirements.

A total of 24 groundwater samples, two field duplicate samples, one matrix spike/matrix spike duplicate (MS/MSD) pair, and two trip blanks were submitted to Agriculture & Priority Pollutant Laboratory (APPL) in Clovis, California for analysis. Groundwater samples were analyzed for the short list of VOCs using SW-846 Method 8260B. The approved short list of VOCs includes *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-DCE, 1,1-DCE, tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride.

The data packages (Parsons internal reference 787780-#126) contain the analytical results for this sampling event and are presented in **Appendix C**. Laboratory results were reviewed and verified according to the guidelines outlined in the CSSA Quality Assurance Project Plan (QAPP), Version 1.0. Parsons received data packages September 30, 2011.

Concentrations of the VOCs detected in September 2011 are presented in **Table 2-2**. Full analytical results from the September 2011 sampling event are presented in **Appendix B**. As shown in **Table 2-1**, 28 samples were scheduled for collection in September 2011 and all samples were collected. Ten new wells have been identified in the Boerne Stage Road area which may be used to further delineate plume migration to the west. Access agreements were

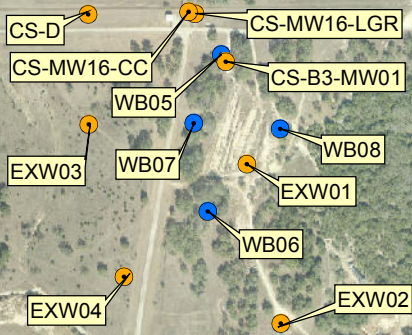
mailed out and one has been returned. One well (SLD-01) was sampled with permission from the owner but with no access agreement. This well is a significant distance west of CSSA (~ 2.5 miles), as are eight of the wells that were not sampled. These wells will be sampled on an as-needed basis during future sampling events. **Appendix D** shows the locations of the additional wells for future sampling.

On October 9, 2011, weather station south reported 4.84 inches of rainfall. Three wells (LS-7, LS-5, and RFR-11) were sampled after the rain event on October 12. These samples showed a significant decrease in concentrations of PCE and TCE in all 3 wells. It should be noted that prior to the initial September sampling event a steamed injection study was conducted at the soil vapor extraction (SVE) system located at solid waste management unit (SWMU) area of concern (AOC)-65.

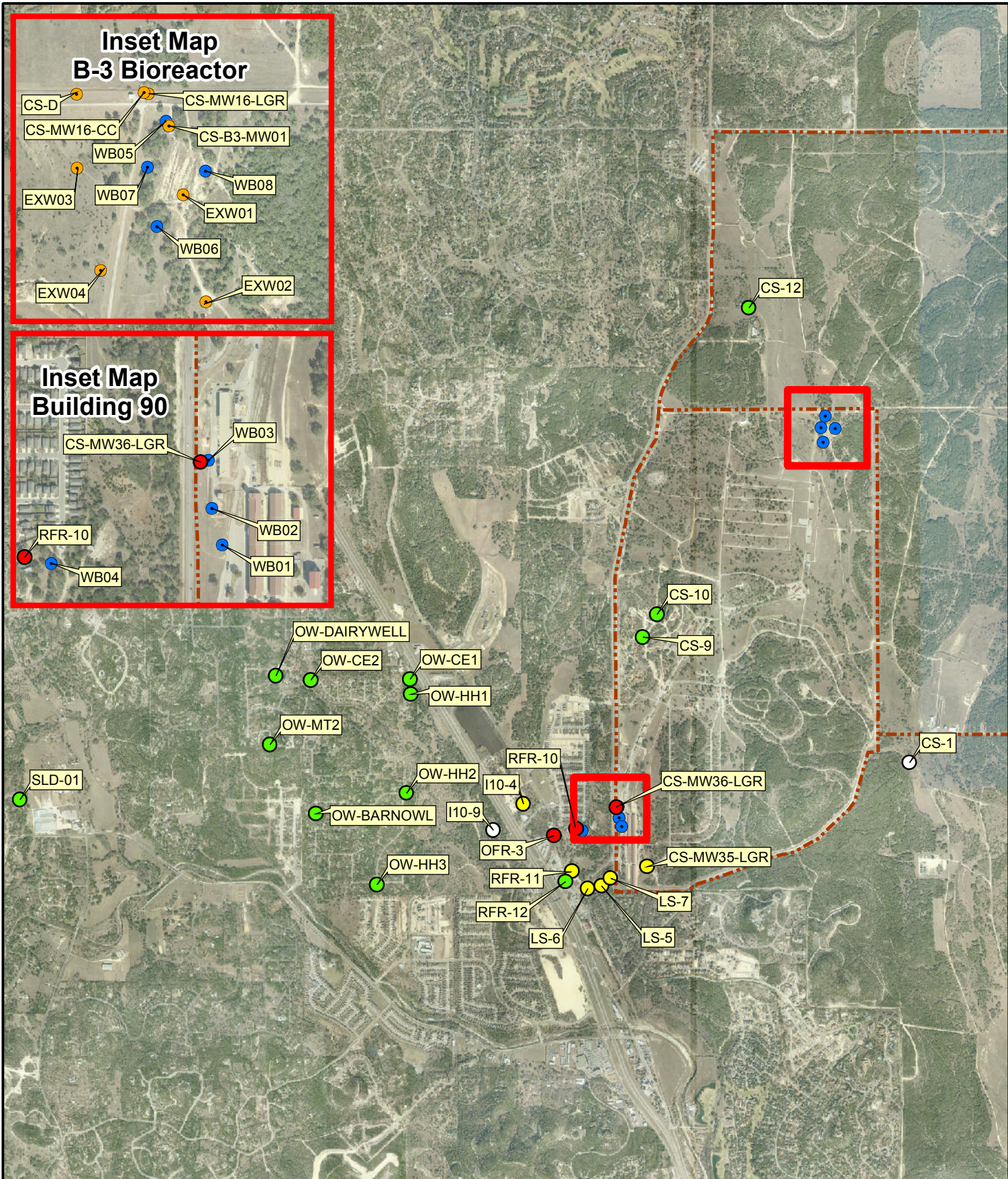
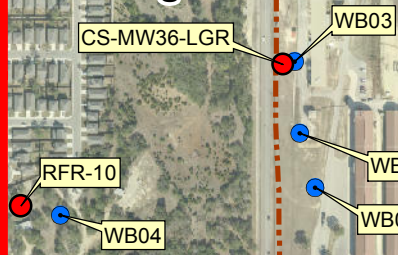
In July 2011, routine semi-annual maintenance was performed on the GAC treatment systems at LS-6, LS-7, OFR-3, RFR-10, and RFR-11. Carbon canisters were exchanged and other routine maintenance was performed. GAC filtered samples were collected this quarter.

Based on historical detections, the lateral extent of VOC detections extends approximately 1.5 miles beyond the south and west boundaries of CSSA. Past detections of VOCs have extended south to well LS-4 and west to OW-BARNOWL (**Figure 2-1**).

Inset Map B-3 Bioreactor



Inset Map Building 90



0 1,500 3,000 4,500 6,000 Feet

Sampled Wells September 2011

- > MCL (VOCs only)
- > RL (VOCs only)
- > MDL (VOCs only)
- ND (VOCs only)
- Other Wells
- Westbay Wells 2-4
- Fence Line

Figure 2-1

On-Post and Off-Post Well Sampling Locations for September 2011
Camp Stanley Storage Activity

PARSONS

**Table 2-2
September 2011 Off-Post Groundwater Results, Detected Analytes Only**

Subdivision	Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride	Comments
IH-10	I10-4	9/7/2011	--	--	--	4.12	1.84	--	Well not in use.
	I10-9	9/6/2011	--	--	--	--	0.57F	--	First time sample.
	I10-9 FD	9/6/2011	--	--	--	--	0.32F	--	
Leon Springs Villas	LS-5	9/6/2011	--	--	--	1.38F	4.8	--	Highest TCE detection in this well, bottled water provided 9/21/11.
		9/28/2011	--	--	--	1.11F	2.54	--	Follow up sample after > 90% MCL detection. GAC unit installed 10/6/11.
		10/12/2011	--	--	--	0.74F	1.82	--	Sample collected 3 days after ~5" rain event.
	LS-6	9/6/2011	--	--	--	1.43	1.87	--	Last time TCE was above the RL was 2009, PCE in 2008.
	LS-6-A2	9/6/2011	--	--	--	--	--	--	Post-GAC sample
	LS-7	9/6/2011	--	--	--	4.35	1.02	--	Last time TCE was above the RL was 2002. PCE consistently above the RL.
		10/12/2011	--	--	--	2.26	0.38F	--	Sample collected 3 days after ~5" rain event.
LS-7-A2	9/6/2011	--	--	--	--	--	--	Post-GAC sample	
Old Fredricksburg	OFR-3	9/6/2011	--	--	--	7.72	5.14	--	TCE last above the MCL in 2008, PCE in 2010.
	OFR-3-A2	9/6/2011	--	--	--	--	--	--	Post-GAC sample
Ralph Fair Road	RFR-10	9/6/2011	--	--	--	6.75	1.79	--	Historic high levels: PCE=35.48 (12/10), TCE=13.03 (3/11)
	RFR-10-A2	9/6/2011	--	--	--	--	--	--	Post-GAC sample
	RFR-10-B2	9/6/2011	--	--	--	--	--	--	Post-GAC sample
	RFR-11	9/6/2011	--	--	--	0.64F	4.81	--	Highest TCE detection in this well since sampling began in 2001.
		10/12/2011	--	--	--	0.48F	1.9	--	Sample collected 3 days after ~5" rain event.
	RFR-11-A2	9/6/2011	--	--	--	--	--	--	Post-GAC sample
RFR-12	9/7/2011	--	--	--	--	--	--	Historic sporadic PCE & TCE detections below the RL.	
The Oaks Water Supply	OW-BARNOWL	9/8/2011	--	--	--	--	--	--	PCE detection below the RL in March 2011.
	OW-CE1	9/8/2011	--	--	--	--	--	--	Third consecutive sampling event of non-detect.
	OW-CE2	9/8/2011	--	--	--	--	--	--	
	OW-DAIRYWELL	9/8/2011	--	--	--	--	--	--	
	OW-HH1	9/8/2011	--	--	--	--	--	--	
	OW-HH1 FD	9/8/2011	--	--	--	--	--	--	PCE detection below the RL in March 2011.
	OW-HH2	9/8/2011	--	--	--	--	--	--	
	OW-HH3	9/8/2011	--	--	--	--	--	--	
OW-MT2	9/8/2011	--	--	--	--	--	--	Third consecutive sampling event of non-detect.	
Scenic Loop Drive	SLD-01	9/8/2011	--	--	--	--	--	--	First time sample, approximately 2.5 miles west of CSSA. Future samples on an as needed basis.
Laboratory Detection Limits & Maximum Contaminant Level									
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

All samples were analyzed by APPL, Inc.
VOC data reported in µg/L.
Abbreviations/Notes:
FD Field Duplicate
TCE Trichloroethene
PCE Tetrachloroethene
DCE Dichloroethene
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.

3.0 SUMMARY AND RECOMMENDATIONS

Results of the September 2011 sampling are summarized as follows:

- Eighteen wells and 6 GAC filtered samples were scheduled for sampling in September 2011. All 18 off-post wells and 6 GAC filtered samples were collected this event.
- Wells OW-BARNOWL, OW-CE1, OW-CE2, OW-DAIRYWELL, OW-HH1, OW-HH2, OW-HH3, and OW-MT2 were sampled for the third consecutive quarter in September 2011. No VOCs were detected in these wells this quarter. In March 2011, wells OW-BARNOWL and OW-HH2 had low levels (less than the RL) of PCE, but no VOCs were detected in June or September. These wells will be sampled quarterly for 4 consecutive quarters in accordance with project DQOs.
- Well LS-5 exceeded 90% of the applicable MCL during the September sampling event; therefore, a GAC treatment system was installed on this well on 10/6/11, per the groundwater DQO's or the CSSA Off-Post Monitoring Program Response Plan (Parsons, 2002). Upon receiving these results, the well owner and well user were informed of the concentrations detected. Prior to the GAC installation, the well user was provided with bottled water on 9/21/11. A follow-up sample was collected on 9/28/11. These results reported PCE at 1.11 µg/L and TCE at 2.54 µg/L.
- Wells LS-5, LS-7, and RFR-11 were sampled 3 days after a significant rain event in which the CSSA weather station at AOC-65 recorded 4.9 inches of rain from October 8th 11:45 p.m. through 9th 12:25 p.m. The bulk of that rain event (3.54") fell between 1:30 a.m. and 3:15 a.m. PCE and TCE levels were reduced in all 3 wells after the rainfall.
- Wells OFR-3 and RFR-10 exceeded the MCL in September 2011 for PCE and TCE. Both wells are equipped with a GAC filtration system. Post-GAC samples, which represent the water being delivered for consumption, were non-detect.
- PCE and/or TCE were detected above the RLs in public and/or private drinking water wells LS-5, LS-6, LS-7, I10-4 and RFR-11. Wells LS-6, LS-7, and RFR-11 have GAC treatment systems in place and well LS-5 now has a new GAC filtration system in place.
- Low levels (below the RL) of TCE were also detected in well I10-9 and its field duplicate. This is the first sampling event for this well.
- 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and vinyl chloride were not detected in any of the off-post wells in September 2011.
- One well (SLD-01) was sampled with permission from the owner but with no access agreement. This well is a significant distance west of CSSA (~ 2.5 miles), as are seven of the eight wells identified but were not sampled. These wells could be considered for sampling in the future or on an as needed basis. **Appendix D** shows the locations of the additional wells for future sampling.
- GAC-filtered samples were collected in September 2011. All GAC-filtered samples were non-detect indicating the GAC units were functioning properly. The next GAC filtered samples will be collected in March 2012.
- Semi-annual GAC maintenance, including carbon change-out, was performed in July 2011; the next semi-annual GAC maintenance will be due in January 2012.

- Additional wells to the west and southwest of CSSA are currently being located. As access agreements are received these wells may be added to future sampling events.
- In accordance with project DQOs, the rationale for the selection of 17 samples to be collected in December 2011 is provided in **Table 3-1**.

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, and HSP.	All sampling was conducted in accordance with the procedures described in the project plans.	Yes	NA
Contamination Characterization (Groundwater Contamination)	Determine the potential extent of off-post contamination (§2.3.1 of the DQOs for the Groundwater Contamination Investigation, revised November 2010).	Samples for laboratory analysis were collected from selected off-post public and private wells, which are located within a ½ mile radius of CSSA.	Partially	Replace wells where no VOCs were detected with wells that may be identified in the future, located to the west and southwest of AOC-65 to provide better definition of plume 2. Continue sampling of wells to the west of plume 1 (Fair Oaks and Jackson Woods) to confirm any detections possibly related to plume 1.
	Meet CSSA QAPP quality assurance requirements.	Samples were analyzed in accordance with the CSSA QAPP, and approved variances. A chemist verified all data.	Yes	NA
		All data flagged with a “U” and “J” are usable for characterizing contamination.	Yes	NA

Activity	Objectives	Action	Objective Attained?	Recommendations
	Evaluate CSSA monitoring program and expand as necessary (§2.3.1 of the DQOs for the Groundwater Contamination Investigation, revised November 2010). Determine locations of future monitoring locations.	Evaluation of data collected is ongoing and is reported in this quarterly groundwater report and will be reported in future quarterly groundwater reports. Additional information covering the CSSA monitoring program is available in Volume 5, CSSA Environmental Encyclopedia.	Yes	Continue data evaluation and quarterly teleconferences for evaluation of the monitoring program. Each teleconference/planning session covers expansion of the quarterly monitoring program, if necessary.
Project schedule/ Reporting	The quarterly monitoring project schedule shall provide a schedule for sampling, analysis, validation, verification, reviews, and reports for monitoring events off-post.	A schedule for sampling, analysis, validation, verification and data review, and reports is provided in this quarterly groundwater report and will be reported in future quarterly groundwater reports. Additional information covering the CSSA monitoring program is available in Volume 5, CSSA Environmental Encyclopedia.	Yes	Continue quarterly reporting to include a schedule for sampling, analysis, validation, and verification and data review and data reports.

Activity	Objectives	Action	Objective Attained?	Recommendations
Remediation	Evaluate the effectiveness of GACs (§3.2.3) and install as needed (§3.2.5 both of the DQOs for the Groundwater Contamination Investigation, revised November 2010).	Perform maintenance as needed. Install new GACs as needed.	Yes	Maintenance to the off-post GAC systems to be continued by Parsons' personnel every 3 weeks. Twice yearly (or as needed) maintenance to the off-post GAC systems by additional subcontractors to continue. Evaluations of future sampling results for installation of new GAC systems will occur as needed.

APPENDIX B
SEPTEMBER 2011 QUARTERLY OFF-POST
GROUNDWATER ANALYTICAL RESULTS

Appendix B
September 2011 Quarterly Off-post Groundwater Analytical Results

Well ID	Sample Date	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	PCE	TCE	Vinyl Chloride
I10-4	9/7/2011	0.12U	0.07U	0.08U	4.12	1.84	0.08U
I10-9	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.57F	0.08U
I10-9 FD	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.32F	0.08U
LS-5	9/6/2011	0.12U	0.07U	0.08U	1.38F	4.8	0.08U
LS-5	9/28/2011	0.12U	0.07U	0.08U	1.11F	2.54	0.08U
LS-5	10/12/2011	0.12U	0.07U	0.08U	0.74F	1.82	0.08U
LS-6	9/6/2011	0.12U	0.07U	0.08U	1.43	1.87	0.08U
LS-6-A2	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
LS-7	9/6/2011	0.12U	0.07U	0.08U	4.35	1.02	0.08U
LS-7	10/12/2011	0.12U	0.07U	0.08U	0.38F	2.26	0.08U
LS-7-A2	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OFR-3	9/6/2011	0.12U	0.07U	0.08U	7.72	5.14	0.08U
OFR-3-A2	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-10	9/6/2011	0.12U	0.07U	0.08U	6.75	1.79	0.08U
RFR-10-A2	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-10-B2	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-11	9/6/2011	0.12U	0.07U	0.08U	0.64F	4.81	0.08U
RFR-11	10/12/2011	0.12U	0.07U	0.08U	0.48F	1.9	0.08U
RFR-11-A2	9/6/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
RFR-12	9/7/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-BARNOWL	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-CE1	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-CE2	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-DAIRYWELL	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-HH1	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-HH1 FD	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-HH2	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-HH3	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
OW-MT2	9/8/2011	0.12U	0.07U	0.08U	0.06U	0.05U	0.08U
SLD-01	9/8/2011	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.
Abbreviations/Notes:
FD Field Duplicate
TCE Trichloroethene
PCE Tetrachloroethene
DCE Dichloroethene

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

**APPENDIX C
DATA VALIDATION REPORTS**

(Laboratory data packages are submitted to CSSA electronically.)

**SDG 65592
SDG 65633
SDG 65834**

DATA VERIFICATION SUMMARY REPORT

for off-post samples collected from CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Katherine LaPierre and 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 Camp Stanley Storage Activity (CSSA) under Environmental Protection Support, Investigations, and Treatability Studies on September 6, 2011. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs):

65592

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

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

EVALUATION CRITERIA

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

VOLATILES

General

The volatiles portion of this data package consisted of fifteen (15) samples, including thirteen (13) off-post groundwater samples, one (1) FD sample, and one (1) TB. The samples were collected on September 9, 2011 and were analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one (1) batch (#159130) under a single 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. No sample was designated for MS/MSD analyses on the COC.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated by comparing the field duplicate analyte results. An extra set of vials was collected from well I10-9 and submitted as a field duplicate.

All target analytes were below the reporting limit (RL) in both the parent and field duplicate sample.

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 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 was one method blank and one TB associated with the VOC analyses in this SDG. Both blanks were 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 samples collected from CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Katherine LaPierre and 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 Camp Stanley Storage Activity (CSSA) under Environmental Protection Support, Investigations, and Treatability Studies on September 7 and 8, 2011. The samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs):

65633

The field QC samples associated with this SDG included one field duplicate (FD) sample, one matrix spike/matrix spike duplicate (MS/MSD) pair, and one trip blank (TB). 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 3.0°C, which was within the 2-6°C range recommended by the CSSA QAPP.

EVALUATION CRITERIA

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

VOLATILES

General

The volatiles portion of this data package consisted of fifteen (15) samples, eleven (11) off-post groundwater samples, one FD sample, one MS/MSD pair, and one TB. The samples were collected on September 7 and 8, 2011 and were 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 (#159360 and #159426) under two different initial calibrations (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 spike (LCS) samples, the MS/MSD samples, and the surrogate spikes. Sample RFR-12 was designated for MS/MSD analyses on the COC.

Two LCS samples were analyzed, one for each batch. All LCS, MS/MSD, and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD concentrations. Precision was further evaluated by comparing the field duplicate analyte results. An extra set of vials was collected from well OW-HH1 and submitted as a field duplicate.

All MS/MSD RPDs were within acceptance criteria.

All target analytes were non-detect in both the parent and field duplicate sample.

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 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.

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 one off-post sample collected from CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang and Katherine LaPierre
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one groundwater sample and one associated field quality control (QC) sample collected from off-post Camp Stanley Storage Activity (CSSA) under Environmental Protection Support, Investigations, and Treatability Studies on September 28, 2011. Both samples were assigned to the following Sample Delivery Group (SDG) and was analyzed for volatile organic compounds (VOCs):

65834

The field QC sample associated with this SDG included one trip blank (TB). 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.

This sample and the TB 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 cooler was received by the laboratory at a temperature of 2.0°C, which was within the 2-6°C 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 one (1) sample and one TB. The samples were collected on September 28, 2011 and were analyzed for a reduced list of VOCs which included: 1,1-dichloroethene, *cis*-1,2-dichloroethene, tetrachloroethene, *trans*-1,2-dichloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The samples were analyzed in one (1) batch (#159728) under one set of initial calibration (ICAL). Both 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) samples 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 in this SDG.

Representativeness

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

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

Both samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. Both 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 sample 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.

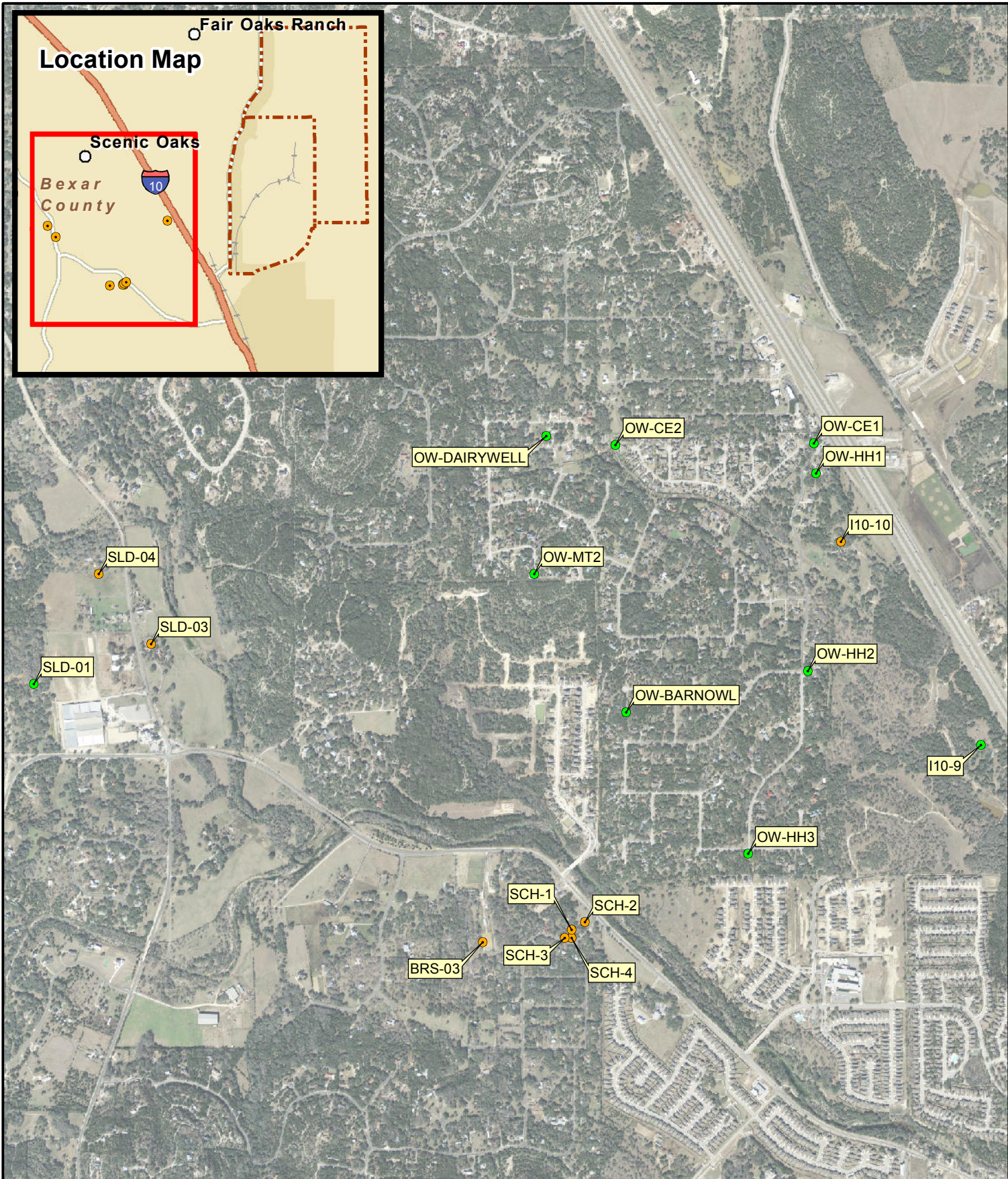
There were one method blank, one TB, and several calibration blanks associated with the VOC analyses in this SDG. All blanks were non-detect for all target VOCs.

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%.

APPENDIX D
ADDITIONAL WELLS FOR FUTURE SAMPLING



0 750 1,500 2,250 3,000 Feet

- CSSA Fence Line
- Existing Sampled Well
- Proposed Sampled Well

Appendix D

Additional Wells for Future Sampling
Camp Stanley Storage Activity

PARSONS