WORK PLAN GROUNDWATER SAMPLING



Prepared for:

Camp Stanley Storage Activity Boerne, Texas

Prepared by:

PARSONS

Austin, TX December 2012

TABLE OF CONTENTS

2.0	GRO	UNDWA	ATER MONITORING SCOPE OF WORK				
	2.1	Groun	dwater Sampling				
	2.2	Granular Activated Carbon Maintenance					
	2.3	Analytical Validation And Verification					
	2.4	Reporting Procedures					
		2.4.1	Groundwater Reports				
		2.4.2	Report Distribution				
		2.4.3	Annual Fact Sheet				
		2.4.4	Well Owner Letters				

LIST OF TABLES

Table 2-1	Estimated Sample Quantities and Analytical Parameters
Table 3-1	Schedule

ATTACHMENTS

Attachment 1	On-post Groundwater Wells, CSSA
Attachment 2	Western Off-Post Groundwater Wells, CSSA
Attachment 3	Southwestern Off-Post Groundwater Wells, CSSA
Attachment 4	Far Western Off-Post Groundwater Wells, CSSA

1.0 INTRODUCTION

Parsons is under contract to provide groundwater monitoring in December 2012 through September 2013. 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 downgradient of the plume, sampling Westbay-equipped wells, providing data validation, and providing on- and off-post granular activated carbon (GAC) maintenance, through September 2013.

2.1 GROUNDWATER SAMPLING

Four groundwater monitoring events (December 2012, March, June, and September 2013) 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, which will be conducted in December 2012 and September 2013, 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 112 in December 2012, 22 in March 2013, 61 in June 2013, and 105 in September 2013. **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 is required at an additional off-post location, or if an existing GAC needs to be replaced.

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 includes effluent sampling and GAC carbon canister replacement as necessary for off-post GAC systems. Parsons will perform two carbon changes (January and July 2013) at each of the six off-post GACs for the duration of this task. Also included in this task is changing pre- and post-GAC filters at each off-post GAC system every three weeks, as well as inspection of each 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 sampling will meet the requirements of the Camp Stanley QAPP and Groundwater Monitoring DQOs as screening level data.

	Analyses & Method										
		VOCs	Metals	Drinking Water Well Metals	Trip Blank (per cooler)	MS (5%)	MSD (5%)	Field Duplicates (10%)			
Well Type/Tot	al No. Wells	8260	6010	6010	8260	8260	8260	8260			
December 2012											
Total Wells	112	8260	6010	6010	8260	8260	8260	8260			
CSSA Wells		48	45	3	4	2	2	5			
Westbay Interva	ls	8	0	0	0	0	0	0			
Off-Post Supply	Wells*	56	0	0	3	3	3	6			
			Ma	arch 2013							
Total Wells	22	8260	6010	6010	8260	8260	8260	8260			
CSSA Wells		5	2	3	1	1	1	1			
Westbay Interva	ls	0	0	0	0	0	0	0			
Off-Post Supply	Wells*	17	0	0	2	1	1	2			
		June 2013									
Total Wells	61	8260	6010	6010	8260	8260	8260	8260			
CSSA Wells		14	11	3	2	1	1	1			
Westbay Interva	ls	37	0	0	0	0	0	0			
Off-Post Supply Wells*		10	0	0	1	1	1	1			
		September 2013									
Total Wells	105	8260	6010	6010	8260	8260	8260	8260			
CSSA Wells		34	31	3	3	2	2	3			
Westbay Interva	ls	8	0	0	0	0	0	0			
Off-Post Supply	Wells*	63	0	0	3	3	3	6			

 Table 2-1

 Estimated Sample Quantities and Analytical Parameters

*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-ofcustody 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),

4

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 2012, March 2013, and June 2013 sampling events; 2012 Annual Groundwater Report; 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 quarterly groundwater sampling will be included in the quarterly groundwater reports for September, 2012, March 2013, and June 2013. Both an on-post and an off-post report will be prepared for each quarter. Results from the December 2012 quarterly event will be included with the other 2012 data in the 2012 Annual Groundwater Report. The preliminary analytical data for each event 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 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.

2.4.3 Annual Fact Sheet

Since 2000, CSSA has issued a fact sheet annually to approximately 200 residents, who live in the areas surrounding CSSA. Parsons will prepare this fact sheet in the spring in draft form and submit to CSSA electronically, in Word and PDF formats. Parsons will incorporate CSSA comments into the final version. The four-page sheet will provide an overview of quarterly groundwater sampling conducted during the prior year. Information includes a map of on- and off-post wells and analytical sampling results. Parsons will disseminate the final version of the fact sheet on behalf of CSSA, after the Installation Manager has approved it for distribution. The final Fact Sheet 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.

2.4.4 Well Owner Letters

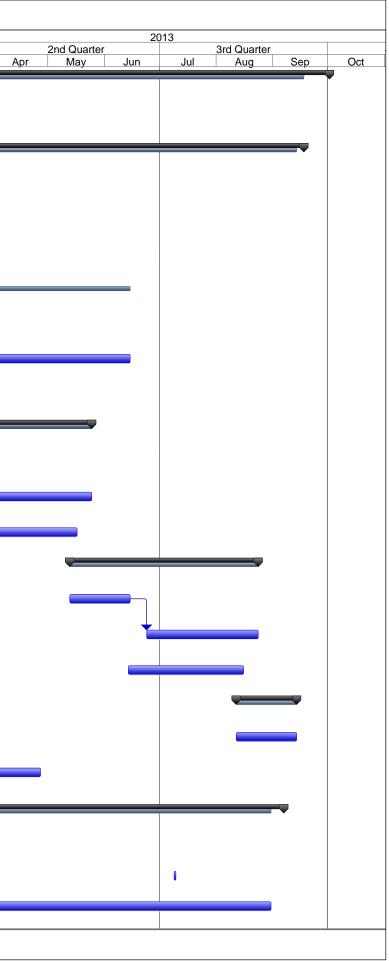
Each quarter, letters are sent by CSSA to each person or entity that owns or uses a well offpost. Parsons prepares the letters, then forwards to CSSA, who will then send out the letters. The letters will advise that sampling was done, the results of that sampling, and whether or not there are any issues regarding that well, including any remedies to be taken by CSSA. The final versions of the well owner letters will be added electronically to the Environmental Encyclopedia website and the Document Management System (DMS).

3.0 SCHEDULE

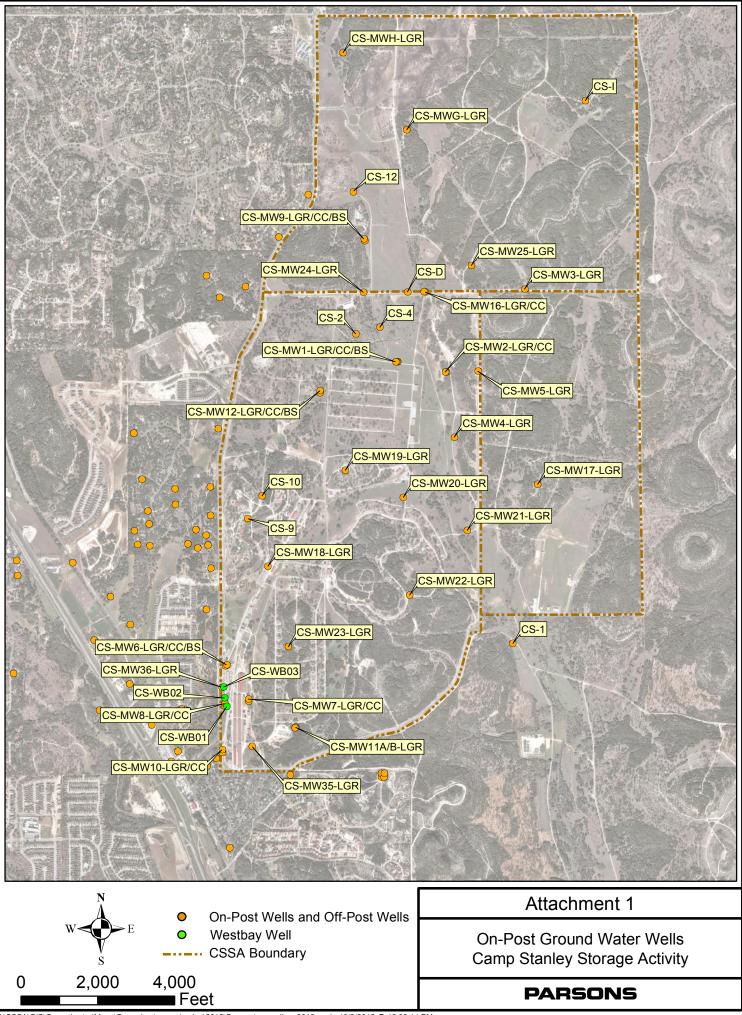
The activities covered by this work plan will be performed in accordance with the schedule given in **Table 3-1**.

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 2013.

	–			le 3-1 Groundwater Mo		Conocado	•			
ID	Task Name	Duration	Start	Finish Predecessors	Oct	4th Quarter Nov	Dec	Jan	1st Quarter Feb	Mar
1	Task Order 2: Groundwater Monitoring	277 days	Mon 9/10/12	Tue 10/1/13		1107		Jan		
2	Work Plan Updates	60 days	Mon 9/10/12	Fri 11/30/12						
3	Quarterly Monitoring Events	250 days	Wed 10/3/12	Tue 9/17/13	-					
4	September 2012	45 days	Wed 10/3/12	Tue 12/4/12	-		•			
5	Quarterly Reports (Draft, Comments, Final)	45 days	Wed 10/3/12	Tue 12/4/12						
6	Well Owner Letters	45 days	Wed 10/3/12	Tue 12/4/12						
7	December 2012	75 days	Mon 11/12/12	Fri 2/22/13	_					
В	GW Sampling (Prep and Fieldwork)	25 days	Mon 11/12/12	Fri 12/14/12	_					
9	Annual Report (Draft, Comments, Final)	125 days	Mon 12/24/12	Fri 6/14/138FS+5 days	_					
10	Well Owner Letters	45 days	Mon 12/17/12	Fri 2/15/13	_					
1	March 2013	75 days	Mon 2/11/13	Fri 5/24/13	_					
2	GW Sampling (Prep and Fieldwork)	25 days	Mon 2/11/13	Fri 3/15/13	_					 -
13	Quarterly Reports (Draft, Comments, Final)	45 days	Mon 3/25/13	Fri 5/24/13 12FS+5 days						
4	Well Owner Letters	45 days	Fri 3/15/13	Thu 5/16/13	-					
5	June 2013	75 days	Mon 5/13/13	Fri 8/23/13						
6	GW Sampling (Prep and Fieldwork)	25 days	Mon 5/13/13	Fri 6/14/13	_					
7	Quarterly Reports (Draft, Comments, Final)	45 days	Mon 6/24/13	Fri 8/23/13 16FS+5 days	_					
8	Well Owner Letters	45 days	Fri 6/14/13	Thu 8/15/13	_					
9	September 2013	25 days	Mon 8/12/13	Fri 9/13/13						
0	GW Sampling (Prep and Fieldwork)	25 days	Mon 8/12/13	Fri 9/13/13	_					
21	Annual Fact Sheet	25 days	Mon 3/25/13	Fri 4/26/13 12FS+5 days	_					
2	Granular Activated Carbon (GAC) System O&M	260 days	Mon 9/10/12	Fri 9/6/13						
23	Carbon Exchange, 6-Month	1 day	Wed 1/9/13	Wed 1/9/13	-			•		
24	Carbon Exchange, 6-Month	1 day	Tue 7/9/13	Tue 7/9/13						
25	Filter Exchange, Every 3 Weeks	255 days	Mon 9/10/12	Fri 8/30/13						



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



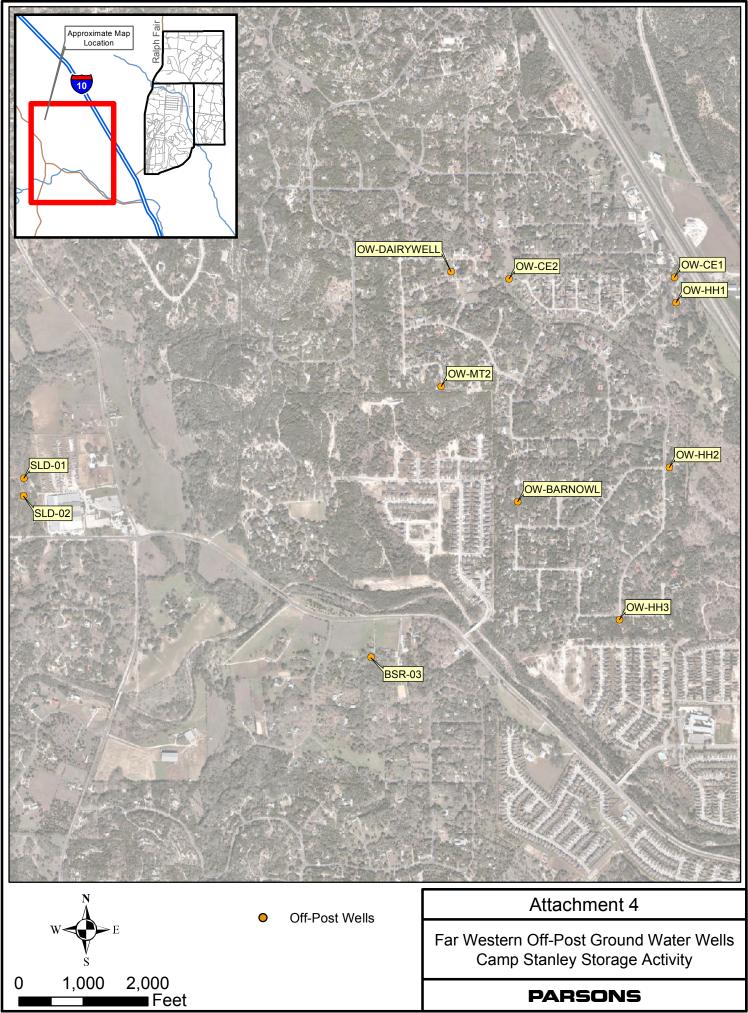
J:\CSSA\GIS\Groundwater\Maps\Groundwater_work_plan\2012\On_post_sampling_2012.mxd - 10/3/2012 @ 12:02:14 PM



J:\CSSA\GIS\Groundwater\Maps\Groundwater_work_plan\2012\Offpost_western_2012.mxd - 10/3/2012 @ 12:14:22 PM



J:\CSSA\GIS\Groundwater\Maps\Groundwater_work_plan\2012\Offpost_southern_2012.mxd - 10/3/2012 @ 11:12:11 AM



J:\CSSA\GIS\Groundwater\Maps\Groundwater_work_plan\2012\Offpost_farwestern_2012.mxd - 10/3/2012 @ 12:06:38 PM