FINAL

March 2009

Off-Post
Quarterly Groundwater Monitoring Report

Prepared For

Department of the Army
Camp Stanley Storage Activity
Boerne, Texas

June 2009

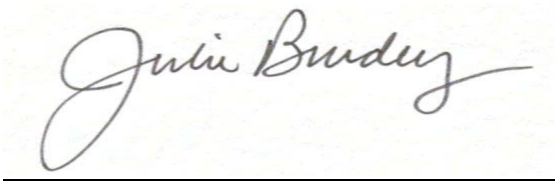
GEOSCIENTIST CERTIFICATION

March 2009 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 March 2009 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 March 2009, and is true and accurate to the best of my knowledge and belief.



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05/20/2009
Date

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EXECUTIVE SUMMARY

- A total of 32 off-post groundwater well samples and 6 post-granular activated carbon (GAC) samples were collected during the March 2009 monitoring event.
- Analyses indicated off-post wells OFR-3, RFR-10, and I10-4 exceeded the maximum contaminant level (MCL) for tetrachloroethene (PCE). Wells OFR-3 and RFR-10 were previously equipped with a GAC treatment system. Well I10-4, sits in a vacant lot, is not currently being used and there is no pump in the well.
- Post-GAC samples collected this quarter were all non-detect indicating that the GAC filtration systems are functioning properly.
- Semi-annual GAC maintenance was performed November 20, 2008. This involves replacing one carbon canister and other routine maintenance in each GAC. The next GAC maintenance is scheduled for the week of May 18, 2009; during this visit the GAC structures will also be replaced.

MARCH 2009
OFF-POST GROUNDWATER MONITORING REPORT
CAMP STANLEY STORAGE ACTIVITY

1.0 INTRODUCTION

This report presents results from the off-post quarterly sampling performed at Camp Stanley Storage Activity (CSSA) in March 2009 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 2009 quarterly monitoring events (March, June, September, and December) will be described in detail in an Annual Report to be submitted after December 2009. 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 scoped under the U.S. Army Corps of Engineers (USACE) Fort Worth District (CESWF), Contract W9126G-07-D-0028, Task Order DO11, was performed March 2 -9, 2009. 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.

Current objectives of the off-post groundwater monitoring program include determining 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 MARCH 2009 ANALYTICAL RESULTS

In March 2009, thirty-eight samples were collected from 32 off-post wells shown in **Figure 2-1**. Well DOM-2 was not sampled this quarter due to an expired access agreement. The access agreement has since been obtained and this well will be sampled during the next quarterly event. Post-GAC (granular activated carbon) samples were collected during this event. Post-GAC samples (LS-6, LS-7, RFR-10, RFR-11, and OFR-3) are collected semi-annually and will be sampled again during the September 2009 monitoring event. **Table 2-1** includes the rationale for selection of the wells sampled in March 2009, and **Figure 2-1** provides well locations for the following sampled wells:

- Three public supply well in the Fair Oaks area (FO-J1, FO-8, and FO-22);
- Two public supply wells in the Hidden Springs Estates subdivision (HS-1 and HS-2);
- Three public wells (I10-2, I10-5, and I10-7) and one privately owned well (I10-4) that is offline, in the Interstate-10 area;

- Eleven privately owned wells in the Jackson Woods subdivision (JW-5, JW-7, JW-8, JW-9, JW-12, JW-14, JW-15, JW-27, JW-28, JW-29, and JW-30);
- Five wells in the Leon Springs Villa area (one public well: LS-6; two privately-owned wells: LS-5 and LS-7; and two wells: LS-1 and LS-4 that were taken out of service but will remain in the sampling program for data collection purposes);
- Three privately owned wells on Old Fredericksburg Road (OFR-1, OFR-3, and OFR-4); and
- Four privately owned wells in the Ralph Fair Road area (RFR-10, RFR-11, RFR-12, and RFR-14).

All wells 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.

A total of 38 groundwater samples, four field duplicate samples, two matrix spike/matrix spike duplicate (MS/MSD) pairs, and three trip blanks were submitted to Agriculture & Priority Pollutant Laboratory (APPL) in Fresno, 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, tetrachlorethene (PCE), trichloroethene (TCE), and vinyl chloride.

The data packages (Parsons internal reference DO11 #20, #22 and #26) contain the analytical results for this sampling event. 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 March 19 through March 31, 2009.

Concentrations of the VOCs detected in March 2009 are presented in **Table 2-2**. Full analytical results from the March 2009 sampling event are presented in **Appendix B**. As shown in **Table 2-1**, 39 samples were scheduled for collection in March 2009, but one well DOM-2 was not sampled due to an expired access agreement.

On November 20, 2008 routine semi-annual maintenance was performed on the GAC treatment systems installed at LS-6, LS-7, OFR-3, RFR-10, and RFR-11. The carbon canisters were exchanged and other routine maintenance was performed. Post-GAC samples were collected this quarter and will be collected again in September 2009.

Based on historical detections, the lateral extent of VOC contamination extends approximately 0.5 mile beyond the south and west boundaries of CSSA. Detections of VOCs have extended south to well HS-1 and HS-2 and west to OFR-1 **(Figure 2-1).**

Table 2-1 Sampling Rationale for March 2009

Figure 2-1 On-Post and Off-Post Well Sampling Locations for March 2009

Table 2-2 March 2009 Off-Post Groundwater Results, Detected Analytes Only

3.0 SUMMARY AND RECOMMENDATIONS

Results of the March 2009 sampling are summarized as follows:

- PCE exceeded the MCL in wells OFR-3, RFR-10, and I10-4 in March 2009. Wells OFR-3 and RFR-10 are equipped with GAC treatment systems. Well I10-4 is a privately owned well that is not currently being used. The pump has been removed and the well owner has been informed to contact Camp Stanley if the status of the well changes.
- PCE/TCE was detected above the RL in drinking water wells LS-5, LS-7, and RFR-11. Two of these wells have GAC treatment systems in place, and well LS-5 is monitored quarterly.
- Low levels (below the RL) of PCE/TCE were also detected in wells FO-J1, JW-14, JW-29, LS-1, LS-6, OFR-1, and RFR-14.
- 1,1-DCE, *cis*-1,2-DCE, *trans*-1,2-DCE, and vinyl chloride were not detected in any off-post wells in March 2009.
- No VOCs were detected in wells FO-8, FO-22, HS-1, HS-2, I10-2, I10-5, I10-7, JW-5, JW-7, JW-8, JW-9, JW-12, JW-15, JW-27, JW-28, JW-30, LS-4, OFR-4, and RFR-12.
- Post-GAC samples were collected in March 2009. All post-GAC samples were non-detect indicating the GAC units are functioning properly. The next post-GAC samples will be collected in September 2009.
- Semi-annual GAC maintenance was performed November 20, 2008; the next scheduled maintenance is scheduled for the week May 18, 2009. During this visit Carbonair will also replace the GAC enclosures at wells LS-6, LS-7, OFR-3, and RFR-10.
- In the event additional wells are located to the west and southwest of CSSA, they may be added to future sampling events.
- In accordance with project DQOs, the rationale for the selection of 31 wells to be sampled in June 2009 is provided in **Table 3-1**.

Table 3-1 Sampling Rationale for June 2009

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 2003).	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 2003). 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 2003).	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
MARCH 2009 QUARTERLY OFF-POST GROUNDWATER ANALYTICAL RESULTS