Camp Stanley Storage Activity
Groundwater Contamination – 2010 Sampling
FACT SHEET

No. 31 – Annual Fact Sheet for 2010

The purpose of this Fact Sheet is to provide an overview of quarterly groundwater sampling conducted in 2010. The off-post groundwater contamination in small areas west and southwest of Camp Stanley Storage Activity (CSSA) continues to be stable and CSSA is making progress addressing contamination sources on-post. 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 CSSA environmental program. The wells sampled include drinking water, monitoring, and agriculture/livestock wells. Sampling frequencies for on-post wells are determined by the long-term monitoring optimization (LTMO) study completed in May 2005 and updated in 2010. This Plan, as approved by the U.S. Environmental Protection Agency (USEPA) and Texas Commission on Environmental Quality (TCEQ), sets the well sampling frequency at either quarterly (3 months), semi-annually (6 months), every nine months, or biennially (2 years). Currently, groundwater samples from monitoring wells are analyzed for chromium, cadmium, lead, and mercury, while the samples from the drinking water wells are analyzed for the additional metals arsenic, barium, copper, and zinc. All wells (monitoring and drinking water) are also analyzed for select volatile organic compounds (VOCs). VOCs make up substances such as paint thinners, dry cleaning solvents, and some constituents of petroleum fuels (*e.g.* gasoline and natural gas). Decades-old industrial practices sometimes accidentally released VOCs into the environment, where they can contaminate the soil and groundwater. CSSA ceased using VOC solvents in the mid-1990s. CSSA monitors for VOCs and metals associated with its past industrial processes. The CSSA Groundwater Monitoring Program Data Quality Objectives (DQO) that provides a description of the ongoing groundwater monitoring program and sampling frequencies is available in the Environmental Encyclopedia.

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 off-post drinking water meets USEPA and TCEQ safe drinking water standards, determine where VOC contamination has migrated and, if contaminant levels in those wells exceed standards, define the appropriate response. As part of the Plan, 44 off-post wells were sampled in 2010.

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 in deciding if a well is sampled include where the well is located, how close it is to areas where VOCs have been detected, whether the well owner grants access for sampling, and results of previous sampling at the well. A well is initially sampled for four consecutive quarters (i.e., every three months). Depending on the analytical results from the well, future sampling occurs as illustrated on Figure 1.

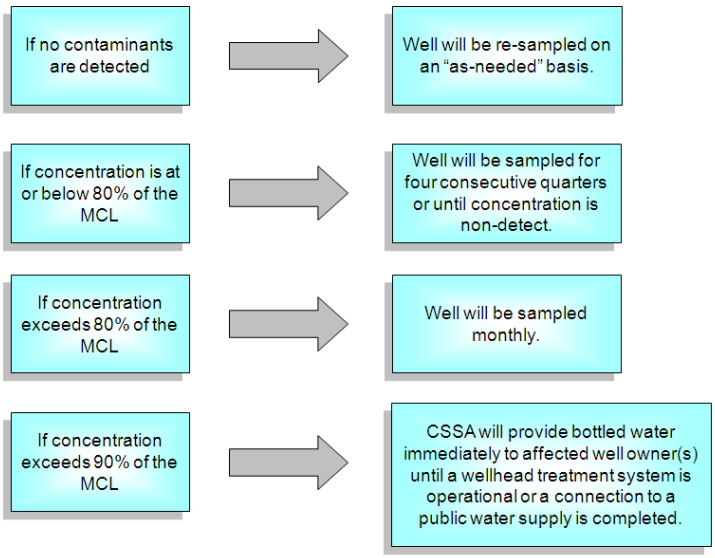


Figure 1. Off-Post Well Sampling Decision Chart

CSSA takes action if VOCs are detected in off-post wells at concentrations greater than 90 percent of the USEPA maximum contaminant level (MCL) of 5 parts per billion (ppb) for tetrachloroethene (PCE) and trichloroethene (TCE) (i.e., action is taken at concentrations greater than 4.5 ppb).

If a VOC exceedance occurs, CSSA will supply bottled water to affected residents within 24 hours of the detection and the well will be resampled to confirm the results. 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. Over the history of off-post sampling, 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 and LS-3 (April 2002), and OFR-3 (April 2002).

In August 2007, the San Antonio Water System (SAWS) began supplying water to residents of the Leon Springs Villas Subdivision and use of the former drinking water supply wells LS-1, LS-2, LS-3, LS-4 was discontinued. Based on these changes, GAC filtration service for LS-2 and LS-3 was discontinued.

2010 Groundwater Sampling Results

The locations of all on- and off-post wells sampled in 2010 are shown on Figure 2 (Page 4). According to the USEPA, concentrations below 5.0 ppb for PCE and TCE meet safe drinking water standards. Table 1 (Page 3) presents off-post groundwater data for PCE and TCE from all four 2010 sampling events (March,

June, September, December). Three wells (I10-4, OFR-3, and RFR-10) exceeded the MCL for PCE, and one well (RFR-10) exceeded the MCL for TCE. In the past, three additional wells (LS-6, LS-7 and RFR-11) had PCE and/or TCE detections at concentrations above the MCL (5.0 ppb) in the past. Wells OFR-3, RFR-10, RFR-11, LS-6 and LS-7 have been equipped with GAC filtration systems, and samples of water collected after going through the filtration for these wells have no detection of the VOC contamination. Well I10-4 is not currently being used and therefore is not equipped with a GAC filtration system. In all other wells tested, VOC levels, where detected, were below the applicable drinking water MCLs for PCE and TCE, specifically.

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

GAC-filtered Sampling Results

Because of the previously detected presence of VOCs, five off-post wells in the area are currently equipped with GAC filtration systems to remove VOCs from the water. In March and September 2010 analyses of the GAC-filtered 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, RFR-10, and RFR-11 GAC filtration systems was performed in July 2010 and January 2011. The next carbon-canister replacement is scheduled for July 2011. Table 2 presents the results for PCE and TCE from GAC-filtered water treatment systems sampled. GAC-filtered samples are collected every six months and will be collected again in March and September 2011.

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 as shown Figure 3.

SWMU B-3 and SWMU O-1 are in the central portion of CSSA. Cleanup activities at SWMU B-3 and SWMU O-1 have included excavation and disposal of the VOC-contaminated soil and removing gases in the remaining fractured rock (soil vapor extraction [SVE]). Approximately 1,515 cubic yards of soil were removed from SWMU O-1. Approximately 1,515 cubic yards of soil were removed from SWMU O-1, and the site was closed in 2002. Approximately 17,000 cubic yards of waste and contaminated soil has been removed from SWMU B-3 since 2003. A bioreactor, designed to eliminate VOCs through accelerating biological activity of microorganisms capable of degrading PCE and TCE, was installed in 2007. Wells installed around SWMU B-3 and the bioreactor are closely monitored to determine if the system is running efficiently and effectively.

AOC-65 located in the southwest corner of CSSA was identified as another source of VOCs found in groundwater around CSSA. An SVE system has been installed and is being tested to evaluate its effectiveness and ability to remove VOCs from soil and rock in the area. Since initial operation of the SVE system began in 2002, a significant reduction in soil gas concentrations has been observed. This system was recently upgraded by adding extraction wells to increase its effectiveness, and additional SVE modification modifications and improvements are planned for the near future.

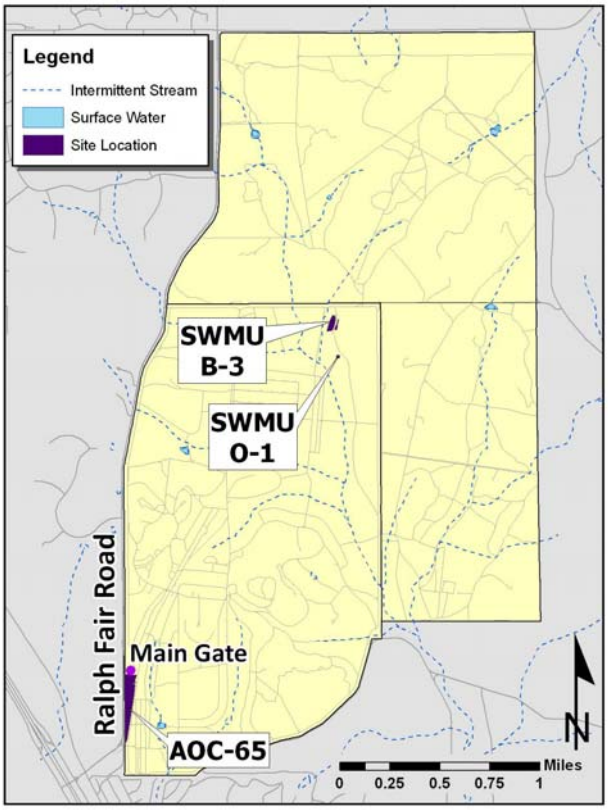


Figure 3. Locations of SWMU B-3, SWMU O-1, and AOC-65

Public Comment and Future Fact Sheets

CSSA has been issuing fact sheets similar to this Fact Sheet since 2000. We will continue to mail Fact Sheets 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. CSSA will continue to inform the public about various aspects of its environmental program. The most recent Public meetings were held in November 2009. The next Public meetings will be held in 2011. All investigation reports are available on the CSSA website (www.stanley.army.mil). 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;
- USEPA Regional Program Manager, Mr. Greg Lyssy, at (214) 665-8317;
- TCEQ Regional Program Manager, Mr. Kirk Coulter, at (512) 239-2572; or
- Fort Sam Houston, Public Affairs Office, Mr. Phillip Reidinger, at (210) 221-1151 or (210) 336-0449 (mobile)

2010 Off-Post Groundwater Analytical Results

Table 1 - Groundwater Sampling Results

Off-post wells near Plume 1

Well Number	Sample Date	PCE (ppb)	TCE (ppb)
FO-8	3/3/10	ND	ND
FO-J1	3/2/10	0.21F	ND
	6/2/10	ND	ND
	9/1/10	ND	ND
	12/14/10	0.32F	ND
FO-22	3/3/10	ND	ND
JW-5	3/2/10	ND	ND
JW-6	6/2/10	ND	ND
JW-7	3/4/10	0.46F	ND
	6/3/10	0.36F	ND
	8/31/10	0.26F	ND
	12/14/10	0.47F	ND
JW-8	3/4/10	0.19F	ND
	6/2/10	ND	ND
	9/1/10	0.22F	ND
	12/14/10	0.30F	ND
JW-9	3/4/10	ND	ND
JW-13	6/9/10	ND	ND
JW-14	3/2/10	ND	ND
	6/2/10	ND	ND
	9/1/10	ND	ND
	12/14/10	ND	ND
JW-15	3/4/09	ND	ND
JW-26	8/30/10	ND	ND
JW-27	3/4/10	ND	ND
Duplicate	3/4/10	ND	ND
JW-28	3/4/10	ND	ND
	6/3/10	ND	ND
	9/2/10	ND	ND
	12/28/10	ND	ND
JW-29	3/4/10	ND	ND
	6/3/10	ND	ND
	9/2/10	ND	ND
	12/16/10	ND	ND
JW-30	3/2/10	0.15F	ND
	6/3/10	ND	ND
Duplicate	6/3/10	ND	ND
	8/31/10	ND	ND
	12/16/10	0.17F	ND
JW-31	3/2/10	ND	ND
	6/3/10	ND	ND
	9/1/10	ND	ND
Duplicate	9/1/10	ND	ND
RFR-3	12/21/10	ND	ND
RFR-4	12/21/10	ND	ND
RFR-5	12/21/10	ND	ND
Duplicate	12/21/10	ND	ND
RFR-8	6/4/10	ND	ND
RFR-9	3/5/10	ND	ND
	6/23/10	ND	ND
	9/16/10	ND	ND
RFR-12	3/3/10	0.26F	0.38F
	6/2/10	ND	0.38F
Duplicate	6/2/10	ND	0.35F
	8/31/10	ND	0.25F
RFR-13	6/2/10	ND	ND
RFR-14	3/3/10	0.21F	ND
	6/4/10	0.16F	ND
Duplicate	6/4/10	0.17F	ND
	8/31/10	0.18F	ND
Duplicate	8/31/10	0.15F	ND
	12/16/10	ND	ND

Off-post wells near Plume 2

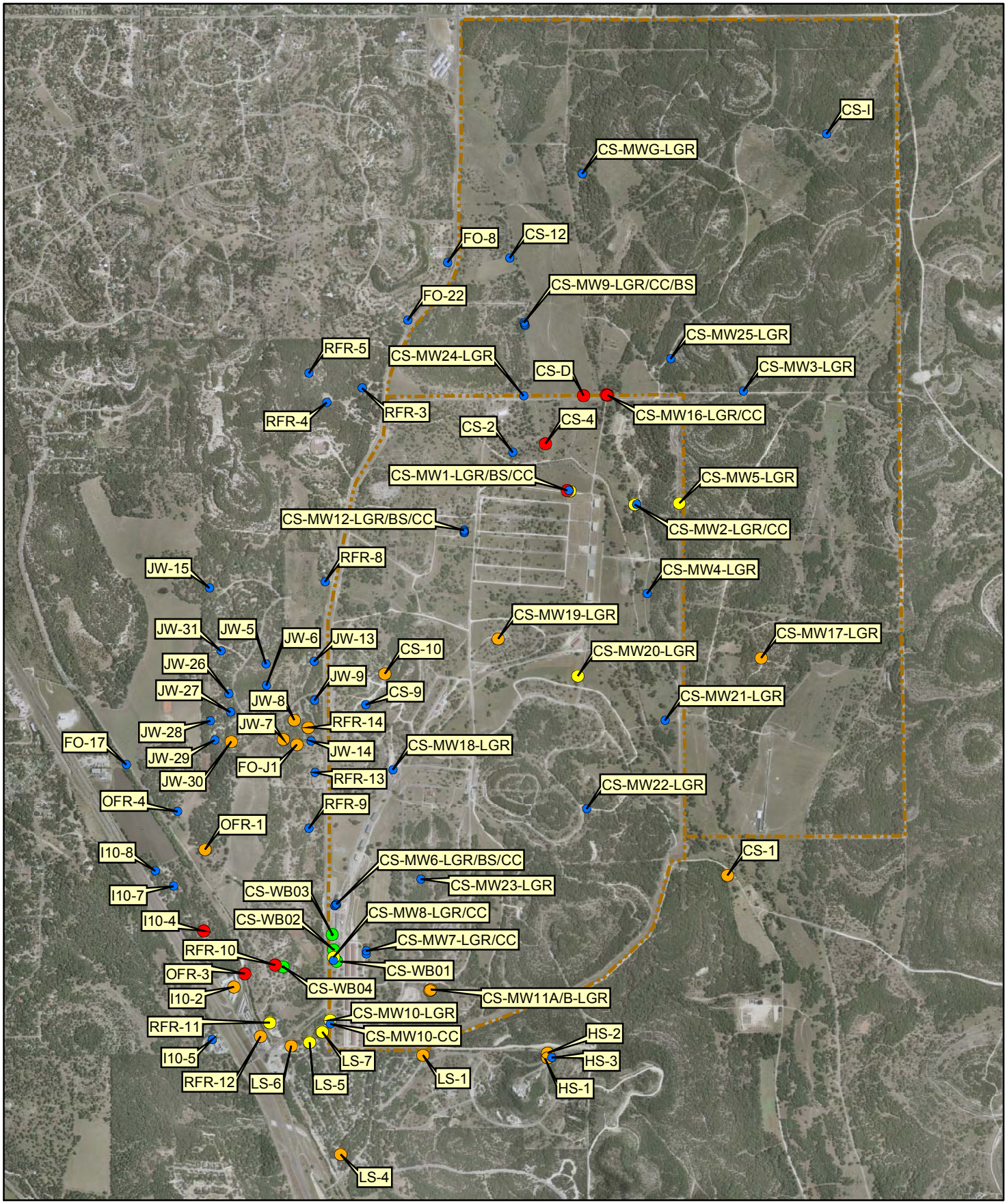
Well Number	Sample Date	PCE (ppb)	TCE (ppb)
FO-17	6/1/10	ND	ND
HS-1	12/16/10	0.24F	ND
HS-2	3/3/10	0.19F	ND
	9/2/10	ND	ND
	12/16/10	ND	ND
HS-3	6/4/10	ND	ND
I10-2	3/3/10	0.19F	ND
	6/2/10	ND	ND
	8/31/10	ND	ND
I10-4	3/2/10	0.69F	0.21F
Duplicate	3/2/10	0.59F	0.20F
	6/1/10	ND	ND
	8/31/10	**7.02**	3.55
	12/13/10	**7.86**	3.15
I10-5	3/3/10	ND	ND
I10-7	3/2/10	ND	ND
I10-8	3/3/10	ND	ND
	6/4/10	ND	ND
	9/2/10	ND	ND
	12/16/10	ND	ND
LS-1	3/1/10	0.35F	ND
	6/3/10	ND	ND
	8/30/10	0.22F	ND
Duplicate	8/30/10	0.24F	ND
	12/16/10	0.33F	ND
Duplicate	12/16/10	0.34F	ND
LS-4	3/1/10	0.17F	ND
	6/3/10	ND	ND
	8/30/10	ND	ND
	12/14/10	ND	ND
LS-5	3/1/10	1.1F	2.7
	6/1/10	0.98F	2.22
	8/30/10	0.82F	2.73
	12/13/10	1.02F	2.17
LS-6	3/1/10	1.1F	0.23F
	6/1/10	0.95F	0.23F
	8/30/10	0.78F	0.27F
	12/13/10	0.86F	0.48F
LS-7	3/1/10	0.99F	0.50F
	6/1/10	0.47F	0.19F
	8/30/10	1.68	0.24F
	12/13/10	1.75	0.35F
OFR-1	3/3/10	0.31F	ND
	6/2/10	ND	ND
	8/31/10	0.16F	ND
	12/14/10	0.29F	ND
Duplicate	12/14/10	0.32F	ND
OFR-3	3/1/10	2.3	2.4
	6/1/10	3.23	3.04
	8/30/10	**7.97**	4.96
OFR-4	3/5/10	ND	ND
Duplicate	3/5/10	ND	ND
RFR-10	3/1/10	**13**	**7.5**
	6/2/10	**10.56**	**5.05**
	8/30/10	**12.12**	**7.96**
	12/13/10	**35.48**	**12.94**
RFR-11	3/1/10	1.4	ND
	6/1/10	1.13F	ND
	8/30/10	0.59F	1.11
	12/13/10	1.07F	1.56

Table 2 - GAC System Sampling Results

Off-post wells

Well Number	Sample Date	PCE (ppb)	TCE (ppb)
LS-6-A2	3/1/10	ND	ND
	8/30/10	ND	ND
LS-7-A2	3/1/10	ND	ND
Duplicate	3/1/10	ND	ND
	8/30/10	ND	ND
OFR-3-A2	3/1/10	ND	ND
	8/30/10	ND	ND
RFR-10-A2	3/1/10	ND	ND
	8/30/10	ND	ND
RFR-10-B2	3/1/10	ND	ND
	8/30/10	ND	ND
RFR-11-A2	3/1/10	ND	ND
	8/30/10	ND	ND

Notes:
ppb = parts per billion.
MCL = Maximum Contaminant Level.
PCE = tetrachloroethene.
TCE = trichloroethene.
ND = The analyte was not detected above the method detection limit.
F = The analyte was detected, but the concentration is below the reporting limit.
BOLD = Concentration is greater than the MCL of 5 ppb for PCE or TCE.



N
W E
S

0 2,000 4,000 Feet

2010 Sampled Wells

- Wells with VOC concentrations > MCL
- Wells with VOC concentrations between RL and MCL
- Wells with VOC concentrations below the RL
- Other Non-detect Wells
- Multi-port Westbay Wells
- CSSA Fenceline

Figure 2

2010 Sampled On-Post and Off-Post Ground Water Wells Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Groundwater\Maps\2010_AnnualGW_Report_Sample_Results.mxd - 2/14/2011 @ 10:09:40 AM