# WORK PLAN GROUNDWATER SAMPLING



Prepared for:

# Camp Stanley Storage Activity Boerne, Texas

Prepared by:

### **PARSONS**

Austin, TX

December 2011

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#### 1.0 INTRODUCTION

Parsons is under contract to provide groundwater monitoring in December 2011 through September 2012. Services will be provided for Camp Stanley Storage Activity (CSSA), Boerne, Texas. The work shall be performed in accordance with requirements of the Resource Conservation and Recovery Act (RCRA) 3008(h) Order in effect for CSSA.

This work plan provides a description of the activities to be conducted to complete the requirements of the scope of work in effect for this contract. Existing work plans for current and previous CSSA task orders fulfilled by Parsons are in effect and are available in the CSSA Environmental Encyclopedia, Volume 1, Work Plans. Activities to be conducted will follow the provisions of those prior work plans, as applicable. This work plan sets out project-specific activities directly related to groundwater monitoring to be conducted under this contract.

#### 2.0 GROUNDWATER MONITORING SCOPE OF WORK

The activities covered by this work plan include monitoring existing on- and off-post groundwater wells, expanding the off-post well network to include additional wells in the plumes path, sampling Westbay-equipped wells, providing data validation, and providing on- and off-post granular activated carbon (GAC) maintenance, through September 2012.

#### 2.1 GROUNDWATER SAMPLING

Four groundwater monitoring events (December 2011, March, June, and September 2012) will be performed at selected monitoring wells both on- and off-post. Specific schedules and requirements for periodic monitoring shall conform to the approved Long-Term Monitoring Well Optimization (LTMO) study (Nov. 2010) completed for CSSA. The sampling schedule included in this work plan includes the 9-month "snapshot" event that has been implemented since December 2009 as part of an LTMO modification. The snapshot event includes the sampling of a limited number of Westbay LGR intervals to assess the groundwater condition near the AOC-65 source area.

The estimated number of samples to be collected is 73 in December 2011, 103 in March 2012, 15 in June 2012, and 83 in September 2012. **Table 2-1** indicates the number of wells and sampling parameters to be completed under this TO. This sample count may also be adjusted in times of extreme weather to ensure adequate sample coverage. Parsons will confirm that right-of-entry agreements are in place for each of the off-post wells to be sampled, and will adjust their sampling schedule as necessary to meet the needs of the off-post residents. Wells to be sampled are shown on **Attachments 1** through **4**.

Prior to sampling, each well will be purged in accordance with low-flow sampling techniques. Parsons will follow the methods approved in CSSA Quality Assurance Program Plan (QAPP) and the Sampling and Analysis Plan (SAP) for this contract. Quality Assurance/Quality Control (QA/QC) sampling and analysis will be performed to meet the requirements in the CSSA QAPP. The purge water from on-post wells will be containerized, transported and applied to the SWMU B-3 Bioreactor for disposal. Further details on the groundwater sampling are included in the sampling and analysis plan.

#### 2.2 GRANULAR ACTIVATED CARBON MAINTENANCE

CSSA has installed GAC treatment systems at private off-post wells in which PCE concentrations reached 90% or greater of the MCL. Installation of an additional GAC treatment system was included in the scope of this contract in the event that an additional system was required at an off-post location. On October 6, 2011, a GAC treatment system was installed at LS-5 following the September 2011 sampling event, which indicated the well contained 4.8  $\mu g/L$  trichloroethane (TCE), a concentration that is 96% of the MCL. The system includes a dual carbon-canister/ultraviolet light treatment system within an insulated freeze shed, and is consistent the GAC units already installed at five other off-post locations. The system will effectively remove the VOCs from the groundwater well without affecting service flow or pressure to the residence.



#### Off-Post Well LS-5 GAC System

This work plan also includes maintenance of the GAC systems installed by CSSA which are located at private off-post properties. The GAC system maintenance shall include effluent sampling and GAC carbon canister replacement as necessary for off-post GAC systems. Parsons will perform two carbon changes (January and July 2012) at each of the six off-post GACs (including the new GAC) for the duration of this task. Also included in this task is sending a CSSA representative to each off-post GAC system every three weeks to change pre- and post-GAC filters, as well as to inspect the system for proper operation.

#### 2.3 ANALYTICAL VALIDATION AND VERIFICATION

The analytical validation and verification task includes issues related to analytical data, including oversight of sample collection and submittal efforts, interaction with the selected laboratory, data verification, data validation, and management of electronic analytical data. Groundwater results from the on- and off-post monitoring and drinking water wells are validated in accordance with the CSSA QAPP. Westbay and GAC effluent sampling will meet the requirements of the Camp Stanley QAPP and Groundwater Monitoring DQOs as screening level data.

Table 2-1
Estimated Sample Quantities and Analytical Parameters

	Analyses & Method									
Well Type/Tot	al No. Wells	SO A 8260	Metals	Drinking Water Well Metals	Trip Blank (per cooler)	SW (%5) 8260	OSW (%5) 8260	Field Duplicates (10%)		
December 2011										
Total Wells	73	8260	6010	6010	8260	8260	8260	8260		
CSSA Wells		14	10	4	3	1	1	1		
Westbay Intervals		43	0	0	0	0	0	0		
Off-Post Supply Wells*		16	0	0	2	1	1	2		
	March 2012									
Total Wells	103	8260	6010	6010	8260	8260	8260	8260		
CSSA Wells		34	30	4	4	2	2	3		
Westbay Intervals		11	0	0	0	0	0	0		
Off-Post Supply Wells*		58	0	0	4	3	3	6		
	June 2012									
Total Wells	15	8260	6010	6010	8260	8260	8260	8260		
CSSA Wells		6	2	4	2	1	1	1		
Westbay Intervals		0	0	0	0	0	0	0		
Off-Post Supply Wells*		9	0	0	1	1	1	1		
	September 2012									
Total Wells	83	8260	6010	6010	8260	8260	8260	8260		
CSSA Wells		12	8	4	2	1	1	1		
Westbay Intervals		56	0	0	0	0	0	0		
Off-Post Supply Wells*		15	0	0	2	1	1	2		

<sup>\*</sup>Off-post supply wells include post GAC sampling for wells with treatment systems every six months.

Parsons will oversee analysis for each sampling event, including reviewing each chain-of-custody for accuracy and completeness, verifying that the laboratory sample log-in sheets match the chain-of-custody forms, addressing any sample receipt issues (such as broken sample containers), and maintaining continuous contact with the laboratory regarding scheduling.

Laboratory data packages will be reviewed by Parsons chemists for completeness and adherence to the CSSA QAPP and the approved laboratory variances. All associated analytical QA/QC data will be examined, and all exceptions will be noted in both the case narrative and data verification report (DVR). The sample results associated with noncompliant QC performance will be qualified in accordance with the CSSA QAPP.

Following verification of the laboratory data, the data usability as related to the project DQOs will be assessed. Validation will include examination of historical data (if available), laboratory data trends, and the reasons for data collection. Based on the overall assessment of the data, flags may be removed or changed to reflect usability of the data. The basis for such changes will be detailed in the project summary report.

Electronic data submitted by the laboratories will be loaded into the CSSA GIS database, verified for accuracy, and updated to reflect all data qualifier changes incurred through the data verification and validation process. The data are to be supplied in Environmental Resource Program Information Management System (ERPIMS) compliant format.

#### 2.4 REPORTING PROCEDURES

Various reports are required under the this scope of work, including: Quarterly Groundwater Monitoring Reports for September 2011, March 2012, and June 2012 sampling events, December 2011 Annual Groundwater Report, Health and Safety Plan, Sampling and Analysis Plan, Project Activities Work Plan, Status Reports, Annual Fact Sheet, and Individual Off-Post Well Owner Letters. Specific reporting procedures will follow the provisions of the statement of work (SOW) and the procedures set out below.

#### 2.4.1. GROUNDWATER REPORTS

Results from the four rounds of groundwater sampling will be included in the quarterly groundwater reports for September, December 2011, March, and June 2011. The preliminary analytical data will be provided to CSSA within five days of receipt at Parsons. All reports will be prepared as both draft and final versions, with one round of government comments before issuance of the final reports. The summary quarterly groundwater reports will document the findings of contaminant concentration and delineation.

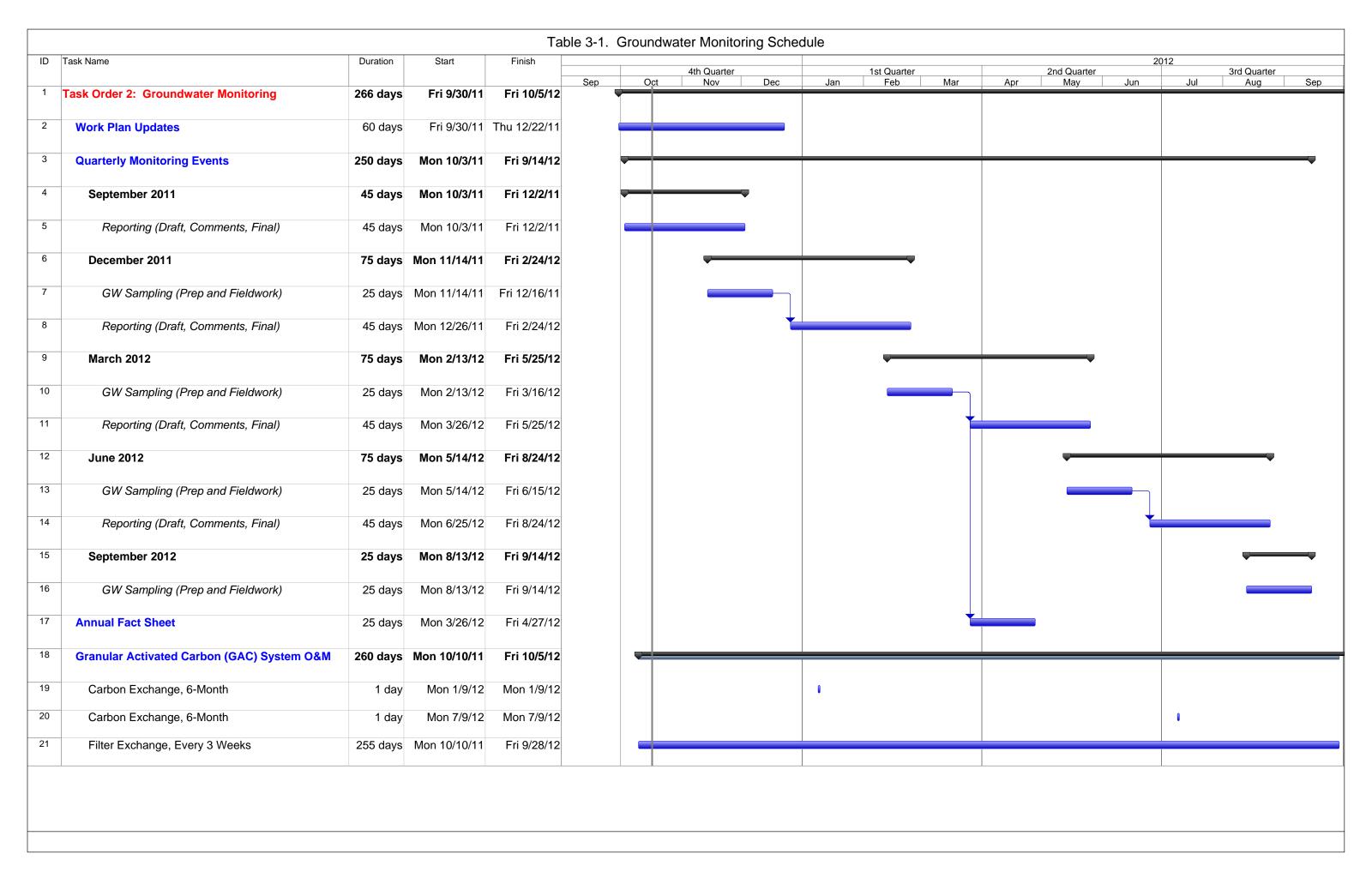
#### 2.4.2. REPORT DISTRIBUTION

From the field efforts for groundwater monitoring covered in this work plan, four reports will be submitted in draft and final versions. The draft version will be submitted to CSSA electronically, in Word and PDF formats. Parsons will incorporate CSSA comments into the final version. The final version will be submitted electronically. The final reports will be added electronically to the Environmental Encyclopedia website and the Document Management System (DMS). An electronic copy will also be posted to CSSA's FTP site.

#### 3.0 SCHEDULE

The activities covered by this work plan will be performed in accordance with the schedule given in **Table 3-1**.

Table 3-1 provides a tentative timeline for the progression of work. With the current scope of work, quarterly groundwater reporting will be completed by September 2012. The schedule will be maintained and updated, and submitted with the bi-monthly status reports.



### Attachments 1 through 4 On-post and Off-post Groundwater Wells, CSSA

