



DEPARTMENT OF THE ARMY
CAMP STANLEY STORAGE ACTIVITY, MCAPP
25800 RALPH FAIR ROAD, BOERNE, TX 78015-4800

July 17, 2013

U-096-13

Mr. Bryan Smith
Texas Commission on Environmental Quality
Industrial and Hazardous Waste Permits Section
P.O. Box 13087 (MC-130)
Austin, TX 78711-3087

Subject: Annual Status Report (Month 61 - Month 72, May 1, 2012 - April 30, 2013) of the Pilot Study Class V Aquifer Remediation Injection Wells at Camp Stanley Storage Activity, Boerne, Texas, TCEQ Authorization No. 5X2600431; WWC12002216; CN602728206/RN104431655

Dear Mr. Smith:

The Camp Stanley Storage Activity (CSSA), McAlester Army Ammunition Plant, U.S. Army Field Support Command, Army Materiel Command, U.S. Army, is submitting this annual report summarizing the injection activities performed at the on-post Solid Waste Management Unit (SWMU) B-3 site. The activities performed are part of the planned SWMU B-3 Pilot Study being performed to evaluate the effectiveness of enhanced anaerobic biodegradation (EAB) for treatment of chlorinated compounds in groundwater. The pilot study activities include the injection of recovered groundwater into mulch/gravel filled bioreactor trenches.

This annual report contains data as specified by the Texas Commission on Environmental Quality (TCEQ) Underground Injection Control (UIC) permit for the months of May, 2012 through April, 2013 (Months 61-72). The annual reporting data includes monthly and quarterly samples of the injected groundwater for volatile organic concentrations (VOCs) and total dissolved solids (TDS) and field collected parameters including injection volumes, injection pressures and the pH of recovered groundwater. Data indicates that concentrations of contaminants did not exceed limits specified in 40 CFR §261.24 Table 1 as referenced in CSSA's UIC permit authorization.

Between May 1, 2012 and April 30, 2013 approximately 15,218,814 gallons of groundwater from wells CS-MW16-CC (~5,332,600 gallons), CS-MW16-LGR (~1,575,100 gallons), B3-EXW-01 (~2,152,000 gallons), B3-EXW-02 (~2,579,200 gallons), B3-EXW-03 (~1,464,000 gallons), B3-EXW-04 (~1,096,000 gallons), and B3-EXW-05 (~937,500 gallons) were injected into SWMU B-3 bioreactor trenches 1 and 6. A total of 73,841,268 gallons of recovered groundwater from CS-MW16-LGR, CS-MW16-CC, B3-EXW01, B3-EXW02, B3-EXW03, B3-EXW04, and B3-EXW05 have been injected into bioreactor trenches since normal bioreactor operations began. During this period, sampling efforts associated with this UIC permit was reduced from a monthly to a quarterly basis as authorized in TCEQ

correspondence dated February 17, 2012. Samples of the injected groundwater, for this reporting period, were collected on May 29, June 26, July 26 and October 29, 2012, and January 16, and April 15, 2013. Results of analysis are summarized in the attached Table 1. An additional 14,860 gallons of recovered groundwater were injected into the bioreactor. This additional water was generated from well drilling efforts located on post (12,100 gallons from B3-EXW-05, and 150 gallons from each ISCO Injection Well installed at AOC-65 as authorized by TCEQ Authorization No. 5X2600645) and well development efforts on post (2,160 gallons from CS-MW2-LGR). The laboratory data packages for characterization of the managed water for the newly drilled wells are included in the accompanying CD as is the most recent data package for CS-MW2-LGR prior to development. Field forms which contain operating pressures and pH readings for the reporting period are attached and the laboratory data packages are included in the accompanying CD.

If you have any questions regarding the information contained in this letter, please feel free to contact Gabriel Moreno-Fergusson, CSSA Environmental Program Manager, at (210) 295-7453 or Ken Rice, Parsons, at (512)719-6050.

Sincerely,


Jason D. Shirley
Installation Manager

Enclosures

cc: Gabriel Moreno-Fergusson, CSSA Environmental Program Manager
Julie Burdey, Parsons (ltr only)
Ken Rice, Parsons
File: 748350.01100

Table 1

SWMU B3 UIC Analytical Summary Table
May 2012 - April 2013

Sample ID	Sample Date		Sample Type		Sampling Method		Lab ID		B3-UIC Criteria		Results		Flags		Dilution		Results		Flags		Dilution	
	Lab	Lab	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL	MDL	PQL
	(RCRA Haz.)																					
SW8260B (µg/L) cis-DCE trans-DCE TCE PCE Toluene Vinyl chloride EPA 160.1 (mg/L) TDS	0.07	1.2	0.08	0.6	3.2	1.0	500	0.06	1.4	700	0.06	1.1	200	0.08	1.1	4.4	10	114	2	1	1	354
	0.08	0.6	0.05	1.0	107	2	84	0.06	1.4	700	0.06	1.1	200	0.08	1.1	352	1	94	2	1	1	352
	0.06	1.4	0.06	1.4	93	1	69	0.06	1.4	700	0.06	1.1	200	0.08	1.1	395	1	80	1	1	1	395
	0.06	1.1	0.06	1.1	107	2	84	0.06	1.4	700	0.06	1.1	200	0.08	1.1	368	1	76	1	1	1	368
	0.08	1.1	0.08	1.1	107	2	84	0.08	1.1	200	0.08	1.1	200	0.08	1.1	384	1	76	1	1	1	384
	0.06	1.4	0.06	1.4	93	1	69	0.06	1.4	700	0.06	1.1	200	0.08	1.1	368	1	76	1	1	1	368
	0.06	1.4	0.06	1.4	93	1	69	0.06	1.4	700	0.06	1.1	200	0.08	1.1	368	1	76	1	1	1	368
	0.06	1.4	0.06	1.4	93	1	69	0.06	1.4	700	0.06	1.1	200	0.08	1.1	368	1	76	1	1	1	368
	0.06	1.4	0.06	1.4	93	1	69	0.06	1.4	700	0.06	1.1	200	0.08	1.1	368	1	76	1	1	1	368
	0.06	1.4	0.06	1.4	93	1	69	0.06	1.4	700	0.06	1.1	200	0.08	1.1	368	1	76	1	1	1	368

Tables present all laboratory results for analytes.

Data packages for laboratory results are presented in Attachment 1.

All samples were analyzed by APPL Laboratory Services.

pH results reported were field measured.

UIC criteria specified in 40 CFR 261.24 Table 1.

Data Qualifiers:

U - The analyte was analyzed for, but not detected. The associated numerical value is the MDL.

Abbreviations:

- MDL Method Detection Limit
- PQL Practical Quantitation Limit
- N1 Environmental Sample
- UIC Underground Injection Control

TCEQ Correspondence

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 17, 2012

Mr. Jason Shirley
Installation Manager
U.S. Army, Camp Stanley Storage Activity
25800 Ralph Fair Road
Boerne, TX 78015

Re: Amendment to Class V Authorization
TCEQ Authorization No. 5X2600431
CN602728206/RN104431655
Camp Stanley Storage Activity
25800 Ralph Fair Road
Boerne, TX 78015

Dear Mr. Shirley:

The Underground Injection Control (UIC) staff has completed review of the modification request dated August 29, 2011 requesting approval to change the data collection and reporting requirements for the above authorization. The following change has been made to the above Class V authorization.

Injection volumes, pressures, and concentrations of contaminants (including pH and total dissolved solids) in the injected groundwater shall be sampled quarterly at the point of reinjection (prior to fluids being released into the trenches). The concentration of contaminants in the trench bioreactor monitoring sumps and the surrounding monitoring wells shall be sampled semiannually. All monitoring and sampling data shall be submitted to the UIC Permits Team, Radioactive Materials Divisions, at mail code MC 233 on an annual basis. All other requirements of the above mentioned authorization remain in effect.

If you have any questions regarding this matter, please contact me at (512) 239-6075. If you will be corresponding by mail, please use mail code MC 233.

Sincerely,

A handwritten signature in black ink, appearing to read "Bryan S. Smith".

Bryan S. Smith
Underground Injection Control Permits Team
Radioactive Materials Division

BSS/nlc

cc: Mr. Ken Rice, Parsons, 8000 Centre Park Drive, Suite 200, Austin, TX 78754

Field Forms

Personnel		Elliott + Lindley				
Weekly Water Level Monitoring						
Well Interval	Sampling Port Depth (ft BTOC)	Sample Date	Sample Time	Pressure at TOC (psi)	Pressure in MP (psi)	Zone Pressure (psi)
CS-WB05-LGR-01	99	7/2/12	0930	14.06	^{14.10} 14.07	19.78
CS-WB05-LGR-02	182		0929		^{14.15} 14.10	14.09
CS-WB05-LGR-03A	216		0928		^{14.17} 14.18	14.08
CS-WB05-LGR-03B	262		0927		^{15.66} 15.46	15.24
CS-WB05-LGR-04A	277		0926		^{22.22} 22.04	19.22
CS-WB05-LGR-04B	329		0924		^{44.84} 44.71	41.71
CS-WB05-BS-01	362		0921		^{59.18} 59.07	56.79
CS-WB05-CC-01	432		0920		^{89.58} 89.49	62.75
CS-WB05-CC-02	460		0919		^{101.75} 101.64	75.34
CS-WB06-UGR-01	20		0854	14.00	^{14.10} 14.06	16.25
CS-WB06-LGR-01	93		0853		^{14.14} 14.10	16.36
CS-WB06-LGR-02	174		0852		^{14.15} 14.10	19.84
CS-WB06-LGR-03A	207		0851		^{14.19} 14.14	21.93
CS-WB06-LGR-03B	260		0850		^{25.77} 25.73	44.86
CS-WB06-LGR-04	320		0849		^{51.82} 51.81	40.62
CS-WB07-UGR-01	14		0910	14.01	^{14.09} 14.06	14.13
CS-WB07-LGR-01	90		0909		^{14.13} 14.07	34.12
CS-WB07-LGR-02	175		0907		^{14.17} 14.07	27.48
CS-WB07-LGR-03A	208		0905		^{14.16} 14.09	13.70
CS-WB07-LGR-03B	257		0904		^{14.21} 14.14	30.90
CS-WB07-LGR-04	318		0903		^{24.24} 24.20	40.33
CS-WB08-UGR-01	38		0839	13.98	^{14.08} 14.05	18.22
CS-WB08-LGR-01	115		0838		^{14.13} 14.02	19.29
CS-WB08-LGR-02	193		0837		^{14.15} 14.07	20.52
CS-WB08-LGR-03A	228		0835		^{14.18} 14.10	13.66
CS-WB08-LGR-03B	273		0834		^{24.20} 24.12	13.70
CS-WB08-LGR-04	341		0833		^{53.77} 53.74	41.79

Personnel: J. Bouch

Trench Sumps Water Levels (BTOC)

Sump ID	Sump Depth (ft BTOC)	Sump Water Level (ft BTOC)	pH	Temp (deg. C)	SpCond (mS/cm)	ORP	DO (mg/L)	Trench Currently Being Used (N)	Notes
Date: 10-9-12 Time: 1415									
B3-T1-1	12.9	7.08	6.71	24.59	0.988	-25.0	0.07		
B3-T1-2	12.4	4.43	6.20	22.09	0.495	105.4	0.11		
B3-T1-3	12.85	4.52	6.09	24.58	0.782	17.0	0.09		
B3-T2-1	9.67	6.04	7.55	29.67	1.013	108.6	0.16		
B3-T2-2	10.01	6.54	6.96	27.61	1.574	-14.5	0.11		
B3-T3-1	9.96	6.49	7.07	29.75	1.062	116.7	0.19		
B3-T3-2	7.4	DR							
B3-T4-1	6.32	DR							
B3-T5-1	9.33	3.82							
B3-T5-2	7.98	4.87							
B3-T6-1	11.45	7.58	6.24	22.68	0.593	33.00	0.00		
B3-T6-2	12.34	7.35	6.29	22.67	0.671	-18.6	0.01		
B3-UIC									

B-3 Transfer System Monitoring

Meter	Monday	Tuesday	Wednesday	Thursday	Friday
Date/Time:	10-9-12 1000	10-9-12 1405	10-10-12 0805	10-11-12 1500	10-12-12 1045
Rate (gpm) / Cumulative Total (gal)					
CS-MW16-LGR	162317	163758	164715	164751	167341
CS-MW16-CC	917161	936078	948528	970211	993578
B3-EXW01	1019067	1023526	1032609	1047944	1057199
B3-EXW02	135267	150412	160551	177401	188153
B3-EXW03				1047744	
B3-EXW04					
B3-EXW05					
T-1	13.4	429501	44435	469149	483534
T-6	5.77	409117	4100824	412428	419518
Meter In:					
Meter Out:	15.7pm	19.91	40107	438519	462750
Tank Levels:	3800	4300	3800	4300	4300
Bag Filter Pressure (In/Out):	14/8	7/3	8/3	5/5	5/5
Change BF:	150µ	150µ	150µ	75µ	75µ

Notes:
 Suckers hit line for 16 wells. Turned off wells @ 0945. Turned on @ 1140.
 1) 7/3 (2) 3/3 HHR change
 2) 1/3
 3) 1/3
 4) 1/3
 5) 1/3
 Hillbik @ B3 fixing leads - fixed manifold out side and leads inside Tank 4400 + 13
 Transfer pump to make sure it works fluid transfer to tank and 550 of all trenches open TP wind back wards, some leaks 15.2 gpm

Personnel		Elliott + Bouch				
Weekly Water Level Monitoring						
Well Interval	Sampling Port Depth (ft BTOC)	Sample Date	Sample Time	Pressure at TOC (psi)	Pressure in MP (psi)	Zone Pressure (psi)
CS-WB05-LGR-01	99	10-9-12	1121	14.02	^{14.10} 14.11	14.72
CS-WB05-LGR-02	182		1120		^{14.15} 14.15	14.14
CS-WB05-LGR-03A	216		^{14.17} 14.18		14.34	
CS-WB05-LGR-03B	262		^{15.66} 15.22		31.16	
CS-WB05-LGR-04A	277		^{22.22} 21.75		38.44	
CS-WB05-LGR-04B	329		^{44.84} 44.40		61.16	
CS-WB05-BS-01	362		^{59.18} 58.77		74.48	
CS-WB05-CC-01	432		^{89.58} 89.18		65.26	
CS-WB05-CC-02	460		^{101.75} 101.35		77.58	
CS-WB06-UGR-01	20			1149	14.05	^{14.10} 14.04
CS-WB06-LGR-01	93		1148	^{14.14} 14.09		16.44
CS-WB06-LGR-02	174		1147	^{14.15} 14.14		32.29
CS-WB06-LGR-03A	207		1146	^{14.19} 14.17		26.87
CS-WB06-LGR-03B	260		1145	^{25.77} 25.71		49.83
CS-WB06-LGR-04	320		1144	^{51.82} 51.80		62.71
CS-WB07-UGR-01	14		1135	14.08	^{14.08} 14.08	15.52
CS-WB07-LGR-01	90		1134		^{14.13} 14.10	31.31
CS-WB07-LGR-02	175		1133		^{14.17} 14.13	26.90
CS-WB07-LGR-03A	208		1132		^{14.16} 14.15	16.21
CS-WB07-LGR-03B	257		1131		^{14.21} 14.22	37.23
CS-WB07-LGR-04	318		1130		^{24.24} 24.19	60.38
CS-WB08-UGR-01	38		1203	14.03	^{14.08} 14.06	19.39
CS-WB08-LGR-01	115		1202		^{14.13} 14.10	19.23
CS-WB08-LGR-02	193		1201		^{14.15} 14.13	22.01
CS-WB08-LGR-03A	228		1200		^{14.18} 14.17	14.19
CS-WB08-LGR-03B	273		1159		^{24.20} 24.15	32.52
CS-WB08-LGR-04	341	↓	1158		^{53.77} 53.73	62.87

Personnel: J. Bowden; S. Elliott

Trench Sumps Water Levels ('BTOC)

Sump ID	Sump Depth (ft BTOC)	Sump Water Level (ft BTOC)	pH	Temp. (deg. C)	SpCond. (mS/cm)	ORP	DO (mg/L)	Trench Currently Being Used (NY)	Notes
Date: <u>10-17-12</u> Time: <u>0900</u>									
B3-T1-1	12.9	4.68	6.56	23.71	1.105	-31.6	0.19	✓	Ⓞ 0900
B3-T1-2	12.4	4.50	6.59	23.03	0.577	79.1	0.08	✓	Ⓞ 0940
B3-T1-3	12.85	4.26	6.73	24.29	0.857	23.1	0.01	✓	Ⓞ 1015
B3-T2-1	9.67	6.18	7.60	28.77	1.953	-66.3	0.11		
B3-T2-2	10.01	6.58	7.42	27.47	1.748	37.1	0.03		DTM (6.58)
B3-T3-1	9.96	8.74	7.36	29.82	1.219	144.4	0.37		
B3-T3-2	7.4	DEY							
B3-T4-1	6.32	DEY							
B3-T5-1	9.33	8.96							
B3-T5-2	7.98	7.89							
B3-T6-1	11.45	7.97	6.52	22.90	0.730	-39.9	-0.03	✓	Ⓞ 1040
B3-T6-2	12.34	7.69	6.54	23.22	0.774	-41.2	-0.01	✓	Ⓞ 1115
B3-UIC			7.32	24.95	0.581	128.9	4.58		Ⓞ 1330

B-3 Transfer System Monitoring

Meter	Monday	Tuesday	Wednesday	Thursday	Friday
Flow Meters Readings					
Date/Time:	10-15-12 1932	10-16-12 0926	10-17-12 0655	10-18-12	10-19-12 1215
CS-MW16-LGR	7.58	17.88	172.98		7.53
CS-MV16-CC	11.28	480.73	615.70		* batteries dead
B3-EXW01	8.71	1109.00	1111.074	No time for	7.93
B3-EXW02	7.30		824852.0	Readings	82730.11
B3-EXW03					
B3-EXW04					
B3-EXW05					
T-1	15.5	5420.30	14.0	580.328	4.2
T-6	6.88	4145.64	7.16	41639.710	6.54
Meter In:					
Meter Out:	15.3	5420.30	16.40	5909.17	15.34
Tank Levels:	4300	4300	4300	4300	4200
Bag Filter Pressure (In/Out):	13	8	4	5	7
Change BF	150 R	75 H	150 H	75 H	150 H

Notes:

changed 85-30 psi gauges to 100 psi in first BF

4.5 / 3

5 / 5

5 / 3.5

gauge on 2nd BF indicated no change and in filter. Check and

changed BF

Personnel: J. Bouch, S. Elliott

Piezometer ID	TD (ft. BTOC)	Date Sampled	Weekly/Monthly Wtr Lvl		Monthly Field Parameters						
			Sample Time	Water Level (ft. BTOC)	pH	Temp. (deg. C)	SpCond (mS/cm)	ORP (mV)	DO (mg/L)	Notes	
B3-MW26-UGR	20.32	10/15/12	1020	12.03	6.46	21.79	0.815	-170.7	0.38		
B3-MW27-UGR	17.00		1040	7.94	6.59	24.88	0.713	-85.9	0.35	ORP = 86.9	
B3-MW28-UGR	18.33		1046	18.30	NO	Sample					
B3-MW29-UGR	20.40		1052	19.48	6.62	21.43	0.765	67.5	1.82	Could not get all sample	
B3-MW30-UGR	23.90		1110	22.33	6.65	21.88	0.786	118.2	3.34		
B3-MW31-UGR	39.06		1140	32.89	6.55	21.51	0.759	128.7	2.66		
B3-MW32-UGR	58.45		1320	38.62	6.76	20.99	0.594	132.7	3.49		
B3-MW33-UGR	29.55		1345	20.90	6.70	20.95	0.876	-234.2	0.28		
B3-MW34-UGR	25.40		0955	17.02	6.55	21.90	0.720	-170.4	0.35		

Monitoring Well ID	Date Sampled	Sample Time	Quarterly Monitoring Well Field Parameters						
			Water Level (ft. BTOC)	pH	Temp. (deg. C)	SpCond. (mS/cm)	ORP (mV)	DO (mg/L)	Notes
B3-MW01	10/18/12	1105	248.3	6.67	21.32	0.885	44.3	2.99	
CS-D	1000	10/18/12	251.14	NO	Sample				pump depth 253.0
CS-MW16-LGR	0900	10/16/12		7.07	21.82	0.555	34.4	2.46	
CS-MW16-CC	0840	10/16/12		7.21	22.00	0.678	-82.7	1.31	
CS-B3-EXW01	1000	10/16/12		7.03	22.49	0.583	116.5	4.64	
CS-B3-EXW02	0940	10/16/12		6.96	21.07	0.577	120.4	3.92	
CS-MW1-LGR	10-18-12	0900	217.88	6.90	21.39	0.520	135.3	3.91	

CS-4 1020 10/18/12 241.06 7.25 21.02 0.550 134.1 4.31 pump depth 252.0 VOCs only per Ken Rice

Week Quarter 21

Personnel: J. Bouch

Trench Sumps Water Levels ('BTOC)

Sump ID	Sump Depth (ft BTOC)	Sump Water Level (ft BTOC)	pH	Temp (deg C)	SpCond (mS/cm)	ORP	DO (mg/L)	Trench Currently Being Used (V)	Notes
Date: 1-10-13 Time:									
B3-T1-1	12.9								6AW4 - 20.83 Temp @ 1400 0.596 pH
B3-T1-2	12.4								3.00 DO 334.2 ORP
B3-T1-3	12.85								6AW3 - 20.57 Temp @ 1410 0.701 pH 5.20 DO
B3-T2-1	9.67								7.12 pH 207.2 ORP
B3-T2-2	10.01								6AW5 - 14.92 Temp @ 1420 6.560 mS DO 2.72 DO 57.6 ORP
B3-T3-1	9.96								
B3-T3-2	7.4								
B3-T4-1	6.32								
B3-T5-1	9.33								
B3-T5-2	7.98								
B3-T6-1	11.45								
B3-T6-2	12.34								
B3-UIC	1430		7.09	19.39	0.609	157.8	5.45		

B-3 Transfer System Monitoring

Meter	Monday	Tuesday	Wednesday	Thursday	Friday
Date/Time: 1-14-13 08:00					
Rate (gpm) / Cumulative Total (gal)					
CS-MW16-LGR	7103		6.98	749.474	
CS-MW16-CC	9.80		7.36	210.65	OFF
B3-EXW01	6.99		172.2291	1729438	5.01
B3-EXW02	6.66		6.64	8791862	6.54
B3-EXW03	8.0		265.166	264.65	
B3-EXW04	8.1		251.434	254.660	
B3-EXW05	8.0		163.136	1103.149	17.93
T-1			OFF		163243
T-6			OFF		259.030
Meter In:					
Meter Out:	30.4		40.36	3709942	46.52
Tank Levels:	4900		4400	4300	4600
Bag Filter Pressure (In/Out):			65	4	19.5
Change BF:	150 μ	150 μ	150 μ	75 μ	75 μ

Notes:

0700 Hillbig installing vents - 1100 left site. Sample off site 1115. All vents and valves installed. Hillbig will be back on Thursday to change out meters in 16 wells.

0700 Turn system off for valve installation.

Turned off 16 wells @ 0830 - Hillbig installing meters around in 1300.

* Hillbig back onsite to re-install meters. Sample until not enough support & walls off @ 0900

* Changed batteries 15.13 1800

→ Turned wells on @ 1520

103130
102905
23

103149
130
15

Personnel: J. Bouch, E. Rice							
Weekly Water Level Monitoring							
Well Interval	Sampling Port Depth (ft BTOC)	Sample Date	Sample Time	Pressure at TOC (psi)	Pressure in MP (psi)	Zone Pressure (psi)	
CS-WB05-LGR-01	99	1-16-13	12:17	14.21	14.10 14.31	19.76	
CS-WB05-LGR-02	182	↓	12:16		14.15 14.34	14.41	
CS-WB05-LGR-03A	216		12:15		14.17 14.38	14.51	
CS-WB05-LGR-03B	262		12:14		15.66 14.86	18.10	
CS-WB05-LGR-04A	277		12:13		22.22 21.39	28.19	
CS-WB05-LGR-04B	329		12:12		44.84 44.03	50.72	
CS-WB05-BS-01	362		12:11		59.18 50.34	64.48	
CS-WB05-CC-01	432		12:10		89.58 60.77	68.35	
CS-WB05-CC-02	460		↓		12:09	101.75 100.93	80.72
CS-WB06-UGR-01	20		↓	11:36	14.26	14.10 14.29	17.85
CS-WB06-LGR-01	93	11:35		14.14 14.31		16.62	
CS-WB06-LGR-02	174	11:34		14.15 14.36		23.90	
CS-WB06-LGR-03A	207	11:33		14.19 14.40		22.86	
CS-WB06-LGR-03B	260	11:32		25.77 25.75		45.74	
CS-WB06-LGR-04	320	↓		11:31		51.82 51.78	52.41
CS-WB07-UGR-01	14	↓		11:46		14.25	14.09 14.20
CS-WB07-LGR-01	90		11:45	14.13 14.31	30.45		
CS-WB07-LGR-02	175		11:44	14.17 14.33	25.56		
CS-WB07-LGR-03A	208		11:43	14.16 14.37	15.70		
CS-WB07-LGR-03B	257		11:42	14.21 14.41	32.80		
CS-WB07-LGR-04	318		↓	11:41	24.24 24.30		49.80
CS-WB08-UGR-01	38		1/16/13	11:19	14.19		14.08 14.30
CS-WB08-LGR-01	115	↓	11:18	14.13 14.35		19.26	
CS-WB08-LGR-02	193		11:17	14.15 14.37		21.30	
CS-WB08-LGR-03A	228		11:16	14.18 14.40		14.42	
CS-WB08-LGR-03B	273		11:15	24.20 24.19		22.89	
CS-WB08-LGR-04	341		↓	11:15		53.77 53.75	53.53

Personnel J. Bouch, S. Elliott, E. Rice					
Semi-Annual Quarterly Monitoring					
MPMWs	Sampling Port Depth (ft. BTOC)	Sample Date	Sample Time	Inside Pressure	Zone Pressure
CS-WB05-LGR-01	99	4.8.13	1110	14.01	19.59
CS-WB05-LGR-02	182	4.8.13	1100	14.04	14.05
CS-WB05-LGR03A	216	4.8.13	1056	14.08	14.11
CS-WB05-LGR03B	262	4.8.13	1038	16.18	14.28
CS-WB05-LGR04A	277	4.8.13	0900	22.8779	18.60
CS-WB05-LGR04B	329	4.4.13	1340	45.69	41.24
CS-WB05-BS-01	362	4.4.13	1220	60.16	55.47
CS-WB05-CC-01	432	4.4.13	1000	90.72	63.26
CS-WB05-CC-02	460	4.4.13	0900	102.97	75.56
CS-WB06-UGR-01	20	4.9.13	1440	13.95	17.10
CS-WB06-LGR-01	93	4.9.13	1340	14.00	16.35
CS-WB06-LGR-02	174	4.9.13	1120	14.06	20.62
CS-WB06-LGR03A	207	4.9.13	1020	14.08	18.68
CS-WB06-LGR03B	260	4.9.13	0930	27.32	43.82
CS-WB06-LGR-04	320	4.8.13	1345	53.51	41.00
CS-WB07-UGR-01	14	4.3.13	1415	14.13	15.18
CS-WB07-LGR-01	90	4.3.13	0921320	14.18	29.84
CS-WB07-LGR-02	175	4.3.13	0855	14.20	24.84
CS-WB07-LGR03A	208	4.3.13	0840	14.21	14.16
CS-WB07-LGR03B	257	4.2.13	0950	14.23	29.06
CS-WB07-LGR-04	318	4.2.13	0700	26.12	38.76
CS-WB08-UGR-01	38	4.1.13	1427	14.0711	18.81
CS-WB08-LGR-01	115	4.1.13	1325	14.13	19.24
CS-WB08-LGR-02	193	4.1.13	1105	14.24	19.59
CS-WB08-LGR03A	228	4.1.13	1055	14.23	14.18
CS-WB08-LGR03B	273	4.1.13	1020	25.90	14.23
CS-WB08-LGR-04	341	4.1.13	0920	55.61	41.53

DRY
 DRY
 DRY
 ATM: 14.05
 ATM 14.15
 ATM: 13.96
 ATM: 13.98
 DRY
 DRY ATM: 14.13
 ATM: 14.11
 DRY
 No Sample
 ATM: 14.13

A
 B
 B
 A
 B
 A



→ checked twice with tubes? - DRY

Personnel: J. Douch S. Ellruff

Weekly Piezometer Water Levels ('BTOC) and Monthly Field Parameters

Piezometer ID	TD (ft BTOC)	Date Sampled	Weekly/Monthly Water Levels (ft BTOC)		Monthly Field Parameters							Notes
			Sample Time	Water Level (ft BTOC)	pH	Temp (deg. C)	SpCond. (mS/cm)	ORP (mV)	DO (mg/L)			
B3-MW26-UGR	20.32	4.12.13	0915	13.87	6.77	19.45	0.709	172.9	0.61			
B3-MW27-UGR	17.00	4.12.13	0940	8.41	6.52	19.20	0.707	25.0	0.25			
B3-MW28-UGR	18.33	4.12.13	DRY	DRY								No Sample
B3-MW29-UGR	20.40	4.12.13	1000	20.02								No Sample
B3-MW30-UGR	23.90	4.12.13	1015	23.10	6.93	19.70	0.797	173.8	5.58			No Ferrus ions, TDS bottle
B3-MW31-UGR	39.06	4.12.13	1040	34.89	6.90	20.95	0.815	58.2	2.83			
B3-MW32-UGR	58.45	4.12.13	1100	40.24	7.12	21.83	0.626	122.2	6.09			
B3-MW33-UGR	29.55	4.12.13	1120	23.03	6.90	21.06	0.732	159.1	3.44			
B3-MW34-UGR	25.40	4.12.13	1150	18.10	6.93	21.74	0.712	305	2.64			

Quarterly Monitoring Well Field Parameters

Monitoring Well ID	Date Sampled	Sample Time	Water Level (ft BTOC)	pH	Temp (deg. C)	SpCond. (mS/cm)	ORP (mV)	DO (mg/L)	Notes
B3-MW01	4.11.13	1300	267.10	6.90	21.18	0.962	-39.1	1.69	
CS-D	4.11.13		259.50	No Sample					NUM @ 253
CS-MW16-LGR	4.11.13	1040	272.9	7.16	21.26	0.566	79.3	2.73	Scuba DTW
CS-MW16-CC	4.11.13	1015	282.15	7.28	21.81	0.689	3.7	1.65	Scuba DTW
CS-B3-EXW01									Wells off for repair - will get well when well is
CS-B3-EXW02									working off for repair - "
CS-B3-EXW03	4.5.13	1320		6.59	21.67	0.487	190.4	3.84	
CS-B3-EXW04	4.5.13	1240		6.86	23.19	0.421	187.7	3.48	
CS-B3-EXW05	4.5.13	1400		6.83	22.49	0.390	189.0	2.43	
CS-MW1-LGR	4.11.13	0920	244.75	7.00	26.39	0.534	190.7	2.34	

Personnel		J. Bonch; E. Rice				
Weekly Water Level Monitoring						
Well Interval	Sampling Port Depth (ft. BTOC)	Sample Date	Sample Time	Pressure at TOC (psi)	Pressure in NP (psi)	Zone Pressure (psi)
CS-WB05-LGR-01	99	3.27.13	1133	14.28	14.10 14.35	19.65
CS-WB05-LGR-02	182		1132		14.15 14.39	14.37
CS-WB05-LGR-03A	216		1131		14.17 14.41	14.35
CS-WB05-LGR-03B	262		1130		15.66 14.83	14.40
CS-WB05-LGR-04A	277		1128		22.22 21.37	18.70
CS-WB05-LGR-04B	329		1126		44.84 44.0	41.20
CS-WB05-BS-01	362		1124		59.18 58.34	55.59
CS-WB05-CC-01	432		1122		89.58 88.75	63.74
CS-WB05-CC-02	460		1120		101.75 100.91	76.04
CS-WB06-LGR-01	20		3.27.13		1040	14.25
CS-WB06-LGR-01	93	1039		14.14 14.33	16.58	
CS-WB06-LGR-02	174	1038		14.15 14.37	20.53	
CS-WB06-LGR-03A	207	1037		14.19 14.41	20.89	
CS-WB06-LGR-03B	260	1036		25.77 25.72	43.80	
CS-WB06-LGR-04	320	1035		51.82 51.76	40.71	
CS-WB07-LGR-01	14	3.27.13	1100	14.26	14.09 14.30	15.28
CS-WB07-LGR-01	90		1059		14.13 14.31	29.62
CS-WB07-LGR-02	175		1058		14.17 14.39	24.87
CS-WB07-LGR-03A	208		1057		14.16 14.41	14.03
CS-WB07-LGR-03B	257		1056		14.21 14.41 14.42	29.23 14.03 (NOR)
CS-WB07-LGR-04	318		1055		24.24 24.28	39.81
CS-WB08-LGR-01	38	3.27.13	1015	14.22	14.08 14.29	18.77
CS-WB08-LGR-01	115		1014		14.13 14.32	17.19
CS-WB08-LGR-02	193		1013		14.15 14.37	19.49
CS-WB08-LGR-03A	228		1012		14.18 14.40	14.33
CS-WB08-LGR-03B	273		1011		24.20 24.13	14.32
CS-WB08-LGR-04	341		1010		53.77 53.76	42.06

Personnel: J. Bouchard, S. Elliott

Trench Sumps Water Levels (BTOC)

Sump ID	Sump Depth (ft BTOC)	Sump Water Level (ft BTOC)	pH	Temp (deg. C)	SpCond (mS/cm)	ORP	DO (mg/L)	Trench Currently Being Used (Y)	Notes
Date: 4-15-13 Time: 0900									
B	12.9	6.02	6.87	21.88	1.016	8.1	0.32	✓	0.093 V
B	12.4	5.74	6.14	21.90	1.002	-173.3	0.07		0.0150
A	12.85	6.14	6.65	21.72	1.00	-80.5	0.07		did not call by date
B3-T2-1	9.67	7.49	6.73	21.74	1.324	-123.7	0.21		
B3-T2-2	10.01	7.89	6.87	21.76	1.518	-128.0	0.08		
B3-T3-1	9.96	6.85	6.78	22.30	1.843	85.3	0.73		
B3-T3-2	7.4	6.7							
B3-T4-1	6.32	6.7							
B3-T5-1	9.33	8.09	6.84	22.17	1.044	140.2	1.17		
B3-T5-2	7.98	7.07							
A	11.45	7.71	6.97	22.30	0.856	57.8	2.52	✓	10.45
A	12.34	7.51	6.81	21.88	0.912	17.6	0.32	✓	11.10
A			4.13	22.75	0.861	119.1	5.52		12.10

B-3 Transfer System Monitoring

Meter	Date/Time	Monday	Tuesday	Wednesday	Thursday	Friday
Flow Meters Readings						
CS-MW16-LGR		4/15/13 0800	4/16/13 0500	4/17/13	4/18/13	4/19/13
CS-MW16-CC		9.97	9.97	9.97	9.97	9.97
B3-EXW01		off	off	off	off	off
B3-EXW02		off	off	off	off	off
B3-EXW03		17.45	17.13	17.05	16.20	11.04755
B3-EXW04		6.29	6.10	6.0	5.60	4.13584
B3-EXW05		7.77	7.81	7.83	7.27050	7.52
T-1		off				off
T-6		off				off
Meter In:						
Meter Out:		33.43	48.84	21.17	8.35038	28.23
Tank Levels:		3200	4500	4500	4500	4500
Bag Filter Pressure (In/Out):		6	6.5	6.5	7	9.5
Change BF:		150 μ	150 μ	150 μ	75 μ	150 μ
Notes						75 μ