

September 2017

Off-Post

Quarterly Groundwater Monitoring Report



Prepared For

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

November 2017

EXECUTIVE SUMMARY

- A total of 8 off-post wells and 7 Granular Activated Carbon (GAC) filtered samples were collected during the September 2017 sampling event for volatile organic compound (VOC) analyses.
- Analyses indicated off-post well RFR-10 exceeded the maximum contaminant level (MCL) for tetrachloroethene (PCE) and trichloroethene (TCE). This well is equipped with GAC filtration systems. All other wells were below the MCLs.
- GAC-filtered samples were collected in September 2017 as part of the groundwater monitoring program. These samples were non-detect indicating the GAC filtration systems are functioning properly. GAC filtered samples are collected semi-annually and will be collected again in March 2018.
- Semi-annual GAC maintenance was performed September 20, 2017. This involved replacing the first carbon canister in each GAC system and other routine maintenance. This carbon exchange is performed semi-annually; the next carbon change-out is due in March 2018.
- Wells HS-1 and BSR-04 will be removed from the groundwater monitoring program based on the 2015 LTMO study criteria of five years of no detections.

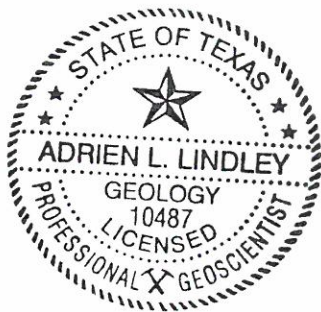
GEOSCIENTIST CERTIFICATION

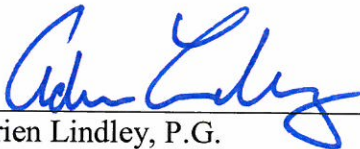
September 2017 Off-Post Quarterly Groundwater Monitoring Report

For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

I, Adrien Lindley, Professional Geologist (P.G.), hereby certify that the 2017 September 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 Camp Stanley Storage Activity Environmental Office, laboratory data provided by APPL, and field data obtained during groundwater monitoring conducted at the site in September 2017, and is true and accurate to the best of my knowledge and belief.





Adrien Lindley, P.G.
State of Texas
Geology License No. 10487

11/15/2017

Date

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ABBREVIATIONS AND ACRONYMS

µg/L	microgram per liter
AOC	Area of Concern
APPL	Agriculture and Priority Pollutants Laboratories, Inc.
BSR	Boerne Stage Road
<i>cis</i> -1,2-DCE	<i>cis</i> -1,2-Dichloroethene
CSSA	Camp Stanley Storage Activity
DQO	Data Quality Objective
FD	Field Duplicate
FO	Fair Oaks Ranch
GAC	Granular Activated Carbon
HS	Hidden Springs Estates
HASP	Health and Safety Plan
JW	Jackson Woods
LS	Leon Springs
LTMO	Long Term Monitoring Optimization
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
MS/MSD	Matrix Spike/Matrix Spike Duplicate
NA	Not Applicable
OFR	Old Fredericksburg Road
OW	Oaks Water Supply Corporation
Parsons	Parsons Government Services, Inc.
PCE	Tetrachloroethene
P.G.	Professional Geologist
Plan	Off-Post Monitoring Program and Response Plan
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RFR	Ralph Fair Road
RL	Reporting Limit
SAP	Sampling and Analysis Plan
SLD	Scenic Loop Drive
TCE	Trichloroethene
TCEQ	Texas Commission on Environmental Quality
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

**SEPTEMBER 2017
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 2017 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 2017 quarterly monitoring events (March, June, September, and December) will be described in detail in an Annual Report to be submitted after December 2017. 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 20 through 28, 2017. 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 described in the Plan.

The CSSA groundwater monitoring program also follows the provisions of the groundwater monitoring program data quality objectives (DQOs) as well as the recommendations of all applicable project-specific work plans. **Appendix A** provides an evaluation of the DQO attainment for this sampling event. Approval for the updated DQOs and the long term monitoring optimization (LTMO) was received from the Texas Commission on Environmental Quality (TCEQ) on April 22, 2016 and the United States Environmental Protection Agency (USEPA) on May 5, 2016. The sampling schedule provided in the 2015 LTMO update was implemented during the December 2016 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 2017 ANALYTICAL RESULTS

During the September 2017 event, groundwater samples were collected from 8 off-post wells shown in **Figure 2.1**. Seven granular activated carbon (GAC) filtered samples (LS-5-A2, LS-6-A2, LS-7-A2, OFR-3-A2, RFR-10-A2, RFR-10-B2, and RFR-11-A2) are collected semi-annually (March and September), and were collected during this event.

Table 2.1 includes the rationale for selection of the 8 wells scheduled to be sampled in September 2017. These included:

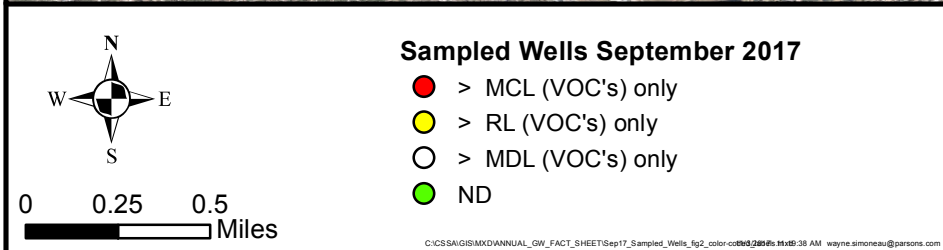
- One public well on Boerne Stage Road (BSR-04);
- One public well in the Hidden Springs Estates subdivision (HS-1);
- Three privately owned wells in the Leon Springs Villa area (LS-5, LS-6, and LS-7);
- One privately-owned well on Old Fredericksburg Road (OFR-3);
- Two privately-owned wells in the Ralph Fair Road area (RFR-10 and RFR-11).

A total of 15 groundwater samples, five trip blanks, two field duplicates (FD), and one matrix spike/matrix spike duplicate (MS/MSD) included with the on-post data groups were submitted to Agriculture & Priority Pollutant Laboratories, Inc. (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), tetrachloroethene (PCE), trichloroethene (TCE), and vinyl chloride.

The data packages (Parsons Government Services, Inc. [Parsons] internal reference 110046-#102, -#103, -#105, -#106 and -#108) 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 the data packages October 9 through 25, 2017.

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.

Concentrations of the VOCs detected in September 2017 are presented in **Table 2.2**. Full analytical results from the September 2017 sampling event are presented in **Appendix B**. As shown in **Table 2.1**, all 15 samples that were scheduled for collection in September 2017 were obtained.



Sampled Wells September 2017

- > MCL (VOC's) only
- > RL (VOC's) only
- > MDL (VOC's) only
- ND

Figure 2-1

On-Post and Off-Post Well Sampling Locations for September 2017
Camp Stanley Storage Activity

PARSONS

Table 2.2
September 2017 Off-Post Groundwater Results, Detected Analytes Only

Subdivision	Well ID	Sample Date	cis-1,2-DCE	PCE	TCE	Vinyl Chloride
Boerne Stage Road	BSR-04	9/20/2017	--	--	--	--
Hidden Springs	HS-1	9/20/2017	--	--	--	--
Leon Springs Villas	LS-5	9/21/2017	--	0.99F	2.85	--
	LS-5-A2	9/21/2017	--	--	--	--
	LS-6	9/21/2017	--	--	1.65	--
	LS-6-A2	9/21/2017	--	--	--	--
	LS-7	9/21/2017	--	1.60	0.50F	--
	LS-7 FD	9/21/2017	--	1.79	--	--
	LS-7-A2	9/21/2017	--	--	--	--
Old Fredericksburg Road	OFR-3	9/27/2017	--	3.69	2.06	--
	OFR-3-A2	9/27/2017	--	--	--	--
Ralph Fair Road	RFR-10	9/21/2017	0.35F	17.63	11.03	--
	RFR-10-A2	9/21/2017	--	--	--	--
	RFR-10-B2	9/21/2017	--	--	--	--
	RFR-11	9/21/2017	--	0.68F	2.12	--
	RFR-11-A2	9/21/2017	--	--	--	--
Laboratory Detection Limits & Maximum Contaminant Level						
Method Detection Limit (MDL)			0.07	0.06	0.05	0.08
Reporting Limit (RL)			1.2	1.4	1	1.1
Max. Contaminant Level (MCL)			70	5	5	2

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
 A2 & B2 sample collected after Granular Activated Carbon System
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.

Well RFR-10 exceeded the Maximum Contaminant Level (MCL) of 5 micrograms per liter ($\mu\text{g/L}$) in September 2017 for PCE and/or TCE. This well is equipped with a GAC filtration system. PCE and/or TCE was detected above the Reporting Limits (RLs) in private drinking water wells LS-5, LS-6, LS-7, OFR-3, and RFR-11. These wells also have GAC filtration systems in place. Vinyl chloride was not detected in any of the off-post wells sampled in September 2017.

On September 20, 2017, routine semi-annual maintenance was performed on the GAC treatment systems at LS-5, 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 as part of the groundwater project and all samples were non-detect. GAC-filtered samples will be collected again during the March 2018 event.

Based on historical detections, the lateral extent of VOC detections extends beyond the south and west boundaries of CSSA. Past detections of VOCs have extended 0.37 miles south to well LS-4 and 2.9 miles west towards Scenic Loop Drive (SLD) at well SLD-01.

3.0 SUMMARY AND RECOMMENDATIONS

Results of the September 2017 sampling event are summarized as follows:

- All 15 samples scheduled for collection in September 2017 were obtained during the quarterly monitoring event.
- Well RFR-10 exceeded the MCL for PCE and TCE in September 2017. This well is equipped with GAC filtration systems.
- TCE and/or PCE was detected above the RL in private drinking water wells LS-5, LS-6, LS-7, OFR-3 and RFR-11. These wells have GAC filtration systems in place.
- Vinyl chloride was not detected in any of the off-post wells sampled in September 2017.
- GAC-filtered samples were collected as part of the quarterly groundwater monitoring in September 2017. All samples were non-detect indicating the GAC filtration systems are functioning properly. GAC-filtered samples are collected semi annually, every March and September. The next GAC-filtered samples will be collected in March 2018.
- Semi-annual GAC maintenance, including carbon change-out, was performed September 20, 2017. The next semi-annual GAC maintenance is due in March 2018.
- Wells HS-1 and BSR-04 were non-detect this quarter. In accordance with the 2015 LTMO study these wells can now be excluded from the sampling program based on 5 years of no detections in each well.
- In accordance with project DQOs and LTMO schedule, the rationale for selection of 6 samples to be collected in December 2017 is provided in **Table 3.1**.

**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 HASP.	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 (§2.1 of the DQOs for the Groundwater Contamination Investigation, revised February 2016).	Samples for laboratory analysis were collected from selected off-post public and private wells, which are located within a 3 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 Area of Concern (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
	<p>Evaluate CSSA monitoring program and expand as necessary (§2.1 of the DQOs for the Groundwater Contamination Investigation, revised February 2016). Determine locations of future monitoring locations.</p>	<p>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.</p>	<p>Yes</p>	<p>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.</p>
<p>Project Schedule/ Reporting</p>	<p>The quarterly monitoring project schedule shall provide a schedule for sampling, analysis, validation, verification, reviews, and reports for monitoring events off-post.</p>	<p>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.</p>	<p>Yes</p>	<p>Continue quarterly reporting to include a schedule for sampling, analysis, validation, and verification and data review and data reports.</p>

Activity	Objectives	Action	Objective Attained?	Recommendations
Remediation	Evaluate the effectiveness of GACs and install as needed (§3.2 both of the DQOs for the Groundwater Contamination Investigation, revised February 2016).	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 2017 QUARTERLY OFF-POST
GROUNDWATER ANALYTICAL RESULTS**

Appendix B
September 2017 Quarterly Off-post Groundwater Analytical Results

Well ID	Sample Date	cis-1,2-DCE	PCE	TCE	Vinyl Chloride
BSR-04	9/20/2017	0.07U	0.06U	0.05U	0.08U
HS-1	9/20/2017	0.07U	0.06U	0.05U	0.08U
LS-5	9/21/2017	0.07U	0.99F	2.85	0.08U
LS-5-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
LS-6	9/21/2017	0.07U	0.06U	1.65	0.08U
LS-6-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
LS-7	9/21/2017	0.07U	1.60	0.50F	0.08U
LS-7 FD	9/21/2017	0.07U	1.79	0.05U	0.08U
LS-7-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
OFR-3	9/27/2017	0.07U	3.69	2.06	0.08U
OFR-3-A2	9/27/2017	0.07U	0.06U	0.05U	0.08U
RFR-10	9/21/2017	0.35F	17.63	11.03	0.08U
RFR-10-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
RFR-10-B2	9/21/2017	0.07U	0.06U	0.05U	0.08U
RFR-11	9/21/2017	0.07U	0.68F	2.12	0.08U
RFR-11-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
Laboratory Detection Limits & Maximum Contaminant Level					
Method Detection Limit (MDL)		0.07	0.06	0.05	0.08
Reporting Limit (RL)		1.2	1.4	1	1.1
Max. Contaminant Level (MCL)		70	5	5	2

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

A2 & B2 = sample collected after Granular Activated Carbon System

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**

**SDG 83872
SDG 83813
SDG 83803
SDG 83815
SDG 83870**

DATA VERIFICATION SUMMARY REPORT
for off-post samples collected from
CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers two groundwater samples and the associated field quality control (QC) sample collected from off-post Camp Stanley Storage Activity (CSSA) on September 20, 2017. The samples were assigned to the following Sample Delivery Group (SDG). All samples were analyzed for volatile organic compounds (VOCs).

83803

The field QC sample associated with this SDG was one trip blank (TB) sample. 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. Samples in this SDG were shipped to the laboratory in one cooler which was received by the laboratory at a temperature of 5.5°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 two (2) off-post groundwater samples and one (1) TB. All samples were collected on September 20, 2017 and analyzed for a reduced list of VOCs which included: *cis*-1,2-dichloroethene, tetrachloroethene, 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 analytical batch, #222378 under one of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

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

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

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

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 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.
- All initial calibration verification (ICV) criteria were met. The ICV was prepared using a secondary source standard. All second source verification 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 and both 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: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers six groundwater samples and the associated field quality control (QC) sample collected from off-post Camp Stanley Storage Activity (CSSA) on September 21, 2017. The samples were assigned to the following Sample Delivery Group (SDG). All samples were analyzed for volatile organic compounds (VOCs).

83813

The field QC sample associated with this SDG was one trip blank (TB) sample. 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. Samples in this SDG were shipped to the laboratory in one cooler which was received by the laboratory at a temperature of 4.3°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 six (6) off-post groundwater samples and one (1) TB. All samples were collected on September 21, 2017 and analyzed for a reduced list of VOCs which included: *cis*-1,2-dichloroethene, tetrachloroethene, 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 analytical batch, #222283 under one of initial calibration (ICAL). All samples were analyzed following the procedures outlined in the CSSA QAPP and were prepared and analyzed within the holding time required by the method. All analyses were performed undiluted.

Accuracy

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

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

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

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 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.
- All initial calibration verification (ICV) criteria were met. The ICV was prepared using a secondary source standard. All second source verification 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 and both 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: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers five groundwater samples and the associated field quality control (QC) sample collected from off-post Camp Stanley Storage Activity (CSSA) on September 21, 2017. The samples were assigned to the following Sample Delivery Group (SDG). All samples were analyzed for volatile organic compounds (VOCs).

83815

The field QC sample associated with this SDG was one field duplicate (FD) sample. 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. Samples in this SDG were shipped to the laboratory in one cooler which was received by the laboratory at a temperature of 4.3°C, which was within the 2-6°C range recommended by the CSSA QAPP.

There was a trip blank (TB) included in the cooler, but it was assign in SDG 83813 with other rush VOC samples. The TB had no detection of target VOCs.

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 five (5) off-post groundwater samples and one FD. All samples were collected on September 21, 2017 and analyzed for a reduced list of VOCs which included: *cis*-1,2-dichloroethene, tetrachloroethene, 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 analytical batch, #222283 under one 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 recoveries were within acceptance criteria.

One of the four surrogates, Toluene-*d*₈ was recovered above the control limits of 75-125% at 139% in the sample LS-7. Lab reinjected this sample on 19 days beyond the holding time, and this surrogate was recovered within the criteria. Since this sample was collected in duplicate and its FD had compliant %R for all four surrogates, it is Parsons data validator's professional opinion that the non-compliant %R of one surrogate should not have any impact to reported results, therefore, no flag was applied.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of the parent and FD sample results. Sample LS-7 was collected in duplicate.

Only Tetrachloroethene was detected above the reporting limit in both parent and FD sample. %RPD was compliant.

Representativeness

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

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blank 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.
- All initial calibration verification (ICV) criteria were met. The ICV was prepared using a secondary source standard. All second source verification 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 and both 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
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one groundwater sample and one field quality control sample collected from off-post Camp Stanley Storage Activity (CSSA) on September 27, 2017. Both samples were assigned to the following Sample Delivery Group (SDG) and were analyzed for volatile organic compounds (VOCs).

83870

The field QC sample associated with this SDG was 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.

Both 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 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; laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) form 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) off-post groundwater sample and one TB. Both samples were collected on September 27, 2017 and analyzed for a reduced list of VOCs which included: *cis*-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The sample was analyzed in two analytical batches, #222378 and #222581 with two instruments and under two sets 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. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two laboratory control samples (LCSs) and the surrogate spikes.

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

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

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 and trip blank for cross contamination of samples during sample collection, shipment, and analysis.

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

- All instrument performance check criteria were met for both instrument.
- All initial calibration criteria were met for both sets of curves.
- All initial calibration verification (ICV) criteria were met. Both ICVs were prepared using a secondary source standard. All second source verification 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 involved 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
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one groundwater sample collected from off-post Camp Stanley Storage Activity (CSSA) on September 27, 2017. The sample was assigned to the following Sample Delivery Group (SDG). This sample was analyzed for volatile organic compounds (VOCs) with three days turn-around-time request.

83872

The field QC sample associated with this SDG was one trip blank (TB) sample which was logged in a different SDG (83870) along with sample OFR-3. 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 was 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 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; laboratory quality control samples; calibrations; case narratives; raw data; chain-of-custody (COC) form 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) off-post groundwater sample. This sample was collected on September 20, 2017 and analyzed for a reduced list of VOCs which included: *cis*-1,2-dichloroethene, tetrachloroethene, trichloroethene, and vinyl chloride.

The VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. The sample was analyzed in one analytical batch, #222378 under one of initial calibration (ICAL). This sample was analyzed following the procedures outlined in the CSSA QAPP and was prepared and analyzed within the holding time required by the method. The analysis was performed undiluted.

Accuracy

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

All LCS and surrogate spike recoveries were within acceptance criteria.

Precision

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

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 analysis.

This sample was analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0; 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 for both sets of curves.
- All initial calibration verification (ICV) criteria were met. The ICV was prepared using a secondary source standard. All second source verification criteria were met.
- All continuing calibration verification (CCV) criteria were met.
- All internal standard criteria were met.

There was one method blank and it was non-detect for all target VOCs. Although TB was not analyzed in this SDG, but since the sample had no VOC detected at or above the MDL, the lack of TB results had no impact to data quality.

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