# Camp Stanley Storage Activity
# Groundwater Contamination – 2006 Sampling
# FACT SHEET

**No. 26 – Annual Fact Sheet for 2006**

*The purpose of this Fact Sheet is to provide an overview of the quarterly groundwater sampling conducted in 2006. Results for all groundwater sampling events are available in the Camp Stanley Storage Activity Environmental Encyclopedia located at the downtown San Antonio Public Library, 600 Soledad Street, on the 2nd floor behind the Reference Desk in the Government Documentation Section, or on the internet at www.stanley.army.mil.*

## On-post Groundwater Monitoring Plan

On-post groundwater monitoring has been conducted since 1991 as part of the Camp Stanley Storage Activity (CSSA) environmental program. The wells sampled include drinking water, monitoring, and agriculture/livestock wells. Sampling frequencies for the on-post wells are determined by the long-term monitoring optimization (LTMO) study completed in May 2005, as approved by U.S. Environmental Protection Agency (EPA) and Texas Commission on Environmental Quality (TCEQ). Based on the LTMO recommendations, on-post wells are sampled semi-annually, every nine months, or biennially. Currently, CSSA samples for metals (*e.g.* lead, cadmium, and nickel) and for volatile organic compounds (VOC). VOCs are substances such as paint thinners, dry cleaning solvents, and some constituents of petroleum fuels (*e.g.* gasoline and natural gas). VOCs are sometimes accidentally released into the environment, where they can contaminate the soil and groundwater. The CSSA Groundwater Monitoring Program Data Quality Objectives (DQO) provide a description of the ongoing groundwater monitoring program and sampling frequencies under LTMO.

## Off-post Groundwater Monitoring Plan

CSSA describes its off-post groundwater monitoring plan in its *Off-Post Monitoring Program and Response Plan*, July 2001 (Plan). The goals of this Plan are to confirm that drinking water meets EPA and TCEQ safe drinking water standards, to determine where VOC contamination has migrated, monitor off-post water wells near known CSSA VOC source areas, and respond according to the Plan if contaminant levels in those wells exceed standards. As part of the Plan, 47 off-post wells were sampled in 2006.

Off-post water wells are selected for sampling based on CSSA's plan to ensure protection of drinking water and to provide information for the environmental program. Factors considered for deciding if a well is sampled include where the well is located and how close it is to areas where other VOCs have been detected. Other factors include whether the well owner grants access for sampling and results of previous sampling at the well.

CSSA takes action if VOC contamination is detected in off-post wells at concentrations greater than 90 percent of the maximum contaminant level (MCL) as established by the USEPA. More than 90% of the MCL is above 4.5 parts per billion (ppb) for tetrachloroethene (PCE) and trichloroethene (TCE). CSSA's actions if this occurs include supplying bottled water to the affected residents within 24 hours of the detection and resampling the well for confirmation. If additional sampling confirms previous test results, CSSA will either install a granular activated carbon (GAC) filter to remove contaminants from the water, or provide the well owner with an alternate water supply for as long as contaminant levels in the well exceed standards. Seven off-post water wells have been fitted with GAC filtration systems: LS-7 (August 2001), LS-6 (August 2001), RFR-10 (two units, October 2001), RFR-11 (October 2001), LS-2/LS-3 (April 2002), and OFR-3 (April 2002).

## 2006 Groundwater Sampling Results

The locations of all off-post wells sampled in 2006 are shown on Figure 1 (page 4). According to the EPA drinking water standards, concentrations below 5.0 ppb for PCE and TCE are considered safe. Table 1 (page 2) presents groundwater data for PCE and TCE from all four 2006 sampling events (March, June, September, December). Only one well, RFR-10, exceeded the MCL for PCE. This well was previously equipped with a GAC filtration system and post GAC results are below the MCL. The post-GAC Sampling Results are summarized in Table 2 (page 3). Five wells had PCE and/or TCE detected (LS-2, LS-6, LS-7, OFR-3 and RFR-11) at concentrations below the MCL of 5.0 ppb but above the reporting limits of 1.4 ppb and 1.0 ppb, respectively. All of these wells have been equipped with a GAC filtration system. In all other wells tested, VOC detections were below the applicable MCLs for drinking water and below the laboratory reporting limit for PCE and TCE, specifically.

CSSA will continue to sample both on- and off-post groundwater wells at the frequencies recommended in the LTMO and DQOs. CSSA will continue to coordinate this groundwater monitoring program with the regulatory agencies and other potentially affected parties, including the EPA, TCEQ, Fort Sam Houston, City of Fair Oaks, Fair Oaks Water Utilities, Bexar Metropolitan Water District, Bexar County Commissioners' office, State Representatives' offices, local, state, and federal elected officials, private well owners, and others.

## Post-GAC Sampling Results

Because of the previously detected presence of VOCs, seven off-post wells in the area are equipped with GAC filters. In March and September 2006 analyses of the post-GAC water samples confirmed that no VOCs were present above the applicable MCLs, and that the GAC units were working properly. Maintenance involving the replacement of carbon canisters for the LS-6, LS-7, OFR-3, RFR-10, and RFR-11 GAC filtration systems was performed in September 2006. Table 2 presents the results for PCE and TCE from post-GAC water treatment systems sampled. Post-GAC samples are collected every six months and will be collected again in March 2007.

## Source Area Cleanup

Groundwater contamination at CSSA is associated with three VOC source areas: Solid Waste Management Unit (SWMU) B-3, SWMU O-1 and Area of Concern (AOC) 65. SWMU B-3 and SWMU O-1 are in the central portion of CSSA and affect the area designated as Plume 1. Cleanup activities at SWMU B-3 and SWMU O-1 included excavation and disposal of some of the VOC-contaminated soil and removing gases in the soil (soil vapor extraction [SVE]). In late 2003, over 1,900 cubic yards of VOC-contaminated soil at SWMU B-3 was removed. In February 2004, a pilot SVE system was installed at SWMU B-3. This system was removed in order to build a bioreactor which was installed in 2007. The bioreactor is designed to eliminate VOCs through accelerating biological activity of microorganisms capable of degrading PCE and TCE. Wells installed around SWMU B-3 and the bioreactor are closely monitored to determine if the system is running efficiently and effectively.

AOC 65 was identified in the southwest corner of CSSA as another potential source of VOCs, and affects the area designated as Plume 2. An SVE system installed during the summer 2002 is being tested to evaluate its effectiveness and ability to optimize performance. A significant reduction in soil gas concentrations beneath AOC 65 has been observed since initial operation of the SVE system. This SVE system is currently being upgraded by adding extraction wells to increase its effectiveness. The SVE system west of Building 90 will be in operation for the foreseeable future.

## Public Comment and Future Fact Sheets

CSSA first began issuing fact sheets similar to this Fact Sheet on a quarterly basis in 2000 through 2005. Future fact sheets will be mailed annually to provide information on sampling results, ongoing investigations, and cleanup activities. Each well owner involved in the groundwater monitoring program will continue to receive a separate letter concerning laboratory results for their wells after sampling by CSSA.

Public meetings were held in December 2006 at Fair Oaks Ranch Elementary and Leon Springs Elementary for interested residents. These meetings were designed to inform the public about the groundwater contamination issues in the area and answer any questions local citizens may have.

CSSA will continue to inform the public about various aspects of its environmental program. The public is welcome to comment on this Fact Sheet and the environmental activities at CSSA by writing to:

Installation Manager,
Camp Stanley Storage Activity
25800 Ralph Fair Road
Boerne, Texas 78015-4800

Interested parties may also comment by calling:

- CSSA Installation Manager, Mr. Jason D. Shirley, at (210) 295-7416;
- EPA Regional Program Manager, Mr. Greg Lyssy, at (214) 665-8317; or
- Fort Sam Houston, Public Affairs Office, Mr. Phillip Reidinger, at (210) 221-1151 or (210) 336-0449 (mobile)

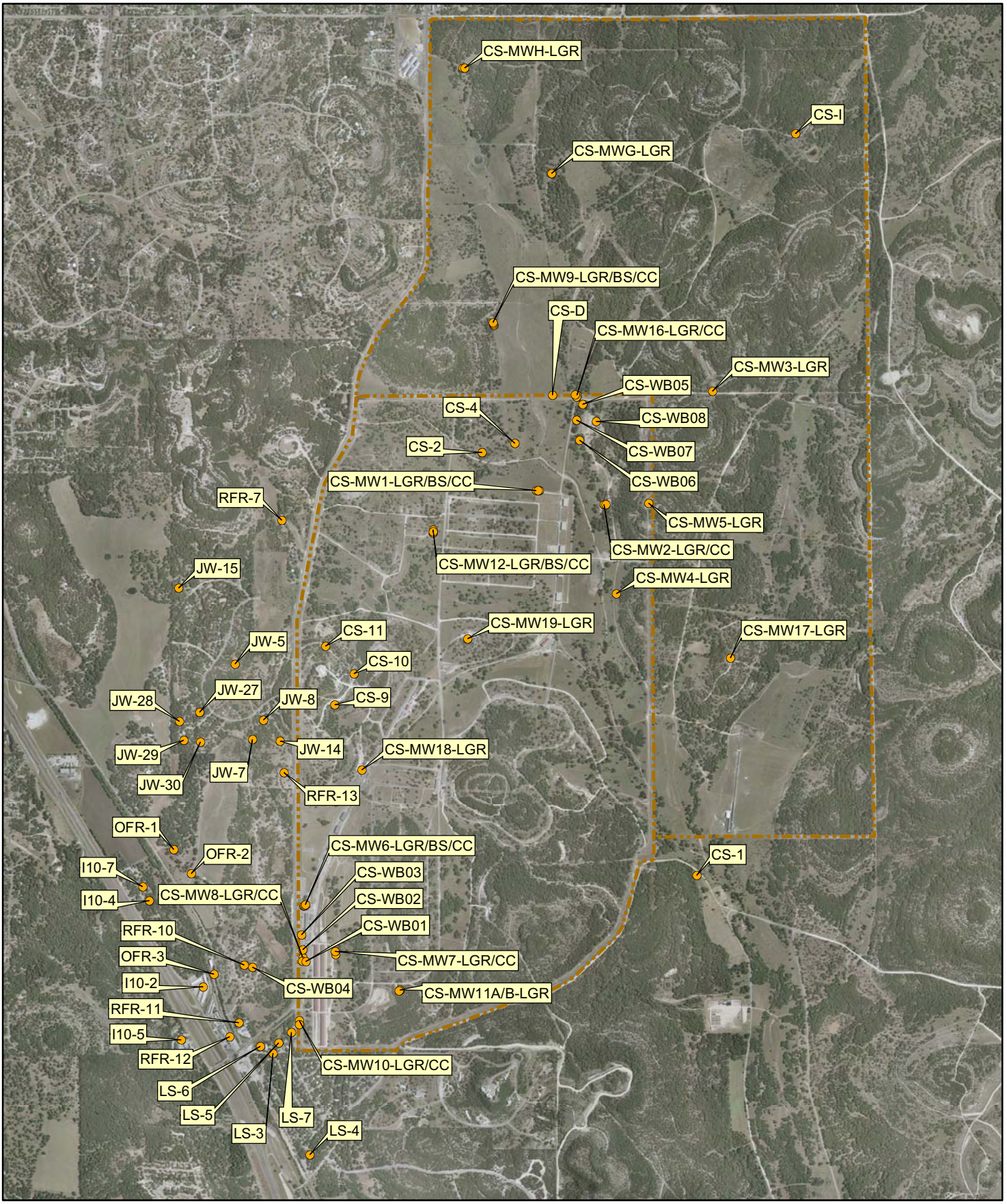
**Table 1 - Groundwater Sampling Results**
**Off-post wells near Plume 1**

| Well Number | Sample Date | PCE (ppb) | TCE (ppb) |
|---|---|---|---|
| FO-8 | 3/22/06 | ND | ND |
| FO-22 | 12/11/06 | ND | ND |
| FO-J1 | 6/20/06 | 0.08F | ND |
| | 9/19/06 | 0.36F | ND |
| | 12/11/06 | 0.40F | ND |
| JW-5 | 3/22/06 | ND | ND |
| JW-6 | 6/20/06 | ND | ND |
| JW-7 | 3/21/06 | 0.42F | ND |
| | 6/20/06 | 0.56F | ND |
| | 9/18/06 | ND | ND |
| | 12/11/06 | 0.77F | ND |
| JW-8 | 3/23/06 | 0.32F | ND |
| *Duplicate* | 3/23/06 | 0.25F | ND |
| | 6/22/06 | 0.40F | ND |
| | 9/19/06 | 0.43F | ND |
| | 12/13/06 | 0.35F | ND |
| JW-9 | 3/21/06 | ND | ND |
| JW-12 | 9/19/06 | ND | ND |
| JW-13 | 6/20/06 | ND | ND |
| *Duplicate* | 6/20/06 | ND | ND |
| JW-14 | 3/21/06 | ND | ND |
| | 6/20/06 | ND | ND |
| | 9/19/06 | ND | ND |
| | 12/14/06 | 0.07F | ND |
| JW-15 | 3/21/06 | ND | ND |
| JW-26 | 12/13/06 | ND | ND |
| JW-27 | 3/21/06 | ND | ND |
| | 6/21/06 | 0.07F | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | 0.09F | ND |
| JW-28 | 3/22/06 | ND | ND |
| | 6/21/06 | ND | ND |
| *Duplicate* | 6/21/06 | ND | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | ND | ND |
| *Duplicate* | 12/12/06 | ND | ND |
| JW-29 | 3/21/06 | ND | ND |
| | 6/20/06 | ND | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | ND | ND |
| JW-30 | 3/22/06 | 0.16F | ND |
| | 6/22/06 | 0.22F | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | ND | ND |
| RFR-3 | 12/13/06 | ND | ND |
| RFR-4 | 3/21/06 | ND | ND |
| RFR-5 | 3/21/06 | ND | ND |
| RFR-8 | 6/22/06 | ND | ND |
| RFR-9 | 9/19/06 | ND | ND |
| *Duplicate* | 9/19/06 | ND | ND |
| RFR-12 | 3/23/06 | ND | ND |
| RFR-13 | 3/22/06 | ND | ND |
| | 6/22/06 | ND | ND |
| RFR-14 | 3/23/06 | 0.20F | ND |
| | 6/21/06 | 0.24F | ND |
| | 9/19/06 | ND | ND |
| | 12/14/06 | 0.20F | ND |

ND = The VOC was not detected above the method detection limit.
F = The VOC was not detected above the RL.
Bold = Concentration > MCL

| Table 1 - Groundwater Sampling Results | | | |
|---|---|---|---|
| Off-post wells near Plume 2 | | | |
| | Sample | PCE | TCE |
| Well Number | Date | (ppb) | (ppb) |
| DOM-2 | 3/22/06 | ND | ND |
| FO-17 | 6/19/06 | ND | ND |
| HS-1 | 9/19/06 | ND | ND |
| | 12/12/06 | 0.13F | ND |
| HS-2 | 3/23/06 | ND | ND |
| | 6/21/06 | 0.07F | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | ND | ND |
| HS-3 | 6/21/06 | ND | ND |
| I10-2 | 3/23/06 | ND | ND |
| I10-4 | 3/22/06 | ND | ND |
| | 6/22/06 | ND | ND |
| | 9/19/06 | 0.62F | 0.29F |
| | 12/12/06 | 0.84F | 0.48F |
| *Duplicate* | 12/12/06 | 0.95F | 0.49F |
| I10-5 | 12/14/06 | ND | ND |
| *Duplicate* | 12/14/06 | ND | ND |
| I10-7 | 3/20/06 | ND | ND |
| | 6/20/06 | ND | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | ND | ND |
| I10-8 | 12/12/06 | ND | ND |
| LS-2 | 3/23/06 | 1.35F | 0.36F |
| | 6/21/06 | 1.71 | 0.58F |
| LS-3 | 3/23/06 | 0.92F | 0.20F |
| | 6/21/06 | 0.92F | 0.34F |
| | 9/19/06 | 0.99J | 0.54J |
| | 12/12/06 | 0.93F | 0.61F |
| LS-4 | 3/23/06 | ND | ND |
| | 6/21/06 | 0.09F | ND |
| | 9/19/06 | ND | ND |
| | 12/12/06 | 0.09F | ND |
| LS-5 | 3/20/06 | ND | 0.14F |
| | 6/19/06 | ND | 0.09F |
| | 9/18/06 | ND | ND |
| | 12/11/06 | ND | ND |
| LS-6 | 3/20/06 | 1.22F | 0.69F |
| | 6/19/06 | 0.95F | 0.95F |
| | 9/18/06 | ND | 1.8 |
| | 12/11/06 | 0.69F | 1.6 |
| LS-7 | 3/20/06 | 2.74 | 0.29F |
| | 6/19/06 | 3.38 | 0.21F |
| | 9/18/06 | 2.98 | ND |
| | 12/11/06 | 2.59 | 0.34F |
| OFR-1 | 3/21/06 | 0.35F | ND |
| | 6/22/06 | 0.44F | ND |
| *Duplicate* | 6/22/06 | 0.37F | ND |
| | 9/19/06 | 0.28F | ND |
| *Duplicate* | 9/19/06 | 0.28F | ND |
| | 12/14/06 | 0.33F | ND |
| OFR-2 | 3/20/06 | 0.28F | ND |
| OFR-3 | 3/22/06 | 0.35F | 0.46F |
| *Duplicate* | 3/22/06 | 0.41F | 0.52F |
| | 6/19/06 | 0.57F | 0.60F |
| | 9/18/06 | 2.41 | 2 |
| | 12/11/06 | 4.32 | 3.28 |
| OFR-4 | 3/21/06 | ND | ND |
| *Duplicate* | 3/21/06 | ND | ND |
| RFR-10 | 3/20/06 | **6.27** | 2.76 |
| | 6/19/06 | **10.85** | 2.88 |
| | 9/18/06 | **5.23** | 1.86 |
| *Duplicate* | 9/18/06 | **5.4** | 1.83 |
| | 12/11/06 | 2.37 | 1.3 |
| RFR-11 | 3/20/06 | 0.33F | 1.39 |
| | 6/19/06 | 0.33F | 1.5 |
| | 9/18/06 | ND | 1.47 |
| | 12/11/06 | 0.34F | 1.72 |
| ND = The VOC was not detected above the method detection limit. | | | |
| F = The VOC was not detected above the RL. | | | |

| Table 2 - GAC System Sampling Results | | | |
|---|---|---|---|
| Off-post wells | | | |
| | Sample | PCE | TCE |
| Well Number | Date | (ppb) | (ppb) |
| LS-2/LS-3-A1 | 3/23/06 | ND | ND |
| | 9/19/06 | ND | ND |
| LS-2/LS-3-A2 | 3/23/06 | ND | ND |
| | 9/19/06 | ND | ND |
| LS-6-A2 | 3/20/06 | ND | ND |
| | 9/18/06 | ND | ND |
| LS-7-A2 | 3/20/06 | ND | ND |
| | 9/18/06 | ND | ND |
| OFR-3-A2 | 3/22/06 | ND | ND |
| | 9/18/06 | ND | ND |
| RFR-10-A2 | 3/20/06 | ND | ND |
| | 9/18/06 | ND | ND |
| RFR-10-B2 | 3/20/06 | ND | ND |
| | 9/18/06 | ND | ND |
| RFR-11-A2 | 3/20/06 | ND | ND |
| Duplicate | 3/20/06 | ND | ND |
| | 9/18/06 | ND | ND |
| The MCL for PCE and TCE is 5.0 ppb | | | |
| ND = The VOC was not detected above the method detection limit. | | | |




# Figure 1

On-Post and Off-Post Ground Water Wells
Camp Stanley Storage Activity

PARSONS