APPENDIX B

SUMMARY OF WATER QUALITY AND WATER LEVEL DATA COLLECTED FOR

TASK 2.2 OF AQUIFER CHARACTERIZATION PLAN

TABLE OF CONTENTS

TABLES

FIGURES

TABLES

TABLE B.1
Index of Wells Sampled for Task 2.2

Wells Sorted by ADWR Well Registry Number

ADWR Well Registry Number	Well Name	ADWR Well Registry Number	Well Name	ADWR Well Registry Number	Well Name
	1350	545557	IW-14	623130	IW-2
	A-955	545558	IW-15	623131	IW-3A
85228	M-1	545559	IW-16	623132	IW-4
85304	M-2	545560	IW-17	623133	IW-5
85305	M-3	545561	IW-18	623982	S-19A
85306	M-4	545562	IW-19	623991	S-40
87387	M-5	545563	IW-20	623994	S-44
87388	M-6	545564	IW-21	623996	S-46
87389	M-7	545565	IW-6A	624010	C-4
87390	M-8	550533	SAH-1	624012	E-5A
200554	IW-22	561859	PZ-9	624013	E-6
200555	IW-23	561866	PZ-8	624024	W-9
200556	IW-24	561870	PZ-7	624025	W-11
201527	MH-26A	562962	RANCHO SAHUARITA	624026	W-12
201528	MH-25A	563799	MH-24	624028	NP-2 FICO
206214	GRAEF	566940	ST-7	627429	QUIHUIS
207982	CW-10	577707	TAYLOR	627483	CW-3
208426	MH-25C	586729	CANOA RANCH	627485	CW-6
208427	MH-26B	588121	CW-9	634036	JOHNSON
208428	MH-26C	599350	ROBERTS	634037	CALDERON
208429	MH-25B	599357	EL TORO	634392	1758
208825	SI WELL	599769	KULESZA	634393	1759
501652	M-9	603428	GV-1	634394	1225
501653	M-10	603429	GV-2	635386	SANTA RITA RANCH-1
501654	M-11	603430	GV-06-GVDWID	635387	SANTA RITA RANCH-2
501760	CC OF GV	603504	GV-07-GVDWID	639055	SIMPSON
502546	CW-7	605898	NP-2	640358	GIACALONE
504946	RT-1	608518	CW-11	803629	MH-1
508235	IW-11	608519	RRQC-2	803630	MH-3
508236	IW-8	608521	RRQC-1	803632	MH-5
508237	IW-10	608523	I-12	803633	MH-6
508238	IW-9	608524	I-11	803634	MH-7
508428	M-13	608525	I-10	803635	MH-9
509603	GV-01-PCWW	608526	I-9	803636	MH-10
509604	GV-02-PCWW	608530	ST-6	803637	MH-11
514015	2125	608531	ST-5	803638	MH-12
515867	HAVEN GOLF	608591	RRQC-3	903548	MH-28
528093	MH-15W	608597	RRQC-4	903649	MH-29
528094	MH-15E	608604	EP-1 [AXABCO-04]	903884	MH-30
528098	MH-14	616156	TMM-1	904071	MH-13A
528099	MH-16W	616212	RRQC-5	904072	MH-13B
528100	MH-16E	623102	ESP-1	904073	MH-13C
529142	SIMONS	623103	ESP-2	905019	SAH-3B
531807	MW-2	623104	ESP-3	906595	M-20
532595	GORETCKI/STEINMAN	623105	ESP-4	906765	MO-2007-2
532627	AXABCO-01	623106	ESP-5	906817	MO-2007-3C
532628	AXABCO-02	623111	S-1	907209	MO-2007-1C
537958	AXABCO-03	623112	S-2	907210	MO-2007-1B
540451	UA	623113	S-3	907211	MO-2007-4C
543600	CW-8	623114	S-4	907342	MO-2007-1A
545349	SALVATORE	623115	S-5	907457	MO-2007-5C
545555	IW-12	623116	S-6		
545556	IW-13	623129	IW-1		

TABLE B.1
Index of Wells Sampled for Task 2.2

Wells Sorted by Well Name

Well Name	ADWR Well Registry Number	Well Name	ADWR Well Registry Number	Well Name	ADWR Well Registry Number
1225	634394	IW-12	545555	MH-29	903649
1350		IW-13	545556	MH-30	903884
1758	634392	IW-14	545557	MO-2007-1A	907342
1759	634393	IW-15	545558	MO-2007-1B	907210
2125	514015	IW-16	545559	MO-2007-1C	907209
A-955		IW-17	545560	MO-2007-2	906765
AXABCO-01	532627	IW-18	545561	MO-2007-3C	906817
AXABCO-02	532628	IW-19	545562	MO-2007-4C	907211
AXABCO-03	537958	IW-20	545563	MO-2007-5C	907457
C-4	624010	IW-21	545564	MW-2	531807
CALDERON	634037	IW-22	200554	NP-2	605898
CANOA RANCH	586729	IW-23	200555	NP-2 FICO	624028
CC OF GV	501760	IW-24	200556	PZ-7	561870
CW-3	627483	JOHNSON	634036	PZ-8	561866
CW-6	627485	KULESZA	599769	PZ-9	561859
CW-7	502546	M-1	85228	QUIHUIS	627429
CW-8	543600	M-2	85304	RANCHO SAHUARITA	562962
CW-9	588121	M-3	85305	ROBERTS	599350
CW-10	207982	M-4	85306	RRQC-1	608521
CW-11	608518	M-5	87387	RRQC-2	608519
E-5A	624012	M-6	87388	RRQC-3	608591
E-6	624013	M-7	87389	RRQC-4	608597
EL TORO	599357	M-8	87390	RRQC-5	616212
EP-1 [AXABCO-04]	608604	M-9	501652	RT-1	504946
ESP-1	623102	M-10	501653	S-1	623111
ESP-2	623103	M-11	501654	S-2	623112
ESP-3	623104	M-13	508428	S-3	623113
ESP-4	623105	M-20	906595	S-4	623114
ESP-5	623106	MH-1	803629	S-5	623115
GIACALONE	640358	MH-3	803630	S-6	623116
GORETCKI/STEINMAN	532595	MH-5	803632	S-19A	623982
GRAEF	206214	MH-6	803633	S-40	623991
GV-01-PCWW	509603	MH-7	803634	S-44	623994
GV-02-PCWW	509604	MH-9	803635	S-46	623996
GV-1	603428	MH-10	803636	SAH-1	550533
GV-2	603429	MH-11	803637	SAH-3B	905019
GV-06-GVDWID	603430	MH-12	803638	SALVATORE	545349
GV-07-GVDWID	603504	MH-13A	904071	SANTA RITA RANCH-1	635386
HAVEN GOLF	515867	MH-13B	904072	SANTA RITA RANCH-2	635387
I-9	608526	MH-13C	904073	SI WELL	208825
I-10	608525	MH-14	528098	SIMONS	529142
I-11	608524	MH-15E	528094	SIMPSON	639055
I-12	608523	MH-15W	528093	ST-5	608531
IW-1	623129	MH-16E	528100	ST-6	608530
IW-2	623130	MH-16W	528099	ST-7	566940
IW-3A	623131	MH-24	563799	TAYLOR	577707
IW-4	623132	MH-25A	201528	TMM-1	616156
IW-5	623133	MH-25B	208429	UA	540451
IW-6A	545565	MH-25C	208426	W-9	624024
IW-8	508236	MH-26A	201527	W-11	624025
IW-9	508238	MH-26B	208427	W-12	624026
IW-10	508237	MH-26C	208428		
IW-11	508235	MH-28	903548		

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
634394	1225	4th Quarter 2006	07/19/06	NA	NA	NA	NA	1200	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/17/07	7.20 [2]	2500 [2]	24.0	1100.0	NA	NA	0.25	NA	NA	NA	310.0	82.3
		3rd Quarter 2007	07/12/07	7.39	1493	26.0	1200	NA	NA	NA	NA	NA	NA	410.0	95.0
634393	1759	4th Quarter 2006	07/19/06	NA	NA	NA	NA	91	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.60 [2]	590 [2]	27.0	100.0	NA	NA	0.44	NA	NA	NA	58.0	14.4
		3rd Quarter 2007	07/13/07	7.90	424	27.0	77	NA	NA	NA	NA	NA	NA	59.0	16.0
624010	C-4	3rd Quarter 2007	07/18/07	7.65	577	25.7	43	NA	NA	NA	NA	NA	NA	NA	NA
634037	CALDERON	1st Quarter 2007	01/08/07	7.68	264	25.1	17.7	18.0	5	0.30	0.63	< 0.01	0.63	27.2	7.2
586729	CANOA RANCH	1st Quarter 2007	01/09/07	7.66	589	24.2	110.0	111	19	0.30	1.90	< 0.01	1.90	69.9	11.7
		3rd Quarter 2007	08/20/07	7.05	602	24.7	93.6	93.7	18.2	0.3	1.76	< 0.01	1.76	74.0	12.1
501760	CC OF GV	1st Quarter 2007	01/15/07	7.31	767	23.0	135	133.0	34	0.30	5.37	< 0.01	5.37	93.5	15.0
		2nd Quarter 2007	04/16/07	7.44	767	22.6	130	133	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/09/07	7.58	658	24.5	100	104	27.6	0.4	4.38	< 0.01	4.38	76.8	9.7
627483	CW-3	2nd Quarter 2007	06/06/07	7.74	449	25.3	58.7	57.9	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	08/10/07	7.40	444	25.9	59.7	59.5	17.0	0.3	3.05	< 0.01	3.05	51.7	8.6
627485	CW-6	4th Quarter 2006	12/04/06	NA	NA	NA	NA	46.2	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	7.73	418	26.8	49.2	49.2	12	0.60	1.80	0.02	1.82	42.9	4.8
		1st Quarter 2007	01/03/07	7.73	418	26.8	49.8	49.5	12	0.60	1.87	0.01	1.88	43.0	4.9
		2nd Quarter 2007	05/14/07	7.58	507	26.1	69.3	68.7	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.60	475	26.9	57.9	57.6	13.4	0.5	1.98	< 0.01	1.98	50.7	6.3
		3rd Quarter 2007	07/10/07	7.60	475	26.9	58.1	58	13.4	0.5	2.02	< 0.01	2.02	45.5	6.0
502546	CW-7	1st Quarter 2007	01/03/07	7.38	1799	27.4	812	807	71	0.30	1.91	0.02	1.93	304.0	33.1
		2nd Quarter 2007	05/14/07	7.40	1860	27.4	874	874	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.32	1945	27.4	830	860	75.4	0.2	1.75	< 0.01	1.75	323.0	37.4
543600	CW-8	1st Quarter 2007	01/24/07	7.67	1232	29.7	459	449.0	51	1.00	1.32	< 0.01	1.32	125.0	8.9
		2nd Quarter 2007	05/14/07	7.69	1379	29.4	530	529	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.63	1401	29.8	500	500	54.5	1.0	1.58	< 0.01	1.58	156.0	12.2
588121	CW-9	4th Quarter 2006	12/04/06	NA	NA	NA	NA	44.5	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	7.74	387	27.0	44.9	44.9	8	0.50	0.85	0.02	0.87	39.3	4.1
		2nd Quarter 2007	05/14/07	7.74	414	27.5	47.2	47.8	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.68	414	22.6	47	46.7	9.0	0.5	0.65	< 0.01	0.65	36.7	4.2
207982	CW-10	4th Quarter 2006	12/04/06	NA	NA	NA	NA	37.2	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	7.90	385	30.2	47.7	48.6	8	0.70	0.45	< 0.01	0.45	29.8	1.8
		2nd Quarter 2007	05/14/07	7.81	392	31.3	52.8	52.8	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.82	403	31.3	51.8	51.7	8.3	0.9	0.48	< 0.01	0.48	28.0	1.7
608518	CW-11	3rd Quarter 2007	07/10/07	7.93	449	28.6	70.1	69.7	9.2	1.9	0.60	< 0.01	0.60	23.4	2.0
624012	E-5A	1st Quarter 2007	02/24/07	7.50	778	22.2	137.0	NA	NA	NA	NA	NA	NA	NA	NA
624013	E-6	1st Quarter 2007	02/24/07	7.40	710	22.7	112.0	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.48	651	24.1	112	NA	NA	NA	NA	NA	NA	NA	NA
599357	EL TORO	1st Quarter 2007	01/11/07	7.59	733	26.9	210.0	204.0	21	0.50	1.72	< 0.01	1.72	80.9	21.5
		3rd Quarter 2007	07/09/07	7.48	749	31.3	203	206	21.1	0.5	1.69	< 0.01	1.69	82.5	21.5
623102	ESP-1	4th Quarter 2006	12/04/06	NA	NA	NA	NA	262	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	7.65	869	28.0	245	242	39	0.40	1.34	0.02	1.36	120.0	11.2
		2nd Quarter 2007	05/14/07	7.70	592	28.7	112	113	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.66	584	28.8	104	94	26.8	0.4	1.13	< 0.01	1.13	60.8	6.3

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
634394	1225	4th Quarter 2006	07/19/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/12/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
634393	1759	4th Quarter 2006	07/19/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
624010	C-4	3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
634037	CALDERON	1st Quarter 2007	01/08/07	1.1	19.2	111	111	< 2	< 2	160	148	1.08	2.8	2.8	0.0
586729	CANOA RANCH	1st Quarter 2007	01/09/07	3.7	37.1	180	180	< 2	< 2	400	369	1.08	6.6	6.1	-3.9
		3rd Quarter 2007	08/20/07	3.5	40.9	175	175	< 2	< 2	380	355	1.07	6.1	6.5	3.2
501760	CC OF GV	1st Quarter 2007	01/15/07	4.1	43.0	191	191	< 2	< 2	480	461	1.04	7.9	7.9	0.0
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/09/07	3.9	48.6	172	172	< 2	< 2	430	394	1.09	6.7	6.8	0.7
627483	CW-3	2nd Quarter 2007	06/06/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	08/10/07	2.9	27.4	134	134	< 2	< 2	280	261	1.07	4.6	4.5	-1.1
627485	CW-6	4th Quarter 2006	12/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	2.8	37.3	134	134	< 2	< 2	260	238	1.09	4.2	4.2	0.0
		1st Quarter 2007	01/03/07	2.8	37.3	135	135	< 2	< 2	250	239	1.05	4.2	4.2	0.0
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	3.3	38.6	142	142	< 2	< 2	300	264	1.14	4.5	4.8	3.2
		3rd Quarter 2007	07/10/07	2.9	37.0	141	141	< 2	< 2	230	257	0.89	4.5	4.4	-1.1
502546	CW-7	1st Quarter 2007	01/03/07	6.7	75.4	95	95	< 2	< 2	1420	1360	1.04	21.0	21.4	0.9
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.2	77.5	99	99	< 2	< 2	1550	1450	1.07	22.3	22.8	1.1
543600	CW-8	1st Quarter 2007	01/24/07	6.3	123.0	95	95	< 2	< 2	880	827	1.06	12.9	12.6	-1.2
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.3	128.0	97	97	< 2	< 2	970	924	1.05	14.1	14.6	1.7
588121	CW-9	4th Quarter 2006	12/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	2.7	36.9	137	137	< 2	< 2	240	223	1.08	4.0	3.9	-1.3
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	2.6	35.8	137	137	< 2	< 2	270	221	1.22	3.8	9.0	-2.6
207982	CW-10	4th Quarter 2006	12/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	2.7	43.3	125	122	3	< 2	240	213	1.13	3.8	3.6	-2.7
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	2.6	45.0	121	121	< 2	< 2	260	213	1.22	3.8	3.5	-4.1
608518	CW-11	3rd Quarter 2007	07/10/07	2.4	62.6	120	119	2	< 2	290	245	1.18	4.2	4.1	-1.2
624012	E-5A	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
624013	E-6	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
599357	EL TORO	1st Quarter 2007	01/11/07	4.3	45.6	133	129	4	< 2	520	467	1.11	7.6	7.9	1.9
		3rd Quarter 2007	07/09/07	4.8	48.3	131	131	< 2	< 2	530	471	1.13	7.6	8.1	3.2
623102	ESP-1	4th Quarter 2006	12/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	4.1	50.2	122	122	< 2	< 2	590	546	1.08	8.7	9.2	2.8
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	3.2	41.4	128	128	< 2	< 2	370	315	1.17	5.3	5.4	0.9

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
623103	ESP-2	4th Quarter 2006	12/04/06	NA	NA	NA	NA	29.6	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	7.82	377	28.4	30.9	31.3	8	0.80	0.50	0.01	0.51	35.5	3.3
		2nd Quarter 2007	05/14/07	7.86	368	27.8	28.4	28.4	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.73	380	28.9	28.8	28.6	8.0	0.5	0.49	< 0.01	0.49	33.3	3.3
623104	ESP-3	4th Quarter 2006	12/04/06	NA	NA	NA	NA	36.2	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	7.83	393	27.8	37.2	37.5	8	0.90	0.50	0.02	0.52	36.0	3.6
		2nd Quarter 2007	05/14/07	7.78	374	28.8	36.7	36.6	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	05/14/07	7.78	374	28.8	36.8	36.6	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	7.84	378	29.2	36.6	36.6	7.7	0.5	0.41	< 0.01	0.41	31.9	2.9
623105	ESP-4	4th Quarter 2006	11/28/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	3/20/07 [3]	7.67	1187	26.7	397	393	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	06/04/07	7.45	733	28.4	NA	385	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	7.34	918	28.4	NA	410	53.0	0.3	NA	NA	1.71	190.0	20.0
		3rd Quarter 2007	07/24/07	7.34	918	28.4	NA	420	53.0	0.3	NA	NA	1.76	187.0	19.8
640358	GIACALONE	1st Quarter 2007	01/02/07	7.88	334	24.1	4.0	3.9	8	0.40	1.16	0.02	1.18	37.7	6.6
		3rd Quarter 2007	07/16/07	7.59	383	28.2	3.4	3.4	8.5	0.4	1.17	< 0.01	1.17	36.2	6.4
532595	GORETCKI/ STEINMAN	1st Quarter 2007	02/06/07	7.77	526	26.6	94.7	94.2	14	< 0.1	1.77	<0.01	1.77	71.7	10.1
		3rd Quarter 2007	08/20/07	6.96	510	28.6	99	100	13.9	< 0.1	1.51	< 0.01	1.51	66.7	9.2
206214	GRAEF	1st Quarter 2007	01/08/07	7.57	392	26.6	4.1	4.1	8	0.20	0.69	< 0.01	0.69	47.7	7.3
		3rd Quarter 2007	07/16/07	7.42	418	28.1	3.6	3.5	7.9	0.2	0.81	< 0.01	0.81	46.7	7.3
509604	GV-02-PCWW	1st Quarter 2007	01/18/07	6.90	1501	20.1	140	140	212	< 0.5	6.01	< 0.01	6.01	197.0	29.4
		3rd Quarter 2007	07/09/07	7.04	1490	20.9	146	145	224.0	0.2	5.27	< 0.01	5.27	196.0	28.6
603428	GV-1	4th Quarter 2006	08/06/06	NA	NA	NA	NA	41.2	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	8.00	424	25.8	40.8	40.9	12	0.50	1.48	< 0.01	1.48	46.0	6.6
		2nd Quarter 2007	04/10/07	7.69	421	27.2	43.6	43.2	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	06/18/07	7.73	351	29.7	Pending	Pending	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.64	447	26.8	41.7	41.5	12.1	0.5	1.33	< 0.01	1.33	48.7	6.9
603429	GV-2	4th Quarter 2006	08/06/06	NA	NA	NA	NA	48.6	NA	NA	NA	NA	NA	NA	NA
		4th Quarter 2006	10/04/06	NA	NA	NA	NA	95.3	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	7.68	626	23.6	105	103	22	0.40	2.82	< 0.01	2.82	76.3	12.1
		2nd Quarter 2007	04/10/07	7.60	479	24.1	107	106	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.50	649	24.0	98.7	98	21.9	0.3	2.75	< 0.01	2.75	78.8	12.3
515867	HAVEN GOLF	1st Quarter 2007	02/06/07	7.28	683	23.0	104	107	24	0.40	3.29	< 0.01	3.29	83.1	11.2
		2nd Quarter 2007	04/16/07	7.26	655	23.3	105	105	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/09/07	7.57	622	32.8	98.9	80.1	17.3	0.4	2.66	< 0.01	2.66	63.2	7.4
608525	I-10	2nd Quarter 2007	04/16/07	7.17	878	28.8	NA	533	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.13	1013	31.3	NA	550	44.1	0.3	1.67	< 0.01	1.67	207.0	34.5
623129	IW-1	4th Quarter 2006	11/15/06	NA	NA	NA	NA	490	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	6.97	1033	25.1	NA	520	57	0.30	NA	NA	1.74	188	42.7
		2nd Quarter 2007	04/09/07	7.24	918	26	NA	480	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	6.86	884	32.7	NA	510	58.0	0.3	NA	NA	1.74	185.0	43.4
623130	IW-2	4th Quarter 2006	11/15/06	NA	NA	NA	NA	100	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	6.91	528	23.8	NA	110	15	0.40	NA	NA	1.31	60.6	12.9
		2nd Quarter 2007	04/03/07	7.08	492	25.3	NA	90	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	7.18	506	32.2	NA	90	14.0	0.4	NA	NA	1.28	51.0	11.2

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
623103	ESP-2	4th Quarter 2006	12/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	2.8	38.5	139	139	< 2	< 2	160	206	0.78	3.7	3.8	1.3
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	2.5	34.3	138	138	< 2	< 2	250	195	1.28	3.6	3.5	-1.4
623104	ESP-3	4th Quarter 2006	12/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/03/07	2.9	40.1	138	138	< 2	< 2	230	214	1.07	3.8	3.9	1.3
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	05/14/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/10/07	2.6	37.5	130	130	< 2	< 2	240	200	1.20	3.6	3.5	-1.4
623105	ESP-4	4th Quarter 2006	11/28/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	3/20/07 [3]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	06/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	4.7	59.3	119	119	< 2	< 2	830	809	1.03	12.5	13.9	5.3
		3rd Quarter 2007	07/24/07	4.9	59.5	120	120	< 2	< 2	840	817	1.03	12.7	13.7	3.8
640358	GIACALONE	1st Quarter 2007	01/02/07	4.3	32.9	167	167	< 2	< 2	230	199	1.16	3.7	3.9	2.6
		3rd Quarter 2007	07/16/07	4.1	32.0	172	172	< 2	< 2	250	199	1.26	3.8	3.8	0.0
532595	GORETCKI/ STEINMAN	1st Quarter 2007	02/06/07	2.5	26.5	137	137	< 2	< 2	310	309	1.00	5.2	5.6	3.7
		3rd Quarter 2007	08/20/07	2.6	24.6	139	137	2	< 2	350	308	1.14	5.3	5.2	-1.0
206214	GRAEF	1st Quarter 2007	01/08/07	3.1	27.5	191	189	< 2	< 2	250	214	1.17	4.1	4.2	1.2
		3rd Quarter 2007	07/16/07	2.9	27.0	195	195	< 2	< 2	260	216	1.20	4.2	4.2	0.0
509604	GV-02-PCWW	1st Quarter 2007	01/18/07	5.3	76.8	265	265	< 2	< 2	920	846	1.09	14.6	15.8	3.9
		3rd Quarter 2007	07/09/07	5.2	75.3	259	259	< 2	< 2	1030	853	1.21	14.9	15.6	2.3
603428	GV-1	4th Quarter 2006	08/06/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	2.7	31.6	157	157	< 2	< 2	270	241	1.12	4.4	4.3	-1.1
		2nd Quarter 2007	04/10/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	06/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	3.0	34.1	157	157	< 2	< 2	300	247	1.21	4.4	4.5	1.1
603429	GV-2	4th Quarter 2006	08/06/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		4th Quarter 2006	10/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	3.5	36.5	192	192	< 2	< 2	410	382	1.07	6.8	6.5	-2.3
		2nd Quarter 2007	04/10/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	3.8	39.3	189	189	< 2	< 2	440	350	1.16	6.6	6.7	0.8
515867	HAVEN GOLF	1st Quarter 2007	02/06/07	3.8	49.5	193	193	< 2	< 2	410	409	1.00	7.0	7.3	2.1
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/09/07	2.9	40.4	151	151	< 2	< 2	340	314	1.08	5.4	5.6	1.8
608525	I-10	2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.3	62.9	103.0	103.0	< 2	< 2	1080	975	1.11	15.0	16.1	3.5
623129	IW-1	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	9.6	61.1	134	134	< 2	< 2	1000	959	1.04	15.2	15.8	1.9
		2nd Quarter 2007	04/09/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	9.3	59.3	134	134	< 2	< 2	1130	946	1.19	15.0	15.7	2.3
623130	IW-2	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	5.5	41.3	151	151	< 2	< 2	380	336	1.13	5.7	6.0	2.6
		2nd Quarter 2007	04/03/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	5.4	39.1	153	153	< 2	< 2	360	303	1.19	5.3	5.3	0.0

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
623131	IW-3A	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1590	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	04/03/07	7.29	1374	25.1	NA	1540	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	6.85	1184	29.8	NA	1500	125.0	0.2	NA	NA	1.25	451.0	103.0
623132	IW-4	1st Quarter 2007	01/18/07	6.81	2210	22.4	NA	1610	142	0.20	NA	NA	0.74	530	93.0
		1st Quarter 2007	01/18/07	6.81	2210	22.4	NA	1590	141	0.20	NA	NA	0.76	495	88.2
		2nd Quarter 2007	04/11/07	6.6	1252	28.2	NA	1600	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	6.61	1462	29.1	NA	1450	135.0	0.3	NA	NA	0.84	512.0	88.7
623133	IW-5	1st Quarter 2007	01/16/07	7.34	1511	23.1	NA	1710	163	0.20	NA	NA	0.91	526	94.0
		3rd Quarter 2007	07/18/07	6.82	1716	27.0	NA	1610	151.0	0.2	NA	NA	0.97	545.0	96.4
545565	IW-6A	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1760	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.25	1562	22.5	NA	1800	123	0.20	NA	NA	0.73	503	89.9
		2nd Quarter 2007	04/09/07	6.69	1627	26	NA	1830	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.67	1609	24.5	NA	1930	110.0	0.2	NA	NA	0.76	512.0	89.7
508236	IW-8	2nd Quarter 2007	04/03/07	7.11	1523	24.1	NA	1760	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	6.82	1328	29.5	NA	1870	113.0	0.3	NA	NA	0.83	522.0	120.0
508238	IW-9	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1760	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/18/07	7.40	1690	22.6	NA	1670	128	0.30	NA	NA	0.82	501	101.0
		2nd Quarter 2007	04/11/07	6.73	1424	25.1	NA	1750	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	6.78	1547	29.4	NA	1810	115.0	0.3	NA	NA	0.89	515.0	103.0
508237	IW-10	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1650	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.38	1303	23.7	NA	1670	145	0.20	NA	NA	0.90	483	90.0
		2nd Quarter 2007	04/03/07	7.11	1520	26.7	NA	1750	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	6.78	1734	28.3	NA	1770	139.0	0.2	NA	NA	1.01	541.0	99.8
508235	IW-11	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1600	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.10	1516	21.7	NA	1700	124	0.20	NA	NA	0.74	482	93.0
		2nd Quarter 2007	04/09/07	6.76	1342	26.2	NA	1760	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	6.84	1788	26.8	NA	1770	114.0	0.3	NA	NA	0.88	501.0	99.1
545555	IW-12	1st Quarter 2007	01/16/07	6.93	1444	22.3	NA	1620	113	0.20	NA	NA	1.10	470	95.3
		2nd Quarter 2007	04/17/07	6.56	1345	25.9	NA	1630	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.55	1483	25.2	NA	1700	110.0	0.2	NA	NA	1.19	474.0	95.7
545556	IW-13	2nd Quarter 2007	04/17/07	6.81	1430	25.8	NA	1690	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.61	1560	25.1	NA	1940	110.0	0.2	NA	NA	1.50	508.0	99.2
		3rd Quarter 2007	07/25/07	6.61	1560	25.1	NA	1780	110.0	0.2	NA	NA	1.47	501.0	98.0
545557	IW-14	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1820	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	6.72	1484	22.4	NA	1790	122	0.30	NA	NA	1.39	524	118.0
		1st Quarter 2007	01/16/07	6.72	1484	22.4	NA	1810	124	0.30	NA	NA	1.40	513	116.0
		2nd Quarter 2007	04/16/07	6.63	1383	24.4	NA	1790	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.51	1462	24.7	NA	1910	120.0	0.2	NA	NA	1.42	532.0	115.0
545558	IW-15	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1710	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.04	1420	23.9	NA	1730	84	0.30	NA	NA	1.79	522	105.0
		2nd Quarter 2007	04/16/07	6.82	1314	27.4	NA	1740	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.32	1388	26.6	NA	1760	120.0	0.2	NA	NA	2.05	542.0	105.0

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
623131	IW-3A	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	04/03/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	14.0	121.0	117	117	< 2	< 2	2670	2380	1.12	37.4	36.7	-0.9
623132	IW-4	1st Quarter 2007	01/18/07	9.9	164	148	148	< 2	< 2	2800	2640	1.06	40.8	41.6	1.0
		1st Quarter 2007	01/18/07	10.2	165	148	148	< 2	< 2	2780	2580	1.08	40.3	39.5	-1.0
		2nd Quarter 2007	04/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	9.0	165.0	148	148	< 2	< 2	2910	2450	1.19	37.2	40.4	4.1
623133	IW-5	1st Quarter 2007	01/16/07	8.5	185	170	170	< 2	< 2	3010	2790	1.08	43.9	42.4	-1.7
		3rd Quarter 2007	07/18/07	8.0	179.0	167	167	< 2	< 2	3140	2690	1.17	41.4	43.2	2.1
545565	IW-6A	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.9	228	110	110	< 2	< 2	3030	2820	1.07	43.5	42.8	-0.8
		2nd Quarter 2007	04/09/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	8.0	231.0	108	108	< 2	< 2	3180	2950	1.08	45.8	43.3	-2.8
508236	IW-8	2nd Quarter 2007	04/03/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	12.0	180.0	122	122	< 2	< 2	3130	2890	1.08	44.9	44.2	-0.8
508238	IW-9	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/18/07	12.7	188	124	124	< 2	< 2	2970	2680	1.11	41.1	41.9	1.0
		2nd Quarter 2007	04/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	12.0	185.0	122	122	< 2	< 2	3050	2810	1.09	43.7	42.6	-1.3
508237	IW-10	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	11.7	173	155	155	< 2	< 2	2920	2670	1.09	42.2	39.4	-3.4
		2nd Quarter 2007	04/03/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	11.0	170.0	151	151	< 2	< 2	3060	2820	1.09	44.1	43.0	-1.3
508235	IW-11	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	9.1	215	129	129	< 2	< 2	2920	2700	1.08	41.8	41.4	-0.5
		2nd Quarter 2007	04/09/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	9.0	199.0	125	125	< 2	< 2	3010	2770	1.09	42.9	42.2	-0.8
545555	IW-12	1st Quarter 2007	01/16/07	8.6	188	114	114	< 2	< 2	2720	2560	1.06	39.5	39.8	0.4
		2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.8	174.0	112	112	< 2	< 2	2900	2630	1.10	41.0	39.4	-2.0
545556	IW-13	2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.2	219.0	114	114	< 2	< 2	3210	2950	1.09	46.1	43.4	-3.0
		3rd Quarter 2007	07/25/07	7.0	216.0	115	115	< 2	< 2	3180	2780	1.14	42.8	42.8	0.0
545557	IW-14	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	8.1	161	125	125	< 2	< 2	3050	2800	1.09	43.5	43.2	-0.3
		1st Quarter 2007	01/16/07	7.8	157	125	125	< 2	< 2	3070	2800	1.10	44.0	42.3	-2.0
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.9	158.0	125	125	< 2	< 2	3170	2920	1.09	46.0	43.2	-3.1
545558	IW-15	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.3	130	128	128	< 2	< 2	2940	2660	1.11	41.3	40.6	-0.9
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.1	132.0	127	127	< 2	< 2	3100	2740	1.13	42.9	41.7	-1.4

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
545559	IW-16	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1730	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.18	1415	23.8	NA	1730	139	0.30	NA	NA	2.01	513	126.0
		2nd Quarter 2007	04/17/07	6.86	1320	26.8	NA	1770	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	04/17/07	6.86	1320	26.8	NA	1790	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.63	1368	26.5	NA	1800	140.0	0.2	NA	NA	2.22	542.0	127.0
545560	IW-17	4th Quarter 2006	11/15/06	NA	NA	NA	NA	1570	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	6.79	1402	21.8	NA	1600	131	0.30	NA	NA	2.21	457	121.0
		2nd Quarter 2007	04/16/07	6.9	1303	26.3	NA	1670	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	7/25/07 [4]	6.61	1348	27.2	NA	1730	130.0	0.2	NA	NA	2.30	504.0	124.0
545561	IW-18	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1610	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/18/07	7.26	1460	15.4	NA	1660	127	0.20	NA	NA	1.89	518	114.0
		2nd Quarter 2007	04/16/07	6.8	1161	24.9	NA	1610	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.45	1293	28.1	NA	1760	130.0	0.2	NA	NA	2.09	524.0	112.0
545562	IW-19	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1570	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/11/07	7.19	1802	25.1	NA	1630	135	0.30	NA	NA	2.00	486	120.0
		2nd Quarter 2007	04/16/07	6.69	1296	26.7	NA	1630	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.91	1310	26.3	NA	1650	130.0	0.2	NA	NA	2.04	486.0	121.0
545563	IW-20	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1550	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/11/07	7.23	2360	26.4	NA	1630	131	0.30	NA	NA	2.32	473	118.0
		2nd Quarter 2007	04/09/07	7.07	1260	27.2	NA	1500	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	6.69	1822	30.8	NA	1580	130.0	0.2	NA	NA	3.69	500.0	126.0
545564	IW-21	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1580	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/11/07	7.15	1848	27.8	NA	1620	139	0.30	NA	NA	2.45	480	119.0
		2nd Quarter 2007	04/17/07	6.85	1424	29.4	NA	1650	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	6.68	1828	30.6	NA	1630	130.0	0.2	NA	NA	2.75	502.0	125.0
200554	IW-22	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1710	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/23/07	6.90	1253	22.1	NA	1660	136	0.70	NA	NA	0.92	530	84.8
		2nd Quarter 2007	04/09/07	7.09	1325	26	NA	1740	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	6.99	1683	28.1	NA	1790	135.0	0.2	NA	NA	0.86	532.0	87.8
200555	IW-23	4th Quarter 2006	11/21/06	NA	NA	NA	NA	1540	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/23/07	6.60	1249	22.8	NA	1640	153	0.40	NA	NA	1.18	537	102.0
		2nd Quarter 2007	04/11/07	6.88	1528	26.7	NA	1670	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	6.49	1541	24.7	NA	1670	150.0	0.2	NA	NA	1.07	525.0	98.7
200556	IW-24	3rd Quarter 2007	07/18/07	6.78	1739	29.0	NA	1790	144.0	0.2	NA	NA	0.62	554.0	93.8
634036	JOHNSON	1st Quarter 2007	01/17/07	7.77	450	11.8	65.1	64.8	8	0.10	0.25	< 0.01	0.25	63.0	11.2
		3rd Quarter 2007	07/12/07	7.54	495	30.4	68.1	68.2	8.1	< 0.1	0.27	< 0.01	0.27	64.7	11.1
85228	M-1	1st Quarter 2007	01/17/07	7.90 [2]	350 [2]	27.0	NA	9.5	NA	0.56	NA	NA	NA	33.0	5.6
		3rd Quarter 2007	07/11/07	7.88 [2]	270	27.0	17	NA	NA	NA	NA	NA	NA	39.0	7.8
85304	M-2	4th Quarter 2006	07/19/06	NA	NA	NA	NA	490	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.40 [2]	1400 [2]	28.0	470.0	NA	NA	0.34	NA	NA	NA	157.0	36.5
85306	M-4	3rd Quarter 2007	07/13/07	7.50	338	28.0	20	NA	15.0	0.7	2.10	< 0.1	NA	37.0	16.0
		3rd Quarter 2007	07/13/07	7.50	338	28.0	19	NA	15.0	0.7	2.10	< 0.1	NA	36.0	16.0
87387	M-5	1st Quarter 2007	01/16/07	7.70 [2]	1200 [2]	26.0	450.0	NA	29.0	0.37	1.10	NA	NA	134.0	38.4
87389	M-7	1st Quarter 2007	01/16/07	7.40 [2]	1200 [2]	25.0	430.0	NA	18.0	0.32	<1	NA	NA	142.0	35.9

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
545559	IW-16	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	6.8	112	128	128	< 2	< 2	2970	2700	1.10	42.8	41.1	-2.0
		2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.0	116.0	125	125	< 2	< 2	3190	2810	1.14	44.2	42.8	-1.6
545560	IW-17	4th Quarter 2006	11/15/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.1	134	128	128	< 2	< 2	2820	2530	1.11	39.8	38.9	-1.1
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	7/25/07 [4]	7.6	122.0	128	128	< 2	< 2	3050	2690	1.13	42.5	40.9	-1.9
545561	IW-18	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/18/07	7.5	107	129	129	< 2	< 2	2830	2610	1.08	41.0	40.2	-1.0
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.2	106.0	129	129	< 2	< 2	3030	2720	1.11	43.2	40.2	-3.6
545562	IW-19	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/11/07	7.6	117	145	145	< 2	< 2	2700	2580	1.05	40.9	39.5	-1.7
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	7.8	122.0	145	145	< 2	< 2	2930	2600	1.13	41.2	39.8	-1.7
545563	IW-20	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/11/07	8.1	129	139	139	< 2	< 2	2370	2570	0.92	40.7	39.2	-1.9
		2nd Quarter 2007	04/09/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	8.6	144.0	138	138	< 2	< 2	2760	2570	1.07	39.6	41.9	2.8
545564	IW-21	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/11/07	10.8	141	135	135	< 2	< 2	2760	2590	1.07	40.6	40.2	-0.5
		2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	10.6	150.0	136	136	< 2	< 2	2810	2630	1.07	40.6	42.2	1.9
200554	IW-22	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/23/07	10.7	199	147	147	< 2	< 2	2860	2710	1.06	41.6	42.5	1.1
		2nd Quarter 2007	04/09/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	11.0	195.0	137	137	< 2	< 2	3040	2830	1.07	44.1	42.7	-1.6
200555	IW-23	4th Quarter 2006	11/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/23/07	9.9	174	159	159	< 2	< 2	2830	2710	1.04	41.9	43.1	1.4
		2nd Quarter 2007	04/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/25/07	9.3	169.0	151	151	< 2	< 2	3070	2710	1.13	42.3	42.0	-0.4
200556	IW-24	3rd Quarter 2007	07/18/07	7.0	171.0	147	147	< 2	< 2	3040	2850	1.07	44.6	43.1	-1.7
634036	JOHNSON	1st Quarter 2007	01/17/07	1.6	26.8	161	157	5	< 2	310	276	1.12	4.8	5.2	4.0
		3rd Quarter 2007	07/12/07	1.6	26.6	167	167	<2	<2	330	282	1.17	5.0	5.3	2.9
85228	M-1	1st Quarter 2007	01/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
85304	M-2	4th Quarter 2006	07/19/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
85306	M-4	3rd Quarter 2007	07/13/07	< 5.0	50.0	190	190	< 1	< 1	270	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/13/07	< 5.0	51.0	190	190	< 1	< 1	270	NA	NA	NA	NA	NA
87387	M-5	1st Quarter 2007	01/16/07	7.9	58.0	NA	110	<1	NA	810	NA	NA	NA	NA	NA
87389	M-7	1st Quarter 2007	01/16/07	8.1	61.0	NA	170	<1	NA	800	NA	NA	NA	NA	NA

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
87390	M-8	1st Quarter 2007	12/06/06	7.50 [2]	380 [2]	25.5	23.0	NA	13.0	NA	<1	NA	NA	42	9.3
		1st Quarter 2007	12/06/06	7.60 [2]	380 [2]	NA	20.0	NA	10	NA	<1	NA	NA	42.0	9.3
		2nd Quarter 2007	04/16/07	7.87	424	23.1	NA	<0.5	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.67	415	28.2	NA	16.5	9.5	0.3	0.68	< 0.01	0.68	41.9	9.4
501652	M-9	1st Quarter 2007	01/17/07	7.50 [2]	460 [2]	26.0	61.0	NA	NA	0.37	NA	NA	NA	47.6	10.4
		3rd Quarter 2007	07/11/07	7.72	334	27.0	67	NA	NA	NA	NA	NA	NA	49.0	11.0
501653	M-10	4th Quarter 2006	07/19/06	NA	NA	NA	NA	66	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	7.90 [2]	440 [2]	29.0	66.0	NA	NA	0.80	NA	NA	NA	33.1	7.1
		2nd Quarter 2007	04/16/07	7.97	475	28.2	NA	72.6	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/12/07	8.05	322	27.0	78	NA	NA	NA	NA	NA	NA	37.0	7.9
501654	M-11	1st Quarter 2007	01/17/07	7.70 [2]	350 [2]	26.0	11.0	NA	NA	0.35	NA	NA	NA	36.6	6.8
		1st Quarter 2007	01/17/07	7.70 [2]	350 [2]	NA	11.0	NA	NA	0.36	NA	NA	NA	36.8	6.8
		1st Quarter 2007	01/17/07	7.74 [2]	380 [2]	NA	12.0	NA	9	0.33	0.55	NA	NA	35.0	7.0
		3rd Quarter 2007	07/11/07	7.87	252	26.0	16	NA	NA	NA	NA	NA	NA	35.0	6.9
		3rd Quarter 2007	07/11/07	7.87	252	26.0	12	NA	NA	NA	NA	NA	NA	36.0	6.7
906595	M-20	3rd Quarter 2007	3/22/07 [7]	7.10	3500	27.0	1400	NA	100.0	0.2	NA	2.20	NA	390.0	99.0
		3rd Quarter 2007	07/12/07	7.44	1970	27.0	1600	NA	93.0	0.2	2.10	< 0.1	NA	610.0	100.0
803636	MH-10	4th Quarter 2006	11/08/06	NA	NA	NA	NA	1330	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	6.70	1717	28.5	NA	1310	134	0.20	NA	NA	1.66	484	80.8
		2nd Quarter 2007	04/03/07	6.86	1267	30.2	NA	1360	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	6.87	1138	31.4	NA	1410	152.0	0.5	NA	NA	2.31	477.0	81.1
803637	MH-11	1st Quarter 2007	01/11/07	7.33	1778	25.0	NA	1590	114	0.20	NA	NA	1.21	494	109.0
		2nd Quarter 2007	04/10/07	7.02	1327	28.3	NA	1580	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	6.87	1848	28.8	NA	1650	106.0	0.2	NA	NA	1.26	487.0	110.0
803638	MH-12	1st Quarter 2007	01/11/07	6.76	1547	19.2	NA	1100	121	0.30	NA	NA	2.65	380	75.7
		2nd Quarter 2007	04/04/07	7.19	1225	30.7	NA	1130	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	6.84	1468	30.4	NA	1090	128.0	0.2	NA	NA	2.92	374.0	75.7
904071	MH-13A	4th Quarter 2006	11/10/06	NA	NA	NA	NA	1680	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	7.87	1458	25.0	NA	1700	172	0.30	NA	NA	1.24	524	102.0
		2nd Quarter 2007	04/18/07	7.1	1609	27.4	NA	1720	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	6.98	1553	28.1	NA	1760	167.0	< 0.1	NA	NA	1.20	528.0	104.0
904072	MH-13B	4th Quarter 2006	11/10/06	NA	NA	NA	NA	1080	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	8.07	1262	25.9	NA	1100	168	0.30	NA	NA	1.60	385	55.1
		2nd Quarter 2007	04/18/07	7.36	1396	30	NA	1120	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	7.28	1786	28.5	NA	1150	167.0	0.1	NA	NA	1.62	369.0	53.4
904073	MH-13C	4th Quarter 2006	11/10/06	NA	NA	NA	NA	90	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	9.12	450	22.9	NA	100	10	1.40	NA	NA	< 0.02	14.7	1.1
		2nd Quarter 2007	04/18/07	9.2	379	29.1	NA	20	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	8.78	380	33.8	NA	20	7.0	0.6	NA	NA	0.11	11.6	1.0
201528	MH-25A	4th Quarter 2006	11/13/06	NA	NA	NA	NA	190	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	8.09	344	26.0	NA	10	8	0.60	NA	NA	1.04	30.8	8.1
		2nd Quarter 2007	04/04/07	7.82	322	26.6	NA	<10	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	7.63	431	28.6	NA	< 10	9.0	0.4	NA	NA	1.28	34.0	8.8

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
87390	M-8	1st Quarter 2007	12/06/06	<5	31.0	NA	160	<1	NA	220	NA	NA	NA	NA	NA
		1st Quarter 2007	12/06/06	<5	31.0	NA	160	<1	NA	210	NA	NA	NA	NA	NA
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	4.6	30.9	167	167	< 2	< 2	250	216	1.16	4.0	4.3	3.6
501652	M-9	1st Quarter 2007	01/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
501653	M-10	4th Quarter 2006	07/19/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	04/16/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/12/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
501654	M-11	1st Quarter 2007	01/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/17/07	3.2	28.0	NA	170	<5	NA	230	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
906595	M-20	3rd Quarter 2007	3/22/07 [7]	18.0	110.0	NA	88	< 1	NA	2400	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/12/07	21.0	140.0	84	84	< 1	1.0	2500	NA	NA	NA	NA	NA
803636	MH-10	4th Quarter 2006	11/08/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	6.7	74	138	138	< 2	< 2	2310	2170	1.06	34.0	34.3	0.4
		2nd Quarter 2007	04/03/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	6.4	70.9	137	137	< 2	< 2	2620	2280	1.15	36.6	33.8	-4.0
803637	MH-11	1st Quarter 2007	01/11/07	15.3	105	110	110	< 2	< 2	2670	2490	1.07	38.8	38.7	-0.1
		2nd Quarter 2007	04/10/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	14.4	105.0	109	109	< 2	< 2	2650	2540	1.04	39.8	38.4	-1.8
803638	MH-12	1st Quarter 2007	01/11/07	10.5	77.1	104	104	< 2	< 2	1970	1830	1.08	28.6	28.9	0.5
		2nd Quarter 2007	04/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	9.6	83.1	104	104	< 2	< 2	2150	1820	1.18	28.6	28.8	0.3
904071	MH-13A	4th Quarter 2006	11/10/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	14.4	173	115	115	< 2	< 2	2900	2750	1.05	42.8	42.6	-0.2
		2nd Quarter 2007	04/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	14.4	178.0	112	112	< 2	< 2	3130	2820	1.11	43.9	43.2	-0.8
904072	MH-13B	4th Quarter 2006	11/10/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	10.8	124	96	96	< 2	< 2	2020	1900	1.06	29.7	29.5	-0.3
		2nd Quarter 2007	04/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	10.7	119.0	112	112	< 2	< 2	2190	1940	1.13	31.1	28.4	-4.5
904073	MH-13C	4th Quarter 2006	11/10/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/24/07	2.7	96.2	132	118	13	< 2	300	310	0.97	5.0	5.1	1.0
		2nd Quarter 2007	04/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	2.5	64.5	94	94	< 2	< 2	220	164	1.34	2.5	3.5	16.7
201528	MH-25A	4th Quarter 2006	11/13/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	2.9	38	161	156	5	< 2	230	197	1.17	3.6	3.9	4.0
		2nd Quarter 2007	04/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	2.4	37.0	161	161	< 2	< 2	230	188	1.22	3.4	4.1	9.3

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
208429	MH-25B	4th Quarter 2006	11/13/06	NA	NA	NA	NA	1660	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	7.54	1440	26.1	NA	1680	117	0.20	NA	NA	1.96	533	117.0
		2nd Quarter 2007	04/04/07	7.32	1333	28.7	NA	1550	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	7.16	1649	28.4	NA	1760	121.0	0.2	NA	NA	2.07	551.0	125.0
208426	MH-25C	4th Quarter 2006	11/13/06	NA	NA	NA	NA	1290	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	7.46	1361	26.3	NA	1250	112	0.30	NA	NA	1.74	418	94.1
		2nd Quarter 2007	04/13/07	7.24	1357	26	NA	1260	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	7.13	1599	30.2	NA	1240	117.0	0.2	NA	NA	1.87	420.0	97.4
201527	MH-26A	4th Quarter 2006	11/13/06	NA	NA	NA	NA	10	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/15/07	7.89	316	26.2	NA	< 10	8	0.50	NA	NA	0.92	32.9	8.0
		2nd Quarter 2007	04/04/07	7.83	325	27	NA	10	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	7.80	428	26.9	NA	20	8.0	0.5	NA	NA	1.18	33.8	8.1
208427	MH-26B	4th Quarter 2006	11/13/06	NA	NA	NA	NA	1560	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/15/07	7.53	1310	26.4	NA	1590	126	0.20	NA	NA	1.85	495	111.0
		2nd Quarter 2007	04/04/07	7.31	1448	30.5	NA	1620	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	7.10	1652	29.0	NA	1590	98.0	0.2	NA	NA	2.14	510.0	115.0
		3rd Quarter 2007	07/19/07	7.10	1652	29.0	NA	1570	119.0	0.2	NA	NA	3.27	508.0	114.0
208428	MH-26C	4th Quarter 2006	11/13/06	NA	NA	NA	NA	730	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/15/07	7.89	1059	24.6	NA	740	83	0.30	NA	NA	1.94	223	48.7
		2nd Quarter 2007	04/04/07	7.58	1128	29.5	NA	720	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	7.55	1267	30.5	NA	730	70.0	0.3	NA	NA	2.21	227.0	51.0
		3rd Quarter 2007	07/19/07	7.55	1267	30.5	NA	740	71.0	0.3	NA	NA	2.10	223.0	49.7
903548	MH-28	4th Quarter 2006	01/09/07	7.22	2690	25.8	NA	1920	136	0.20	NA	NA	1.45	654	95.3
		1st Quarter 2007	04/17/07	6.98	1359	26.1	NA	1920	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	07/16/07	6.89	1206	27.1	NA	1880	137.0	0.2	NA	NA	1.42	577.0	91.2
		3rd Quarter 2007	11/14/06	NA	NA	NA	NA	1860	NA	NA	NA	NA	NA	NA	NA
903649	MH-29	4th Quarter 2006	11/14/06	NA	NA	NA	NA	1640	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	7.47	2600	25.8	NA	1660	133	0.20	NA	NA	0.66	555	97.8
		1st Quarter 2007	01/09/07	7.47	2600	25.8	NA	1650	136	0.30	NA	NA	0.67	566	101.0
		2nd Quarter 2007	04/17/07	7.01	1345	25.1	NA	1690	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	6.95	1177	27.4	NA	1650	159.0	0.2	NA	NA	0.67	500.0	90.9
903884	MH-30	4th Quarter 2006	11/10/06	NA	NA	NA	NA	1690	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	7.33	2780	26.2	NA	1760	136	0.40	NA	NA	2.20	459	119.0
		2nd Quarter 2007	04/09/07	7.3	1529	27.3	NA	1810	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.18	1694	31.9	NA	1820	136.0	0.3	NA	NA	1.96	477.0	125.0
907342	MO-2007-1A	3rd Quarter 2007	08/08/07	7.17	370	29.0	19.2	19.2	8.4	0.4	0.54	< 0.01	0.54	40.4	6.4
907210	MO-2007-1B	3rd Quarter 2007	08/02/07	7.41	321	30.7	18.9	18.9	12.4	0.6	0.71	< 0.01	0.71	32.4	4.3
907209	MO-2007-1C	3rd Quarter 2007	07/31/07	7.35	523	27.9	114	112	22.4	0.5	0.82	< 0.01	0.82	57.5	9.3
906765	MO-2007-2	3rd Quarter 2007	6/14/07 [5]	7.05	1372	32.2	596	591	28.3	0.3	0.94	< 0.01	0.94	196.0	35.5
		3rd Quarter 2007	08/09/07	7.11	1271	32.2	580	520	28.2	0.3	0.87	< 0.01	0.87	181.0	33.0
906817	MO-2007-3C	3rd Quarter 2007	6/28/07 [5]	7.93	570	32.2	136	136	11.4	3.1	0.30	< 0.01	0.30	28.2	1.4
907211	MO-2007-4C	3rd Quarter 2007	08/16/07	7.62	472	35.2	78.6	78.7	11.8	5.0	0.48	< 0.01	0.48	13.0	0.3
907457	MO-2007-5C	3rd Quarter 2007	08/23/07	7.46	780	31.4	252	248	12.0	2.1	0.13	0.02	0.15	30.0	1.4
605898	NP-2	2nd Quarter 2007	06/04/07	7.20	411	25.9	41.3	41.2	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	08/13/07	7.16	441	26.0	41.8	41.7	8.9	0.3	0.35	< 0.01	0.35	49.7	9.8
624028	NP-2 FICO	1st Quarter 2007	02/24/07	6.90	1004	21.1	182.0	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.30	816	23.2	65	NA	NA	NA	NA	NA	NA	NA	NA

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
208429	MH-25B	4th Quarter 2006	11/13/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	11.6	101	101	101	< 2	< 2	2790	2620	1.06	40.6	41.0	0.5
		2nd Quarter 2007	04/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	11.3	107.0	93	93	< 2	< 2	2910	2730	1.07	42.2	42.8	0.7
208426	MH-25C	4th Quarter 2006	11/13/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	11.7	98.2	99	99	< 2	< 2	2210	2040	1.08	31.4	33.2	2.8
		2nd Quarter 2007	04/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/20/07	11.9	103.0	99	99	< 2	< 2	2300	2050	1.12	31.3	33.8	3.8
201527	MH-26A	4th Quarter 2006	11/13/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/15/07	3.9	36.4	158	155	3	< 2	240	186	1.29	3.4	4.0	8.1
		2nd Quarter 2007	04/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	3.6	34.0	160	160	< 2	< 2	260	204	1.27	3.8	3.9	1.3
208427	MH-26B	4th Quarter 2006	11/13/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/15/07	12.1	97.2	100	100	< 2	< 2	2710	2490	1.09	38.9	38.4	-0.6
		2nd Quarter 2007	04/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	10.0	96.5	100	100	< 2	< 2	2800	2480	1.13	38.1	39.4	1.7
		3rd Quarter 2007	07/19/07	11.0	95.5	99	99	< 2	< 2	2810	2480	1.13	38.3	39.2	1.2
208428	MH-26C	4th Quarter 2006	11/13/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/15/07	11.5	101	87	87	< 2	< 2	1350	1260	1.07	19.6	19.9	0.8
		2nd Quarter 2007	04/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	10.8	99.7	90	90	< 2	< 2	1390	1240	1.12	19.1	20.2	2.8
		3rd Quarter 2007	07/19/07	10.6	99.2	88	88	< 2	< 2	1410	1250	1.13	19.3	19.9	1.5
903548	MH-28	4th Quarter 2006	01/09/07	7.4	165	130	130	< 2	< 2	3280	3060	1.07	46.7	48.0	1.4
		1st Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		2nd Quarter 2007	07/16/07	6.5	149.0	130	130	< 2	< 2	3240	2920	1.11	45.9	43.1	-3.1
		3rd Quarter 2007	11/14/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
903649	MH-29	4th Quarter 2006	11/14/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	11.3	164	160	160	< 2	< 2	2930	2720	1.08	41.8	43.3	1.8
		1st Quarter 2007	01/09/07	11.4	172	158	158	< 2	< 2	2860	2730	1.05	41.6	44.5	3.3
		2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/16/07	9.9	150.0	158	158	< 2	< 2	2970	2650	1.12	42.3	39.3	-3.7
903884	MH-30	4th Quarter 2006	11/10/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	12.7	227	116	116	< 2	< 2	3000	2780	1.08	43.1	43.0	-0.1
		2nd Quarter 2007	04/09/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	11.8	237.0	120	120	< 2	< 2	3180	2880	1.10	44.4	45.0	0.7
907342	MO-2007-1A	3rd Quarter 2007	08/08/07	3.0	30.4	164	164	< 2	< 2	250	209	1.20	3.9	3.9	0.0
907210	MO-2007-1B	3rd Quarter 2007	08/02/07	3.2	40.5	140	140	< 2	< 2	220	199	1.11	3.6	3.8	2.7
907209	MO-2007-1C	3rd Quarter 2007	07/31/07	4.8	49.3	124	124	< 2	< 2	380	334	1.14	5.5	5.9	3.5
906765	MO-2007-2	3rd Quarter 2007	6/14/07 [5]	7.7	73.5	108	108	< 2	< 2	1060	1000	1.06	15.4	16.1	2.2
		3rd Quarter 2007	08/09/07	7.1	69.6	304	304	< 2	< 2	1030	1030	1.00	17.9	15.0	-8.8
906817	MO-2007-3C	3rd Quarter 2007	6/28/07 [5]	3.3	93.4	103	103	< 2	< 2	380	340	1.12	5.4	5.7	2.7
907211	MO-2007-4C	3rd Quarter 2007	08/16/07	1.9	80.8	103	101	2	< 2	310	256	1.21	4.3	4.2	-1.2
907457	MO-2007-5C	3rd Quarter 2007	08/23/07	7.1	129.0	71	71	< 2	< 2	540	473	1.14	7.0	7.4	2.8
605898	NP-2	2nd Quarter 2007	06/04/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	08/13/07	3.7	29.8	166	166	< 2	< 2	270	245	1.10	4.4	4.7	3.3
624028	NP-2 FICO	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
561870	PZ-7	4th Quarter 2006	11/16/06	NA	NA	NA	NA	270	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/12/07	7.30	920	21.6	NA	340	73	0.30	NA	NA	1.23	139	38.1
		2nd Quarter 2007	04/17/07	7.13	777	23.8	NA	360	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	7.31	979	28.2	NA	360	76.0	0.2	NA	NA	1.59	161.0	43.6
561866	PZ-8	4th Quarter 2006	11/14/06	NA	NA	NA	NA	470	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	6.60	985	21.0	NA	460	60	0.90	NA	NA	2.52	233	52.4
		2nd Quarter 2007	04/11/07	7.41	1074	19.8	NA	540	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/12/07	7.27	935	27.3	NA	450	59.0	0.9	NA	NA	2.14	144.0	44.2
627429	QUIHUIS	1st Quarter 2007	01/11/07	7.23	1047	24.3	190.0	189.0	43	0.50	8.20	< 0.01	8.20	119.0	14.0
599350	ROBERTS	3rd Quarter 2007	07/12/07	7.49	405	29.5	29.4	29.6	5.9	0.2	0.59	< 0.01	0.59	56.7	7.9
608521	RRQC-1	3rd Quarter 2007	07/17/07	8.20	657	32.2	148	156	13.0	1.9	0.32	< 0.01	0.32	19.4	0.5
608519	RRQC-2	1st Quarter 2007	02/27/07	8.21	575	31.8	173.0	173.0	12	NA	NA	NA	NA	20.0	0.5
		1st Quarter 2007	02/27/07	8.21	575	31.8	174.0	174.0	12	NA	NA	NA	NA	20.1	0.4
608597	RRQC-4	1st Quarter 2007	02/27/07	7.53	375	25.5	56.7	56.9	9	NA	NA	NA	NA	48.2	6.4
		1st Quarter 2007	02/27/07	7.53	375	25.5	56.9	56.9	9	NA	NA	NA	NA	48.3	6.5
		3rd Quarter 2007	07/17/07	7.69	439	26.5	57.3	57	8.4	< 0.1	0.49	< 0.01	0.49	48.3	6.4
504946	RT-1	1st Quarter 2007	01/25/07	7.30	620	27.0	130.0	NA	NA	0.68	NA	NA	NA	NA	NA
623111	S-1	4th Quarter 2006	11/17/06	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	6.45	468	19.2	NA	180.0	52	2.00	NA	NA	2.58	57.2	7.9
		3rd Quarter 2007	07/18/07	6.84	599	24.9	NA	60	19.0	0.4	NA	NA	3.71	70.7	9.1
623112	S-2	1st Quarter 2007	01/23/07	6.38	380	19.0	NA	80.0	15	0.60	NA	NA	2.42	53.6	6.2
		3rd Quarter 2007	07/18/07	6.89	541	28.8	NA	60	13.0	0.6	NA	NA	2.10	52.1	5.9
623113	S-3	4th Quarter 2006	11/17/06	NA	NA	NA	NA	60	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/23/07	6.45	442	21.3	NA	80.0	14	0.70	NA	NA	1.55	49.3	5.4
		3rd Quarter 2007	07/17/07	7.21	498	26.1	NA	90	24.0	0.7	NA	NA	1.53	53.5	6.7
623114	S-4	4th Quarter 2006	11/17/06	NA	NA	NA	NA	70	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	6.65	450	18.5	NA	80.0	12	0.80	NA	NA	1.28	44.4	5.0
		3rd Quarter 2007	07/18/07	7.64	564	26.9	NA	80	12.0	0.7	NA	NA	1.22	44.5	5.0
623115	S-5	4th Quarter 2006	11/17/06	NA	NA	NA	NA	80	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	6.45	518	19.9	NA	110.0	14	0.80	NA	NA	1.24	54.4	6.8
		3rd Quarter 2007	07/18/07	6.89	613	27.7	NA	80	12.0	0.7	NA	NA	1.16	52.4	6.6
623116	S-6	4th Quarter 2006	11/17/06	NA	NA	NA	NA	100	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	7.70	830	18.7	NA	130.0	17	1.10	NA	NA	1.94	73.7	11.7
		3rd Quarter 2007	07/18/07	6.97	677	26.3	NA	130	15.0	1.0	NA	NA	1.74	69.8	11.0
623982	S-19A	1st Quarter 2007	02/24/07	7.70	549	27.6	108.0	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	8.57	565	38.7	125	NA	NA	NA	NA	NA	NA	NA	NA
623991	S-40	1st Quarter 2007	02/24/07	7.30	1078	22.0	194.0	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.31	696	25.8	121	NA	NA	NA	NA	NA	NA	NA	NA
623994	S-44	1st Quarter 2007	02/24/07	7.30	1301	21.6	180.0	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.46	694	26.0	115	NA	NA	NA	NA	NA	NA	NA	NA
623996	S-46	1st Quarter 2007	02/24/07	8.30	492	27.7	71.9	NA	NA	NA	NA	NA	NA	NA	NA
550533	SAH-1	1st Quarter 2007	01/25/07	7.70	844	30.2	228	229	21	0.40	1.61	< 0.01	1.61	80.1	23.4
		3rd Quarter 2007	07/25/07	7.65	818	29.8	214	213	21.3	0.4	1.91	< 0.01	1.91	82.6	20.6
635386	SANTA RITA RANCH-1	1st Quarter 2007	02/15/07	7.89	327	26.6	39.2	39.0	6	0.10	0.38	<0.01	0.38	35.4	5.0
		3rd Quarter 2007	07/17/07	7.86	336	26.4	33.2	33.1	6.1	0.1	0.35	< 0.01	0.35	33.3	4.9
635387	SANTA RITA RANCH-2	3rd Quarter 2007	07/17/07	7.62	536	28.1	87.4	86.8	14.2	0.1	2.20	< 0.01	2.20	65.3	7.5

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
561870	PZ-7	4th Quarter 2006	11/16/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/12/07	3.3	29.1	105	105	< 2	< 2	780	686	1.14	11.3	11.4	0.4
		2nd Quarter 2007	04/17/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/24/07	4.1	33.6	106	106	< 2	< 2	840	742	1.13	11.8	13.2	5.6
561866	PZ-8	4th Quarter 2006	11/14/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	7.4	91	173	173	< 2	< 2	990	1010	0.98	14.8	20.1	15.2
		2nd Quarter 2007	04/11/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/12/07	7.6	104.0	176	176	< 2	< 2	1010	915	1.10	14.7	15.6	3.0
627429	QUIHUIS	1st Quarter 2007	01/11/07	4.5	71.1	213	204	10	< 2	630	610	1.03	10.1	10.3	1.0
599350	ROBERTS	3rd Quarter 2007	07/12/07	2.2	19.2	161	161	< 2	< 2	260	221	1.18	4.0	4.3	3.6
608521	RRQC-1	3rd Quarter 2007	07/17/07	2.1	107.0	91	89	< 2	< 2	390	357	1.09	5.5	5.7	1.8
608519	RRQC-2	1st Quarter 2007	02/27/07	2.2	NA	90	90	< 2	< 2	390	NA	NA	NA	NA	NA
		1st Quarter 2007	02/27/07	2.2	NA	90	88	< 2	< 2	380	NA	NA	NA	NA	NA
608597	RRQC-4	1st Quarter 2007	02/27/07	2.2	NA	132	132	< 2	< 2	270	NA	NA	NA	NA	NA
		1st Quarter 2007	02/27/07	1.9	NA	131	131	< 2	< 2	260	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/17/07	2.0	27.4	132	123	< 2	< 2	270	231	1.17	4.1	4.2	1.2
504946	RT-1	1st Quarter 2007	01/25/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
623111	S-1	4th Quarter 2006	11/17/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	3.1	49.3	151	151	< 2	< 2	530	442	1.20	8.3	5.7	-18.6
		3rd Quarter 2007	07/18/07	3.2	46.0	154	154	< 2	< 2	400	301	1.33	4.8	6.3	13.5
623112	S-2	1st Quarter 2007	01/23/07	3.2	53.4	150	148	2	< 2	320	303	1.06	5.1	5.6	4.7
		3rd Quarter 2007	07/18/07	3.3	51.2	176	176	< 2	< 2	340	292	1.16	5.1	5.4	2.9
623113	S-3	4th Quarter 2006	11/17/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/23/07	3.1	54.7	155	150	5	< 2	310	302	1.03	5.2	5.4	1.9
		3rd Quarter 2007	07/17/07	3.8	56.7	138	121	16	< 2	370	324	1.14	5.3	5.8	4.5
623114	S-4	4th Quarter 2006	11/17/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	3.1	56.2	151	151	< 2	< 2	330	292	1.13	5.0	5.1	1.0
		3rd Quarter 2007	07/18/07	3.1	55.7	150	150	< 2	< 2	360	291	1.24	5.0	5.1	1.0
623115	S-5	4th Quarter 2006	11/17/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	3.4	59.5	160	160	< 2	< 2	370	345	1.07	5.9	5.9	0.0
		3rd Quarter 2007	07/18/07	3.5	59.2	158	158	< 2	< 2	390	309	1.26	5.2	5.8	5.5
623116	S-6	4th Quarter 2006	11/17/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/19/07	3.0	59.3	189	189	< 2	< 2	450	409	1.10	7.0	7.3	2.1
		3rd Quarter 2007	07/18/07	3.0	59.8	184	184	< 2	< 2	480	400	1.20	6.8	7.1	2.2
623982	S-19A	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
623991	S-40	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
623994	S-44	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
623996	S-46	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
550533	SAH-1	1st Quarter 2007	01/25/07	4.5	46.8	126	126	< 2	< 2	550	488	1.13	8.0	8.1	0.6
		3rd Quarter 2007	07/25/07	4.7	47.0	122	122	< 2	< 2	570	471	1.21	7.6	8.0	2.6
635386	SANTA RITA RANCH-1	1st Quarter 2007	02/15/07	1.5	22.4	107	107	< 2	< 2	200	176	1.14	3.1	3.2	1.6
		3rd Quarter 2007	07/17/07	1.5	22.7	108	108	< 2	< 2	200	168	1.19	3.0	3.1	1.6
635387	SANTA RITA RANCH-2	3rd Quarter 2007	07/17/07	2.6	26.3	134	134	< 2	< 2	340	293	1.16	5.0	5.1	1.0

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Field pH (SU)	Field EC (µS/cm)	Field Temp (deg C)	Sulfate, total	Sulfate, dissolved	Chloride, dissolved	Fluoride, dissolved	Nitrate as N, dissolved	Nitrite as N, dissolved	Nitrate/Nitrite as N, dissolved	Calcium, dissolved	Magnesium, dissolved
208825	SI Well	4th Quarter 2006	10/04/06	NA	NA	NA	NA	5.9	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	7.90	358	26.7	5.7	5.7	8	0.30	0.55	< 0.01	0.55	39.4	5.7
		2nd Quarter 2007	04/10/07	7.48	367	26.8	6.6	6.6	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	7.59	389	27.1	6.9	6.9	8.1	0.3	0.57	< 0.01	0.57	42.9	6.1
529142	SIMONS	1st Quarter 2007	01/11/07	7.63	437	23.7	3.5	3.6	7	0.30	0.95	< 0.01	0.95	50.5	9.0
		3rd Quarter 2007	07/16/07	7.47	433	25.2	3	3	7.4	0.3	0.95	< 0.01	0.95	49.7	9.0
639055	SIMPSON	1st Quarter 2007	01/08/07	7.59	381	25.3	3.2	3.2	8	0.30	0.93	< 0.01	0.93	41.9	8.2
608531	ST-5	4th Quarter 2006	07/21/06	NA	NA	NA	NA	32	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	7.64	383	27.6	23.9	23.7	9	0.30	0.56	< 0.01	0.56	44.8	5.5
		1st Quarter 2007	01/25/07	7.30 [2]	390 [2]	27.0	24.0	NA	NA	0.38	NA	NA	NA	38.0	5.2
		3rd Quarter 2007	07/13/07	7.69	268	28.0	26	NA	NA	NA	NA	NA	NA	43.0	5.1
608530	ST-6	4th Quarter 2006	07/21/06	NA	NA	NA	NA	46	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	7.95	386	27.6	41.3	41.1	8	0.50	0.36	< 0.01	0.36	39.6	5.3
		1st Quarter 2007	01/25/07	7.60 [2]	370 [2]	27.0	33.0	NA	NA	0.61	NA	NA	NA	47.5	5.8
		3rd Quarter 2007	07/13/07	7.85	369	27.0	47	NA	NA	NA	NA	NA	NA	44.0	5.9
566940	ST-7	4th Quarter 2006	07/21/06	NA	NA	NA	NA	26	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	7.94	362	7.9	32.8	32.7	8	0.80	0.39	< 0.01	0.39	35.1	3.5
		1st Quarter 2007	01/25/07	7.60	380	27.0	33.0	NA	NA	0.93	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	6.86	505	27.6	NA	40	7.0	0.7	NA	NA	0.41	38.2	3.8
577707	TAYLOR	1st Quarter 2007	01/23/07	7.56	400	28.1	2.6	3.6	9	0.30	1.26	< 0.01	1.26	33.0	5.7
616156	TMM-1 [1]	3rd Quarter 2007	6/19/07 [6]	7.73	351	29.7	14.2	14.1	8.4	0.3	0.23	< 0.01	0.23	31.7	6.1
		3rd Quarter 2007	08/06/07	8.04	505	25.2	NA	< 10	8.0	0.2	NA	NA	3.54	33.9	6.7
540451	UA	1st Quarter 2007	01/25/07	7.82	459	26.8	82.1	82.6	10	0.10	1.00	< 0.01	1.00	49.2	9.3
		3rd Quarter 2007	07/16/07	7.70	475	27.4	84.9	84.5	10.1	0.1	0.99	< 0.01	0.99	51.8	9.2
624024	W-9	1st Quarter 2007	02/24/07	7.70	684	21.7	106.0	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.56	623	23.7	95	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.56	623	23.7	97.1	97.2	18.0	0.6	3.66	< 0.01	3.66	72.6	8.3
624025	W-11	1st Quarter 2007	02/24/07	7.70	610	19.2	82.5	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	7.50	604	20.9	72	NA	NA	NA	NA	NA	NA	NA	NA
624026	W-12	3rd Quarter 2007	07/18/07	7.56	589	23.6	77	NA	NA	NA	NA	NA	NA	NA	NA

TABLE B.2
Water Quality Data Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

ADWR Well Registry Number	Well Name	Sampling Period	Sample Date	Potassium, dissolved	Sodium, dissolved	Total Alkalinity	Bicarbonate as CaCO3	Carbonate as CaCO3	Hydroxide as CaCO3	Residue, Filterable (TDS) @ 180ºC	TDS (calculated)	TDS Ratio (measured/ calculated)	Sum of Anions (meq/L)	Sum of Cations (meq/L)	Cation-Anion Balance (%)
208825	SI Well	4th Quarter 2006	10/04/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/09/07	3	28.5	178	178	< 2	< 2	220	200	1.10	3.9	3.7	-2.6
		2nd Quarter 2007	04/10/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/11/07	3.1	30.8	176	176	< 2	< 2	230	206	1.12	3.9	4.0	1.3
529142	SIMONS	1st Quarter 2007	01/11/07	2.9	24.9	204	191	13	< 2	250	230	1.09	4.4	4.4	0.0
		3rd Quarter 2007	07/16/07	3.0	25.0	202	202	< 2	< 2	270	223	1.21	4.3	4.4	1.1
639055	SIMPSON	1st Quarter 2007	01/08/07	2.9	29.1	187	184	2	< 2	250	211	1.18	4.1	4.1	0.0
608531	ST-5	4th Quarter 2006	07/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	3.0	30.3	165	165	< 2	< 2	250	218	1.15	4.1	4.1	0.0
		1st Quarter 2007	01/25/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
608530	ST-6	4th Quarter 2006	07/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	3.2	37.9	148	144	3	< 2	250	227	1.10	4.0	4.1	1.2
		1st Quarter 2007	01/25/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/13/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
566940	ST-7	4th Quarter 2006	07/21/06	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		1st Quarter 2007	01/10/07	3.0	41.4	146	142	4	< 2	240	215	1.12	3.9	3.9	0.0
		1st Quarter 2007	01/25/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/19/07	3.6	43.7	148	148	< 2	< 2	280	226	1.24	4.0	4.2	2.4
577707	TAYLOR	1st Quarter 2007	01/23/07	3.8	29.1	162	161	< 2	< 2	200	186	1.08	3.6	3.5	-1.4
616156	TMM-1 [1]	3rd Quarter 2007	6/19/07 [6]	3.7	30.9	149	149	< 2	< 2	200	186	1.08	3.5	3.5	0.0
		3rd Quarter 2007	08/06/07	3.3	30.8	152	152	< 2	< 2	200	174	1.15	3.2	3.6	5.9
540451	UA	1st Quarter 2007	01/25/07	1.8	26.3	122	122	< 2	< 2	290	257	1.13	4.5	4.4	-1.1
		3rd Quarter 2007	07/16/07	1.5	27.4	122	122	< 2	< 2	320	262	1.22	4.5	4.5	0.0
624024	W-9	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	3.5	49.1	179.0	179.0	< 2	< 2	420	373	1.13	6.4	6.5	0.8
624025	W-11	1st Quarter 2007	02/24/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
624026	W-12	3rd Quarter 2007	07/18/07	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

All units are in milligrams per liter (mg/L) unless otherwise noted.

NA = Not Analyzed
SU = Standard Units
µS/cm = microsiemens per centimeter
TDS = Total Dissolved Solids
meq/L = milliequivalent per liter
deg C = degrees Celsius
EC = *electrical conductivity*

1 = Formerly listed as Davis Monthan (55-804995) and PC Parks wells (55-616156); determined to be the same well located at the Titan Missile Museum.

2 = The data report does not specify if it was a field or a laboratory measurement; it is assumed these values were measured in the field.

3 = Water quality sample collected in Q1-2007 and reported in Q2-2007
4 = Sample was re-analyzed for sulfate
5 = Water quality sample collected in Q2 during pump test; reported in Q3
6 = Water quality sample collected in Q2 during well rehabilitation; reported in Q3
7 = Water quality sample collected in Q1 during well installation; reported in Q3

TABLE B.3
Groundwater Elevation Measurements
Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

WELL NAME	ADWR 55 WELL REGISTRY NUMBER	SURVEY SOURCE	UTM NORTH	UTM EAST	BENCHMARK ELEVATION (ft amsl)	HEIGHT OF MEASURING POINT (feet)	MEASURING POINT ELEVATION (ft amsl)	SAMPLING PERIOD	DATE	DEPTH TO WATER BELOW MEASURING POINT (feet)	GROUNDWATER ELEVATION (ft amsl)
1225	634394	TBPI	3530408.470	499727.068	NA	NA	2998.01	4th Quarter 2006	07/18/2006	476.55	2521.46
							2998.01	1st Quarter 2007	01/15/2007	475.40	2522.61
							3000.57	3rd Quarter 2007	07/10/2007	479.69	2520.88
1350	ND	TBPI	3528452.906	499357.609	NA	NA	3033.25	3rd Quarter 2007	07/12/2007	474.29	2558.96
1758	634392	TBPI	3532220.217	499727.710	NA	NA	2983.50	1st Quarter 2007	01/15/2007	471.34	2512.16
							2987.54	3rd Quarter 2007	07/10/2007	473.86	2513.68
1759	634393	TBPI	3531309.952	499727.703	NA	NA	2986 [5]	4th Quarter 2006	07/18/2006	472.21	2513.79
							2986.00	1st Quarter 2007	01/15/2007	469.42	2516.58
							2989.39	3rd Quarter 2007	07/10/2007	475.41	2513.98
2125	514015	TBPI	3529314.906	497874.280	NA	NA	3253.90	1st Quarter 2007	01/15/2007	703.74	2550.16
							3253.98	3rd Quarter 2007	07/10/2007	705.26	2548.72
A-955	ND	TBPI	3528579.097	499260.926	NA	NA	3042.65	1st Quarter 2007	01/15/2007	484.48	2558.17
							3042.65	3rd Quarter 2007	07/12/2007	485.02	2557.63
AXABCO-01	532627	HGC	3535361.000	502759.000	2732.28	3.20	2735.48	1st Quarter 2007	01/05/2007	177.22	2558.26
AXABCO-02	532628	HGC	3535161.590	502485.179	2759.13	1.90	2761.03	1st Quarter 2007	01/05/2007	205.85	2555.18
					2759.13	1.85	2760.98	3rd Quarter 2007	08/03/2007	204.80	2556.18
AXABCO-03	537958	HGC	3534764.927	502643.298	2743.15	2.10	2745.25	1st Quarter 2007	01/05/2007	181.60	2563.65
					2743.15	2.10	2745.25	3rd Quarter 2007	08/03/2007	180.30	2564.95
C-4	624010	HGC	3525187.298	501820.790	2835.09	1.10	2836.19	1st Quarter 2007	01/2007 [2]	190.00	2646.19
					2835.09	1.10	2836.19	3rd Quarter 2007	08/2007 [4]	256.00	2580.19
CANOA RANCH	586729	HGC	3516220.094	497453.001	3014.03	1.04	3015.07	1st Quarter 2007	01/09/2007	146.70	2868.37
					3014.03	1.60	3015.63	3rd Quarter 2007	08/06/2007	148.83	2866.80
CC OF GV	501760	HGC	3527885.000	501626.000	2821.85	1.30	2823.15	1st Quarter 2007	01/15/2007	253.15	2570.00
					2823.45	1.25	2824.70	2nd Quarter 2007	04/16/2007	254.20	2570.50
					2821.85	1.60	2823.45	3rd Quarter 2007	07/09/2007	259.79	2563.66
CW-3	627483	HGC	3523613.540	500108.828	2941.24	0.00	2941.24	2nd Quarter 2007	06/06/2007	265.35	2675.89
					2941.24	0.20	2941.44	3rd Quarter 2007	08/10/2007	267.40	2674.04
CW-6	627485	CWC	3525597.784	500952.233	NA	NA	2855 [5]	4th Quarter 2006	12/04/2006	247.50	2607.50
					2866.00	1.00	2867.00	1st Quarter 2007	01/03/2007	245.00	2622.00
					2866.00	1.00	2867.00	2nd Quarter 2007	05/24/2007	252.25	2614.75
					2866.00	1.00	2867.00	3rd Quarter 2007	07/10/2007	252.15	2614.85
CW-7	502546	CWC	3527897.679	499721.015	2986.00	1.50	2987.50	1st Quarter 2007	02/02/2007	425.00	2562.50
					2986.00	1.50	2987.50	2nd Quarter 2007	05/14/2007	424.15	2563.35
					2986.00	1.50	2987.50	3rd Quarter 2007	07/10/2007	426.50	2561.00
CW-8	543600	CWC	3525464.732	499859.689	2956.00	1.50	2957.50	1st Quarter 2007	01/03/2007	336.50	2621.00
					2956.00	1.50	2957.50	2nd Quarter 2007	05/24/2007	338.14	2619.36
					2956.00	1.50	2957.50	3rd Quarter 2007	08/10/2007	339.80	2617.70
CW-9	588121	CWC	3528544.309	501133.203	NA	NA	2860 [5]	4th Quarter 2006	12/04/2006	306.00	2554.00
					2833.00	1.30	2834.30	1st Quarter 2007	01/03/2007	304.20	2530.10
					2833.00	1.30	2834.30	2nd Quarter 2007	05/24/2007	309.40	2524.90
					2833.00	1.30	2834.30	3rd Quarter 2007	07/10/2007	310.20	2524.10

TABLE B.3
Groundwater Elevation Measurements
Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

WELL NAME	ADWR 55 WELL REGISTRY NUMBER	SURVEY SOURCE	UTM NORTH	UTM EAST	BENCHMARK ELEVATION (ft amsl)	HEIGHT OF MEASURING POINT (feet)	MEASURING POINT ELEVATION (ft amsl)	SAMPLING PERIOD	DATE	DEPTH TO WATER BELOW MEASURING POINT (feet)	GROUNDWATER ELEVATION (ft amsl)
CW-10	207982	CWC	3523259.063	500974.523	NA	NA	2860 [5]	4th Quarter 2006	12/04/2006	178.25	2681.75
					2867.00	1.50	2868.50	1st Quarter 2007	01/03/2007	177.20	2691.30
					2867.00	1.50	2868.50	2nd Quarter 2007	05/24/2007	196.30	2672.20
					2867.00	1.50	2868.50	3rd Quarter 2007	07/10/2007	198.79	2669.71
CW-11	608518	HGC	3531003.354	502440.773	2777.21	1.70	2778.91	1st Quarter 2007	01/03/2007	258.40	2520.51
					2777.21	1.40	2778.61	3rd Quarter 2007	07/10/2007	278.50	2500.11
E-5A	624012	HGC	3524383.000	502176.000	2851.34	3.10	2854.44	1st Quarter 2007	01/16/2007	181.00	2673.44
					2851.34	0.00	2851.34	3rd Quarter 2007	08/2007 [4]	236.00	2615.34
E-6	624013	HGC	3525167.000	502420.000	2841.15	1.08	2842.23	1st Quarter 2007	01/20/2007	186.00	2656.23
					2841.15	0.00	2841.15	3rd Quarter 2007	08/2007 [4]	236.00	2605.15
EP- (AXABCO-04)	608604	PDSI	3534915.102	502194.115	2771.01	0.70	2771.71	3rd Quarter 2007	08/06/2007	237.00	2534.71
ESP-1	623102	PDSI	3526252.213	500030.855	NA	NA	2951.88	4th Quarter 2006	11/28/2006	352.2	2599.68
					2946.76	1.12	2947.88	1st Quarter 2007	01/03/2007	350.10	2597.78
					2946.76	1.12	2947.88	2nd Quarter 2007	05/24/2007	349.55	2598.33
					2953.43	1.44	2954.87	3rd Quarter 2007	07/10/2007	351.11	2603.76
ESP-2	623103	PDSI	3526728.190	500302.810	NA	NA	2931.61	4th Quarter 2006	11/28/2006	342.55	2589.06
					2921.22	2.39	2923.61	1st Quarter 2007	01/03/2007	343.10	2580.51
					2921.22	2.39	2923.61	2nd Quarter 2007	05/14/2007	339.90	2583.71
					2933.45	1.15	2934.60	3rd Quarter 2007	07/10/2007	341.25	2593.35
ESP-3	623104	PDSI	3527190.039	500234.071	NA	NA	2932.81	4th Quarter 2006	11/28/2006	360.40	2572.41
					2931.38	0.81	2932.19	1st Quarter 2007	01/03/2007	358.60	2573.59
					2931.36	0.83	2932.19	2nd Quarter 2007	05/14/2007	355.85	2576.34
					2934.50	1.30	2935.80	3rd Quarter 2007	07/01/2007	358.05	2577.75
ESP-4	623105	PDSI	3525936.573	499977.998	NA	NA	3955.61	4th Quarter 2006	11/28/2006	349.20	3606.41
					2955.22	0.39	2955.61	1st Quarter 2007	01/12/2007	348.30	2607.31
					2955.22	0.39	2955.61	2nd Quarter 2007	05/04/2007	346.90	2608.71
					2957.70	0.90	2958.60	3rd Quarter 2007	07/24/2007	348.80	2609.80
ESP-5	623106	PDSI	3526885.773	502069.049	2815.00	2.06	2817.06	1st Quarter 2007	02/12/2007	219.50	2597.56
					2815.00	2.06	2817.06	2nd Quarter 2007	05/04/2007	217.75	2599.31
					2819.13	0.87	2820.00	3rd Quarter 2007	07/03/2007	224.60	2595.40
GATTERER	632969	HGC	3519360.147	496774.252	3074.00	1.10	3075.10	4th Quarter 2006	11/15/2006	253.90	2821.20
GIACALONE	640358	HGC	3519058.087	495830.481	3123.82	1.80	3125.62	1st Quarter 2007	01/04/2007	285.20	2840.42
					3123.82	1.80	3125.62	3rd Quarter 2007	08/10/2007	289.15	2836.47
GORETCKI	532595	HGC	3517595.000	501145.000	3008.83	2.87	3011.70	1st Quarter 2007	01/19/2007	186.90	2824.80
GRAEF	206214	HGC	3517841.357	495895.947	3149.64	2.10	3151.74	1st Quarter 2007	01/08/2007	281.25	2870.49
					3149.64	2.10	3151.74	3rd Quarter 2007	07/16/2007	284.60	2867.14
GV-01-GVDWID	603428	HGC	3522057.907	499874.026	2940.85	1.50	2942.35	1st Quarter 2007	01/09/2007	221.00	2721.35
					2940.85	1.75	2942.60	2nd Quarter 2007	04/10/2007	218.11	2724.49
					2940.85	1.50	2942.35	3rd Quarter 2007	08/06/2007	231.00	2711.35
GV-02-GVDWID	603429	HGC	3521458.204	499847.973	2929.27	1.20	2930.47	1st Quarter 2007	01/09/2007	185.30	2745.17
					2929.27	1.33	2930.60	2nd Quarter 2007	04/10/2007	187.10	2743.50
					2929.27	1.20	2930.47	3rd Quarter 2007	07/11/2007	200.45	2730.02

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(Sorted by Well Name)

WELL NAME	ADWR 55 WELL REGISTRY NUMBER	SURVEY SOURCE	UTM NORTH	UTM EAST	BENCHMARK ELEVATION (ft amsl)	HEIGHT OF MEASURING POINT (feet)	MEASURING POINT ELEVATION (ft amsl)	SAMPLING PERIOD	DATE	DEPTH TO WATER BELOW MEASURING POINT (feet)	GROUNDWATER ELEVATION (ft amsl)
GV-06-GVDWID	603430	HGC	3518637.527	498433.381	2979.05	0.50	2979.55	1st Quarter 2007	01/09/2007	158.00	2821.55
					2979.05	0.50	2979.55	3rd Quarter 2007	08/06/2007	162.20	2817.35
GV-07-GVDWID	603504	HGC	3518513.712	496938.934	3088.82	0.00	3088.82	1st Quarter 2007	01/09/2007	262.80	2826.02
					3088.82	1.10	3089.92	3rd Quarter 2007	08/06/2007	250.34	2839.58
GV-01-PCWW [5]	509603	PIMA COUNTY	3529728.507	502928.924	2786.06	1.10	2787.16	1st Quarter 2007	01/18/2007	174.11	2613.05
					2786.06	1.10	2787.16	3rd Quarter 2007	07/09/2007	173.96	2613.20
GV-02-PCWW [5]	509604	PIMA COUNTY	3530023.290	502739.743	2770.76	2.38	2773.13	1st Quarter 2007	01/18/2007	162.76	2610.37
					2770.76	2.38	2773.13	3rd Quarter 2007	07/09/2007	162.48	2610.65
I-9	608526	TBPI	3528475.602	497884.403	NA	NA	3213.01	3rd Quarter 2007	07/10/2007	657.62	2555.39
I-10	608525	TBPI	3528273.050	497859.144	NA	NA	3210.79	1st Quarter 2007	01/15/2007	655.89	2554.90
							3203.20	2nd Quarter 2007	04/16/2007	630.00	2573.20
							3210.79	3rd Quarter 2007	07/10/2007	656.00	2554.79
I-11	608524	TBPI	3528289.002	497980.468	NA	NA	3326.06	1st Quarter 2007	01/15/2007	766.59	2559.47
							3326.06	3rd Quarter 2007	07/10/2007	768.24	2557.82
I-12	608523	TBPI	3528382.135	498171.784	NA	NA	3327.80	1st Quarter 2007	01/15/2007	772.62	2555.18
							3328.24	3rd Quarter 2007	07/10/2007	770.77	2557.47
IW-1	623129	PDSI	3521081.335	496967.070	NA	NA	3141.70	4th Quarter 2006	12/16/2006 [3]	360.95	2780.75
					3141.00	0.70	3141.70	1st Quarter 2007	02/24/2007 [3]	386.70	2755.00
IW-2	623130	PDSI	3521164.111	497546.637	NA	NA	3098.29	4th Quarter 2006	12/16/2006 [3]	404.30	2693.99
					3098.00	0.29	3098.29	1st Quarter 2007	02/24/2007 [3]	406.80	2691.49
					3098.00	0.29	3098.29	2nd Quarter 2007	05/04/2007 [3]	344.00	2754.29
					3098.00	0.29	3098.29	3rd Quarter 2007	07/31/2007 [3]	381.00	2717.29
IW-3A	623131	PDSI	3521526.165	497427.371	NA	NA	3117.13	4th Quarter 2006	12/05/2006 [3]	431.80	2685.33
					3117.00	0.13	3117.13	3rd Quarter 2007	07/31/2007 [3]	381.50	2735.63
IW-4	623132	PDSI	3522269.430	497432.878	3134.00	0.07	3134.07	1st Quarter 2007	02/24/2007 [3]	417.70	2716.37
					3134.00	0.07	3134.07	3rd Quarter 2007	07/21/2007 [3]	425.30	2708.77
IW-6A	545565	PDSI	3523512.299	497442.407	NA	NA	3127.51	4th Quarter 2006	11/15/2006 [3]	425.00	2702.51
					3125.86	1.65	3127.51	1st Quarter 2007	02/24/2007 [3]	433.60	2693.91
					3125.86	1.65	3127.51	3rd Quarter 2007	07/31/2007 [3]	432.28	2695.23
IW-8	508236	PDSI	3521824.074	497429.430	3115.00	4.20	3119.20	1st Quarter 2007	02/24/2007 [3]	434.05	2685.15
					3115.00	4.20	3119.20	3rd Quarter 2007	07/31/2007 [3]	438.75	2680.45
IW-9	508238	PDSI	3522011.192	497430.969	NA	NA	3099.98	4th Quarter 2006	11/15/2006 [3]	402.72	2697.26
					3100.00	-0.02	3099.98	1st Quarter 2007	02/24/2007 [3]	405.95	2694.03
					3100.00	-0.02	3099.98	3rd Quarter 2007	07/21/2007 [3]	405.68	2694.30
IW-10	508237	PDSI	3522925.746	497431.547	NA	NA	3126.65	4th Quarter 2006	11/15/2006 [3]	464.05	2662.60
					3125.00	1.65	3126.65	1st Quarter 2007	02/24/2007 [3]	463.40	2663.25
					3125.00	1.65	3126.65	3rd Quarter 2007	07/21/2007 [3]	464.22	2662.43
IW-11	508235	PDSI	3523232.498	497432.594	NA	NA	3124.21	4th Quarter 2006	11/21/2006 [3]	429.25	2694.96
					3125.00	-0.79	3124.21	1st Quarter 2007	02/24/2007 [3]	428.05	2696.16
					3125.00	-0.79	3124.21	3rd Quarter 2007	07/31/2007 [3]	428.50	2695.71

TABLE B.3
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IW-12	545555	PDSI	3523773.410	497426.092	3131.53	1.42	3132.95	1st Quarter 2007	02/24/2007 [3]	456.20	2676.75
					3131.53	1.42	3132.95	3rd Quarter 2007	07/21/2007 [3]	428.78	2704.17
IW-13	545556	PDSI	3523970.213	497425.001	3142.84	0.51	3143.35	3rd Quarter 2007	07/31/2007 [3]	412.13	2731.22
IW-14	545557	PDSI	3524176.661	497428.308	NA	NA	3141.55	4th Quarter 2006	11/15/2006 [3]	471.68	2669.87
					3139.35	2.20	3141.55	1st Quarter 2007	02/24/2007 [3]	463.35	2678.20
					3139.35	2.20	3141.55	3rd Quarter 2007	07/31/2007 [3]	474.00	2667.55
IW-15	545558	PDSI	3524370.798	497434.056	NA	NA	3146.67	4th Quarter 2006	11/15/2006 [3]	427.27	2719.40
					3145.27	1.40	3146.67	1st Quarter 2007	02/24/2007 [3]	429.89	2716.78
					3145.27	1.40	3146.67	3rd Quarter 2007	07/31/2007 [3]	430.55	2716.12
IW-16	545559	PDSI	3524586.404	497431.834	NA	NA	3158.27	4th Quarter 2006	11/15/2006 [3]	409.69	2748.58
					3156.54	1.73	3158.27	1st Quarter 2007	02/24/2007 [3]	409.95	2748.32
					3156.54	1.73	3158.27	3rd Quarter 2007	07/31/2007 [3]	409.50	2748.77
IW-17	545560	PDSI	3524806.403	497434.901	NA	NA	3156.51	4th Quarter 2006	11/15/2006 [3]	429.15	2727.36
					3154.71	1.80	3156.51	1st Quarter 2007	02/24/2007 [3]	429.70	2726.81
					3154.71	1.80	3156.51	3rd Quarter 2007	07/26/2007 [3]	427.97	2728.54
IW-18	545561	PDSI	3524973.304	497435.240	NA	NA	3167.29	4th Quarter 2006	11/21/2006 [3]	449.02	2718.27
					3165.79	1.50	3167.29	1st Quarter 2007	02/24/2007 [3]	449.55	2717.74
					3165.79	1.50	3167.29	3rd Quarter 2007	07/21/2007 [3]	446.35	2720.94
IW-19	545562	PDSI	3525146.924	497434.814	NA	NA	3150.72	4th Quarter 2006	11/21/2006 [3]	418.60	2732.12
					3148.92	1.80	3150.72	1st Quarter 2007	02/23/2007 [3]	444.65	2706.07
					3148.92	1.80	3150.72	3rd Quarter 2007	07/26/2007 [3]	435.85	2714.87
IW-20	545563	PDSI	3525372.301	497425.924	NA	NA	3160.70	4th Quarter 2006	11/21/2006 [3]	421.25	2739.45
					3158.90	1.80	3160.70	1st Quarter 2007	01/29/2007 [3]	445.30	2715.40
					3158.90	1.80	3160.70	3rd Quarter 2007	07/26/2007 [3]	426.21	2734.49
IW-21	545564	PDSI	3525576.796	497435.770	NA	NA	3167.40	4th Quarter 2006	11/21/2006 [3]	424.80	2742.60
					3166.07	1.61	3167.68	1st Quarter 2007	02/23/2007 [3]	449.65	2718.03
					3166.07	1.33	3167.40	3rd Quarter 2007	07/26/2007 [3]	454.04	2713.36
IW-22	200554	PDSI	3523077.138	497430.770	NA	NA	3128.25	4th Quarter 2006	11/21/2006 [3]	434.75	2693.50
					3124.84	3.41	3128.25	1st Quarter 2007	02/2420/07 [3]	433.58	2694.67
					3124.84	3.41	3128.25	3rd Quarter 2007	07/31/2007 [3]	430.00	2698.25
IW-23	200555	PDSI	3522774.335	497430.417	NA	NA	3128.53	4th Quarter 2006	12/16/2006 [3]	544.5	2584.03
					3125.03	3.50	3128.53	1st Quarter 2007	02/24/2007 [3]	499.20	2629.33
					3125.03	3.50	3128.53	3rd Quarter 2007	07/31/2007 [3]	500.00	2628.53
JOHNSON	634036	HGC	3513323.566	499997.971	3125.49	1.07	3126.56	1st Quarter 2007	01/17/2006	228.30	2898.26
					3125.49	1.40	3126.89	3rd Quarter 2007	07/12/2007	230.74	2896.15
KULESZA	599769	HGC	3528880.273	502025.215	2800.04	1.09	2801.13	1st Quarter 2007	03/13/2007	234.75	2566.38
					2800.04	0.00	2800.04	3rd Quarter 2007	08/10/2007	245.95	2554.09

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M-2	85304	TBPI	3532755.643	499583.211	NA	NA	2993.60	4th Quarter 2006	07/18/2006	484.18	2509.42
							2993.60	1st Quarter 2007	01/15/2007	489.14	2504.46
							2995.02	3rd Quarter 2007	07/10/2007	486.70	2508.32
M-3	85305	TBPI	3532390.590	496970.351	NA	NA	3205.00	1st Quarter 2007	01/15/2007	617.51	2587.49
							3213.38	3rd Quarter 2007	07/10/2007	618.70	2594.68
M-4	85306	TBPI	3532390.449	496369.184	NA	NA	3260.00	1st Quarter 2007	01/15/2007	293.73	2966.27
							3259.75	3rd Quarter 2007	07/10/2007	291.92	2967.83
M-5	87387	TBPI	3530602.661	499701.662	NA	NA	2995.43	1st Quarter 2007	01/15/2007	474.01	2521.42
							2996.87	3rd Quarter 2007	07/10/2007	477.02	2519.85
M-6	87388	TBPI	3530105.362	499720.528	NA	NA	3002.54	1st Quarter 2007	01/15/2007	475.55	2526.99
							3002.45	3rd Quarter 2007	07/10/2007	476.95	2525.50
M-7	87389	TBPI	3529800.414	499720.567	NA	NA	3008.04	1st Quarter 2007	01/15/2007	474.55	2533.49
							3008.18	3rd Quarter 2007	07/10/2007	477.61	2530.57
M-8	87390	TBPI	3529495.751	499720.092	NA	NA	2998.18	1st Quarter 2007	01/15/2007	460.92	2537.26
							2998.18	2nd Quarter 2007	04/16/2007	458.83	2539.35
							2999.53	3rd Quarter 2007	07/10/2007	462.57	2536.96
M-9	501652	TBPI	3530107.465	500045.347	NA	NA	2971.00	4th Quarter 2006	07/18/2006	442.7	2528.30
							2971.00	1st Quarter 2007	01/15/2007	445.76	2525.24
							2973.81	3rd Quarter 2007	07/10/2007	450.75	2523.06
M-10	501653	TBPI	3529946.624	499720.203	NA	NA	3004.40	4th Quarter 2006	07/18/2006	472.72	2531.68
							3004.40	1st Quarter 2007	01/15/2007	473.65	2530.75
							3004.39	2nd Quarter 2007	04/16/2007	471.47	2532.92
							3005.68	3rd Quarter 2007	07/10/2007	477.16	2528.52
M-11	501654	TBPI	3530561.357	500328.605	NA	NA	2937.54	4th Quarter 2006	07/18/2006	419.12	2518.42
							2937.54	1st Quarter 2007	01/15/2007	415.23	2522.31
							2938.53	3rd Quarter 2007	07/10/2007	422.46	2516.07
M-13	508428	TBPI	3530710.569	498800.545	NA	NA	3074.06	1st Quarter 2007	01/15/2007	555.36	2518.70
							3078.12	3rd Quarter 2007	07/10/2007	556.04	2522.08
M-20	906595	TBPI	3528295.290	499143.248	NA	NA	3054.00	3rd Quarter 2007	07/12/2007	493.26	2560.74
MH-1	803629	PDSI	3525676.440	497433.577	NA	NA	3177.80	4th Quarter 2006	11/21/2006	443.9	2733.90
					3176.00	1.80	3177.80	1st Quarter 2007	01/10/2007	444.15	2733.65
					3176.00	1.80	3177.80	2nd Quarter 2007	04/20/2007	442.70	2735.10
					3176.00	1.80	3177.80	3rd Quarter 2007	07/03/2007	441.33	2736.47
MH-3	803630	PDSI	3525073.714	497533.614	NA	NA	3152.38	4th Quarter 2006	12/18/2006	427.7	2724.68
					3151.91	0.47	3152.38	1st Quarter 2007	02/23/2007	427.31	2725.07
					3151.91	0.47	3152.38	2nd Quarter 2007	04/23/2007	425.51	2726.87
					3151.91	0.47	3152.38	3rd Quarter 2007	07/21/2007	424.22	2728.16
MH-5	803632	PDSI	3523528.883	497538.532	NA	NA	3122.80	4th Quarter 2006	11/21/2006	389.22	2733.58
					3122.00	0.80	3122.80	1st Quarter 2007	01/12/2007	390.70	2732.10
					3122.80	0.00	3122.80	2nd Quarter 2007	04/20/2007	391.60	2731.20
					3122.80	0.00	3122.80	3rd Quarter 2007	07/03/2007	391.66	2731.14

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MH-6	803633	PDSI	3522574.001	497497.825	NA	NA	3130.98	4th Quarter 2006	11/14/2006	381.65	2749.33
					3133.00	-2.02	3130.98	1st Quarter 2007	01/09/2007	378.32	2752.66
					3133.00	-2.02	3130.98	2nd Quarter 2007	04/20/2007	374.80	2756.18
					3133.00	-2.02	3130.98	3rd Quarter 2007	07/03/2007	379.00	2751.98
MH-7	803634	PDSI	3521820.025	497563.652	NA	NA	3108.66	4th Quarter 2006	11/21/2006	357.85	2750.81
					3109.00	-0.34	3108.66	1st Quarter 2007	01/12/2007	360.20	2748.46
					3109.00	-0.34	3108.66	2nd Quarter 2007	04/20/2007	368.20	2740.46
					3109.00	-0.34	3108.66	3rd Quarter 2007	07/03/2007	370.20	2738.46
MH-9	803635	PDSI	3521056.161	496499.361	NA	NA	3159.50	4th Quarter 2006	11/08/2006	380.58	2778.92
					3158.00	1.50	3159.50	1st Quarter 2007	01/09/2007	362.10	2797.40
					3158.00	1.50	3159.50	2nd Quarter 2007	04/20/2007	363.60	2795.90
					3158.00	1.50	3159.50	3rd Quarter 2007	07/03/2007	365.25	2794.25
MH-10	803636	PDSI	3521040.412	495778.954	NA	NA	3184.95	4th Quarter 2006	11/08/2006	346.7	2838.25
					3184.00	0.95	3184.95	1st Quarter 2007	01/09/2007	364.80	2820.15
					3184.00	0.95	3184.95	2nd Quarter 2007	04/03/2007	355.65	2829.30
					3184.00	0.95	3184.95	3rd Quarter 2007	07/16/2007	356.75	2828.20
MH-11	803637	PDSI	3524267.192	498810.555	NA	NA	3040.30	4th Quarter 2006	11/09/2006	369.90	2670.40
					3039.00	1.30	3040.30	1st Quarter 2007	01/11/2007	369.55	2670.75
					3039.00	1.30	3040.30	2nd Quarter 2007	04/10/2007	370.46	2669.84
					3039.00	1.30	3040.30	3rd Quarter 2007	07/17/2007	372.75	2667.55
MH-12	803638	PDSI	3525010.541	498833.336	NA	NA	3054.07	4th Quarter 2006	11/13/2006	415.94	2638.13
					3052.00	2.07	3054.07	1st Quarter 2007	01/10/2007	419.88	2634.19
					3052.00	2.07	3054.07	2nd Quarter 2007	04/04/2007	419.60	2634.47
					3052.00	2.07	3054.07	3rd Quarter 2007	07/20/2007	422.10	2631.97
MH-13A	904071	PDSI	3523596.992	498885.030	NA	NA	3026.23	4th Quarter 2006	11/10/2006	327.84	2698.39
					3025.18	1.05	3026.23	1st Quarter 2007	01/24/2007	326.35	2699.88
					3025.18	1.05	3026.23	2nd Quarter 2007	04/18/2007	328.14	2698.09
					3025.18	1.05	3026.23	3rd Quarter 2007	07/17/2007	330.98	2695.25
MH-13B	904072	PDSI	3523590.907	498891.053	NA	NA	3025.63	4th Quarter 2006	11/10/2006	330.70	2694.93
					3023.93	1.70	3025.63	1st Quarter 2007	01/24/2007	330.58	2695.05
					3023.93	1.70	3025.63	2nd Quarter 2007	04/18/2007	332.21	2693.42
					3023.93	1.70	3025.63	3rd Quarter 2007	07/17/2007	335.47	2690.16
MH-13C	904073	PDSI	3523596.580	498858.634	NA	NA	3028.46	4th Quarter 2006	11/10/2006	335.38	2693.08
					3026.81	1.65	3028.46	1st Quarter 2007	01/24/2007	335.45	2693.01
					3026.81	1.65	3028.46	2nd Quarter 2007	04/18/2007	337.80	2690.66
					3026.81	1.65	3028.46	3rd Quarter 2007	07/17/2007	339.82	2688.64
MH-14	528098	PDSI	3525072.873	497578.809	NA	NA	3150.74	4th Quarter 2006	12/18/2006	427.28	2723.46
					3150.74	0.00	3150.74	1st Quarter 2007	02/23/2007	426.75	2723.99
					3150.74	0.00	3150.74	2nd Quarter 2007	04/23/2007	425.58	2725.16
					3150.74	0.00	3150.74	3rd Quarter 2007	07/10/2007	424.20	2726.54

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MH-15E	528094	PDSI	3523077.874	497645.979	NA	NA	3110.12	4th Quarter 2006	11/10/2006	385.25	2724.87
					3110.12	0.00	3110.12	1st Quarter 2007	02/23/2007	384.07	2726.05
					3110.12	0.00	3110.12	2nd Quarter 2007	04/23/2007	385.11	2725.01
					3110.12	0.00	3110.12	3rd Quarter 2007	07/21/2007	385.80	2724.32
MH-15W	528093	PDSI	3523078.550	497585.246	NA	NA	3116.12	4th Quarter 2006	12/18/2006	391.30	2724.82
					3116.12	0.00	3116.12	1st Quarter 2007	02/23/2007	390.00	2726.12
					3116.12	0.00	3116.12	2nd Quarter 2007	04/23/2007	391.18	2724.94
					3116.12	0.00	3116.12	3rd Quarter 2007	07/11/2007	390.85	2725.27
MH-16E	528100	PDSI	3521673.788	497637.848	NA	NA	3096.66	4th Quarter 2006	12/18/2006	344.70	2751.96
					3096.66	0.00	3096.66	1st Quarter 2007	02/23/2007	349.39	2747.27
					3096.66	0.00	3096.66	2nd Quarter 2007	04/23/2007	352.85	2743.81
					3096.66	0.00	3096.66	3rd Quarter 2007	07/21/2007	355.00	2741.66
MH-16W	528099	PDSI	3521674.374	497577.250	NA	NA	3098.37	4th Quarter 2006	12/18/2006	346.62	2751.75
					3098.37	0.00	3098.37	1st Quarter 2007	02/23/2007	352.18	2746.19
					3098.37	0.00	3098.37	2nd Quarter 2007	04/23/2007	355.75	2742.62
					3098.37	0.00	3098.37	3rd Quarter 2007	07/11/2007	357.47	2740.90
MH-24	563799	PDSI	3523512.589	497451.696	NA	NA	3128.17	4th Quarter 2006	11/21/2006	397.50	2730.67
					3128.17	0.00	3128.17	2nd Quarter 2007	04/20/2007	399.35	2728.82
					3128.17	0.00	3128.17	3rd Quarter 2007	08/03/2007	399.33	2728.84
MH-25A	201528	PDSI	3526313.706	498941.526	NA	NA	3056.57	4th Quarter 2006	11/13/2006	454.11	2602.46
					3055.81	0.76	3056.57	1st Quarter 2007	01/10/2007	453.10	2603.47
					3055.81	0.76	3056.57	2nd Quarter 2007	04/04/2007	452.20	2604.37
					3055.81	0.76	3056.57	3rd Quarter 2007	07/20/2007	454.02	2602.55
MH-25B	208429	PDSI	3526318.775	498931.519	NA	NA	3058.22	4th Quarter 2006	11/13/2006	455.36	2602.86
					3056.21	2.01	3058.22	1st Quarter 2007	01/10/2007	454.28	2603.94
					3056.21	2.01	3058.22	2nd Quarter 2007	04/04/2007	453.20	2605.02
					3056.21	2.01	3058.22	3rd Quarter 2007	07/20/2007	455.32	2602.90
MH-25C	208426	PDSI	3526294.663	498935.843	NA	NA	3057.24	4th Quarter 2006	11/13/2006	454.65	2602.59
					3056.71	0.53	3057.24	1st Quarter 2007	01/10/2007	453.57	2603.67
					3056.71	0.53	3057.24	2nd Quarter 2007	04/13/2007	452.30	2604.94
					3056.71	0.53	3057.24	3rd Quarter 2007	07/20/2007	454.42	2602.82
MH-26A	201527	PDSI	3527621.755	498913.871	NA	NA	3070.89	4th Quarter 2006	11/13/2006	495.74	2575.15
					3069.54	1.35	3070.89	1st Quarter 2007	01/15/2007	495.65	2575.24
					3069.54	1.35	3070.89	2nd Quarter 2007	04/04/2007	493.75	2577.14
					3069.54	1.35	3070.89	3rd Quarter 2007	07/19/2007	495.02	2575.87
MH-26B	208427	PDSI	3527617.539	498901.079	NA	NA	3070.50	4th Quarter 2006	11/13/2006	493	2577.50
					3068.68	1.82	3070.50	1st Quarter 2007	01/15/2007	492.85	2577.65
					3068.68	1.82	3070.50	2nd Quarter 2007	04/04/2007	490.78	2579.72
					3068.68	1.82	3070.50	3rd Quarter 2007	07/19/2007	492.01	2578.49

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MH-26C	208428	PDSI	3527610.293	498926.419	NA	NA	3069.11	4th Quarter 2006	11/13/2006	494.45	2574.66
					3067.27	1.84	3069.11	1st Quarter 2007	01/15/2007	494.10	2575.01
					3067.27	1.84	3069.11	2nd Quarter 2007	04/04/2007	492.30	2576.81
					3067.27	1.84	3069.11	3rd Quarter 2007	07/19/2007	493.62	2575.49
MH-28	903548	PDSI	3524413.518	497532.609	NA	NA	3142.18	4th Quarter 2006	02/19/2007	401.10	2741.08
					3141.51	0.67	3142.18	1st Quarter 2007	04/17/2007	402.32	2739.86
					3141.51	0.67	3142.18	2nd Quarter 2007	07/16/2007	403.18	2739.00
					3141.51	0.67	3142.18	3rd Quarter 2007	11/14/2006	401.10	2741.08
MH-29	903649	PDSI	3524413.518	497665.504	NA	NA	3123.15	4th Quarter 2006	11/14/2006	378.05	2745.10
					3122.24	0.91	3123.15	1st Quarter 2007	02/19/2007	376.58	2746.57
					3122.24	0.91	3123.15	2nd Quarter 2007	04/17/2007	376.75	2746.40
					3122.24	0.91	3123.15	3rd Quarter 2007	07/16/2007	379.07	2744.08
MH-30	903884	PDSI	3525730.338	496743.497	NA	NA	3232.45	4th Quarter 2006	11/10/2006	422.78	2809.67
					3231.92	0.53	3232.45	1st Quarter 2007	01/09/2007	421.65	2810.80
					3231.92	0.53	3232.45	2nd Quarter 2007	04/09/2007	419.32	2813.13
					3231.92	0.53	3232.45	3rd Quarter 2007	07/11/2007	416.85	2815.60
MO-2007-1A	907342	PDSI	3529134.898	500078.120	2967.15	0.00	2967.15	3rd Quarter 2007	07/30/2007	425.87	2541.28
MO-2007-1B	907210	PDSI	3529128.636	500082.746	2966.35	0.00	2966.35	3rd Quarter 2007	07/30/2007	425.67	2540.68
MO-2007-1C	907209	PDSI	3529132.477	500074.578	2964.34	0.00	2964.34	3rd Quarter 2007	07/30/2007	423.87	2540.47
MO-2007-2	906765	PDSI	3527424.622	497973.595	3153.12	0.49	3153.61	3rd Quarter 2007	08/09/2007	575.30	2578.31
MO-2007-3C	906817	PDSI	3528312.268	500590.880	2908.99	1.10	2910.09	3rd Quarter 2007	07/05/2007	356.30	2553.79
MO-2007-4C	907211	PDSI	3525417.495	500442.112	2923.49	0.00	2923.49	3rd Quarter 2007	08/12/2007	307.13	2616.36
MO-2007-5C	907457	PDSI	3523540.014	500075.317	2943.58	0.75	2944.33	3rd Quarter 2007	08/23/2007	294.04	2650.29
MW-2	531807	ASARCO	3535481.300	500393.400	2998.90	1.00	2999.90	1st Quarter 2007	12/19/2006	428.28	2571.62
NP-2	605898	HGC	3528320.834	500644.673	2910.71	1.96	2912.67	2nd Quarter 2007	0607/2007	138.00	2774.67
					2910.71	1.20	2911.91	3rd Quarter 2007	08/13/2007	156.00	2755.91
NP-2 (FICO)	624028	HGC	3520046.000	500906.000	2910.71	1.96	2912.67	1st Quarter 2007	01/20/2007	138.00	2774.67
					2910.71	1.00	2911.71	3rd Quarter 2007	08/2007 [4]	156.00	2755.71
PZ-7	561870	PDSI	3526160.990	492594.390	NA	N A	3546.22	4th Quarter 2006	11/16/2006	139.55	3406.67
					3545.30	0.92	3546.22	1st Quarter 2007	01/12/2007	139.50	3406.72
					3545.30	0.92	3546.22	2nd Quarter 2007	04/09/2007	139.65	3406.57
					3545.30	0.92	3546.22	3rd Quarter 2007	07/24/2007	139.76	3406.46
PZ-8	561866	PDSI	3523999.763	493033.889	NA	NA	3477.14	4th Quarter 2006	11/14/2006	206.30	3270.84
					3476.64	0.00	3476.64	1st Quarter 2007	01/10/2007	207.42	3269.22
					3476.64	0.00	3476.64	2nd Quarter 2007	04/17/2007	198.52	3278.12
					3476.64	0.50	3477.14	3rd Quarter 2007	07/12/2007	209.46	3267.68
PZ-9	561859	PDSI	3525372.230	493241.716	3504.18	0.48	3504.66	1st Quarter 2007	01/25/2007	229.50	3275.16
					3504.18	0.48	3504.66	2nd Quarter 2007	04/20/2007	DRY	DRY
					3504.18	0.48	3504.66	3rd Quarter 2007	08/03/2007	228.50	DRY (< 3276)
QUIHUIS	627439	HGC	3533503.205	502817.797	2747.25	1.08	2748.33	1st Quarter 2007	01/11/2007	194.10	2554.23
					2747.25	2.00	2749.25	3rd Quarter 2007	07/09/2007	195.50	2553.75

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RANCHO SAHUARITA	562962	HGC	3535692.169	501618.877	2817.21	1.87	2819.08	1st Quarter 2007	02/02/2007	342.80	2476.28
					2817.21	2.00	2819.21	3rd Quarter 2007	07/25/2007	350.35	2468.86
RANCHO SAHUARITA	635386	HGC	3526412.601	506817.364	2994.77	0.00	2994.77	1st Quarter 2007	02/15/2007	316.03	2678.74
					2994.77	0.50	2995.27	3rd Quarter 2007	07/17/2007	316.25	2679.02
RANCHO SAHUARITA	635387	HGC	3517793.492	501327.055	2982.86	0.25	2983.11	1st Quarter 2007	02/15/2007	172.80	2810.31
					2982.86	1.40	2984.26	3rd Quarter 2007	08/06/2007	183.30	2800.96
ROBERTS	599350	HGC	3514580.742	601657.550	3142.13	1.40	3143.53	1st Quarter 2007	02/02/2007	251.30	2892.23
					3142.13	1.40	3143.53	3rd Quarter 2007	08/06/2007	252.91	2890.62
RRQC-1	608521	HGC	3527591.000	502956.000	2801.67	2.75	2804.42	1st Quarter 2007	02/28/2007	257.44	2546.98
RRQC-2	608519	HGC	3529053.253	503518.429	2784.23	0.50	2784.73	1st Quarter 2007	02/27/2007	114.40	2670.33
					2801.67	0.80	2802.47	3rd Quarter 2007	08/06/2007	100.95	2701.52
RRQC-3	608591	HGC	3527654.766	503018.256	2801.22	1.83	2803.05	1st Quarter 2007	02/27/2007	124.80	2678.25
					2801.22	2.40	2803.62	3rd Quarter 2007	08/06/2007	124.63	2678.99
RRQC-4	608597	HGC	3527119.000	505882.000	2938.52	2.17	2940.69	1st Quarter 2007	02/27/2007	280.20	2660.49
RRQC-5 (ASLD)	616212	HGC	3524537.525	505430.466	3002.86	0.63	3003.49	1st Quarter 2007	02/27/2007	294.67	2708.82
					3002.86	0.70	3003.56	3rd Quarter 2007	07/13/2007	296.05	2707.51
RT-1	504946	TBPI	3530775.180	499872.252	NA	NA	2977.90	1st Quarter 2007	01/15/2007	457.81	2520.09
							2980.91	3rd Quarter 2007	07/10/2007	464.79	2516.12
S-19A	623982	HGC	3532046.000	504852.000	2762.68	1.58	2764.26	1st Quarter 2007	01/24/2007	228.00	2536.26
					2762.68	0.50	2763.18	3rd Quarter 2007	08/2007 [4]	319.00	2444.18
S-2	623112	PDSI	3517379.377	499023.66	2935.87	0.29	2936.16	1st Quarter 2007	01/16/2007	118.80	2817.36
					2953.09	0.19	2953.28	3rd Quarter 2007	08/01/2007	124.35	2828.93
S-3	623113	PDSI	3516092.581	498184.215	2953.09	0.19	2953.28	1st Quarter 2007	01/16/2007	102.30	2850.98
S-4	623114	PDSI	3514876.027	497313.042	2979.44	0.32	2979.76	1st Quarter 2007	01/25/2007	93.40	2886.36
					2979.44	0.32	2979.76	3rd Quarter 2007	08/01/2007	97.70	2882.06
S-5	623115	PDSI	3513422.954	496747.939	2990.82	0.23	2991.05	1st Quarter 2007	01/25/2007	82.70	2908.35
					2990.82	0.23	2991.05	3rd Quarter 2007	08/08/2007	84.20	2906.85
S-6	623116	PDSI	3512172.430	496324.397	3003.89	-0.74	3003.15	1st Quarter 2007	01/25/2007	70.65	2932.50
S-40	623991	HGC	3534955.000	504854.000	2714.90	0.00	2714.90	1st Quarter 2007	01/24/2007	161.00	2553.90
					2714.90	0.00	2714.90	3rd Quarter 2007	08/2007 [4]	335.00	2379.90
S-44	623994	HGC	3530990.000	503879.000	2761.57	1.08	2762.65	1st Quarter 2007	01/24/2007	211.00	2551.65
					2761.57	1.08	2762.65	3rd Quarter 2007	08/2007 [4]	312.00	2450.65
S-46	623996	HGC	3532490.000	502517.000	2769.72	2.12	2771.85	1st Quarter 2007	01/24/2007	253.00	2518.85
SAH-1-PCSW	550533	PIMA COUNTY	3534342.394	500530.888	2908.10	0.00	2908.10	1st Quarter 2007	01/25/2007	408.25	2499.85
					2908.10	0.00	2908.10	3rd Quarter 2007	07/25/2007	411.38	2496.72
SAH-3B-PCSW	905019	PIMA COUNTY	3534809.053	500824.776	2883.35	3.62	2886.97	1st Quarter 2007	01/25/2007	401.45	2485.52
					2886.47	0.50	2886.97	3rd Quarter 2007	07/25/2007	405.56	2481.41
SALVATORE	545349	HGC	3517166.926	495744.844	3145.27	1.52	3146.79	1st Quarter 2007	01/08/2007	266.40	2880.39
					3145.27	1.80	3147.07	3rd Quarter 2007	07/15/2007	269.65	2877.42

TABLE B.3
Groundwater Elevation Measurements
Collected for Task 2.2 from Fourth Quarter 2006 through Third Quarter 2007
(Sorted by Well Name)

WELL NAME	ADWR 55 WELL REGISTRY NUMBER	SURVEY SOURCE	UTM NORTH	UTM EAST	BENCHMARK ELEVATION (ft amsl)	HEIGHT OF MEASURING POINT (feet)	MEASURING POINT ELEVATION (ft amsl)	SAMPLING PERIOD	DATE	DEPTH TO WATER BELOW MEASURING POINT (feet)	GROUNDWATER ELEVATION (ft amsl)
SI WELL	208825	HGC	3519521.000	497243.000	NA	NA	3042.97	1st Quarter 2007	01/09/2007	237.50	2805.47
					3040.55	2.25	3042.80	2nd Quarter 2007	04/10/2007	238.55	2804.25
					3040.55	2.10	3042.65	3rd Quarter 2007	08/06/2007	240.31	2802.34
SIMONS	529142	HGC	3516170.000	495477.000	3142.61	1.17	3143.78	1st Quarter 2007	01/11/2007	244.70	2899.08
SIMPSON	639055	HGC	3516527.357	495515.199	3095.93	1.60	3097.53	1st Quarter 2007	01/04/2007	203.95	2893.58
					3095.93	1.60	3097.53	3rd Quarter 2007	07/16/2007	205.91	2891.62
ST-6	608530	HGC	3531156.231	501309.476	2854.47	2.14	2856.61	1st Quarter 2007	02/16/2007	333.25	2523.36
					2854.47	1.40	2855.87	3rd Quarter 2007	08/03/2007	346.89	2508.98
TMM-1 [1]	616156	HGC	3529736.231	500018.323	2970.58	-3.50	2967.08	2nd Quarter 2007	06/18/2007	432.50	2534.58
					2970.58	-3.50	2967.08	3rd Quarter 2007	06/19/2007	432.00	2535.08
W-9	624024	HGC	3524125.000	501284.000	2852.81	1.33	2854.14	1st Quarter 2007	01/18/2007	177.00	2677.14
					2852.91	0.00	2852.91	3rd Quarter 2007	08/2007 [4]	200.00	2652.91
W-11	642025	HGC	3520090.000	499959.000	2908.16	1.75	2909.91	1st Quarter 2007	01/20/2007	136.00	2773.91
W-12	624026	HGC	3521103.056	500217.248	2892.70	1.90	2894.60	1st Quarter 2007	01/2007 [2]	157.00	2737.60
					2892.70	1.90	2894.60	3rd Quarter 2007	08/2007 [4]	197.00	2697.60

NOTES:

UTM NAD27 Zone 12 meters
PDSI Benchmark Datum NAVD 27; HGC Benchmark Datum NAVD 88
ADWR = Arizona Department of Water Resources
ASDL = Arizona State Land Department
AXABCO = AMAX Arizona, Inc.
CC OF GV = Country Club of Green Valley
CWC = Community Water Company of Green Valley
FICO = Farmers Investment Company
ft amsl = feet above mean sea level
GVDWID = Green Valley Domestic Water Improvement District
HGC = Hydro Geo Chem, Inc.
NA = Not Available
NAD 83 = North American Datum of 1983
ND = No Data
NAVD 27 = North American Vertical Datum of 1927
NAVD 88 = North American Vertical Datum of 1988
PCWW = Pima County Wastewater
PCSW = Pima County Solid Waste
PDSI = Phelps Dodge Sierrita, Inc.
RRQC = Robsen Ranch Quail Creek
TBPI = Twin Buttes Properties, Inc.
USGS = United States Geological Society
UTM = Universal Transverse Mercator
1 = Formally listed as Davis-Monthan (55-804995) and PC Parks (55-616156); determined to be the same well located at the Titan Missile Museum
2 = Water level measurement date was estimated
3 = Water level measurement was collected under dynamic conditions and not used for contouring
4 = Water level measurement was collected under dynamic conditions and not used for contouring; date is estimated
5 = Ground surface elevation estimated using USGS topographic map; approximation verified using Google Earth

FIGURES

LEGEND

- M-2 WELL LOCATION AND IDENTIFIER
- 79.1 DISSOLVED SULFATE CONCENTRATION (DUPLICATE RESULTS SEPERATED BY /)
- ISOCONCENTRATION CONTOUR (DASHED WHERE INFERRED)

WELL NEST

SCREEN (ft bgs): DISSOLVED SULFATE CONCENTRATION (mg/L)

S-40 194.0
SAH-1-PCSW 229.0
El Toro 204.0
Quihuis 189.0
M-2 470.0
S-46 71.9
ST-5 23.7
S-19A 108.0
1759. 100.0
ST-6 41.1
RT-1 130.0
ST-7 32.7
S-44 180.0
M-5 450.0
M-11 11.0
1225 1100.0
M-9 61.0
GV-02-PCWW 140.0
M-10 66.0
M-7 430.0
M-8 23.0
CW-9 44.9
CW-7 807.0
CC of GV 133.0
RRQC-2 173.0/174.0
MH-26A, B, C
418-538: <10
620-730: 1590
780-900: 740
ESP-3 37.5
RRQC-4 56.9/56.9
MH-25A, B, C
418-538: <10
620-730: 1680
731-901: 1250
Santa Rita Ranch 1 39.0
PZ-7 340.0
ESP-1 242.0
Haven Golf 107.0
MH-30 1760.0
IW-21 1620.0
IW-20 1630.0
IW-19 1630.0
CW-8 449.0
CW-6 49.2/49.5
IW-18 1660.0
IW-17 1600.0
MH-12 1100.0
E-6 112.0
IW-16 1730.0
MH-28 1920.0
IW-15 1730.0
MH-11 1590.0
E-5A 137.0
PZ-8 460.0
IW-14 1790.0
IW-12 1620.0
W-9 106.0
MH-13A, B, C
300-650: 1700
750-950: 1100
1050-1350: 100
IW-6A 1800.0
IW-11 1700.0
CW-10 48.6
IW-22 1660.0
IW-10 1670.0
UA 82.6
IW-23 1640.0
MH-29 1650.0
IW-4 1610.0
GV-1-GVDWID 40.9
IW-9 1670.0
GV-2-GVDWID 103.0
MH-10 1310.0
IW-1 520.0
IW-2 110.0
W-11 82.5
NP-2 FICO 182.0
SI Well / GV Water 5.7
Giacalone 3.9
S-1 180.0
Taylor 3.6
S-2 80.0
Gortecki / Steinman 94.2
Simpson 3.2
Canoa Ranch 111.0
Simons 3.6
S-3 80.0
Calderon 18.0
S-4 80.0
S-5 110.0
S-6 130.0

1500 1000 500 250 100 50

1 inch equals 5,500 feet

0 2,900 5,800 Feet

PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

REVISED SULFATE CONCENTRATIONS IN GROUNDWATER SAMPLES COLLECTED IN JANUARY AND FEBRUARY 2007 [FIRST QUARTER 2007]

Approved	Date	Author	Date	File Name	Figure
KAG	05/30/07	RAM	05/30/07	7830132G	B.1

Legend

- M-2 Well Location & Identifier
- 2504.46 Groundwater Elevation (ft amsl)
- Groundwater Elevation Contour (dashed where inferred)

Well Nest

- Screen (ft bgs): Groundwater Elevation (ft amsl)

Rancho Sahuarita 2476.28
MW-2 2571.62
AXABC0-2 2555.18
AXABC0-1 2558.26
SAH-3B-PCSW 2435.52
AXABC0-3 2563.65
S-40 2555.24
SAH-1-PCSW 2499.85
Quihuis 2554.23
M-4 2966.27
M-3 2587.49
M-2 2504.46
1758 2512.16
S-46 2518.85
S-19A 2536.26
1759 2516.58
ST-6 2523.56
M-13 2518.70
M-5 2521.42
RT-1 2520.09
CW-11 2520.51
S-44 2551.65
1225 2522.61
M-11 2522.31
GV-02-PCWW 2610.37
M-6 2526.99
M-9 2525.24
M-7 2533.49
M-10 2530.75
GV-01-PCWW 2613.05
2125 2550.16
M-8 2537.26
Kulesza 2566.38
RRQC-1 2546.98
I-11 2559.27
I-12 2555.18
A-955 2555.22
CW-9 2530.10
I-10 2547.31
CW-7 2562.50
RRQC-2 2670.33
CC OF GV 2570.00
RRQC-3 2678.25
MH-26A, B, C
418-538: 2575.24
620-730: 2577.65
780-900: 2575.01
ESP-3 2573.59
MH-25A, B, C
410-530: 2603.47
580-680: 2603.94
731-901: 2603.67
ESP-5 2597.56
RRQC-4 2660.49
Santa Rita Ranch-1 2678.74
PZ-7 3406.72
ESP-1 2597.78
MH-1 2733.65
IW-21 2718.03
PZ-9 3275.16
MH-30 2810.80
IW-19 2706.07
IW-20 2715.40
CW-8 2621.00
CW-6 2622.00
MH-3 2725.07
IW-18 2717.74
MH-14 2723.99
C-4 2646.19
MH-12 2634.19
IW-16 2748.32
IW-17 2726.18
E-6 2656.23
RRQC-5 2708.82
IW-15 2716.78
MH-28 2739.86
MH-11 2670.75
PZ-8 3269.22
IW-12 2676.75
IW-14 2678.20
E-5A 2673.44
W-9 2677.14
IW-6A 2693.91
MH-5 2732.10
MH-13A, B, C
300-650: 2099.88
750-950: 2695.05
1050-1350: 2691.36
IW-11 2696.16
MH-15W, E 2726.12 2726.05
CW-10 2691.30
IW-22 2694.67
IW-23 2629.33
IW-10 2663.25
MH-29 2746.57
IW-4 2716.37
MH-6 2752.66
GV-1-GVDWID 2721.35
IW-9 2694.03
MH-7 2748.46
MH-16W, 16E 2746.19 2747.27
IW-8 2685.15
GV-2-GVDWID 2745.17
2691.49
MH-10 2820.15
MH-9 2797.4
IW-7 2755.00
W-12 2737.60
W-11 2773.91
NP-2 FICO 2774.67
SI Well/ GV Water 2805.47
Giacalone 2840.42
Santa Rita Ranch-2 2810.31
S-2 2817.36
Gorecki / Steinman 2824.80
Salvatore 2880.39
Simpson 2893.58
Canoa Ranch 2868.37
Simons 2899.08
S-3 2850.98
S-4 2886.36
Roberts 2892.23
S-5 2908.35
S-6 2932.50

2475 2500 2525 2550 2575 2600 2625 2650 2675 2700 2725 2750 2775 2800 2825 2850 2875 2900 2925 3000 3100 3200 3300 3400

1 inch equals 5,750 feet

0 3,000 6,000 Feet

PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

REVISED GROUNDWATER ELEVATIONS FOR JANUARY THROUGH FEBRUARY 2007 [FIRST QUARTER 2007]

Approved	Date	Author	Date	File Name	Figure
KAG	06/04/07	RAM	06/04/07	7830101G	B.2

Legend

EP-1 Well Location & Identifier

2534.71 Depth to Water (ft bmp)

Well Nest

Screen (ft bgs): Depth to Water (ft bmp)

Rancho Sahuarita 350.35

AXABCO-02 204.80

AXABCO-03 180.30

SAH-3B 405.56

SAH-1 411.38

Quihuis 195.50

M-2 486.70

M-4 291.92

M-3 618.70

1758 473.86

1759 475.41

ST-6 346.89

RT-1 464.79

M-13 556.04

M-5 477.02

M-11 422.46

1225 479.69

CW-11 278.50

MO-2007-1A, B, C
460-600: 425.87
740-900: 425.67
1020-1180: 423.87

M-6 476.95

M-9 450.75

M-10 477.16

M-7 477.61

GV-02-PCWW 162.48

GV-01-PCWW 173.96

MH-26A, B, C
418-538: 495.02
620-730: 492.01
780-900: 493.62

2125 705.26

M-8 462.57

TMM-1 432.00

A-955 485.02

Kulesza 245.95

I-9 657.62

I-12 770.77

1350 474.29

CW-9 310.20

I-10 656.00

I-11 768.24

M-20 493.26

CW-7 426.50

RRQC-2 100.95

CC of GV 259.79

RRQC-3 124.63

MH-25A, B, C
410-530: 454.02
580-680: 455.32
731-901: 454.42

MO-2007-2 575.30

ESP-3 358.05

ESP-2 341.25

ESP-5 224.60

PZ-7 139.76

ESP-1 351.11

ESP-4 348.80

NP-2, MO-2007-3B,C
331-500: 352.00
740-940: 359.55
1160-1320: 356.30

MH-30 416.85

MH-1 441.33

CW-8 2617.70

CW-6 252.15

PZ-9 228.50

MH-14 424.20

MH-3 424.22

MH-12 422.10

RRQC-5 296.05

MH-28 403.12

MH-11 372.75

PZ-8 209.46

MO-2007-4A,B,C
360-560: 307.67
700-940: 308.72
1090-1130: 307.13

MH-24 399.33

MH-5 391.66

CW-10 198.79

MH-15W, E 390.85, 385.80

CW-3, MO-2007-5B,C
182-500: 267.40
660-960: 268.27
1150-1350: 270.00

MH-29 379.07

MH-6 379.00

GV-1-GVDWID 231.00

MH-7 370.20

MH-16W, 16E 357.47, 355.00

GV-2-GVDWID 200.45

MH-13A, B, C
300-650: 330.98
750-950: 335.47
1050-1350: 339.82

MH-10 356.75

MH-9 365.25

MO-2007-6A,B
310-390 & 430-610: 303.60
780-940: 319.17

Giacalone 289.15

GV-07-DWID 250.34

GV-06-DWID 162.20

S-2 124.35

Salvatore 269.65

Simpson 205.91

Canoa Ranch 148.83

S-4 97.70

Roberts 252.91

S-5 84.20

Johnson 230.74

1 inch equals 6,000 feet

0 2,900 5,800 Feet

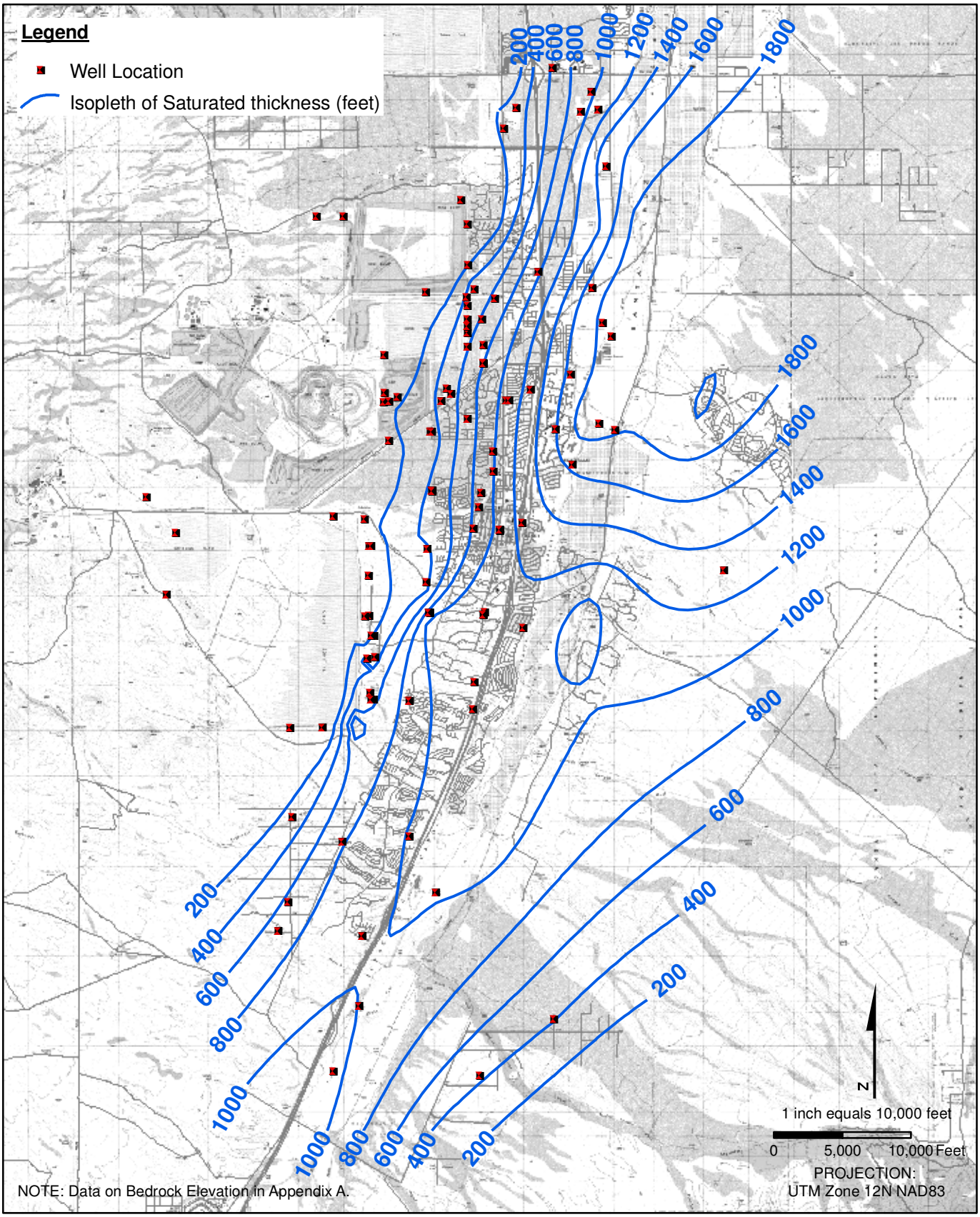
PROJECTION:
UTM Zone 12N NAD83

N

HYDRO GEO CHEM, INC.

DEPTH TO WATER MEASUREMENTS FOR JULY THROUGH OCTOBER 2007

Approved	Date	Author	Date	File Name	Figure
JRN	11/20/07	RAM	11/20/07	7830113G	B.3



HYDRO GEO CHEM, INC.

BASIN FILL SATURATED THICKNESS BASED ON GROUNDWATER ELEVATIONS IN THIRD QUARTER 2007

Approved	Date	Author	Date	File Name	Figure
JRN	11/29/07	RAM	11/29/07	78307003G	B.4

APPENDIX C

DEPTH-SPECIFIC WATER SAMPLING AND INFLOW PROFILING AT EXISTING WELLS IN THE VICINITY OF THE PHELPS DODGE SIERRITA TAILING IMPOUNDMENT

TASK 2.3 OF AQUIFER CHARACTERIZATION PLAN

APPENDIX C

DEPTH-SPECIFIC WATER SAMPLING AND INFLOW PROFILING AT EXISTING WELLS IN THE VICINITY OF PHELPS DODGE SIERRITA TAILINGS IMPOUNDMENT

TASK 2.3 OF AQUIFER CHARACTERIZATION PLAN MITIGATION ORDER ON CONSENT DOCKET NO. P-50-06

Prepared for:

PHELPS DODGE SIERRITA INC.
6200 West Duval Mine Road
Green Valley, Arizona 85614

Prepared by:

HYDRO GEO CHEM, INC.
51 West Wetmore Road, Suite 101
Tucson, Arizona 85705-1678
(520) 293-1500

December 28, 2007

TABLE OF CONTENTS

TABLES

TABLE OF CONTENTS (Continued)

FIGURES

APPENDICES

1. INTRODUCTION

Depth-specific sampling and flow velocity profiling at existing wells in the vicinity of Phelps Dodge Sierrita Tailing Impoundment (PDSTI) were conducted between November 9, 2006 and June 7, 2007. The work was performed as part of the *Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Phelps Dodge Sierrita Tailing Impoundment, Pima County, Arizona* (Work Plan), which was developed pursuant to the Mitigation Order on Consent Docket No. P-50-06 (MO). Task 2.3 of the Work Plan proposes that depth-specific sampling be conducted at production wells ESP-1, ESP-2, ESP-3, ESP-4, CW-7, and CW-8 and at long-screened monitoring wells MH-11 and MH-12 (Figure C.1, Table C.1). These wells were believed to be within, or proximal to, the sulfate plume (aquifer region where the dissolved sulfate concentration is in excess of 250 milligrams per liter [mg/L], as defined by the MO). The purpose of the depth-specific sampling and flow velocity profiling was to evaluate aquifer characteristics, including water quality variations and changes in relative permeability with depth. This information will be use along with other information collected as input to the construction of a numerical groundwater flow and solute transport model of the aquifer in the vicinity of, and down-gradient to, PDSTI.

This report documents methods, accomplishments, and results of the sampling and profiling activities. The organization of this report follows:

- Field methods
- Field activities
- Results of sampling and profiling activities
- Discussion and comparison of the results
- Conclusions

2. FIELD METHODS

Depth-specific sampling and flow velocity profiling services were provided by BESST, Inc. (BESST) under the direction of Hydro Geo Chem, Inc (HGC). The BESST HydroBooster™ sampling and Dye Tracer Flow Velocity Profiling techniques use small diameter tubing and sampling equipment that can be inserted between the well casing and the pump column with less than one inch of clearance. This allows depth-discrete well sampling and tracer injection without pump removal and under dynamic conditions.

This section discusses the methods used for HydroBooster sampling and Dye Tracer Flow Velocity Profiling, including the associated activities of the chain survey and discharge management. The standard operating procedures for the HydroBooster and Dye Tracer techniques are provided in Appendix C.1.

2.1 HydroBooster Sampling

The HydroBooster sampling technique was used to collect water-quality samples at depth-discrete locations within a well. The sampling interval at all wells was 50 feet. The deepest sampling depth was typically within 50 feet of the bottom of the well screen, and the shallowest sampling depth was typically within 50 feet of the static water level.

The normal HydroBooster sampling method uses a bundle of two, ¼-inch nylon tubes: one for air injection and one for sample return. The bundle is inserted through a well sampling port and lowered between the well casing and the pump column to the sampling depth. Well

water from the sampling depth enters the tubing, filling it to the static water level in the well. Pressurized air is then injected through one of the lines. The air closes the valve in the sampler and pushes the water sample through the sample return line to the ground surface, where it is dispensed into a sample container. Release of the air pressure in the tubing opens the valve and water can again enter the tubing. For HydroBooster sampling that was conducted under dynamic conditions, the pump was turned on and the pumping drawdowns were allowed to equilibrate for about one hour prior to the start of sampling. Under dynamic conditions, the HydroBooster sampled the flow stream in the well casing at the reported depth. For both static and dynamic sampling, the sample tubing was purged for two sampling cycles and a sample was collected on the third cycle.

The normal HydroBooster method was modified to a single-tube HydroBooster for one sample at ESP-2 due to concerns about the ability to pass the two-tube HydroBooster bundle between the well casing and pump column. The single tube was pressurized to close the sample valve, lowered to depth, vented to permit water to enter the tubing, and then repressurized to close the sample valve, similar to the two-tube HydroBooster. The single tube was then raised and retrieved from inside the well and the sample water dispensed into a sample container. For the single-tube HydroBooster, the sample tubing was not purged prior to sample collection.

All samples were collected unfiltered in 250 mL, unpreserved, plastic containers. The containers were capped and either stored on ice or refrigerated prior to delivery to the analytical laboratory. Duplicate samples were collected from at least one depth in each well. Samples from the first field event, which included the “static” samples from ESP-4 and MH-12 were analyzed by ACZ Laboratories in Steamboat Springs, Colorado. All other samples were hand-

delivered to Turner Laboratories in Tucson, Arizona for analysis for sulfate ion (sulfate) concentration.

Groundwater samples for sulfate analysis were also tested for water quality indicator parameters: pH, electrical conductivity, and temperature immediately after collection of the depth specific sample. The indicator parameters were measured from the same purge water used to collect the water samples. The indicator parameter measurements were made using a Hanna® probe (HI 991300). The probe was calibrated at least once each day at pH 4, pH 7, and 1413 microsiemens per centimeter (µS/cm).

2.2 Dye Tracer Flow Velocity Profiling

The Dye Tracer technique uses travel time of a fluorescent dye to estimate flow velocities between injection depths, which can be used to estimate water inflow and sulfate loading with depth. The profile is performed under pumping conditions by lowering injection tubing to a specified depth, releasing a pulse of Rhodamine dye, and monitoring the arrival of the Rhodamine dye in the pump discharge using a fluorometer. The Rhodamine dye pulse lengths ranged from 3 to 7 seconds, with the shorter pulses at depths near the pump intake where the dye arrival times were short and the arrival peaks were sharp and longer pulses at depths distant from the pump intake were arrival times were longer and the arrival peaks more dispersed. At least two dye pulses were released at each depth to verify the arrival times. For ESP-4, dye injections were performed on 25-foot intervals. Because the 25-foot intervals provided little additional information over 50-foot intervals, dye injections for ESP-2 were performed on 50-foot intervals, corresponding to HydroBooster sampling locations.

The Rhodamine dye arrival in the pump discharge is used to estimate water inflow and sulfate loading. The injection depths theoretically divide the screened interval into several production zones. The inflow at a given depth (Q_{inf}) can then be estimated from the difference in arrival times at each depth and the cross-sectional area of flow in each production interval. The computed values of Q_{inf} can be used with the analytical results of the sulfate concentrations from the depth-specific sampling to estimate the sulfate concentrations entering the well at each production interval (C_{inf}) by computing a mass balance for sulfate within each production zone. Details concerning the theory and computations used to evaluate Dye Tracer and HydroBooster data are provided in Appendix C.2.

2.3 Chain Survey

A "chain survey" was conducted at wells where the feasibility of passing the sampling and profiling equipment between the well casing and pump column was a concern. The chain survey apparatus consisted of a series of 5/8-in diameter by 4-in long steel weights that were suspended by a 500 foot cable. During the chain survey, the weights were lowered through an access port of a well. The ability to lower the weights past the pump intake depth, was an indication that the HydroBooster and Dye Tracer equipment could also successfully be lowered past the pump intake through that access port.

2.4 Discharge Management

Water discharge from production wells was managed as specified in the *Work Plan* and met the requirements of the Arizona Department of Environmental Quality (ADEQ). De Minimus Discharge Permits were obtained for all potential discharges from wells ESP-1 (AZDGP-00830), ESP-2 (AZDGP-00831), ESP-3 (AZDGP-00832), ESP-4 (AZDGP-00789), CW-7 (AZDGP-00833), and CW-8 (AZDGP-00834). Discharge water was routed to nearby channels, and the discharge rate and total discharge were monitored for all wells that were pumped. Photographs were taken to document pre- and post-pumping conditions in the channel receiving discharge.

3. FIELD ACTIVITIES

Field activities were conducted over three different events: November 9 to 10, 2006; March 20 to 24, 2007; and June 4 to 7, 2007. The field activities included static and dynamic HydroBooster sampling, Dye Tracer Inflow Velocity Profiling, and several chain surveys. A summary of field activities for each well is provided below, and Table C.1 lists features of the wells that were proposed for depth-specific sampling.

3.1 ESP-1

A chain survey was conducted at ESP-1 on March 23, 2007. None of the available access ports at that well permitted the chain to pass between the well casing and the pump column. Consequently, no depth-specific sampling or flow velocity profiling was attempted at ESP-1.

3.2 ESP-2

A chain survey conducted at ESP-2 on March 23, 2007 indicated that sampling and profiling equipment might be able to pass between the well casing and pump column through the east access port, but passage of the 5/8-inch chain was difficult. Concerns of getting the sampling apparatus stuck inside the well lead to the decision to conduct depth-specific sampling using the single-tube HydroBooster on June 4, 2007. The initial sample taken under static conditions at a depth of 1,000 feet was taken with the single-tube HydroBooster. This method

was time and labor intensive; so, the normal HydroBooster was used to collect samples for the remainder of the static and dynamic sampling at ESP-2.

Dye Tracer Flow Velocity Profiling at ESP-2 was conducted on June 6, 2007, following the static and dynamic HydroBooster sampling. Since no record of the pump intake depth at ESP-2 was available (Table C.1), several dye injections were initially conducted to locate the pump intake depth at 480 feet (indicated by the injection with the shortest arrival time). After these initial injections, dye injections were released starting at 500 feet and continuing at 50 foot intervals to 1,000 feet. Dye injections were also released at depths of 450 and 400 feet. While raising the tubing from 1,000 feet to 450, feet several dye injections were released at previously tested depth as confirmatory tests.

The pump discharge rate was monitored throughout the dynamic tests using an existing volumetric flow meter located on the pump discharge pipe. The measured pump discharge rate throughout the tests was approximately 1150 gallons per minute (gpm). The total amount pumped from ESP-2 during the tests was approximately 907, 600 gallons (2.8 acre-feet).

3.3 ESP-3

The HydroBooster tubing apparatus became stuck at a depth of about 300 feet while attempting to lower it through the east access port in ESP-3 on March 22, 2007. The tubing could not be raised or lowered beyond this point. After many attempts to remove the tubing, sampling activities were aborted at ESP-3. Additional attempts to remove the tubing were made on June 6, 2007, but these were also unsuccessful.

3.4 ESP-4

HydroBooster sampling under static conditions was conducted at ESP-4 on November 9 and 10, 2007, and dynamic HydroBooster sampling and Dye Tracer Flow Velocity Profiling were conducted from March 20 to March 23, 2007. HydroBooster samples were collected at 50-foot intervals beginning at a depth of 950 feet for both static and dynamic sampling events and terminating at depths of 400 and 450 feet for the static and dynamic sampling events, respectively.

The Dye Tracer Flow Velocity Profiling at ESP-4 began on March 20, 2007. Dye pulses were released every 25 feet, starting from a depth of 450 feet, which is near the pump intake (Table C.1), and continuing to a depth of 900 feet. A final pulse was also released at 425 feet. During the course of the profiling study, the discharge rate through the fluorometer was observed to decrease. The decreasing flow was cause by debris (appearing to be rusted flakes of metal) that would become lodged in the hose leading from the pump discharge to the fluorometer. The debris was periodically removed and the original flow rate through the fluorometer was reestablished. Additional inflow profiling tests were conducted at ESP-4 in the days following the original test in order to verify the results of the first test. In these latter tests, dye injections were released at 50-foot intervals. The variable flow rates through the fluorometer are not expected to have significantly affected the results because the total pump discharge rate was observed to remain constant throughout the test and because an analysis of the tracer arrival times showed no systematic bias for dye injections under lower flow to the flourometer. Tracer travel time at a few injection depths (i.e., 475-500 and 575-600 feet) produced anomalous

estimates. These injection depths were excluded in the analysis and inflow estimates were made for zones that extended across these injection depths.

The pump discharge at ESP-4 was routed to a nearby channel using a 6-inch diameter hose. A flow meter was installed in-line with the hose and was used to monitor flow from the pump discharge. The measured pump discharge rate throughout the tests was approximately 1550 gpm. The total amount pumped from ESP-4 during the tests was approximately 1,803,600 gallons (5.5 acre-feet).

3.5 CW-7

Sampling was attempted at CW-7 on March 22, 2007; however, the sampling apparatus could not be inserted through any of the available ports. Consequently, no sampling or profiling could be conducted at CW-7.

3.6 CW-8

A chain survey was conducted at CW-8 on March 22, 2007. The results of the chain survey indicated that sampling and profiling equipment might be successfully inserted, lowered, and raised only through the northeast sampling port. HydroBooster sampling at CW-8 was attempted on June 7, 2007. The HydroBooster sampling apparatus became stuck at a depth of about 500 feet, and could not be raised or lowered beyond this point. Consequently, sampling and profiling activities were aborted at CW-8.

3.7 MH-11

Static HydroBooster sampling was conducted at MH-11 on March 22 and 23, 2007. Samples were collected at 50-foot intervals at depths from 750 feet to 450 feet.

3.8 MH-12

Static HydroBooster sampling was conducted at MH-12 on November 11, 2006. Samples were collected at 50-foot intervals at depths from 700 feet to 500 feet. A sample was also collected at a depth of 470 feet. An obstruction in the well prevented sampled at depths below 700 feet.

4. RESULTS

Results of the field parameter measurements and sulfate analysis for the depth-specific sampling are provided in Tables C.2 to C.5 for wells ESP-2, ESP-4, MH-11, and MH-12, respectively. The results of the flow velocity profiling are given in Table C.6 for ESP-2 and Table C.7 for ESP-4, with graphical results shown in Figures C.2 and C.3. The sulfate inflow concentration estimates, calculated from the results of the depth-specific sampling and inflow velocity profiling are shown in Table C.8 and Figure C.4 for ESP-2 and Table C.9 and Figure C.5 for ESP-4. The results of all sampling and profiling activities are discussed below. Computation details and evaluation of the methods are provided in Appendix C.2, and laboratory reports of the sulfate analyses are provided in Appendix C.3.

4.1 ESP-2

The results of the inflow profiling for ESP-2 show a high production zone centered at depths of about 650 to 750 feet (Table C.6, Figure C.2). Outside of this interval, the inflow decreases and is estimated to be lower near the pump intake and near the bottom of the well. The negative values for depth intervals of 500 to 550 feet and 750 to 800 feet, given in Table C.6, are caused by experimental and analytical artifacts that arise when the analytical sensitivity is greater than the measurement error and/or variability. Because a negative value is physically unrealistic, the inflow at these depth intervals should be considered to represent low-flow conditions, as shown in Figure C.2. Because inflow values are estimated using travel time differences between adjacent intervals, the negative values also suggest that the inflow value for the preceding and/or following depth is likely lower than estimated (Appendix C.2).

The sulfate concentrations measured in static and dynamic samples taken from ESP-2 are relatively low, ranging from 14 to 34 mg/L (Table C.2 and C.8 and Figure C.4). Static samples from depths of 450 to 700 feet average more than twice the average concentration from depths of 800 to 1,000 feet, indicating apparent chemical zoning, but all were well below 250 mg/L level of the sulfate plume. The low concentrations demonstrate that ESP-2 is unimpacted by the sulfate plume at all depths. The chemical zoning could be due to a natural stratification of background concentrations unrelated to the sulfate plume, or it may be dilute sulfate concentrations from the plume via a preferential flow zone. The latter interpretation is supported by the observation that the step change in concentration levels occurs approximately at the depth of the high production zone. Differentiation between these possible causes of zoning is unlikely at the dilute concentrations observed.

4.2 ESP-4

The results of the flow velocity profiling for ESP-4 show a variable pattern of inflow with depth (Table C.7, Figure C.3). Below a depth of 650 feet, increases in inflow occur at the intervals between 675 and 725 feet and 825 and 875 feet. Above a depth of 650 feet, inflows are low except for a large inflow spike at the interval near 550 feet. The spike near 550 feet is preceded by an (unrealistic) negative inflow - an artifact of the computation procedure and indicative of measurement accuracy and precision limitations and/or turbulence in the pump column (Appendix C.2). Since the dye tracer arrival time oppositely affects the inflow estimation at the adjacent interval, the negative inflow likely is at least partially responsible for the apparent inflow spike at 550 feet. The validity of this spike is uncertain because the estimates of inflow velocity become very sensitive to measurement errors and variability near the

pump intake depth (458 feet for ESP-4). Furthermore, results of spinner-logging tests do not show a significant inflow in the 500 to 550 foot interval (Section 5.2).

Sulfate concentrations in ESP-4 are vertically variable, ranging from 23 to 816 mg/L in the static sampling and from 220 to 730 mg/L in the dynamic sampling (Table C.3). In the static sampling results for ESP-4, the sulfate concentrations continuously increase with depth, with large increases between depths of 750 feet and 850 feet (increasing from 90 to 816 mg/L). The dynamic sampling results for ESP-4 have a more narrow concentration range (220 to 730 mg/L) with the highest concentrations centered at depths of 750 and 800 feet (730 and 620 mg/L, respectively). The reason for the increasing concentrations with depth in the static samples is unclear. The increasing concentrations with depth do not appear to be representative of sulfate concentrations in the surrounding aquifer because dynamic samples do not show a similar pattern. The depth-wise increase in sulfate concentration has the appearance of density stratification. However, the concentrations of sulfate measured in ESP-4 would cause a density change of less than one percent, suggesting that density stratification should not be significant. Also, the sulfate inflow concentrations, estimated from the dynamic sampling and inflow velocity results, further emphasize the interval of high sulfate inflow centered around 800 feet (Table C.9). As with the inflow velocity estimates, the negative sulfate values estimated in ESP-4 at depth intervals of 550 to 600 feet and 700 to 750 feet are artifacts of the measurement and analytical technique (Appendix C.2). The sulfate inflow concentration in these zones should be considered indeterminate and are reported as zero, as shown in Figure C.5.

4.3 MH-11 and MH-12

Only static depth specific samples were collected at MH-11 and MH-12. The results of the depth-specific sampling show that sulfate concentrations in MH-11 and MH-12 are elevated (> 1,000 milligrams per liter [mg/L]) and relatively uniform at all depths (Tables C.4 and C.5).

5. DISCUSSION

The results of the sampling and profiling activities are useful for refining the conceptual model of the aquifer characteristics. However, because only a few wells could be tested in this study and because the sampling techniques can be influenced by the hydraulics of the borehole and well casing, the findings of this study should be interpreted and evaluated against other measurements made in the well being tested and at other wells in the vicinity. This section further examines some of the major findings of the depth-specific sampling and inflow profiling that should be integrated with other information collected during aquifer characterization activities.

5.1 Sulfate Plume Zonation

The depth-specific sampling results for MH-11 and MH-12 suggest that the plume of sulfate extends over the full saturated thickness of the aquifer immediately downgradient of PDSTI. In contrast, recent measurements made in the well nest at MH-13 (located inline with MH-11 and MH-12, about 1 mile south of MH-11; Figure C.1) show a substantial increase in sulfate concentrations with depth. Measurements in wells nests MH-25 and MH-26, north of MH-12 (Figure C.1), also show vertical zonation of sulfate. Thus, the mechanism causing vertical differences in sulfate concentrations in these other wells may not be present at MH-11 and MH-12. Another possibility is that vertical zonation of sulfate was not observed in MH-11 and MH-12 because these well depths do not penetrate the zone of stratification or because concentrations had homogenized within the long-screened intervals of these wells prior to, or during, sampling. Vertical stratification of sulfate does appear in several wells along the margins

of the plume. In particular, the higher sulfate concentrations measured in ESP-4 at depths centered around 800 feet are corroborated with high concentrations at intermediate depths in recently installed well nests on the leading edge of the sulfate plume (e.g., MH-25 and MH-26) and may also be related to the slight increase in concentrations measured in ESP-2 above about 700 feet. In general, the similar vertical zonation was measured at several wells, increases the likelihood that the high sulfate zones develop as the result of greater sulfate transport velocities at these depths.

5.2 Preferential Transport Zone

The inflow profiles for ESP-2 and ESP-4 show zones of elevated inflow that may correspond to a preferential transport zone. ESP-2 shows elevated inflows from 600 to 750 feet in depth (Figure C.2). High inflow zones in ESP-4 are not as obvious. A high inflow zone may exist in ESP-4 from 525 to 550 feet and from 675 to 875 feet. The high inflow value at 525 to 550 feet is based on a single estimate surrounded by unreliable values made in close proximity to the pump intake. For this reason the high inflow zone may be exaggerated or not indicative of the surrounding aquifer (Section 3.4, Appendix C.2). If the upper productive zone in ESP-4 is correct, it is likely to be a shallow but thin zone centered on 540 feet because a similar high production zone was not apparent in ESP-2. Data from previous testing, discussed in the following paragraph, does not support a high production zone around 540 feet. The high inflow zones at 600 to 750 feet in ESP-2 and 675 to 800 feet in ESP-4 indicate the possibility of a preferential transport zone at intermediate depths between the two wells, with the zone being somewhat thicker at ESP-4. However, any extrapolation of high inflow zones to regional

patterns of higher hydraulic conductivities at intermediate depths can only be speculative because inflow profiling could only be conducted at ESP-2 and ESP-4.

A previous investigation by Errol L. Montgomery and Associates, Inc. (ELMA) in 2004 conducted depth-specific sampling and spinner logging in ESP-4. The results of the spinner logging inflow estimates are shown with the results of the dye tracer inflow estimates in Figure C.6. In this figure, the values of inflow per foot for both the spinner logging and the dye tracer test are normalized by the respective total pumping rate for each test to provide a better visual comparison. In addition, the production estimates from the dye tracer study are averaged across intervals to roughly correspond to the spinner logging intervals. The spinner logging indicates a relatively higher inflow zone between about 650 and 830 feet, which is comparable to the higher inflow zone estimated from the dye tracer study when normalized on a per-foot basis. In the interval near the pump intake, the spinner logging shows a relatively low inflow rate, which is in contrast to the large increase in inflow near the pump intake estimated from the dye tracer study. The high inflow interval near the pump intake for the dye tracer study is heavily influenced by a single high production estimate at a depth interval of 525 to 550 feet (Figure C.3) and likely includes contributions of flow from most of the top of the aquifer.

A comparison of the depth-specific sulfate concentrations measured in the two studies is shown in Figure C.7. This figure shows the results for the static and dynamic sampling and the inflow-corrected dynamic sampling together with the depth-specific sulfate concentrations measured by ELMA (2004) under pumping conditions. All sampling results indicate a spike in the sulfate concentration centered about a depth of about 825 feet. This confirms the hypothesis of a higher sulfate zone around 825 feet in ESP-4.

6. CONCLUSIONS

Depth-specific sampling and flow velocity profiling were conducted at wells in the vicinity of PDSTI. Static (nonpumping conditions) and dynamic (pumping conditions) sampling and flow velocity profiling were conducted at production wells ESP-2 and ESP-4, and static sampling was conducted at monitoring wells MH-11 and MH-12. No sampling or flow velocity profiling was conducted at ESP-1, ESP-3, CW-7, and CW-8 due to problems with inserting and/or removing sampling equipment inside the well casing.

The results of the sampling and inflow profiling suggest the following:

- Although the sampling results indicate that the aquifer region around MH-11 and MH-12 is equally impacted by sulfate over its entire saturated thickness, sulfate concentrations recently measured in the nearby MH-13 well nest does show vertical differences in the sulfate concentrations. Therefore, whether the homogeneous concentration profile is indicative of the plume at these locations or is an artifact of the well construction or sampling technique is uncertain.

- The dye tracer study indicates a zone of relatively high permeability around ESP-2 at depths between 650 and 700 feet.

- The dye tracer study and spinner logging (ELMA, 2004) indicate a zone of relatively high permeability in the vicinity of ESP-4 at depths from about 650 feet to about 800 feet. Dye tracer data indicating a high inflow zone from 525 to 550 feet is not supported by the spinner logging and may be erroneous.

- ESP-4 lies within the zone of sulfate impact, and the most elevated sulfate concentrations are centered between depths of 750 and 800 feet, corresponding to a zone of higher apparent permeability.

- ESP-2 currently lies completely outside the sulfate plume, although an increase in sulfate concentrations corresponding to the suspected high permeability zone may signal the early arrival of sulfate contamination via a preferential zone.

The results and interpretation of depth-specific sampling and velocity inflow profiling will be used to refine the conceptual model of aquifer characteristics. The refined conceptual model will provide the basis for development of the groundwater flow and transport model for predicting sulfate plume migration and its response to mitigation alternatives.

7. REFERENCES

Hydro Geo Chem, Inc. (HGC). 2006. Work Plan to Characterize and Mitigate Sulfate with Respect to Drinking Water Supplies in the Vicinity of the Phelps Dodge Sierrita Tailing Impoundment, Pima County, Arizona. August 11, 2006, revised October 31, 2006.

HGC. 2007. Third Quarter 2007 Groundwater Monitoring Report. Tasks 2.2, 2.3, and 2.4 of Aquifer Characterization Plan, Mitigation Order on Consent Docket No. P-50-06, Pima County, Arizona, September 26, 2007.

Errol L. Montgomery and Associates, Inc. (ELMA) 2004. Results of Spinner Flowmeter Logging and Depth-Specific Water Sampling at Esperanza Well No. 4, May 2004, Phelps Dodge Sierrita. Inc. Memorandum from James S. Davis and Janis Blainer-Fleming to Mike Wood. June 28, 2004.

8. LIMITATIONS

The information and conclusions presented in this report are based upon the scope of services and information obtained through the performance of the services, as agreed upon by HGC and the party for whom this report was originally prepared. Results of any investigations, tests, or findings presented in this report apply solely to conditions existing at the time HGC's investigative work was performed and are inherently based on and limited to the available data and the extent of the investigation activities. No representation, warranty, or guarantee, express or implied, is intended or given. HGC makes no representation as to the accuracy or completeness of any information provided by other parties not under contract to HGC to the extent that HGC relied upon that information. This report is expressly for the sole and exclusive use of the party for whom this report was originally prepared and for the particular purpose that it was intended. Reuse of this report, or any portion thereof, for other than its intended purpose, or if modified, or if used by third parties, shall be at the sole risk of the user.

TABLES

TABLE C.1
Well Information

Well	Total Depth (ft bgs)	Wellhead Elevation (ft. amsl)	Screened Interval (ft bgs)	Casing Diameter (in)	Pump Column Diameter (in)	Pump Intake Depth (ft bgs)	Pump Capacity (gpm)
CW-7	1065	2987.5	500 - 1040 (ft bgs)	16	8	480	1100
CW-8	1200	2957.5	540 - 580, 620 - 980	16	8	438	1500
ESP-1	1020	2954.87	350 - 1020	16 (0 - 596 ft bgs), 12.75 (596 - 905 ft bgs), 10 (905-1020)	10	N/A	1380
ESP-2	1035	2934.6	349 - 1035	16	N/A	N/A	1050
ESP-3	1043	2935.8	350 - 1043	16 (0 - 683 ft bgs), 12.75 (683 - 1042 ft bgs)	10	N/A	840
ESP-4	1045	2958.6	312 - 1036	24	10	458	1380
MH-11	820	3040.3	300 - 800	3			
MH-12	800	3054.07	280 - 800	3			

Notes:

ft = feet

in = inch

bgs = below ground level

gpm = gallons per minute

amsl = above mean sea level

TABLE C.2
Depth-Specific Sampling Results for ESP-2

Static Sampling							
Sample	**Depth**	**Date**	**Time**	**Temperature (°C)**	**Conductivity (µS/cm)**	**pH (SU)**	**Sulfate (mg/L)**
ESP-2-1000	1000	6/4/2007	15:35	30.4	338	7.77	15
ESP-2-950	950	6/5/2007	9:48	33.8	350	7.69	14
ESP-2-900	900	6/5/2007	10:30	34.8	306	7.72	14
ESP-2-850	850	6/5/2007	11:10	35.6	308	7.61	14
ESP-2-800	800	6/5/2007	11:45	36.2	299	7.73	14
ESP-2-750	750	6/5/2007	12:35	38.1	315	7.75	24
ESP-2-700	700	6/5/2007	13:10	37.8	337	7.77	32
ESP-2-650	650	6/5/2007	13:40	38.6	337	7.70	33
ESP-2-600	600	6/5/2007	14:10	38.3	339	7.70	33
ESP-2-550	550	6/5/2007	14:35	37.4	338	7.76	34
ESP-2-500	500	6/5/2007	15:00	37.2	340	7.69	34
ESP-2-450	450	6/4/2007	12:20	--	363	7.45	31

Dynamic Sampling							
Sample	**Depth**	**Date**	**Time**	**Temperature (°C)**	**Conductivity (µS/cm)**	**pH (SU)**	**Sulfate (mg/L)**
ESP-2-1000P	1000	6/5/2007	16:45	35.7	303	7.99	15
ESP-2-950P	950	6/5/2007	17:25	35.0	298	7.80	15
ESP-2-900P	900	6/5/2007	18:00	33.3	303	7.78	15
ESP-2-850P	850	6/6/2007	8:45	28.1	347	7.13	14
ESP-2-800P	800	6/6/2007	9:20	28.4	344	7.89	14
ESP-2-750P	750	6/6/2007	9:55	29.1	351	7.87	17
ESP-2-700P	700	6/6/2007	10:25	29.9	377	7.63	25
ESP-2-650P	650	6/6/2007	10:50	30.7	376	7.63	26
ESP-2-600P	600	6/6/2007	11:20	30.6	376	7.87	27
ESP-2-550P	550	6/6/2007	11:45	--	--	--	27
ESP-2-500P	500	6/6/2007	12:15	--	--	--	27

Notes:
°C = degrees Celsius
µS/cm = microsiemens per centimeter
SU = Standard Units
mg/L = milligrams per liter

TABLE C.3
Depth-Specific Sampling Results for ESP-4

Static Sampling							
Sample	**Depth**	**Date**	**Time**	**Temperature (°C)**	**Conductivity (µS/cm)**	**pH (SU)**	**Sulfate (mg/L)**
ESP-4-950	950	11/9/2006	12:10	28.7	1190	6.69	809
ESP-4-900	900	11/9/2006	13:06	28.7	873	7.93	812
ESP-4-850	850	11/9/2006	13:54	28.7	800	7.82	816
ESP-4-800	800	11/9/2006	14:39	28.1	448	7.00	378
ESP-4-750	750	11/9/2006	15:20	27.7	299	7.20	89.9
ESP-4-700	700	11/9/2006	15:58	26.9	257	7.54	52.6
ESP-4-650	650	11/9/2006	16:30	25.5	240	8.01	40.9
ESP-4-600	600	11/10/2006	7:53	12.5	192.9	6.47	31.3
ESP-4-550	550	11/10/2006	8:22	16.3	188	6.99	29.8
ESP-4-500	500	11/10/2006	8:52	18.4	194	7.88	28.3
ESP-4-450	450	11/10/2006	9:23	19.9	190	8.00	26.6
ESP-4-400	400	11/10/2006	9:52	21.7	198	8.35	23.0

Dynamic Sampling							
Sample	**Depth**	**Date**	**Time**	**Temperature (°C)**	**Conductivity (µS/cm)**	**pH (SU)**	**Sulfate (mg/L)**
ESP-4-950	950	3/20/2007	10:05	28.4	830	7.83	220
ESP-4-900	900	3/20/2007	10:40	29.7	937	7.61	280
ESP-4-850	850	3/20/2007	11:12	30.8	1364	7.74	480
ESP-4-800	800	3/20/2007	11:58	29.6	1866	7.43	730
ESP-4-750	750	3/20/2007	12:26	31.1	1571	7.45	620
ESP-4-700	700	3/20/2007	12:56	31.9	1278	7.54	410
ESP-4-650	650	3/20/2007	13:31	30.7	1276	7.73	400
ESP-4-600	600	3/20/2007	14:06	32.1	1215	7.73	400
ESP-4-550	550	3/20/2007	14:30	32	1236	7.86	400
ESP-4-500	500	3/20/2007	14:55	32	1221	8.15	390
ESP-4-450	450	3/20/2007	15:20	29.7	1178	8.14	370

Notes:
°C = degrees Celsius
µS/cm = microsiemens per centimeter
SU = Standard Units
mg/L = milligrams per liter

TABLE C.4
Static Depth-Specific Sampling Results for MH-11

Sample	Depth	Date	Time	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Sulfate (mg/L)
MH-11-750	750	3/22/2007	17:15	21.9	2975	7.38	1292
MH-11-700	700	3/22/2007	17:21	19.8	2997	7.37	1303
MH-11-650	650	3/22/2007	17:40	16.7	2715	7.55	1160
MH-11-600	600	3/23/2007	8:32	17.8	3107	7.22	1359
MH-11-550	550	3/23/2007	8:51	18.5	3118	7.46	1365
MH-11-500	500	3/23/2007	9:05	18.2	3070	7.59	1341
MH-11-450	450	3/23/2007	9:29	18.8	3085	7.98	1348

Notes:
°C = degrees Celsius
µS/cm = microsiemens per centimeter
SU = Standard Units
mg/L = milligrams per liter

TABLE C.5
Static Depth-Specific Sampling Results for MH-12

Sample	Depth	Date	Time	Temperature (°C)	Conductivity (µS/cm)	pH (SU)	Chloride (mg/L)	TDS (mg/L)	Sulfate (mg/L)
MH-12-700	700	11/10/2006	12:24	27.2	626	7.52	120	2030	1160
MH-12-650	650	11/10/2006	12:59	27.5	623	7.49	130	2010	1140
MH-12-550	550	11/10/2006	13:31	28.4	588	7.36	120	1910	1140
MH-12-500	500	11/10/2006	13:58	28.9	666	7.12	120	2030	1140
MH-12-470	470	11/10/2006	14:48	29.1	683	7.56	120	2010	1140

Notes:
°C = degrees Celsius
µS/cm = microsiemens per centimeter
SU = Standard Units
mg/L = milligrams per liter

TABLE C.6
Inflow Profile Results for ESP-2

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
Depth Interval (ft bgs)	Injection Depth - di (ft bgs)	Interval Midpoint - dm (ft)	Mean Arrival Time - Tm (min)	Δ T (min)	Δ L (feet)	Velocity - V (ft/min)	Uncorrected Discharge - Q (gpm)	Incremental Uncorrected Discharge - Q_{inf} (gpm)	Percent of Total	Incremental Corrected Discharge - Qc (gpm)	Corrected Discharge per Foot (gpm/ft)
	1000		25.93								
950 - 1000	950	975	17.27	8.67	50	6	38	38	4%	40	0.81
900 - 950	900	925	12.80	4.47	50	11	74	36	3%	38	0.76
850 - 900	850	875	10.02	2.78	50	18	119	45	4%	47	0.95
800 - 850	800	825	8.25	1.77	50	28	188	69	6%	72	1.45
750 - 800	750	775	5.75	2.50	50	20	133	-55	-5%	-58	-1.16
700 - 750	700	725	4.67	1.08	50	46	482	349	32%	369	7.39
650 - 700	650	675	3.97	0.70	50	71	746	264	24%	279	5.58
600 - 650	600	625	3.37	0.60	50	83	870	124	11%	131	2.63
550 - 600	550	575	2.83	0.53	50	94	979	109	10%	115	2.30
500 - 550	500	525	2.30	0.54	50	93	973	-6	-1%	-6	-0.13
480 - 500	480	490	2.08	0.21	20	94	979	6	1%	6	0.32
450 - 480	480	465	2.08	1.75	30	17	109	54	5%	57	1.91
400 - 450	450	425	3.83	5.82	50	9	55	55	5%	58	1.16
	400		9.65								
							Total	**1087**			

Well and Pump Information

Measured Well Bottom (ft bgs)	1035
Pump Intake Depth (ft bgs)	480.00
Well Diameter (in) 0 - 800 ft	16.00 (estimated)
Well Diameter (in) 800 - 1035 ft	12.75
Cross Sectional Area of well casing (ft^2) 0 - 800 ft	1.396
Cross Sectional Area of well casing (ft^2) 800 - 1035	0.886
Measured Discharge (gpm)	1150
Pump (480-460 ft)	
Cross Sectional Area of pump bowls (ft^2)	0.975
Cross Sectional Area of well(ft^2)	0.420
Pump Bowl Diameter (in)	13.375
Column Pipe (0-460ft)	
Cross Sectional Area of column pipe (ft^2)	0.545
Cross Sectional Area of well (ft^2)	0.850
Column Pipe Diameter (in)	10

Notes:

in = inches
ft = feet
bgs = below ground surface
min = minutes
gpm = gallons per minutes
Δ T = time difference
Δ L = interval length

TABLE C.7
Inflow Profile Results for ESP-4

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
Depth Interval (ft bgs)	Injection Depth - di (ft bgs)	Interval Midpoint - dm (ft)	Mean Arrival Time - Tm (min)*	Δ T (min)	Δ L (feet)	Velocity - V (ft/min)	Uncorrected Discharge - Q (gpm)	Incremental Uncorrected Discharge - Q_{inf} (gpm)	Percent of Total	Incremental Corrected Discharge - Qc (gpm)	Corrected Discharge per Foot (gpm/ft)
	900		45.00	.							
875 - 900	875	887.5	14.10	30.90	25	0.81	18	18	1%	17	0.69
850 - 875	850	862.5	11.97	2.13	25	11.72	259	242	15%	234	9.35
825 - 850	825	837.5	10.32	1.65	25	15.15	335	76	5%	74	2.94
800 - 825	800	812.5	9.13	1.18	25	21.13	468	132	8%	128	5.12
775 - 800	775	787.5	8.18	0.95	25	26.32	583	115	7%	111	4.45
750 - 775	750	762.5	7.43	0.75	25	33.33	738	155	10%	150	6.01
725 - 750	725	737.5	6.75	0.68	25	36.59	810	72	4%	70	2.79
700 - 725	700	712.5	6.15	0.60	25	41.67	922	112	7%	109	4.35
675 - 700	675	687.5	5.67	0.48	25	51.72	1145	223	14%	215	8.62
650 - 675	650	662.5	5.20	0.47	25	53.57	1186	41	3%	40	1.58
625 - 650	625	637.5	4.75	0.45	25	55.56	1230	44	3%	43	1.70
550 - 625	550	587.5	3.02	1.73	75	43.27	958	-272	-17%	-263	-3.51
525 - 550	525	537.5	2.63	0.38	25	65.22	1444	486	30%	470	18.81
450 - 525	450	487.5	1.63	1.00	75	74.75	1591	147	9%	143	1.90
425 - 450	450	437.5	1.63	43.37	25	0.58	10	10	1%	10	0.40
	425		45.00								
							Total	**1601**			

Well and Pump Information

Measured Well Bottom (ft bgs)	1045
Pump Intake Depth (ft bgs)	458.00
Well Diameter (in)	23.30
Cross Sectional Area of well casing (ft^2)	2.960
Measured Discharge (gpm)	1550
Pump (450-458 ft)	
Cross Sectional Area of pump bowls (ft^2)	1.068
Cross Sectional Area of well(ft^2)	1.891
Pump Bowl Diameter (in)	14
Column Pipe (0-450ft)	
Cross Sectional Area of column pipe (ft2)	0.545
Cross Sectional Area of well(ft2)	2.414
Column Pipe Diameter (in)	10
Average cross sectional area 450 to 525 ft	2.846

Notes:

** Arrival time of 45 minutes used when no dye tracer return detected.*
in = inches
ft = feet
bgs = below ground surface
min = minutes
gpm = gallons per minutes
ΔT = time difference
ΔL = interval length

TABLE C.8
Estimated Sulfate Inflow Concentrations for ESP-2

Interval (ft)	Sample Depth (ft)	Flow at Interval (%)	Measured Sulfate (mg/L)	Interval Loading (Q_iC_i)	Loading Difference (Q_iC_i-$Q_{i+1}C_{i+1}$)	Inflow (%)	Inflow Sulfate (mg/L)
1035-1000	1000	0.0%	15				15
950 - 1000	950	3.5%	15	0.5	0.5	3.5%	15
950 - 900	900	6.8%	15	1.0	1.0	6.8%	15
900 - 850	850	11.0%	14	1.5	1.5	11.0%	14
850 - 800	800	17.3%	14	2.4	0.9	6.3%	14
800 - 750	750	12.2%	17	2.1	-0.3	-5.1%	7
750 - 700	700	44.3%	25	11.1	9.0	32.1%	28
700 - 650	650	68.6%	26	17.8	6.8	24.3%	28
650 - 600	600	80.0%	27	21.6	3.8	11.4%	33
600 - 550	550	89.4%	27	24.1	2.5	9.4%	27
550 - 500	500	89.4%	27	24.1	0.0	0.0%	

Notes:

ft = feet

% = percent

mg/L = milligrams per liter

Q_i = Corrected inflow at interval i

C_i = Concentration at interval i

TABLE C.9
Estimated Sulfate Inflow Concentrations for ESP-4

Interval (ft)	Sample Depth (ft)	Flow at Interval (%)	Measured Sulfate (mg/L)	Interval Loading (Q_iC_i)	Loading Difference (Q_iC_i-$Q_{i+1}C_{i+1}$)	Inflow (%)	Inflow Sulfate (mg/L)
950 - 1000	950	0%	220	0.0	0.0	0.0%	
950 - 900	900	0%	280	0.0	0.0	0.0%	280
900 - 850	850	16.2%	480	77.8	77.8	16.2%	480
850 - 800	800	29.2%	730	213.2	135.4	13.0%	1041
800 - 750	750	46.1%	620	285.7	72.5	16.9%	430
750 - 700	700	57.6%	400	230.4	-55.3	11.5%	-480
700 - 650	650	74.1%	410	303.6	73.2	16.5%	445
650 - 600	600	76.8%	400	307.2	3.6	2.7%	130
600 - 550	550	59.8%	400	239.2	-67.9	-17.0%	400
550 - 500	500	90.2%	390	351.6	112.3	30.3%	370
500 - 450	450	100.0%	370	370.0	18.4	9.8%	370

Notes:

ft = feet

% = percent

mg/L = milligrams per liter

Q_i = Corrected inflow at interval i

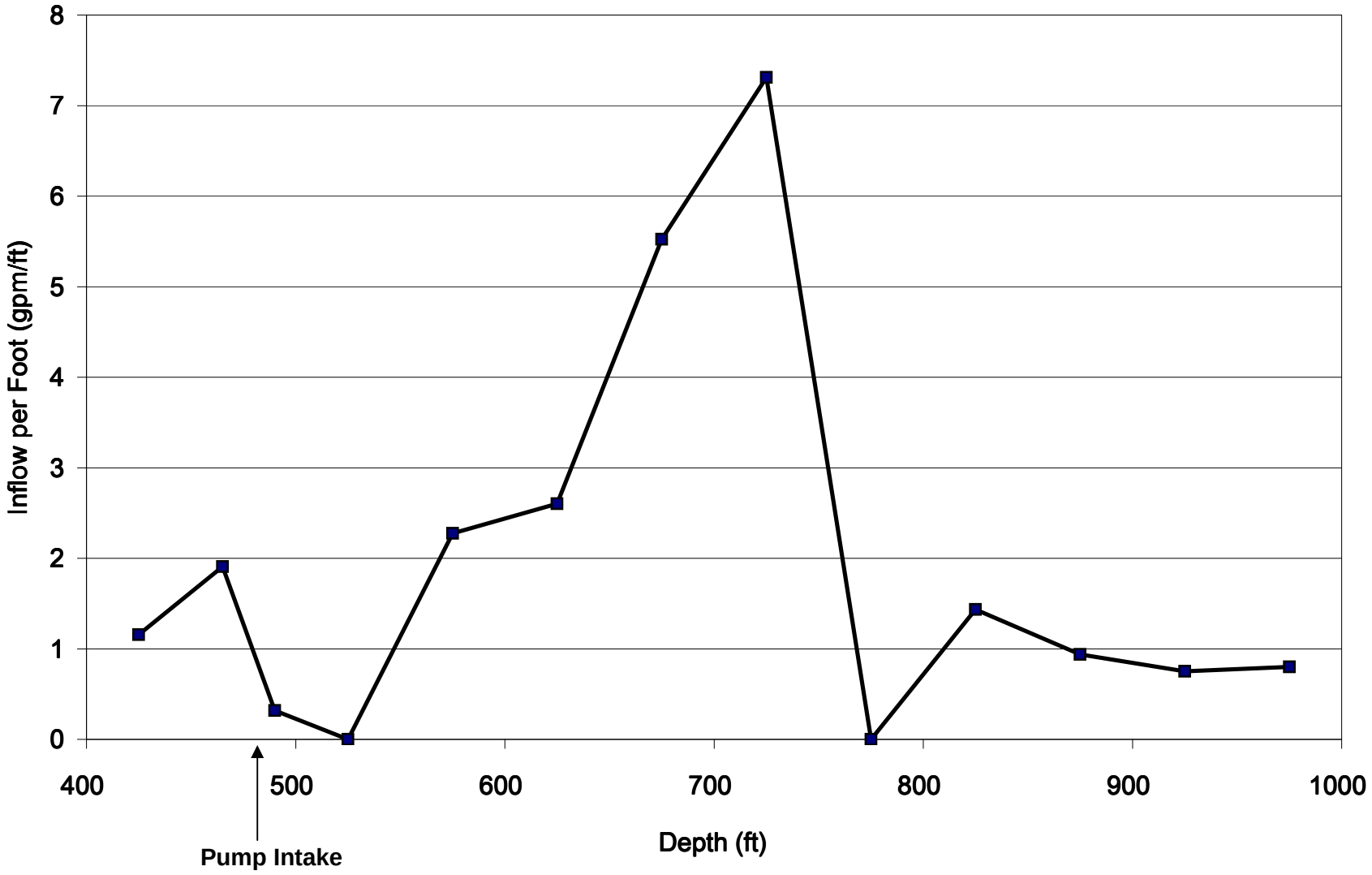
C_i = Concentration at interval i

FIGURES

HYDRO GEO CHEM, INC.

WELL INFORMATION

Approved	Date	Author	Date	File Name	Figure
NWH	11/07/07	RAM	11/07/07	7830060G	C.1

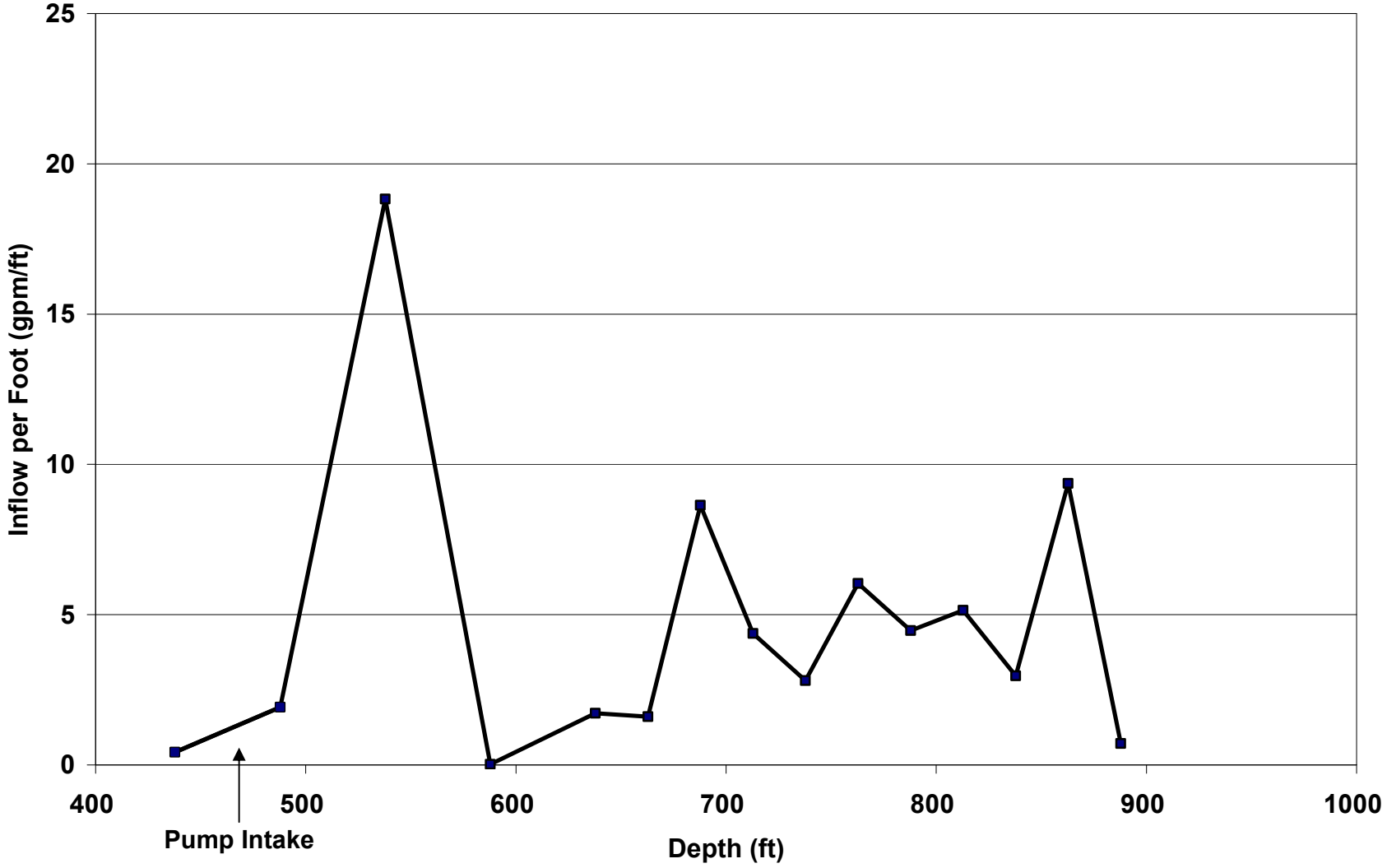


HYDRO GEO CHEM, INC.

INFLOW PROFILE FOR ESP-2

APPROVED	NWH	DATE	6/18/2007	FIGURE	C.2

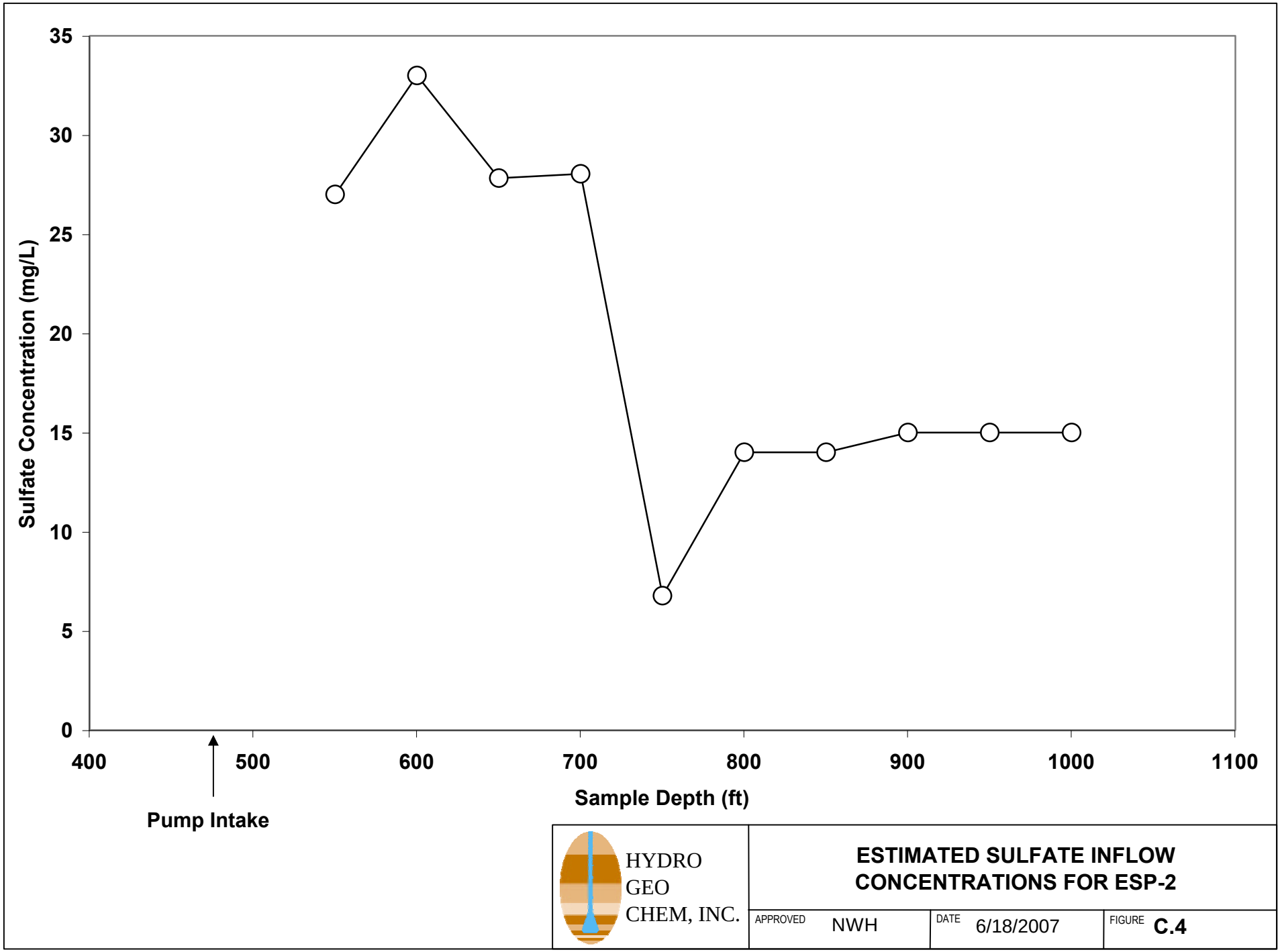
H:\78300\78306.3\Results\ESP2\ESP2 Inflow Profile.xls: MAT Profile Final



HYDRO GEO CHEM, INC.

INFLOW PROFILE FOR ESP-4

APPROVED	NWH	DATE	6/18/2007	FIGURE	C.3

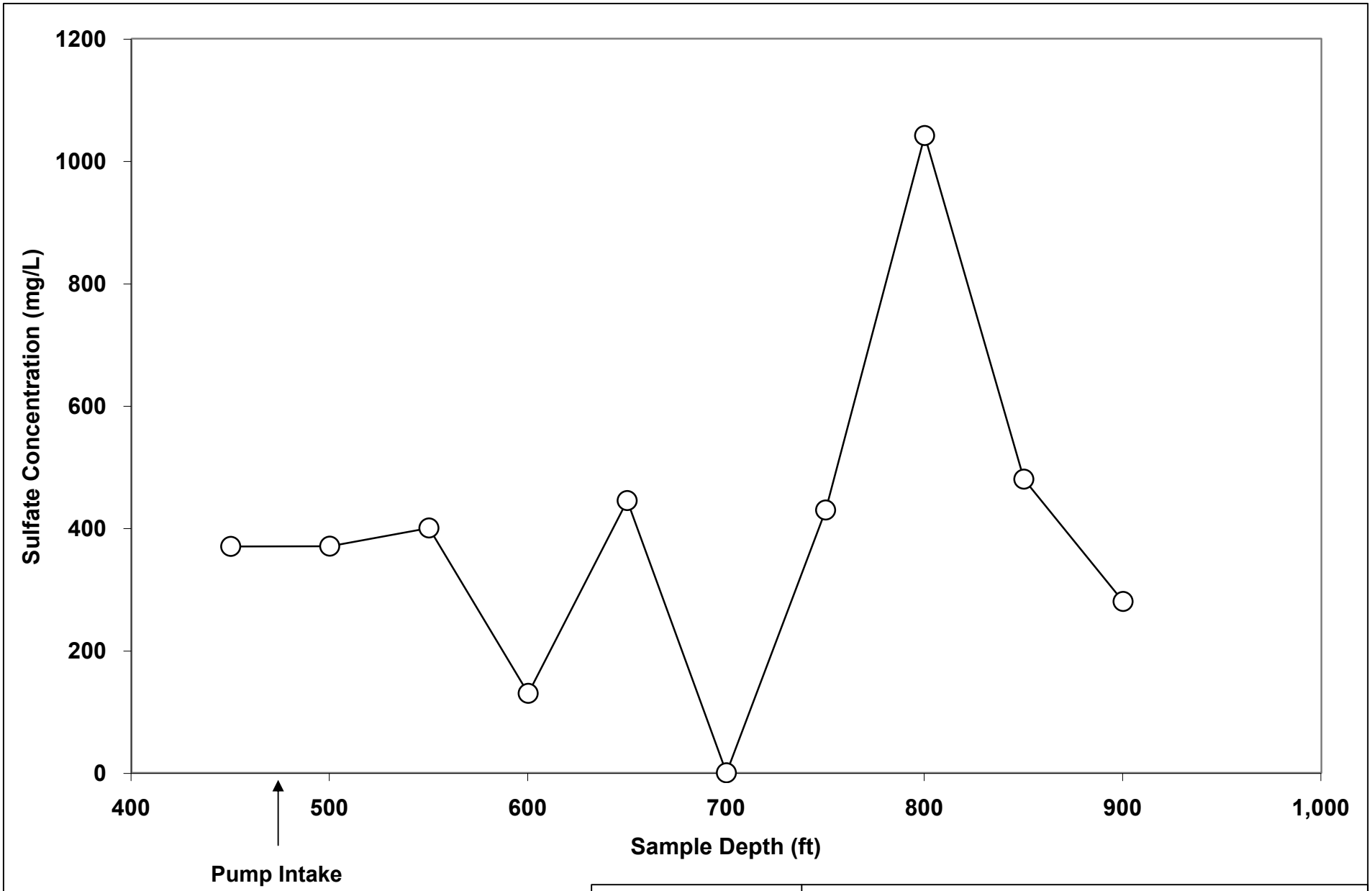


HYDRO GEO CHEM, INC.

ESTIMATED SULFATE INFLOW CONCENTRATIONS FOR ESP-2

APPROVED	DATE	FIGURE
NWH	6/18/2007	**C.4**

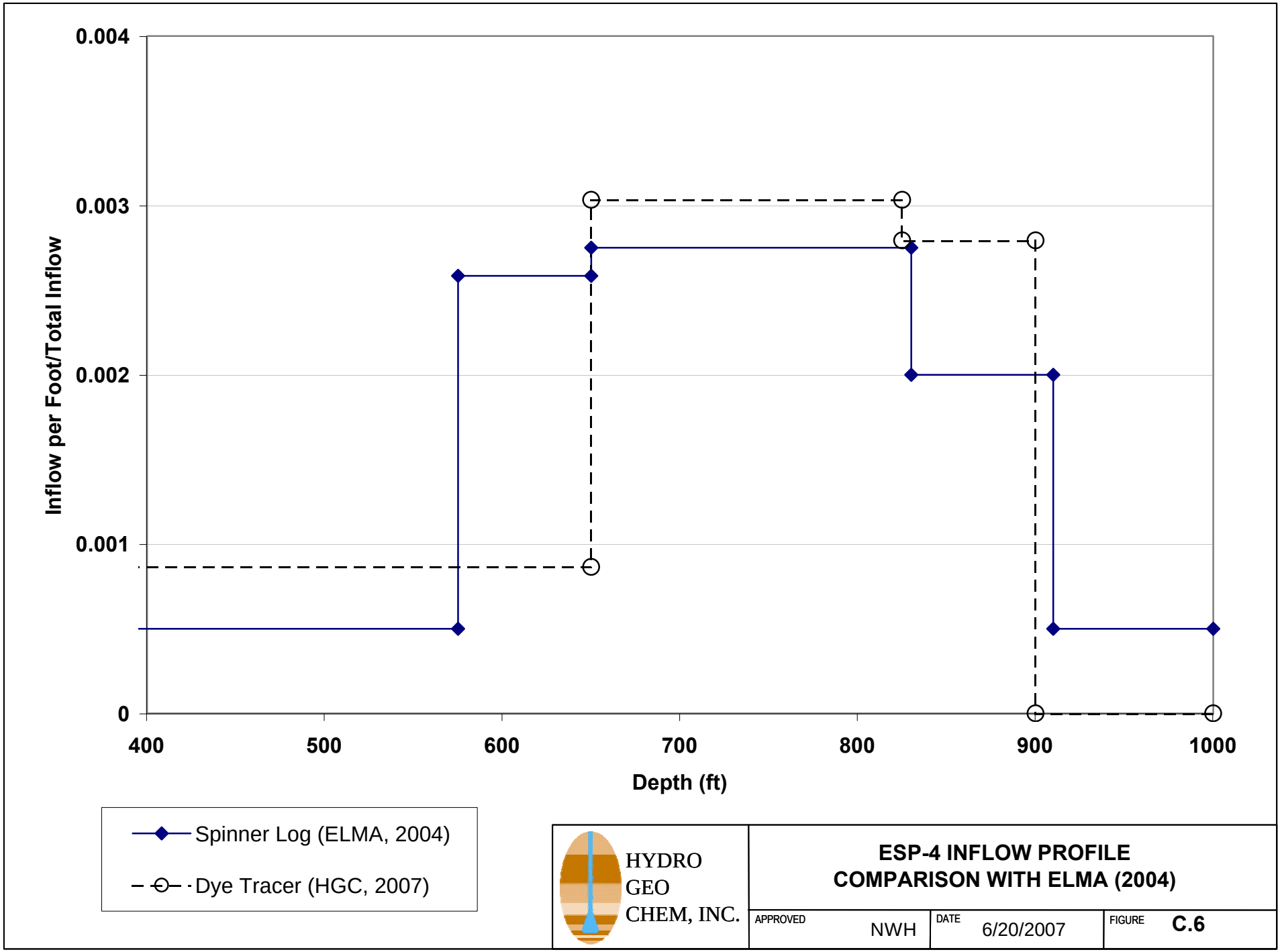
H:\78300\78306.3\Results\ESP2\ESP2 Inflow Profile.xls: SO4 MB



HYDRO GEO CHEM, INC.

ESTIMATED SULFATE INFLOW CONCENTRATIONS ESP-4

APPROVED	DATE	FIGURE
NWH	6/18/2007	**C.5**

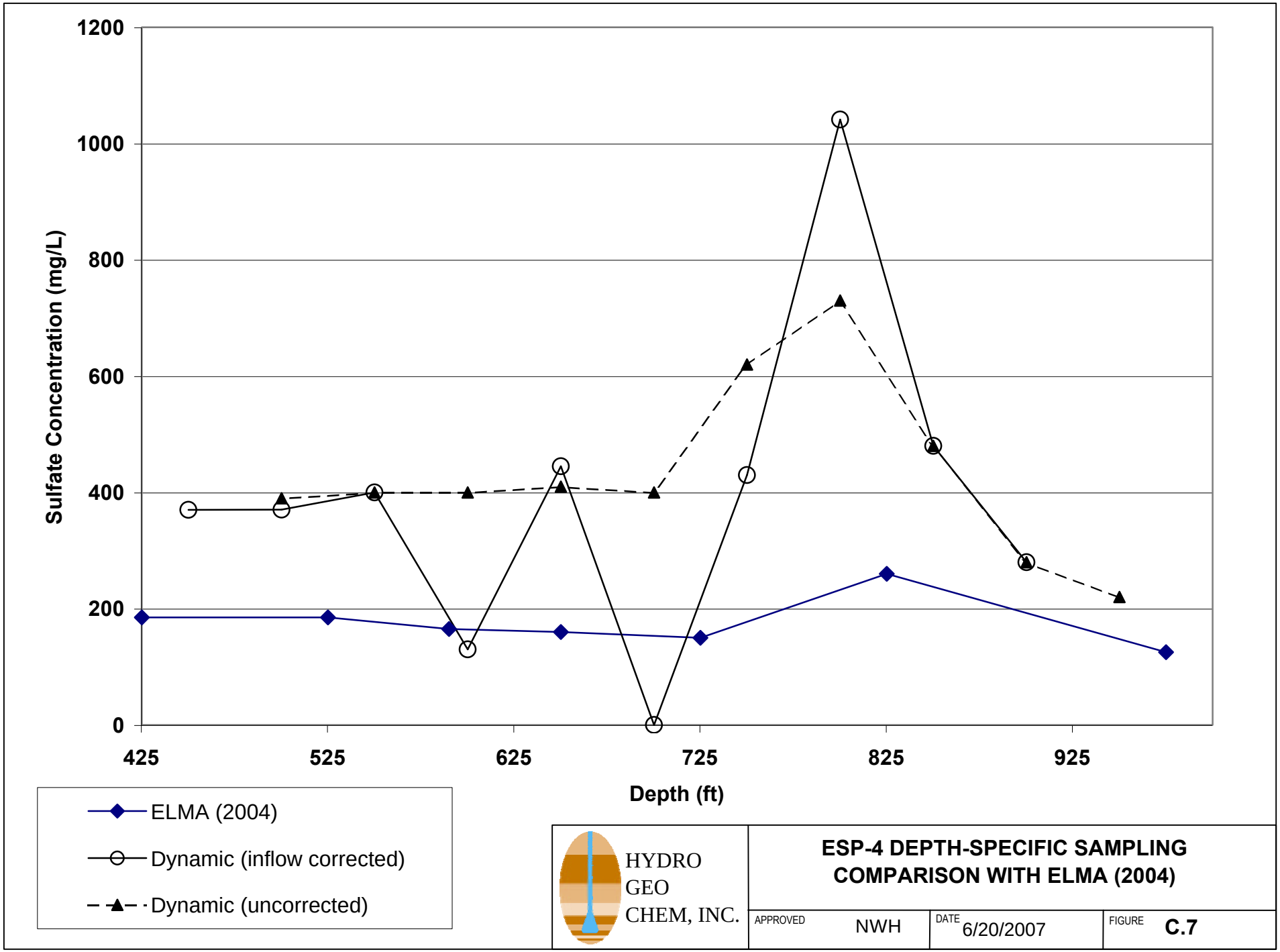


HYDRO GEO CHEM, INC.

ESP-4 INFLOW PROFILE COMPARISON WITH ELMA (2004)

APPROVED	DATE	FIGURE
NWH	6/20/2007	C.6

H:\78300\78306.3\Report\ESP-4Final.xls: ELMA Comp (flow)



HYDRO GEO CHEM, INC.

ESP-4 DEPTH-SPECIFIC SAMPLING COMPARISON WITH ELMA (2004)

APPROVED	DATE	FIGURE
NWH	6/20/2007	C.7

H:\78300\78306.3\Report\ESP-4Final.xls: ELMA Comp (SO4)

APPENDIX C.1

DYE TRACER FLOW VELOCITY PROFILING AND HYDROBOOSTER™ GROUNDWATER SAMPLING

Dye Tracer Flow Velocity Profiling and HydroBooster™ Groundwater Sampling

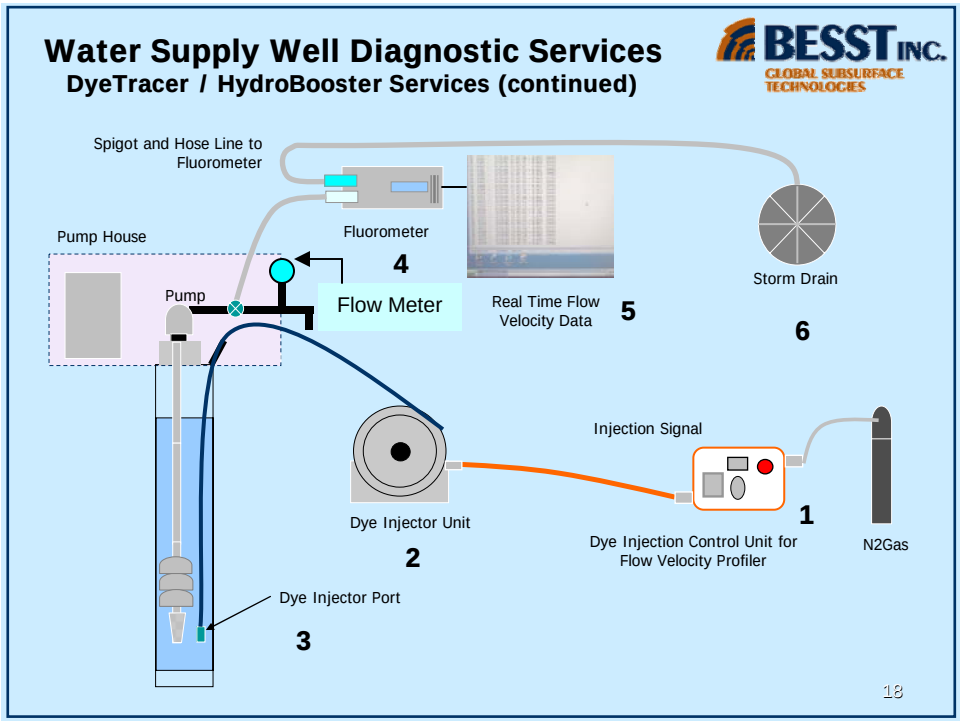
1. Dye Tracer Flow Velocity Profiling – General Description

The Dye Tracer Flow Velocity Profiling System (DT) is a USGS method and apparatus patented technology and was constructed and is operated by BESST, Inc. under exclusive license from the USGS. The technology has the ability to provide a dynamic flow velocity profile from virtually any type of production, remediation or monitoring well without first having to remove the pump from the well. The end result of the method produces a quantitative groundwater production profile of water influx along a well screen under dynamic flow pumping conditions along the entire well screen. The velocity and production profiles generated by this technology are comparable to profiles generated by spinner logging tools under dynamic flow conditions. The setup schematic for the Dye Tracer (DT) system is presented in Figure 1.

The DT system is composed of six main components:

a. Flexible Dye Injection Hose w/ Injection Nozzle
b. Motorized Hose Spool for deploying and retrieving the dye injection tubing w/ nozzle
c. Injection Pump / w/ Pneumatically Controlled Solenoid for the injection pump and Valve Switching Unit
d. Injection Control Unit
e. 10-AU Fluorometer from Turner Designs
f. Rhodamine Red Dye (NSF 60 Approved)

Figure 1: Schematic of Dye Tracer Flow Velocity Profiling System



50 Tiburon Street, Suite 7, San Rafael, CA 94901
Toll Free: 866.298.8701 / 415.453.2501 (fax: 2509)

1.1 Planning and Field Preparation

The first step in operation of the DT system is access to the well of interest. Preparation consists of communication between the consultant, water purveyor and BESST in order to determine the most suitable access points into the well – between the pump column and interior well casing wall. Schematics of the pump and pump house and multiple photos of the well head are typically reviewed before the start of any project. Once reviewed, a planned approach is agreed to before commencement of work.

The DT tubing and injection nozzle typically ranges between ½-inch to ¾-inch in diameter. The small diameter and flexibility of the tubing and nozzle assembly make it possible to bypass the pump column, down-hole impeller bowls and / or electric pump motors. A key factor in successfully inserting the injection tubing and nozzle is the attachment of a small diameter steel cable or weighted chain to a metal loop located and attached just below the injection nozzle. The weight attachment makes it possible to move the DT tubing up and down in the well without turning off the pump.

In typical applications, the DT tubing is lowered through a mechanical counter that indicates the depth of the injection nozzle. The injection process can be started near the top of the pump or impeller bowls or from the bottom of the well screen. Injection points are typically laid out on a 10- to 20-foot vertical grid in order to obtain enough data points to vertically profile production along the well screen.

Prior to well injection, 50 ml of Rhodamine Red (RR) (from Bright Dyes, Inc.) is injected into a 5-Gallon bottle of DI water. The solution from the RR bottle is then fed by the injection pump (IP) to the injection line until the line is completely filled with the RR solution. When released into a well, each second of injection by the Injection Control Unit (ICU) is equivalent to approximately 20 ml of RR released from the injection nozzle (IN). Figure 2 below shows a typical setup for the DT system at a production well location in northern Nevada.

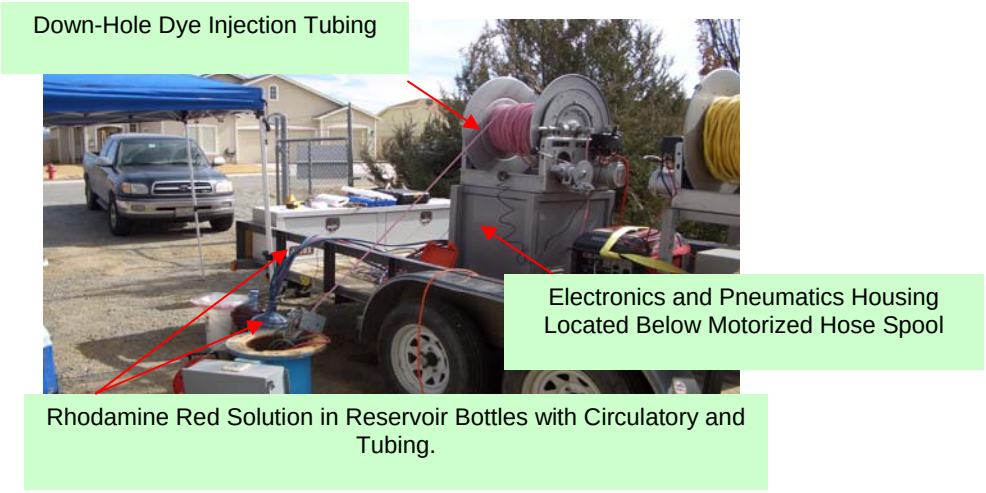


Figure 2: Typical trailer setup for Dye Tracer Flow Velocity Profiling System – at a location in northern, Nevada.

While the system is in non-injection mode and idling, the RR solution is circulated in the RR reservoir bottle to prevent air bubbles from entering the liquid and being injected into the well. Additionally, an electronic float sensor is placed within the RR reservoir bottle

to prevent air from being drawn into the injection line. As a result, when the RR solution is drawn down to the lower third of the RR bottle, the injection pump automatically shuts off. More RR solution is then added to the bottle before RR injection is continued. Introduction of air into the injection line is undesirable since air bubbles can cause delays in the return time of the RR to the fluorometer.

1.2 General Description of Equipment

The fluorometer used for the velocity profiling is a Model 10-AU from Turner Designs and is shown in Figure 3. The 10-AU Fluorometer measures the concentration of various analytes in samples of interest via fluorescence. In the case of dynamic flow velocity analysis for wells, the analyte of interest is artificially introduced in order to measure the peak concentration return times of rhodamine red from the release point to the fluorometer via the discharge path of the pumping well. The return concentrations are typically in the part per billion range. Light or exciting light from a light source within the fluorometer is passed through a color filter specific to rhodamine red, that transmits light of the chosen wavelength range (color). The wavelength of the exciting light that falls on the sample is set by the choice of the light source and the excitation filter. The emitted light radiates in a sphere from the light source and is directed towards the 10-AU detector through an emission filter. The purpose of the emission filter is to prevent any scattered exciting light from reaching the detector (photomultiplier tube) and to pass the emitted color that is specific to the analyte of interest. The concentration of the RR solution is directly proportional to the signal response received by the fluorescing light emitted by the rhodamine red that is received by the detector. The concentration is typically reported on an analog display panel located on the front of the 10-AU (Turner Designs, 1996).

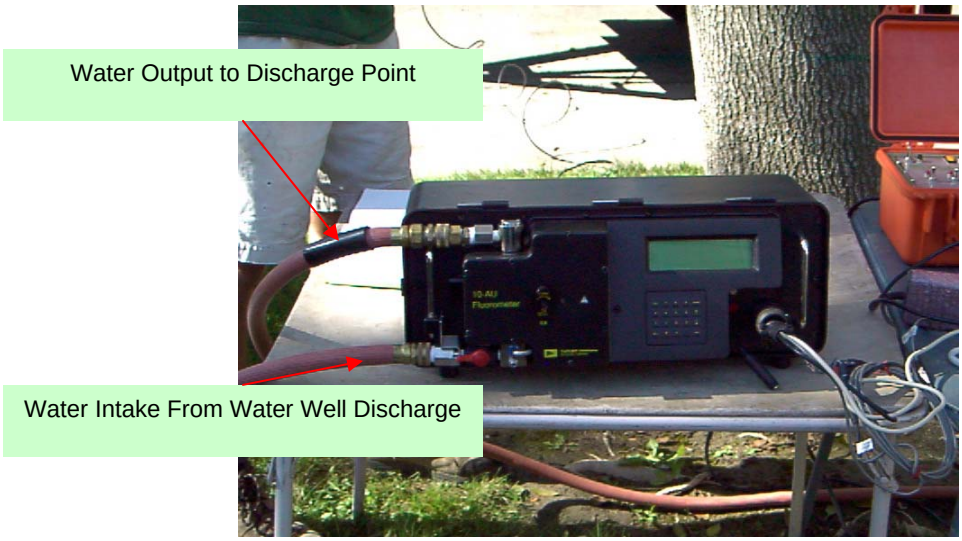


Figure 3: Model 10-AU fluorometer from Turner Designs.

To-the-second consistency of injection time, and bubble free RR injection solution is the key to establishing meaningful and reproducible results for defining dynamic flow velocity measurements in any well under study. Figure 4 shows a BESST, Inc. injection control unit for tightly regulating injection pulse times. Figures 5 and 6 provide a more detailed look of the circulatory system of the dye injector.

Figure 4: Dye Injection Control Unit for to-the-second regulation of dye injection pulses.

Figure 5: Electrical and Pneumatics components inside housing are controlled by the Dye Injection Control Unit (Figure 4). The housing contains injection pump, injection pressure regulator, pneumatically controlled valve switching solenoid, fuse box, electrical circuits and primary and secondary valve control units.

Figure 6: Bottle to right contains primary RR reservoir. When the large oval red button is depressed on the Dye Injection Control Unit (Figure 4), the RR solution is fed from the red tube, then to the injection pump, and finally through the injection nozzle and into the well. When the injection pump is idling, the RR solution circulates through the blue tube and red tube in the primary RR reservoir bottle. The secondary RR bottle receives excess RR that is not used during an injection pulse.

1.3 Injection Procedure

Prior to the first dye injection, the well of concern is typically pumped at the specified pumping rate for the flow velocity test until draw down stabilization inside the well has been reached. Periodic readings are recorded from a flow meter attached to the discharge line. Ideally, the flow meter is attached to the discharge line at a distance of at least 10 feet from the well head in order to minimize the effect of pipe fluid turbulence on the flow meter reading.

The first step in the dye injection process is to lower the injection tubing and nozzle through a mechanical counter to the first injection point in the well. Often times, the injection process starts from the well bottom – since the weighted end of the injection tubing is used to verify the actual well depth. Therefore, as a matter of convenience, the first injection point is typically near the bottom of the well. The injection points are then executed along a vertical ascending grid. At the point of dye injection, the release time is manually noted in a field log. Each release time is selected from a scrolling time and concentration log which appears on a laptop screen – the laptop being directly connected to the fluorometer. The communication of this information through the laptop is facilitated through the laptop's default communication software called Hyperlink. An example of the laptop display is shown in Figure 7 below.

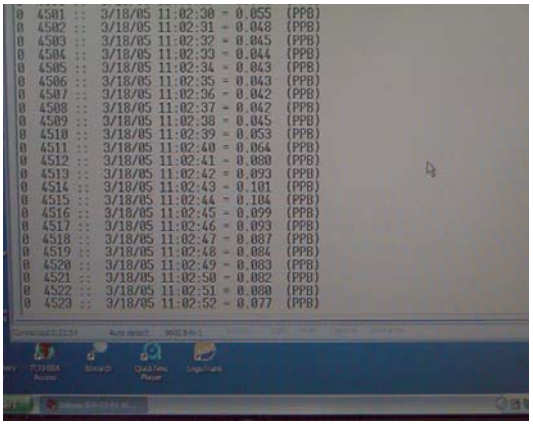


Figure 7: Streaming Laptop Hyperlink Communication Display from AU-10 Fluorometer. Date, time and concentration value are reported and stored in continuous scrolling format.

Figure 8: Laptop connected to 10-AU

1.4 Data Requirements

During the course of completing the vertical dye injection grid, some of the injection points are repeated in order to establish travel time and velocity reproducibility. Once all of the injection points are completed, the data is entered into an Excel spreadsheet with built-in data calculations that facilitate the generation of the flow profile – using the Excel chart function. The basic equation (Izbicki, 2000) used for calculating flow velocity is:

$Q= (V\pi r^2)$

where,

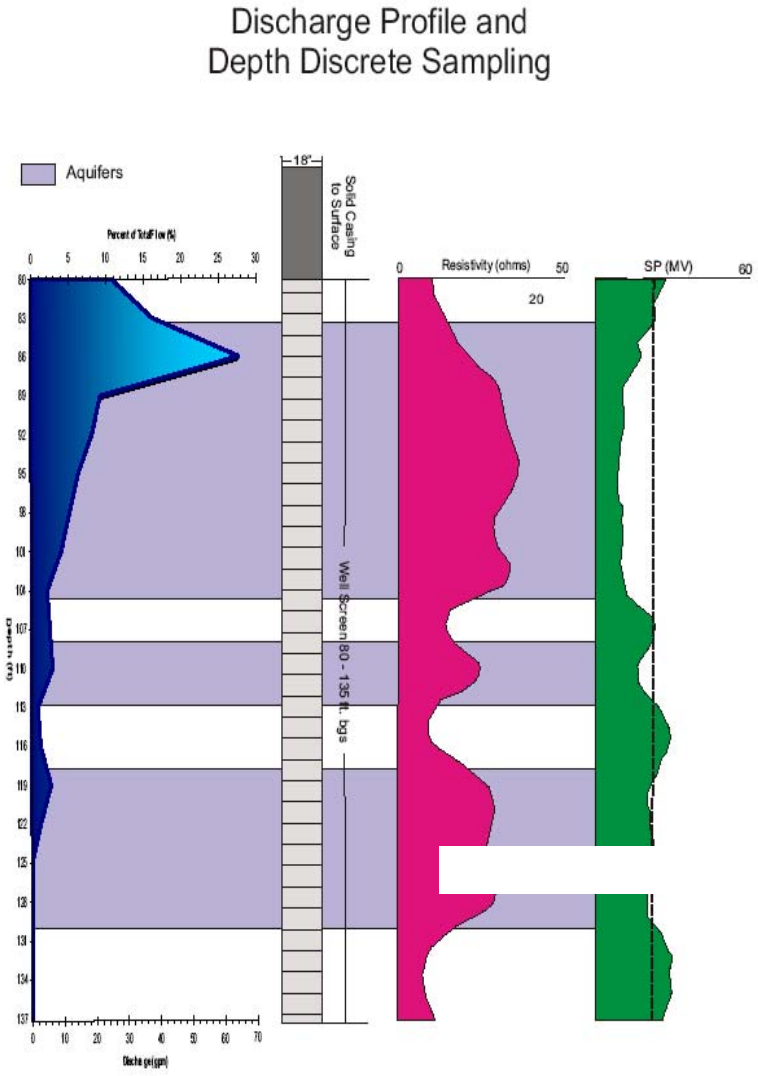
$V = (d_2-d_1) / (t_2-t_1)$

Q = flow in gallons per minute (gpm)
d = injection depth
d_2 = injection depth # 2
d_1 = injection depth # 1
t = travel time of peak tracer concentration from release point to detector
t_2 = return time for rhodamine red peak to fluorometer detector for d_2 injection point
t_1 = return time for rhodamine red peak to fluorometer detector for d_1 injection point

Other factors that are required for the solution and interpretation of the results are well diameter, pump diameter, pump column diameter and length, depth of pump intake, well screen interval(s), and length of well screen located above the pump. Other pieces of information that can play a role in the interpretation of the results are driller's logs from when the well bore was drilled and any geophysical logs such as resistivity short and long normal, spontaneous potential (SP), gamma ray, neutron, caliper, video surveys and others.

As far as data plotting, there are various types of valid presentation formats. One type of format (presented in Figure 9) plots depth on the y-axis, percent flow on the top x-axis and GPM discharge on the bottom x-axis. Additionally, lithologic and geophysical information are presented in co-plots to the right in order to correlate lithologic and geophysical properties to production.

Figure 9: Blue curve displays flow profile of production well – where injection depth points are shown along y-axis. Top x-axis shows percent contribution with depth and bottom x-axis shows discharge with depth in GPM. Magenta shaded curve displays resistivity in ohms and green-shaded curve shows spontaneous potential (SP) in millivolts (MV).



2. HydroBooster™ Groundwater Sampling – General Description

The HydroBooster™ pump is a high-lift gas displacement pump that was designed by BESST, Inc. for the USGS for collecting groundwater samples from active production wells without having to remove the pump (USGS, 2004). The HydroBooster™ pump spans from 6 to 18-inches in length (depending on model) and ranges in diameter from ½-inch to 7/8-inch. The pump can be connected to any type of tubing (i.e. Teflon, polyethylene, nylon, etc.). For high pressure applications, the tubing can consist of regular nylon, or even nylon reinforced with fiber glass or Kevlar for ultra high pressure applications to 3,000+ feet BGS. Figure 10 shows an example of a HydroBooster™ application at a site in the California Central Valley for a production well under study for vertical distribution of nitrate contamination.

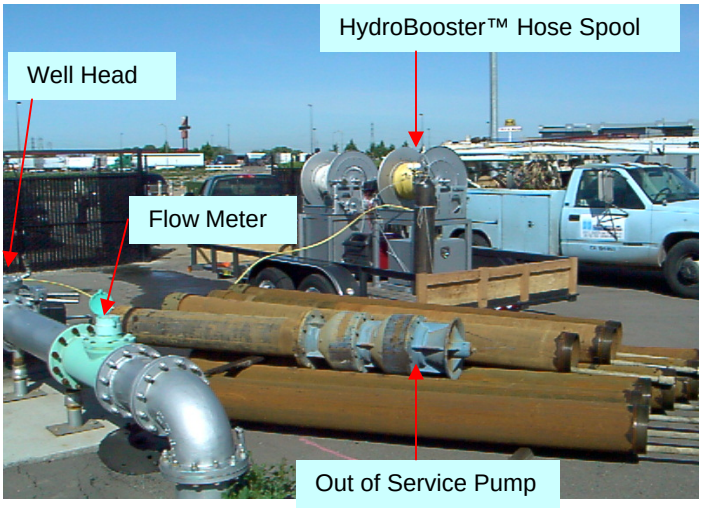


Figure 10: Setup of the HydroBooster system at a groundwater production well in the California Central Valley. Groundwater samples were collected in conjunction with running a smaller electric pump inside the well contemporaneously with the sampling process. The main production pump was removed sometime prior to the testing and is shown in foreground (blue housing). The production well was under study for vertical distribution of nitrate contamination. Note the flexibility of the HydroBooster system leading up to the well head.

As with the Dye Tracer Flow Velocity Unit, the tubing for the HydroBooster™ system is flexible, permitting access into various types of production well settings without having to remove the pump. The different types of BESST pump models used for groundwater sampling in production wells (as well as small diameter and Westbay Multi Port wells) is shown in Figure 11. The pneumatic lift formula used for the gas displacement pump is the following:

Minimum Pneumatic Lift Pressure = X'/[(2.31'/PSI) x 1.1]

where,

X= depth of pump below ground surface
2.31' / PSI = approximate linear gradient of water pressure at sea level and assuming a specific gravity of 1.

1.1 = Correction factor used for increasing lift pressure by 10% to compensate for friction loss of the water inside the sample return line.

Figure 11: Various models of BESSt miniaturized gas displacement pumps for HydroBooster system.

The gas displacement principle that operates the pumps utilizes a single valve located directly below a Y-tube junction between the gas-in and sample return lines. When the pump with bundle is submerged within the well water, the single valve cracks open at about 1/3-PSI water pressure. Groundwater from the well fills both the gas-in and sample return lines simultaneously through the bottom of the one-way valve. When the pump is lowered to its final destination inside the well, water rising inside the two lines eventually rises to a point of static equilibrium. The groundwater in the two lines is pumped from the system by releasing gas at the calculated minimum pneumatic lift pressure. As the groundwater dispenses from the sample return line, flow is continuous until all of the groundwater in the gas-in and sample return lines is discharged. During pressurization, the stainless steel poppet inside the pump's valve chamber is forced to seat against an o-ring located at the bottom of the chamber – and therefore preventing back flow back out through the bottom of the valve. As a result, the water in the sample return line is pushed by the water in the gas-in line in a "u-path", and ascends up the sample return line as a single slug. When all of the groundwater has exited the sample return line, the back end of the water slug is followed by the compressed gas that was pushing the entire slug. At this point, the end of the discharge line sputters – signaling the end of the purge cycle. The gas pressure is then turned off and released – allowing new water from the well to refill both the gas-in and sample return lines. The procedure is typically repeated three times and the sample collected on the fourth purge cycle. This technique allows for the two lines to be cleaned by the water at each sample collection depth.

APPENDIX C.2

COMPUTATIONAL METHODS AND EVALUATION OF DYE TRACER FLOW VELOCITY PROFILING AND HYDROBOOSTER™ GROUNDWATER SAMPLING TECHNIQUES

TABLE OF CONTENTS

1. COMPUTATIONAL METHODS FOR THE FLOW VELOCITY PROFILING AND HYDROBOOSTER SAMPLING TECHNIQUES

The BESST HydroBooster™ sampling and Dye Tracer inflow profiling techniques use small diameter tubing and sampling equipment that can be inserted between the well casing and the pump column with less than one inch of clearance. This allows depth-discrete well diagnosis to be conducted without pump removal and under dynamic conditions. The theory and computation mechanics of the HydroBooster and Dye Tracer techniques are briefly described below.

1.1 Dye Tracer Velocity Profiling Technique

The Dye Tracer technique estimates the groundwater inflow through depth-discrete zones within the screened interval of the well. The diagnosis is performed under pumping conditions by lowering injection tubing to a specified depth and releasing a small pulse (approximately 20 milliliters [mL]) of Rodamine dye. The arrival of the Rodamine dye at the pump discharge is monitored using a flourometer. The dye release and arrival monitoring are repeated at several depths across the well's screened intervals.

The explanation of the computation mechanics for analysis of the Dye Tracer technique are provided with reference to Tables 5 and 6 of the main text. The dye tracer injection depths (d_i, column 2) theoretically divides the screened interval into several production zones (column 1). The mean arrival time at a given injection depth (t_m, column 4) is the average time for the dye tracer to be detected in the flourometer. From the difference in mean arrival times

between adjacent injection depths (ΔT, column 5) and the depth interval (ΔL, column 6), the average flow velocity in a depth interval (V, column 7) and the uncorrected discharge at a given depth (Q_i, column 8) can then be estimated using the following definitions:

$$Q_i = V_i A_i \qquad [1]$$

Where: $V_i = \frac{d_{i-1} - d_i}{t_{i-1} - t_i}$

A_i = cross-sectional of the well, less pump column area, at depth *i* (see Pump and Well Information)

d_i - d_{i-1} = the length between depth *i* (d_i) and the next up-gradient sampling depth (d_{i-1})

t_{i-1} - t_i = ΔT, the difference in mean arrival time (t) at depth *i* and the next up-gradient sampling depth.

When the flow at each sampling depth is estimated, the discharge in each depth interval (Q_{inf}, column 9) can be computed as:

$$Q_{\text{inf}} = Q_i - Q_{i-1} \qquad [2]$$

The total of Q_{inf} values for each depth interval is computed and used to compute the percent of total flow contributed by each depth interval (p_i, column 10):

$$p_i = \frac{Q_{\text{inf}-i}}{\sum Q_{\text{inf}}} \qquad [3]$$

Theoretically the sum of the Q_{inf} values should equal the measured pumping rate; however, this will rarely be this case due to the approximations inherent in the dye tracer method. Using the assumption that errors contributing to the difference between the total Q_{inf} values and the measured pumping rate are evenly distributed across all depth intervals, corrected

Q_{inf} values (Q_c, column 11) can be computed by multiplying the percent discharge values by the actual (measured) pumping rate:

$$Q_{c-i} = p_i Q_{\inf -i} \qquad [4]$$

Finally, assuming the inflow is constant within a depth interval, the correct discharge per foot (q, column 12) can be computed by dividing the Q_c values by the interval length:

$$q_i = \frac{Q_{c-i}}{\Delta L_i} \qquad [5]$$

1.2 HydroBooster Sampling Technique

The HydroBooster sampling technique provides water quality samples from depth-discrete locations in a well. Sampling can be conducted under pumping and non-pumping conditions. Under ideal pumping conditions, the water in a sample from specific depth will be a mixture of water being drawn from below that depth (for depths below the pump intake) and water from the surrounding aquifer that enters the well at that depth. The results of the inflow calculations in the Dye-Tracer velocity profiling can be used to estimate the sulfate concentrations entering the well at each depth interval (C_{inf}):

$$C_{\inf} = \frac{C_i Q_i - C_{i-1} Q_{i-1}}{Q_{\inf}} \qquad [6]$$

2. STRENGTHS AND LIMITATIONS OF THE BESST TECHNIQUES

The principle strength of the BESST techniques is that depth-specific sampling and inflow profiling can be performed without removal of the pump. This provides a significant time and cost savings compared to other techniques that require pump removal. The basic theory behind the estimation of groundwater and solute inflow is valid for determining aquifer characteristics provided the assumption of an ideal flow regime into and through the well casing is appropriate.

Despite the validity of the underlying theory, the application and interpretation of the BESST techniques have several limitations. One important limitation is the sensitivity of the computed results to any deviations from ideal flow. For example, plugging in sections of the well screen, changes in the diameter of the well, and other non-uniformities in the well may cause turbulent mixing and/or preferential flow through the well casing. The effects of flow nonuniformities in the well cannot be easily differentiated from effects caused by features of the surrounding aquifer. Consequently, results indicating high or low inflow zones may be more indicative of the well construction than the surrounding aquifer.

Because flow velocities increase and travel times decrease approaching the pump intake the confidence in the estimates of incremental discharge and sulfate inflow decreases approaching the pump intake. Increasing flow velocities near the pump intake lead to a higher likelihood that turbulent flow influences estimates of incremental water inflow in this region. Likewise, because inflow at depth intervals is computed using differences in travel times, the

sensitivity of the computed results to measurement error increases as dye injection depths approach the pump intake where travel times are shortest. The confidence and sensitivities of the sulfate inflow concentration estimates follow the same trend as the incremental discharge estimates because the sulfate inflow is computed using the computed incremental discharge values.

Limitations in the estimations of incremental discharge and sulfate inflow are most apparent at locations where the incremental discharge or inflow concentrations are estimated to be negative (Figures 2, 3, and 5 of main text). This unrealistic situation arises when a dye tracer travel time at one injection depth is less than the travel time for a depth closer to the pump intake. This will most often occur at depths closest to the pump intake where differences in travel times are small so that slight errors in measurement or non-idealities in the flow regime have a relatively large effect. Negative values in the sulfate concentration inflow estimates can also arise in situations where a high concentration measured at one depth is followed by a much lower concentration at an adjacent depth nearer the pump intake and where that adjacent depth interval was not estimated to have a comparatively large incremental inflow. Such is the case for the negative sulfate inflow estimated for ESP-4 in the depth interval from 750 to 800 feet (Table 8 of the main text). A reasonable interpretation of negative values for both the discharge and sulfate inflow estimates is that the inflow and/or concentration in that interval is low or zero and the adjacent intervals have lower discharge and/or sulfate inflow than predicted because depth-specific values are computed based on differences in travel times and concentrations measured at adjacent depth (Equations 1, 2, and 6).

In summary, the results of the BESST techniques have several limitations that should be considered when developing a conceptual model of aquifer characteristics. Due to these limitations of the results should be understood as qualitative and interpretation of the results should be based on a "weight-of-evidence" approach. This means that interpretation of hydrologic features, such as high permeability zones, should be evaluated against aquifer tests and geologic logs for well of interest and other wells in the vicinity.

APPENDIX C.3

ANALYTICAL LABORATORY REPORTS

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 28, 2006

Report to:
Rick Zimmerman
Hydro Geo Chem, Inc.
51 West Wetmore Road
Tucson, AZ 85705

Bill to:
Kimberly Garcia
Hydro Geo Chem, Inc.
51 W. Wetmore Rd
Tucson, AZ 85705-1678

Project ID: 78306.3
ACZ Project ID: L59936

Rick Zimmerman:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 14, 2006. This project has been assigned to ACZ's project number, L59936. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan, version 11.0. The enclosed results relate only to the samples received under L59936. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 28, 2006. If the samples are determined to be hazardous, additional charges apply for disposal (typically less than $10/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical reports for five years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl 28/Nov/06

Scott Habermehl, Project Manager, has reviewed and approved this report in its entirety.

ACCREDITED IN ACCORDANCE WITH nelac

ACIL

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-950

ACZ Sample ID: ***L59936-01***
Date Sampled: *11/09/06 12:10*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameters	EPA Method	Result	Qual	TO	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	89.5			mg/L	0.5	3	11/20/06 19:51	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	1470	H	*	mg/L	10	20	11/17/06 14:42	icp
Sulfate	300.0 - Ion Chromatography	809		*	mg/L	5	30	11/21/06 14:26	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-900

ACZ Sample ID: ***L59936-02***
Date Sampled: *11/09/06 13:08*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XR	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	89.9			mg/L	0.5	3	11/20/06 20:09	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	1480	H	*	mg/L	10	20	11/17/06 14:43	lcp
Sulfate	300.0 - Ion Chromatography	812		*	mg/L	5	30	11/21/06 14:44	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-850

ACZ Sample ID: ***L59936-03***
Date Sampled: *11/09/06 13:55*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	MQ	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	89.9			mg/L	0.5	3	11/20/06 20:27	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	1500	H	*	mg/L	10	20	11/17/06 14:45	lcp
Sulfate	300.0 - Ion Chromatography	816		*	mg/L	5	30	11/21/06 15:02	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-800

ACZ Sample ID: ***L59936-04***
Date Sampled: *11/09/06 14:39*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XD	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	59.2			mg/L	0.5	3	11/20/06 21:21	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	830	H	*	mg/L	10	20	11/17/06 14:47	lcp
Sulfate	300.0 - Ion Chromatography	378		*	mg/L	3	10	11/21/06 15:20	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-750

ACZ Sample ID: ***L59936-05***
Date Sampled: *11/09/06 15:20*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	SQ	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	25.4			mg/L	0.5	3	11/20/06 21:39	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	350	H	*	mg/L	10	20	11/17/06 14:49	lcp
Sulfate	300.0 - Ion Chromatography	89.9		*	mg/L	0.5	3	11/20/06 21:39	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-700

ACZ Sample ID: ***L59936-06***
Date Sampled: *11/09/06 15:58*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	QC	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	19.6			mg/L	0.5	3	11/20/06 21:57	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	290	H	*	mg/L	10	20	11/17/06 14:52	lcp
Sulfate	300.0 - Ion Chromatography	52.6		*	mg/L	0.5	3	11/20/06 21:57	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO. 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-650

ACZ Sample ID: ***L59936-07***
Date Sampled: *11/09/06 16:33*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	RE	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	19.3			mg/L	0.5	3	11/20/06 22:15	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	280	H	*	mg/L	10	20	11/17/06 14:54	lcp
Sulfate	300.0 - Ion Chromatography	40.9		*	mg/L	0.5	3	11/20/06 22:15	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-600

ACZ Sample ID: ***L59936-08***
Date Sampled: *11/10/06 07:53*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	QC	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	17.8			mg/L	0.5	3	11/20/06 22:34	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	270			mg/L	10	20	11/17/06 14:56	lcp
Sulfate	300.0 - Ion Chromatography	31.3		*	mg/L	0.5	3	11/20/06 22:34	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487(800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-550

ACZ Sample ID: ***L59936-09***
Date Sampled: *11/10/06 08:22*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	RQL	Units	MDL	PQL	Prep/Run	Analyst
Chloride	M300.0 - Ion Chromatography	17.9			mg/L	0.5	3	11/20/06 23:10	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	270			mg/L	10	20	11/17/06 14:57	lcp
Sulfate	300.0 - Ion Chromatography	29.8			mg/L	0.5	3	11/20/06 23:10	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-500

ACZ Sample ID: ***L59936-10***
Date Sampled: *11/10/06 08:52*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	RQ	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	17.8			mg/L	0.5	3	11/20/06 23:46	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	260			mg/L	10	20	11/17/06 14:59	lcp
Sulfate	300.0 - Ion Chromatography	28.3			mg/L	0.5	3	11/20/06 23:46	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.

Project ID: 78306.3
Sample ID: ESP-4-450

ACZ Sample ID: ***L59936-11***
Date Sampled: *11/10/06 09:23*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	Xq	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	17.8			mg/L	0.5	3	11/21/06 0:58	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	270			mg/L	10	20	11/17/06 15:01	lcp
Sulfate	300.0 - Ion Chromatography	26.6			mg/L	0.5	3	11/21/06 0:58	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: ESP-4-400

ACZ Sample ID: ***L59936-12***
Date Sampled: *11/10/06 09:52*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	17.8			mg/L	0.5	3	11/21/06 1:16	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	260			mg/L	10	20	11/17/06 15:02	lcp
Sulfate	300.0 - Ion Chromatography	23.0			mg/L	0.5	3	11/21/06 1:16	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: MH-12-700

ACZ Sample ID: ***L59936-13***
Date Sampled: *11/10/06 12:24*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	%R	Units	MRL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	120			mg/L	10	50	11/21/06 15:38	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	2030			mg/L	10	20	11/17/06 15:04	lcp
Sulfate	300.0 - Ion Chromatography	1160			mg/L	10	50	11/21/06 15:38	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.

Project ID: 78306.3
Sample ID: MH-12-650

ACZ Sample ID: ***L59936-14***
Date Sampled: *11/10/06 12:59*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	SQ	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	130			mg/L	10	50	11/21/06 15:56	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	2010			mg/L	10	20	11/17/06 15:30	lcp
Sulfate	300.0 - Ion Chromatography	1140			mg/L	10	50	11/21/06 15:56	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: MH-12-550

ACZ Sample ID: ***L59936-15***
Date Sampled: *11/10/06 13:31*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XC	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	120			mg/L	10	50	11/21/06 16:15	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	1910			mg/L	10	20	11/17/06 15:32	lcp
Sulfate	300.0 - Ion Chromatography	1140			mg/L	10	50	11/21/06 16:15	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Hydro Geo Chem, Inc.
Project ID: 78306.3
Sample ID: MH-12-500

ACZ Sample ID: ***L59936-16***
Date Sampled: *11/10/06 13:58*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	XR	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	120			mg/L	10	50	11/21/06 16:33	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	2030			mg/L	10	20	11/17/06 15:34	lcp
Sulfate	300.0 - Ion Chromatography	1140			mg/L	10	50	11/21/06 16:33	nps

Arizona license number: AZ0102

ACZ Laboratories, Inc.
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Inorganic Analytical Results

Hydro Geo Chem, Inc.

Project ID: 78306.3
Sample ID: MH-12-470

ACZ Sample ID: ***L59936-17***
Date Sampled: *11/10/06 14:48*
Date Received: *11/14/06*
Sample Matrix: *Ground Water*

Wet Chemistry

Parameter	EPA Method	Result	Qual	RL	Units	MDL	PQL	Date	Analyst
Chloride	M300.0 - Ion Chromatography	120			mg/L	10	50	11/21/06 16:51	nps
Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	2010			mg/L	10	20	11/17/06 15:36	lcp
Sulfate	300.0 - Ion Chromatography	1140			mg/L	10	50	11/21/06 16:51	nps

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calivation Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Bench)

B	Analyte concentration detected at a value between MDL and PQL.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
R	Poor spike recovery accepted because the other spike in the set fell within the given limits.
T	High Relative Percent Difference (RPD) accepted because sample concentrations are less than 10x the MDL.
U	Analyte was analyzed for but not detected at the indicated MDL
V	High blank data accepted because sample concentration is 10 times higher than blank concentration
W	Poor recovery for Silver quality control is accepted because Silver often precipitates with Chloride.
X	Quality control sample is out of control.
Z	Poor spike recovery is accepted because sample concentration is four times greater than spike concentration.

Method References

(1)	EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2)	EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3)	EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(5)	EPA SW-846. Test Methods for Evaluating Solid Waste, Third Edition with Update III, December 1996.
(6)	Standard Methods for the Examination of Water and Wastewater, 19th edition, 1995.

Comments

(1)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2)	Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3)	Animal matrices for Inorganic analyses are reported on an "as received" basis.

Hydro Geo Chem, Inc.

ACZ Project ID: ***L59936***

Project ID: 78306.3

Chloride M300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Accept	Accept	RPD	Limit	Qual
WG216682													
WG216682ICV	ICV	11/16/06 18:15	IC061109-1	20.01		20.49	mg/L	102.4	90	110			
WG216682ICB	ICB	11/16/06 18:33				U	mg/L		-1.5	1.5			
WG216870													
WG216870ICV	ICV	11/16/06 18:15	IC061109-1	20.01		20.49	mg/L	102.4	90	110			
WG216870ICB	ICB	11/16/06 18:33				U	mg/L		-1.5	1.5			
WG216870ICV1	ICV	11/20/06 13:30	IC061109-1	20.01		20.52	mg/L	102.5	90	110			
WG216870ICB1	ICB	11/20/06 13:48				U	mg/L		-1.5	1.5			
WG216870LFB1	LFB	11/20/06 14:06	IC061106-1	30		30.19	mg/L	100.6	90	110			
L59895-04DUP	DUP	11/20/06 18:56			14.5	14.52	mg/L				0.1	20	
L59895-05AS	AS	11/20/06 19:32	IC061106-1	30	10	41.5	mg/L	105	90	110			
WG216870LFB2	LFB	11/20/06 22:52	IC061106-1	30		30.32	mg/L	101.1	90	110			
L59936-09DUP	DUP	11/20/06 23:28			17.9	17.9	mg/L				0	20	
L59936-10AS	AS	11/21/06 0:04	IC061106-1	30	17.8	47.67	mg/L	99.6	90	110			

Residue, Filterable (TDS) @180C M160.1 - Gravimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Accept	Accept	RPD	Limit	Qual
WG216782													
WG216782PBW	PBW	11/17/06 14:30				U	mg/L		-20	20			
WG216782LCSW	LCSW	11/17/06 14:31	PCN25978	260		290	mg/L	111.5	80	120			
L59936-05DUP	DUP	11/17/06 14:50			350	350	mg/L				0	20	
L59937-10DUP	DUP	11/17/06 15:09			1790	1782	mg/L				0.4	20	
WG216784													
WG216784PBW	PBW	11/17/06 15:15				U	mg/L		-20	20			
WG216784LCSW	LCSW	11/17/06 15:16	PCN25978	260		274	mg/L	105.4	80	120			
L59936-17DUP	DUP	11/17/06 15:38			2010	1990	mg/L				1	20	

Sulfate 300.0 - Ion Chromatography

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Accept	Accept	RPD	Limit	Qual
WG216682													
WG216682ICV	ICV	11/16/06 18:15	IC061109-1	50.1		51.83	mg/L	103.5	90	110			
WG216682ICB	ICB	11/16/06 18:33				U	mg/L		-1.5	1.5			
WG216870													
WG216870ICV	ICV	11/16/06 18:15	IC061109-1	50.1		51.83	mg/L	103.5	90	110			
WG216870ICB	ICB	11/16/06 18:33				U	mg/L		-1.5	1.5			
WG216870ICV1	ICV	11/20/06 13:30	IC061109-1	50.1		51.76	mg/L	103.3	90	110			
WG216870ICB1	ICB	11/20/06 13:48				U	mg/L		-1.5	1.5			
WG216870LFB1	LFB	11/20/06 14:06	IC061106-1	30		30.51	mg/L	101.7	90	110			
L59895-04DUP	DUP	11/20/06 18:56			4.6	4.57	mg/L				0.7	20	RA
L59895-05AS	AS	11/20/06 19:32	IC061106-1	30	12.3	43.06	mg/L	102.5	90	110			
WG216870LFB2	LFB	11/20/06 22:52	IC061106-1	30		30.07	mg/L	100.2	90	110			
L59936-09DUP	DUP	11/20/06 23:28			29.8	29.75	mg/L				0.2	20	
L59936-10AS	AS	11/21/06 0:04	IC061106-1	30	28.3	57.66	mg/L	97.9	90	110			

Hydro Geo Chem, Inc.

ACZ Project ID: *L59936*

REPAD	WORKUNIT	PARAMETER	METHOD	QUAL	DESCRIPTION
L59936-01	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-02	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-03	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-04	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-05	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-06	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-07	WG216782	Residue, Filterable (TDS) @180C	M160.1 - Gravimetric	HE	Analysis performed past holding time. Method holding time is less than or equal to 7 days and sample was received with less than half of the holding time remaining (refer to item C5 of ACZ's Terms & Conditions).
	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L59936-08	WG216870	Sulfate	300.0 - Ion Chromatography	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Hydro Geo Chem, Inc.

ACZ Project ID: *L59936*

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
78306.3

ACZ Project ID: L59936
Date Received: 11/14/2006
Received By:
Date Printed: 11/14/2006

Receipt Verification

	YES	NO	NA
1) Does this project require special handling procedures such as CLP protocol?			X
2) Are the custody seals on the cooler intact?	X		
3) Are the custody seals on the sample containers intact?			X
4) Is there a Chain of Custody or other directive shipping papers present?	X		
5) Is the Chain of Custody complete?	X		
6) Is the Chain of Custody in agreement with the samples received?	X		
7) Is there enough sample for all requested analyses?	X		
8) Are all samples within holding times for requested analyses?	X		
9) Were all sample containers received intact?	X		
10) Are the temperature blanks present?			X
11) Are the trip blanks (VOA and/or Cyanide) present?			X
12) Are samples requiring no headspace, headspace free?			X
13) Do the samples that require a Foreign Soils Permit have one?			X

Explanations (if you answered no to any of the above questions, please explain)

N/A

Contact (for any client contacts the client must be contacted)

N/A

Shipping Containers

Cooler Id		Temp (°C)	Rad (µR/hr)
1205		2.4	24

Client must contact ACZ Project Manager if analysis should not proceed for samples received outside of thermal preservation acceptance criteria.

Notes

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hydro Geo Chem, Inc.
78306.3

ACZ Project ID: L59936
Date Received: 11/14/2006
Received By:

Sample Container / Preservation

SAMPLE	CLIENT ID	R < 2	G < 2	BK < 2	Y< 2	YG< 2	B< 2	O < 2	T >12	N/A	RAD	ID
L59936-01	ESP-4-950									X		
L59936-02	ESP-4-900									X		
L59936-03	ESP-4-850									X		
L59936-04	ESP-4-800									X		
L59936-05	ESP-4-750									X		
L59936-06	ESP-4-700									X		
L59936-07	ESP-4-650									X		
L59936-08	ESP-4-600									X		
L59936-09	ESP-4-550									X		
L59936-10	ESP-4-500									X		
L59936-11	ESP-4-450									X		
L59936-12	ESP-4-400									X		
L59936-13	MH-12-700									X		
L59936-14	MH-12-650									X		
L59936-15	MH-12-550									X		
L59936-16	MH-12-500									X		
L59936-17	MH-12-470									X		

Sample Container Preservation Legend

Abbreviation	Description	Container Type	Preservative/Limits
R	Raw/Nitric	RED	pH must be < 2
B	Filtered/Sulfuric	BLUE	pH must be < 2
BK	Filtered/Nitric	BLACK	pH must be < 2
G	Filtered/Nitric	GREEN	pH must be < 2
O	Raw/Sulfuric	ORANGE	pH must be < 2
P	Raw/NaOH	PURPLE	pH must be > 12 *
T	Raw/NaOH Zinc Acetate	TAN	pH must be > 12
Y	Raw/Sulfuric	YELLOW	pH must be < 2
YG	Raw/Sulfuric	YELLOW GLASS	pH must be < 2
N/A	No preservative needed	Not applicable	
RAD	Gamma/Beta dose rate	Not applicable	must be < 250 µR/hr

* pH check performed by analyst prior to sample preparation

Sample IDs Reviewed By: _____

ACZ Laboratories, Inc. L59936

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Rick Zimmerman	Address: 51 West Wetmore
Company: HydroGeo Chem Inc.	Tucson, AZ 85705
E-mail: rickz@hgcinc.com	Telephone: (520) 293-1500

Copy of Report to:

Name: Rick Zimmerman	E-mail: rickz@hgcinc.com
Company: Hydro Geo Chem Inc.	Telephone: (520) 293-1500 ext 131

Invoice to:

Name: Kimberly A. Garcia	Address: 51 W. Wetmore Rd.
Company: Hydro Geo Chem Inc.	Tucson, AZ 85705-11078
E-mail: KimG@HGCinc.com	Telephone: 520-293-1500 X. 123

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X / NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:

Project/PO #: 78306.3

Reporting state for compliance testing:

Sampler's Name: Mark Arneson

Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SM 3020 SO4, Cl							
ESP-4-950	11-09-06 : 1210	GW	1	X							
ESP-4-900	11-09-06 : 1308	GW	1	X							
ESP-4-850	11-09-06 : 1355	GW	1	X							
ESP-4-800	11-09-06 : 1439	GW	1	X							
ESP-4-750	11-09-06 : 1520	GW	1	X							
ESP-4-700	11-09-06 : 1558	GW	1	X							
ESP-4-650	11-09-06 : 1633	GW	1	X							
ESP-4-600	11-10-06 : 0753	GW	1	X							
ESP-4-550	11-10-06 : 0822	GW	1	X							
ESP-4-500	11-10-06 : 0852	GW	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Mark Arneson	11-13-06 : 0830	Kim Garcia	11/13/06 0830
			11-14-06 11:47

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc. L59936

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Rick Zimmerman
Company: Hydro Geo Chem Inc.
E-mail: rickz@hgcinc.com
Address: 51 West Wetmore Rd
Tucson, AZ 85737
Telephone: (520) 293-1500

Copy of Report to:

Name: Rick Zimmerman
Company: Hydro Geo Chem Inc.
E-mail: rickz@hgcinc.com
Telephone: (520) 293-1500 ext 131

Invoice to:

Name: Kimberly A. Garcia
Company: Hydro Geo Chem, Inc.
E-mail: KimG@HGCinc.com
Address: 51 W. Wetmore Rd.
Tucson, AZ 85705-11618
Telephone: 520-293-1500 X.123

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES X NO

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

PROJECT INFORMATION

Quote #:
Project/PO #: 78306.3
Reporting state for compliance testing:
Sampler's Name: Mark Arneson
Are any samples NRC licensable material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	SM 320.0 SO4, Cl
ESP-4-450	11-10-06; 0923	GW	1	x
ESP-4-400	11-10-06; 0952	GW	1	x
MH-12-700	11-10-06; 1224	GW	1	x
MH-12-650	11-10-06; 1259	GW	1	x
MH-12-550	11-10-06; 1331	GW	1	x
MH-12-500	11-10-06; 1358	GW	1	x
MH-12-470	11-10-06; 1448	GW	1	x

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Mark Arneson	11-13-06 0834	Kim Garcia	11/13/06 0834
			11-14-06 11:42

FRMAD050.03.05.02 White - Return with sample. Yellow - Retain for your records.

78306.3

TURNER
LABORATORIES INC.

April 04, 2007

Rick Zimmerman
Hydro Geo Chem, Inc.
51 W. Wetmore Rd.
Suite 101
Tucson, AZ 857051678
TEL: (520) 293-1500
FAX (520) 293-1550

RE: PPSI 78306.3 Order No.: 0703580

Dear Rick Zimmerman,

Turner Laboratories, Inc. received 10 samples on 3/21/2007 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 950
Lab Order:	0703580	**Collection Date:**	3/20/2007 10:05:00 AM
Project:	PPSI 78306.3		
Lab ID:	0703580-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	220	50		mg/L	10	3/21/2007 4:04:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 900
Lab Order:	0703580	**Collection Date:**	3/20/2007 10:40:00 AM
Project:	PPSI 78306.3		
Lab ID:	0703580-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	280	100		mg/L	20	3/22/2007 3:23:00 PM

Qualifiers:	ND - Not Detected at or above the PQL	PQL - Practical Quantitation Limit
	J - Analyte detected below quantitation limits	S - Spike Recovery outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	R - RPD outside accepted recovery limits
	* - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 850
Lab Order:	0703580	**Collection Date:**	3/20/2007 11:12:00 AM
Project:	PPSI 78306.3		
Lab ID:	0703580-03A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	480	100		mg/L	20	3/22/2007 4:18:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 800
Lab Order:	0703580	**Collection Date:**	3/20/2007 11:58:00 AM
Project:	PPSI 78306.3		
Lab ID:	0703580-04A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	730	250		mg/L	50	3/22/2007 4:36:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 750
Lab Order:	0703580	**Collection Date:**	3/20/2007 12:26:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703580-05A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	620	250		mg/L	50	3/22/2007 4:54:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 650
Lab Order:	0703580	**Collection Date:**	3/20/2007 1:31:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703580-06A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	410	100		mg/L	20	3/22/2007 5:12:00 PM

Qualifiers:	ND - Not Detected at or above the PQL	PQL - Practical Quantitation Limit
	J - Analyte detected below quantitation limits	S - Spike Recovery outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	R - RPD outside accepted recovery limits
	* - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 700
Lab Order:	0703580	**Collection Date:**	3/20/2007 12:56:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703580-07A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	400	100		mg/L	20	3/22/2007 5:31:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 600
Lab Order:	0703580	**Collection Date:**	3/20/2007 2:06:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703580-08A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	400	100		mg/L	20	3/22/2007 5:49:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 550
Lab Order:	0703580	**Collection Date:**	3/20/2007 2:30:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703580-09A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	400	100		mg/L	20	3/22/2007 6:07:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 D
Lab Order:	0703580	**Collection Date:**	3/20/2007
Project:	PPSI 78306.3		
Lab ID:	0703580-10A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	690	250		mg/L	50	3/22/2007 6:25:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

TURNER LABORATORIES, INC.

SAMPLE CONTROL RECEIPT CHECKLIST

TURNER
LABORATORIES INC.

Turner Laboratories W.O. #: 0703580

Received By: MA

Received Date/Time: 3/21/07 0926

Delivered by: Client

1. Shipping container/cooler in good condition?	☒ Yes	☐ No	☐ Not Present
2. Custody seals intact on sample bottles?	☐ Yes	☐ No	☒ Not Present
3. Chain of custody present?	☒ Yes	☐ No	
4. COC signed when relinquished and received?	☒ Yes	☐ No	
5. COC agrees with sample labels?	☒ Yes	☐ No	
6. Samples in proper container/bottle?	☒ Yes	☐ No	
7. Sample container intact?	☒ Yes	☐ No	
8. Sufficient sample volume for requested tests?	☒ Yes	☐ No	
9. Samples received within holding times?	☒ Yes	☐ No	
10. VOA vials received with no headspace?	☐ Yes	☐ No	☒ No Vials
11. Bacti bottles received with appropriate headspace?	☐ Yes	☐ Above 100ml	n/a
		☐ Below 100ml	

12. Temperature upon receipt? 10 C

13. Number of sample containers received? 10

Additional Comments:

TURNER LABORATORIES INC
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0703580 DATE _____ PAGE 1 OF 1

PROJECT NAME PDSI # ~~78606~~ 78306.3
CONTACT NAME Rick Zimmerman
COMPANY NAME HYDRO GEO CHEM
ADDRESS 51 W. Wetmore Rd, Suite 101
Tucson 85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX: Sulfate, TDS
ESP4 950	3/20	1005		GW	1	X
ESP4 900	3/20	1040		GW	1	X
ESP4 850	3/20	1112		GW	1	X
ESP4 800	3/20	1158		GW	1	X
ESP4 750	3/20	1226		GW	1	X
ESP4 650	3/20	1331		GW	1	X
ESP4 700	3/20	1256		GW	1	X
ESP4 600	3/20	1406		GW	1	X
ESP4 550	3/20	1430		GW	1	X
ESP4 D	3/20	000		GW	1	X

Base Neutrals ☐ Acids ☐ 625/8270
Volatile Organics 624/524.2/8260 ☐
TTHMS ☐
HAA5 ☐
Pesticides ☐ PCB's ☐ 8081 8082
Total Petroleum Hydrocarbons IR(8015A2) ☐ 1664A ☐
Oil and Grease Grav. 1664A ☐
TCLP Analysis VOA ☐ SemiVOA ☐ Pest/Herb ☐
Metals TCLP ☐ Total ☐ Dissolved ☐ Priority Pollutants ☐
Cyanide Total ☐ Amen. ☐ WAD ☐
SDWA/INORGANICS PRIMARY ☐ SECONDARY ☐
Coliform MPN ☐ Colilert ☐
pH ☐ Cl2 ☐ COD ☐ TSS ☐ BOD ☐

1. RELINQUISHED BY:
Signature [signature]
Printed Name NATHAN HAWS
Firm HYDRO GEO CHEM
Date/Time 3/20/07 1910

2. RECEIVED BY:
Signature [signature]
Printed Name Richard Zimmerman
Firm HGC
Date/Time 3/20/07 1910

TURNAROUND REQUIREMENTS:
____ Standard (approx. 10 days)*
____ Next Day X 2 Day ____ 5 Day*
____ Fax Preliminary Results
Requested Report Date _____
* Working Days

REPORT REQUIREMENTS:
____ I. Routine Report
____ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
____ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ____ Y ____ N
P.O. # 78306.3
Bill to: _____

SAMPLE RECEIPT:
Total Containers 10
Temperature 10°C
☐ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:
Signature [signature]
Printed Name Rick Zimmerman
Firm HGC
Date/Time 3/21/07 0925

4. RECEIVED BY:
Signature [signature]
Printed Name Rebecca J Scott
Firm TURNER LABORATORIES, INC.
Date/Time 3/21/07 0926

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Quote 579
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

78306.3

TURNER
LABORATORIES INC.

April 04, 2007

Rick Zimmerman
Hydro Geo Chem, Inc.
51 W. Wetmore Rd.
Suite 101
Tucson, AZ 857051678
TEL: (520) 293-1500
FAX (520) 293-1550

RE: PPSI 78306.3 Order No.: 0703581

Dear Rick Zimmerman,

Turner Laboratories, Inc. received 2 samples on 3/21/2007 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 500
Lab Order:	0703581	**Collection Date:**	3/20/2007 2:55:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703581-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	390	100		mg/L	20	3/22/2007 6:44:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP4 450
Lab Order:	0703581	**Collection Date:**	3/20/2007 3:20:00 PM
Project:	PPSI 78306.3		
Lab ID:	0703581-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	370	100		mg/L	20	3/22/2007 7:02:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

TURNER LABORATORIES, INC.

SAMPLE CONTROL RECEIPT CHECKLIST

TURNER
LABORATORIES INC.

Turner Laboratories W.O. #: 0703581

Received By: RH

Received Date/Time: 3/2/07 0924

Delivered by: Client

1. Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present
2. Custody seals intact on sample bottles?	☐ Yes	☐ No	☑ Not Present
3. Chain of custody present?	☑ Yes	☐ No	
4. COC signed when relinquished and received?	☑ Yes	☐ No	
5. COC agrees with sample labels?	☑ Yes	☐ No	
6. Samples in proper container/bottle?	☑ Yes	☐ No	
7. Sample container intact?	☑ Yes	☐ No	
8. Sufficient sample volume for requested tests?	☑ Yes	☐ No	
9. Samples received within holding times?	☑ Yes	☐ No	
10. VOA vials received with no headspace?	☐ Yes	☐ No	☑ No Vials
11. Bacti bottles received with appropriate headspace?	☐ Yes	☐ Above 100ml	n/a
		☐ Below 100ml	

12. Temperature upon receipt? 10 C

13. Number of sample containers received? 2

Additional Comments:

TURNER LABORATORIES INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 07035581 DATE _____ PAGE 2 OF 2

PROJECT NAME PDSI # 78306.3
CONTACT NAME Rick Zimmerman
COMPANY NAME HYDRO GEO CHEM
ADDRESS 51 W. Wetmore Rd, Suite 101
Tucson, 85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE Nathan Haws

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Sulfate, TDS
ESP 4 500	3/20	1455		GW	1	X
ESP 4 450	3/20	1520		GW	1	X

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

Base Neutrals ☐ Acids ☐ 625/8270
Volatile Organics 624/524.2/8260 ☐ TTHMS ☐ HAA5 ☐
Pesticides ☐ PCB's ☐ 8081 8082
Total Petroleum Hydrocarbons IR(8015AZ) ☐ 1664A ☐
Oil and Grease Grav. 1664A ☐
TCLP Analysis VOA ☐ Semi-VOA ☐ Pest/Herb ☐
Metals TCLP ☐ Dissolved ☐ Total ☐ Priority Pollutants ☐ Total ☐
Cyanide Amen. ☐ WAD ☐
SDWA-INORGANICS PRIMARY ☐ SECONDARY ☐
Coliform MPN ☐ Colilert ☐
pH ☐ Cl2 ☐ COD ☐ TSS ☐ BOD ☐

1. RELINQUISHED BY:
Signature: Nathan Haws
Printed Name: NATHAN HAWS
Firm: HYDRO GEO CHEM
Date/Time: 3/20 1910

2. RECEIVED BY:
Signature: Rick Zimmerman
Printed Name: Rick Zimmerman
Firm: HGC
Date/Time: 3/20/07 1910

3. RELINQUISHED BY:
Signature: Rick Zimmerman
Printed Name: Rick Zimmerman
Firm: HGC
Date/Time: 3/21/07 0925

4. RECEIVED BY:
Signature:
Printed Name: Rebecca J Scott
Firm: TURNER LABORATORIES, INC.
Date/Time: 3/21/07 0926

TURNAROUND REQUIREMENTS:
____ Standard (approx. 10 days)*
____ Next Day X 2 Day ____ 5 Day*
____ Fax Preliminary Results
Requested Report Date _____
* Working Days

REPORT REQUIREMENTS:
____ I. Routine Report
____ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
____ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ____ Y ____ N
P.O. # 78306.3
Bill to: _____

SAMPLE RECEIPT:
Total Containers 2
Temperature 10C
☐ Wet Ice ☐ Blue Ice

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No
Quote 529

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

78306.3

TURNER
LABORATORIES INC.

April 04, 2007

Rick Zimmerman
Hydro Geo Chem, Inc.
51 W. Wetmore Rd.
Suite 101
Tucson, AZ 857051678
TEL: (520) 293-1500
FAX (520) 293-1550

RE: PDSI, Depth Specific 78306.3 Order No.: 0703648

Dear Rick Zimmerman,

Turner Laboratories, Inc. received 7 samples on 3/26/2007 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 600
Lab Order:	0703648	**Collection Date:**	3/23/2007 8:32:00 AM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	1,500	500		mg/L	100	3/27/2007 11:12:00 AM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 550
Lab Order:	0703648	**Collection Date:**	3/23/2007 8:51:00 AM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY		**E300**				Analyst: **JM**
Sulfate	1,600	500		mg/L	100	3/27/2007 11:30:00 AM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 500
Lab Order:	0703648	**Collection Date:**	3/23/2007 9:10:00 AM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-03A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	1,500	500		mg/L	100	3/27/2007 11:48:00 AM

Qualifiers:	ND - Not Detected at or above the PQL	PQL - Practical Quantitation Limit
	J - Analyte detected below quantitation limits	S - Spike Recovery outside accepted recovery limits
	B - Analyte detected in the associated Method Blank	R - RPD outside accepted recovery limits
	* - Value exceeds Maximum Contaminant Level	E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 450
Lab Order:	0703648	**Collection Date:**	3/23/2007 9:29:00 AM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-04A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	1,500	500		mg/L	100	3/27/2007 12:06:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 750
Lab Order:	0703648	**Collection Date:**	3/22/2007 5:05:00 PM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-05A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	1,500	500		mg/L	100	3/27/2007 12:24:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 700
Lab Order:	0703648	**Collection Date:**	3/22/2007 5:21:00 PM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-06A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	1,500	500		mg/L	100	3/27/2007 12:43:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *04-Apr-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	MH-11 650
Lab Order:	0703648	**Collection Date:**	3/22/2007 5:40:00 PM
Project:	PDSI, Depth Specific 78306.3		
Lab ID:	0703648-07A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	1,500	500		mg/L	100	3/27/2007 1:01:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

TURNER LABORATORIES, INC.

SAMPLE CONTROL RECEIPT CHECKLIST

TURNER LABORATORIES INC.

Turner Laboratories W.O. #: 07036648

Received By: RD

Received Date/Time: 3/26/07 11:00

Delivered by: Client

1. Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present
2. Custody seals intact on sample bottles?	☐ Yes	☐ No	☑ Not Present
3. Chain of custody present?	☑ Yes	☐ No	
4. COC signed when relinquished and received?	☑ Yes	☐ No	
5. COC agrees with sample labels?	☑ Yes	☐ No	
6. Samples in proper container/bottle?	☑ Yes	☐ No	
7. Sample container intact?	☑ Yes	☐ No	
8. Sufficient sample volume for requested tests?	☑ Yes	☐ No	
9. Samples received within holding times?	☑ Yes	☐ No	
10. VOA vials received with no headspace?	☐ Yes	☐ No	☑ No Vials
11. Bacti bottles received with appropriate headspace?	☐ Yes	☐ Above 100ml	NA
		☐ Below 100ml	

12. Temperature upon receipt? 1 °C

13. Number of sample containers received? 7

Additional Comments:

2445 NORTH COYOTE DRIVE ■ SUITE #104 ■ TUCSON, ARIZONA 85745 ■ 520 882-5880 ■ FAX # 520 882-9788

2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 07036648 DATE _____ PAGE 1 OF 2

PROJECT NAME PDSI, Depm Specific # 78306.3
CONTACT NAME ~~Nathan Hawes~~ Rick Zimmerman
COMPANY NAME Hydro Geo Chem
ADDRESS 51 W. Wetmore Rd., Suite 101
Tucson AZ PHONE 293-1500 FAX 293-1530
SAMPLER'S SIGNATURE Nathan Hawes

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX: Sulfate
MW-11 750	3/22	1705		GW	1	X
MW-11 700	3/22	1721		GW	1	X
MW-11 650	3/22	1740		GW	1	X
MW-11 D	3/22	[redacted]		GW	1	X

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX: Base Neutrals ☐ 625/8270; Acids ☐; Volatile Organics 624/524.2/8260 ☐; TTHMS ☐; HAA5 ☐; Pesticides ☐ 608.1; PCB's ☐ 608.2; Total Petroleum Hydrocarbons (TPH) (8015AZ) ☐; 1664A ☐; Oil and Grease Grav. 1664A ☐; TCLP Analysis VOA ☐ Semi-VOA ☐ Pest/Herb ☐; Metals TCLP ☐ Total ☐ Dissolved ☐ Priority Pollutants ☐; Cyanide Total ☐ Amen ☐ WAD ☐; SDWA-INORGANICS PRIMARY ☐ SECONDARY ☐; Coliform MPN ☐ Collect ☐; pH ☐; Cl ☐; COD ☐; TSS ☐; BOD ☐

1. RELINQUISHED BY:
Signature: Nathan Hawes
Printed Name: Nathan Hawes
Firm: Hydro Geo Chem
Date/Time: 3/22/07 1845

2. RECEIVED BY:
Signature: Mark Arneson
Printed Name: Mark Arneson
Firm: Hydro Geo Chem
Date/Time: 3-26-07 1030

TURNAROUND REQUIREMENTS:
X Standard (approx. 10 days)*
____ Next Day ____ 2 Day ____ 5 Day*
____ Fax Preliminary Results
Requested Report Date _____
* Working Days

REPORT REQUIREMENTS:
____ I. Routine Report
____ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
____ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ____ Y ____ N
P.O. # 78306.3
Bill to: _____

SAMPLE RECEIPT:
Total Containers 3
Temperature 1°C
☐ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:
Signature: Mark Arneson / Nathan Hawes
Printed Name: Mark Arneson / Nathan Hawes
Firm: HGC
Date/Time: 3-26-07 1105

4. RECEIVED BY:
Signature: R. Daly
Printed Name: R. Daly
Firm: TURNER LABORATORIES, INC.
Date/Time: 3/26/07 11:00

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER LABORATORIES, INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0703648 DATE _____ PAGE 2 OF 2

PROJECT NAME Depth Specific Sampling # 78306.3
CONTACT NAME Rick Zimmerman
COMPANY NAME HYDRO GEO CHEM
ADDRESS 51 W. Wetmore Rd, Suite 101
Tucson 85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE [signature]

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	Sulfate
MH-11 600	3/23	0832		GW	1	X
MH-11 550	3/23	0851		GW	1	X
MH-11 500	3/23	0910		GW	1	X
MH-11 450	3/23	0929		GW	1	X

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

Base Neutrals 625/82.70 ☐ Acids ☐ Volatile Organics 624/524.2/8260 ☐ THMS ☐ HAA5 ☐ Pesticides 8081 ☐ PCB's 8082 ☐ Total Petroleum Hydrocarbons IR(8015AZ) ☐ 1664A ☐ Oil and Grease Grav. 1664A ☐ TCLP Analysis: VOA ☐ Semi-VOA ☐ Pest/Herb. ☐ Metals: TCLP ☐ Total ☐ Dissolved ☐ Priority Pollutants ☐ Cyanide: Total ☐ Amen ☐ WAD ☐ SDWA INORGANICS: PRIMARY ☐ SECONDARY ☐ Coliform: MPN ☐ Colilert ☐ pH ☐ Cl2 ☐ COD ☐ TSS ☐ BOD ☐

1. RELINQUISHED BY:
Signature [signature]
Printed Name Nathan Hawes
Firm Hydro Geo Chem
Date/Time 3/26/07 10:15

2. RECEIVED BY:
Signature [signature]
Printed Name Mark Hinesen
Firm Hydro Geo Chem
Date/Time 3-26-07 1030

TURNAROUND REQUIREMENTS:
X Standard (approx. 10 days)*
____ Next Day ____ 2 Day ____ 5 Day*
____ Fax Preliminary Results
Requested Report Date _____
* Working Days

REPORT REQUIREMENTS:
____ I. Routine Report
____ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
____ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ____ Y ____ N
P.O. # 78306.3
Bill to: _____

SAMPLE RECEIPT:
Total Containers 4
Temperature 1 °C
☐ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:
Signature [signature]
Printed Name Mark Hinesen
Firm HydroGeoChem
Date/Time 3-26-07 1105

4. RECEIVED BY:
Signature R. Daly
Printed Name R. Daly
Firm TURNER LABORATORIES, INC.
Date/Time 3/26/07 11:00

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

78306.3 ESP2

TURNER
LABORATORIES INC.

June 15, 2007

Rick Zimmerman
Hydro Geo Chem, Inc.
51 W. Wetmore Rd.
Suite 101
Tucson, AZ 857051678
TEL: (520) 293-1500
FAX (520) 293-1550

RE: PDSI Depth Specific Order No.: 0706205

Dear Rick Zimmerman,

Turner Laboratories, Inc. received 3 samples on 6/1/1958 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP 2 450
Lab Order:	0706205	**Collection Date:**	6/4/2007 12:20:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706205-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	31	25		mg/L	5	6/6/2007 3:15:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP 2 1000
Lab Order:	0706205	**Collection Date:**	6/4/2007 3:35:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706205-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	15	5.0		mg/L	1	6/7/2007 10:47:00 AM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP 2 1000D
Lab Order:	0706205	**Collection Date:**	6/4/2007
Project:	PDSI Depth Specific		
Lab ID:	0706205-03A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	15	5.0		mg/L	1	6/7/2007 11:05:00 AM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

TURNER LABORATORIES, INC.

SAMPLE CONTROL RECEIPT CHECKLIST

TURNER LABORATORIES INC.

Turner Laboratories W.O. #: 0706205 65 DNH

Received By: DNH

Received Date/Time: 6/5/07@17:00

Delivered by: Client

1.	Shipping container/cooler in good condition?	☑ Yes	☐ No	☐ Not Present
2.	Custody seals intact on sample bottles?	☐ Yes	☐ No	☑ Not Present
3.	Chain of custody present?	☑ Yes	☐ No	
4.	COC signed when relinquished and received?	☑ Yes	☐ No	
5.	COC agrees with sample labels?	☑ Yes	☐ No	
6.	Samples in proper container/bottle?	☑ Yes	☐ No	
7.	Sample container intact?	☑ Yes	☐ No	
8.	Sufficient sample volume for requested tests?	☑ Yes	☐ No	
9.	Samples received within holding times?	☑ Yes	☐ No	
10.	VOA vials received with no headspace?	☐ Yes	☐ No	☑ No Vials
11.	Bacti bottles received with appropriate headspace?	☐ Yes		☐ Above 100ml
		☑ Not Applicable		☐ Below 100ml

12. Temperature upon receipt? 2°C

13. Number of sample containers received? 3

Additional Comments:

2445 NORTH COYOTE DRIVE ▪ SUITE #104 ▪ TUCSON, ARIZONA 85745 ▪ 520 882-5880 ▪ FAX # 520 882-9788

TURNER LABORATORIES INC
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0706 2016 5 DW DATE _____ PAGE 1 OF 1

PROJECT NAME 805I Depth Specific # 783063
CONTACT NAME Rick Zimmerman
COMPANY NAME Hydro Geo Chem
ADDRESS 51 W Wetmore Rd, Suite 101
85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE [signature]

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	504
ESP 2 450	6/4	1220		GW	1	X
ESP 2 1000	6/4/07	1535		GW	1	X
ESP 2 1000D	6/4/07			GW	1	X

Columns: Base Neutrals 625/8270 ☐; Acids ☐; Volatile Organics 624/524.2/8260 ☐; TTHMS ☐; HAA5 ☐; Pesticides 8081 ☐; PCBs 8082 ☐; Total Petroleum Hydrocarbons IR(8015AZ) ☐; Oil and Grease 1664A ☐; Grav. 1664A ☐; TCLP Analysis: VOA ☐, Semi-VOA ☐, Pest./Herb. ☐; Metals: TCLP ☐, Dissolved ☐, Total ☐, Priority Pollutants ☐; Cyanide: Total ☐, Amen. ☐, WAD ☐; SDWA-INORGANICS PRIMARY ☐, SECONDARY ☐; Coliform: MPN ☐, Colilert ☐; pH ☐; COD ☐; TSS ☐; BOD ☐

1. RELINQUISHED BY:
Signature [signature]
Printed Name Nathan Haws
Firm Hydro GeoChem
Date/Time 6/4/2007 6:45pm

2. RECEIVED BY:
Signature [signature]
Printed Name Rick Zimmerman
Firm HGC
Date/Time 6/5/07 10:95

3. RELINQUISHED BY:
Signature [signature]
Printed Name [illegible]
Firm HGC
Date/Time 6/5/07 1700

4. RECEIVED BY:
Signature [signature]
Printed Name DAN WILSON
Firm TURNER LABORATORIES, INC.
Date/Time 6/5/07 17:00

TURNAROUND REQUIREMENTS:
___ Standard (approx. 10 days)*
___ Next Day X 2 Day ___ 5 Day*
___ Fax Preliminary Results
Requested Report Date _____
* Working Days

REPORT REQUIREMENTS:
___ I. Routine Report
___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
___ III. Date Validation Report (includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ___ Y ___ N
P.O. # 783063
Bill to: _____

SAMPLE RECEIPT:
Total Containers 3
Temperature 2°C
☐ Wet Ice ☒ Blue Ice

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

78306.3 ESP-2

TURNER
LABORATORIES INC.

June 15, 2007

Rick Zimmerman
Hydro Geo Chem, Inc.
51 W. Wetmore Rd.
Suite 101
Tucson, AZ 857051678
TEL: (520) 293-1500
FAX (520) 293-1550

RE: PDSI Depth Specific Order No.: 0706214

Dear Rick Zimmerman,

Turner Laboratories, Inc. received 14 samples on 6/6/2007 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

Turner Laboratories, Inc. **Date:** *15-Jun-07*

CLIENT: Hydro Geo Chem, Inc.
Project: PDSI Depth Specific
Lab Order: 0706214

CASE NARRATIVE

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 950
Lab Order:	0706214	**Collection Date:**	6/5/2007 9:48:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706214-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	14	5.0		mg/L	1	6/6/2007 6:36:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 900
Lab Order:	0706214	**Collection Date:**	6/5/2007 10:30:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706214-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	14	5.0		mg/L	1	6/6/2007 6:54:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 850
Lab Order:	0706214	**Collection Date:**	6/5/2007 11:10:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706214-03A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	14	5.0		mg/L	1	6/6/2007 7:13:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 800
Lab Order:	0706214	**Collection Date:**	6/5/2007 11:45:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706214-04A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	14	5.0		mg/L	1	6/6/2007 7:31:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 750
Lab Order:	0706214	**Collection Date:**	6/5/2007 12:35:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-05A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	24	5.0		mg/L	1	6/6/2007 8:26:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 700
Lab Order:	0706214	**Collection Date:**	6/5/2007 1:10:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-06A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	32	10		mg/L	2	6/7/2007 12:36:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 650
Lab Order:	0706214	**Collection Date:**	6/5/2007 1:40:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-07A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	33	10		mg/L	2	6/7/2007 12:54:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 600
Lab Order:	0706214	**Collection Date:**	6/5/2007 2:10:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-08A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	33	10		mg/L	2	6/7/2007 1:13:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 550
Lab Order:	0706214	**Collection Date:**	6/5/2007 2:35:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-09A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	34	10		mg/L	2	6/7/2007 3:02:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 500
Lab Order:	0706214	**Collection Date:**	6/5/2007 3:00:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-10A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	34	10		mg/L	2	6/7/2007 3:20:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 Discharge
Lab Order:	0706214	**Collection Date:**	6/5/2007 4:00:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-11A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA 1664A-OIL & GREASE		**E1664A**				Analyst: **PSL**
Oil & Grease	ND	5.0		mg/L	1	6/8/2007 11:35:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 1000P
Lab Order:	0706214	**Collection Date:**	6/5/2007 4:45:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-12A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	15	5.0		mg/L	1	6/6/2007 10:15:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 950P
Lab Order:	0706214	**Collection Date:**	6/5/2007 5:25:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-13A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	15	5.0		mg/L	1	6/6/2007 10:33:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 900P
Lab Order:	0706214	**Collection Date:**	6/5/2007 6:00:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706214-14A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	15	5.0		mg/L	1	6/6/2007 10:52:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

TURNER LABORATORIES, INC.

SAMPLE CONTROL RECEIPT CHECKLIST

TURNER LABORATORIES INC.

Turner Laboratories W.O. #: 0706214

Received By: EA

Received Date/Time: 6/6/07 10:10

Delivered by: Kurt

1.	Shipping container/cooler in good condition?	☒ Yes	☐ No	☐ Not Present
2.	Custody seals intact on sample bottles?	☐ Yes	☐ No	☒ Not Present
3.	Chain of custody present?	☒ Yes	☐ No	
4.	COC signed when relinquished and received?	☒ Yes	☐ No	
5.	COC agrees with sample labels?	☒ Yes	☐ No	
6.	Samples in proper container/bottle?	☒ Yes	☐ No	
7.	Sample container intact?	☒ Yes	☐ No	
8.	Sufficient sample volume for requested tests?	☒ Yes	☐ No	
9.	Samples received within holding times?	☒ Yes	☐ No	
10.	VOA vials received with no headspace?	☐ Yes	☐ No	☒ No Vials
11.	Bacti bottles received with appropriate headspace?	☐ Yes		☐ Above 100ml
		☒ Not Applicable		☐ Below 100ml
12.	Temperature upon receipt?	FP 4.0° 6°		
13.	Number of sample containers received?	14		

Additional Comments:

2445 NORTH COYOTE DRIVE ▪ SUITE #104 ▪ TUCSON, ARIZONA 85745 ▪ 520 882-5880 ▪ FAX # 520 882-9788

TURNER LABORATORIES INC
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 0706214 DATE 6/6/2007 PAGE 1 OF 2

PROJECT NAME PDSI Depth Specific # 78306.3
CONTACT NAME Rick Zimmerman
COMPANY NAME HydroGeoChem
ADDRESS 51 West Wetmore, Suite 101
85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE Nathan Haws

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	SO4
ESP-2 950	6/6/07	0948		GW		X
ESP-2 900	6/5	1030		GW		X
ESP-2 850	6/5	1110		GW		X
ESP-2 800	6/5	1145		GW		X
ESP-2 750	6/5	1235		GW		X
ESP-2 700	6/5	1310		GW		X
ESP-2 650	6/5	1340		GW		X
ESP-2 600	6/5	1410		GW		X
ESP-2 550	6/5/07	1435		GW		X
ESP-2 500	6/5/07	1500		GW		X

Available analyses (Base Neutrals 625/8270; Acids; Volatile Organics 624/524.2/8260; THMS; HAA5; Pesticides 8081; PCB's 8082; Total Petroleum Hydrocarbons (R)8015A/Z); Oil and Grease 1664A; Grav. 1664A; TCLP Analysis: VOA, Semi-VOA, Pest./Herb.; Metals: TCLP, Dissolved, Total, Priority Pollutants; Cyanide: Total, Amen.; WAD; SDWA-INORGANICS PRIMARY; SECONDARY; Coliform: MPN, Colilert; pH; Cl2; COD; TSS; BOD

1. RELINQUISHED BY:
Signature: Nathan Haws
Printed Name: Nathan Haws
Firm: Hydro Geo Chem
Date/Time: 6/5/07 7:20p

2. RECEIVED BY:
Signature:
Printed Name: Kimberly A. Garcia
Firm: HydroGeoChem
Date/Time: 6/6/07 0950AM

3. RELINQUISHED BY:
Signature:
Printed Name: KimGarcia
Firm: HGC
Date/Time: 6/6/07 1100

4. RECEIVED BY:
Signature:
Printed Name: Lisa Howard
Firm: TURNER LABORATORIES, INC.
Date/Time: 6/6/07 10:10

TURNAROUND REQUIREMENTS:
___ Standard (approx. 10 days)*
___ Next Day X 2 Day ___ 5 Day*
___ Fax Preliminary Results
Requested Report Date ___
* Working Days

REPORT REQUIREMENTS:
X I. Routine Report
___ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
___ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ___ Y ___ N
P.O. # 78306.3
Bill to: ___

SAMPLE RECEIPT:
Total Containers: 10
Temperature: 6°
☐ Wet Ice ☐ Blue Ice

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Quote 579
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

TURNER LABORATORIES INC.
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 080214 DATE 6/6/07 PAGE 2 OF 2

PROJECT NAME PDSI Depth Specific # 78306.3
CONTACT NAME Rick Zimmerman
COMPANY NAME Hydro Geo Chem
ADDRESS 51 W. Wetmore Rd, Suite 101
85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX: Base Neutrals 625/8270 ☐ / Acids ☐	Volatile Organics 624/524.2/8260	TTHMS ☐	HAA5 ☐	Pesticides ☐ 8081	PCB's ☐ 8082	Total Petroleum Hydrocarbons IR(8015AZ) ☐	1664A ☐	Oil and Grease Grav. 1664A ☐	TCLP Analysis: VOA ☐	Semi-VOA ☐	Pest./Herb. ☐	Metals: TCLP ☐	Dissolved ☐	Total ☐	Priority Pollutants ☐	Cyanide: Total ☐	Amen. ☐	WAD ☐	SDWA-INORGANICS PRIMARY ☐	SECONDARY ☐	Coliform: MPN ☐	Colilert ☐	pH ☐	Cl ☐	COD ☐	TSS ☐	ROD ☐	SP
ESP-2 Discharge	6/6/07	1600		GW									X																				
ESP-2 1000 P	6/6/07	1645		GW																												X	
ESP-2 950 P	6/5	1725		GW																												X	
ESP-2 900 P	6/5	1800		GW																												X	

1. RELINQUISHED BY:
Signature
Nathan Hess
Printed Name
Hydro Geo Chem
Firm
6/5/07 7:24pm
Date/Time

2. RECEIVED BY:
Signature
Kimberly A. Garcia
Printed Name
Hydro Geo Chem
Firm
6/6/07 0950 AM
Date/Time

3. RELINQUISHED BY:
Signature
Kim Garcia
Printed Name
HGC
Firm
6/6/07 1000
Date/Time

4. RECEIVED BY:
Signature
Tom Hermosa
Printed Name
TURNER LABORATORIES, INC.
Firm
6/6/07 1010
Date/Time

TURNAROUND REQUIREMENTS:
___ Standard (approx. 10 days)*
___ Next Day X 2 Day ___ 5 Day*
___ Fax Preliminary Results
Requested Report Date ___
* Working Days

REPORT REQUIREMENTS:
I. Routine Report
II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
III. Date Validation Report (includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ___ Y ___ N
P.O. # 78306.3
Bill to: ___

SAMPLE RECEIPT:
Total Containers 4
Temperature 6°
☐ Wet Ice ☐ Blue Ice

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Quote 579
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

DISTRIBUTION: WHITE - return to originator PINK - retained by originator See back of pink copy for general terms and conditions/limits of liability.

78300.3 ESP-2

TURNER
LABORATORIES INC.

June 15, 2007

Rick Zimmerman
Hydro Geo Chem, Inc.
51 W. Wetmore Rd.
Suite 101
Tucson, AZ 857051678
TEL: (520) 293-1500
FAX (520) 293-1550

RE: PDSI Depth Specific Order No.: 0706281

Dear Rick Zimmerman,

Turner Laboratories, Inc. received 10 samples on 6/6/2007 for the analyses presented in the following report.

All results are intended to be considered in their entirety, and Turner Laboratories, Inc. is not responsible for use of less than the complete report. Results apply only to the samples analyzed. Samples will be disposed of 30 days after issue of our report unless special arrangements are made.

The pages that follow may contain sensitive, privileged or confidential information intended solely for the addressee named above. If you receive this message and are not the agent or employee of the addressee, this communication has been sent in error. Please do not disseminate or copy any of the attached and notify the sender immediately by telephone. Please also return the attached sheet(s) to the sender by mail.

Please call if you have any questions.

Respectfully submitted,

Turner Laboratories, Inc.
ADHS License AZ0066

Shari Bauman

Shari Bauman
Laboratory Director

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 850P
Lab Order:	0706281	**Collection Date:**	6/6/2007 8:45:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-01A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	14	5.0		mg/L	1	6/7/2007 8:49:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 800P
Lab Order:	0706281	**Collection Date:**	6/6/2007 9:20:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-02A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	14	5.0		mg/L	1	6/7/2007 9:07:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 750P
Lab Order:	0706281	**Collection Date:**	6/6/2007 9:55:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-03A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	17	5.0		mg/L	1	6/7/2007 9:25:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 700P
Lab Order:	0706281	**Collection Date:**	6/6/2007 10:25:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-04A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	25	10		mg/L	2	6/8/2007 11:46:00 AM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 650P
Lab Order:	0706281	**Collection Date:**	6/6/2007 10:50:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-05A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	26	10		mg/L	2	6/8/2007 12:04:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 600P
Lab Order:	0706281	**Collection Date:**	6/6/2007 11:20:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-06A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	27	10		mg/L	2	6/8/2007 12:22:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 550P
Lab Order:	0706281	**Collection Date:**	6/6/2007 11:45:00 AM
Project:	PDSI Depth Specific		
Lab ID:	0706281-07A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	27	10		mg/L	2	6/8/2007 12:41:00 PM

Qualifiers:

ND - Not Detected at or above the PQL

J - Analyte detected below quantitation limits

B - Analyte detected in the associated Method Blank

* - Value exceeds Maximum Contaminant Level

PQL - Practical Quantitation Limit

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 500P
Lab Order:	0706281	**Collection Date:**	6/6/2007 12:15:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706281-08A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	27	10		mg/L	2	6/8/2007 12:59:00 PM

Qualifiers:

ND - Not Detected at or above the PQL
J - Analyte detected below quantitation limits
B - Analyte detected in the associated Method Blank
* - Value exceeds Maximum Contaminant Level
PQL - Practical Quantitation Limit
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 DSCG
Lab Order:	0706281	**Collection Date:**	6/6/2007 12:45:00 PM
Project:	PDSI Depth Specific		
Lab ID:	0706281-09A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	27	10		mg/L	2	6/8/2007 1:17:00 PM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

Turner Laboratories, Inc.

Date: *15-Jun-07*

CLIENT:	Hydro Geo Chem, Inc.	**Client Sample ID:**	ESP-2 750PD
Lab Order:	0706281	**Collection Date:**	6/6/2007
Project:	PDSI Depth Specific		
Lab ID:	0706281-10A	**Matrix:**	GROUNDWATER

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
ANIONS BY ION CHROMATOGRAPHY	**E300**					Analyst: **JM**
Sulfate	18	5.0		mg/L	1	6/8/2007 12:10:00 AM

Qualifiers:

- ND - Not Detected at or above the PQL
- J - Analyte detected below quantitation limits
- B - Analyte detected in the associated Method Blank
- * - Value exceeds Maximum Contaminant Level
- PQL - Practical Quantitation Limit
- S - Spike Recovery outside accepted recovery limits
- R - RPD outside accepted recovery limits
- E - Value above quantitation range

TURNER LABORATORIES, INC.

SAMPLE CONTROL RECEIPT CHECKLIST

TURNER LABORATORIES INC.

Turner Laboratories W.O. #: 0906281

Received By: JH

Received Date/Time: 6/6/07 16:16

Delivered by: Mark

1.	Shipping container/cooler in good condition?	☒ Yes	☐ No	☐ Not Present
2.	Custody seals intact on sample bottles?	☐ Yes	☐ No	☒ Not Present
3.	Chain of custody present?	☒ Yes	☐ No	
4.	COC signed when relinquished and received?	☒ Yes	☐ No	
5.	COC agrees with sample labels?	☒ Yes	☐ No	
6.	Samples in proper container/bottle?	☒ Yes	☐ No	
7.	Sample container intact?	☒ Yes	☐ No	
8.	Sufficient sample volume for requested tests?	☒ Yes	☐ No	
9.	Samples received within holding times?	☒ Yes	☐ No	
10.	VOA vials received with no headspace?	☐ Yes	☐ No	☒ No Vials
11.	Bacti bottles received with appropriate headspace?	☐ Yes		☐ Above 100ml
		☒ Not Applicable		☐ Below 100ml

12. Temperature upon receipt? -2°C

13. Number of sample containers received? 10

Additional Comments:

2445 NORTH COYOTE DRIVE ■ SUITE #104 ■ TUCSON, ARIZONA 85745 ■ 520 882-5880 ■ FAX # 520 882-9788

TURNER LABORATORIES INC
2445 N. Coyote Drive, Suite 104
Tucson, Arizona 85745
(520) 882-5880
Fax: (520) 882-9788
www.turnerlabs.com

CHAIN OF CUSTODY/LABORATORY ANALYSIS REQUEST FORM

TURNER WORK ORDER # 98291 DATE _____ PAGE _____ OF _____

PROJECT NAME PDSI Depth Specific # 78306.3
CONTACT NAME Rick Zimmerman
COMPANY NAME Hydro Geo Chem
ADDRESS 51 W. Wetmore Rd, Suite 101
85705 PHONE 293-1500 FAX 293-1550
SAMPLER'S SIGNATURE Nathan Hawes

SAMPLE I.D.	DATE	TIME	LAB I.D.	SAMPLE MATRIX*	NUMBER OF CONTAINERS	504
ESP-2 850P	6/6/07	0845		GW	1	X
ESP-2 800P	6/6	0920		GW	1	X
ESP-2 750P	6/6	0955		GW	1	X
ESP-2 700P	6/6	1025		GW	1	X
ESP-2 650P	6/6	1050		GW	1	X
ESP-2 600P	6/6	1120		GW	1	X
ESP-2 550P	6/6	1145		GW	1	X
ESP-2 500P	6/6	1215		GW	1	X
ESP-2 DUP	6/6	1245		GW	1	X
ESP-2 750P D	6/6	-		GW	1	X

CIRCLE ANALYSIS REQUESTED AND/OR CHECK THE APPROPRIATE BOX

Base Neutrals ☐ Acids ☐ 625/8270
Volatile Organics 624/524.2/8260 ☐
TTHMS ☐ HAA5 ☐
Pesticides ☐ PCB's ☐ 8081 8082
Total Petroleum Hydrocarbons IR(8015AZ) ☐ 1664A ☐
Oil and Grease Grav. 1664A ☐
TCLP Analysis: VOA ☐ Semi-VOA ☐ Pest./Herb. ☐
Metals: TCLP ☐ Dissolved ☐ Total ☐ Priority Pollutants ☐
Cyanide: Total ☐ Amen. ☐ WAD ☐
SDWA-INORGANICS PRIMARY ☐ SECONDARY ☐
Coliform: MPN ☐ Colilert ☐
pH ☐ Cl2 ☐ COD ☐ TSS ☐ BOD ☐

1. RELINQUISHED BY:
Signature: Nathan Hawes
Printed Name: Nathan Hawes
Firm: Hydro Geo Chem
Date/Time: 6/6/07 1509

2. RECEIVED BY:
Signature: Mark Kinpson
Printed Name: Mark Kinpson
Firm: HGC Inc.
Date/Time: 6/6/07 1510

TURNAROUND REQUIREMENTS:
☑ Standard (approx. 10 days)*
☐ Next Day ☐ 2 Day ☐ 5 Day*
☐ Fax Preliminary Results
Requested Report Date _____
* Working Days

REPORT REQUIREMENTS:
☑ I. Routine Report
☐ II. Report (includes DUP, MS, MSD, as required, may be charged as samples)
☐ III. Date Validation Report (Includes All Raw Data) Add 10% to invoice

INVOICE INFORMATION:
Account ☐ Y ☐ N
P.O. # _____
Bill to: _____

SAMPLE RECEIPT:
Total Containers: 40
Temperature: -2°C
☐ Wet Ice ☐ Blue Ice

3. RELINQUISHED BY:
Signature
Printed Name
Firm
Date/Time

4. RECEIVED BY:
Signature
Printed Name: Isaac Hanson
Firm: TURNER LABORATORIES, INC.
Date/Time: 6/6/07 15:16

* LEGEND
ST = STORMWATER
SL = SOIL
SD = SOLID
SG = SLUDGE
WW = WASTEWATER
GW = GROUNDWATER
DW = DRINKING WATER

SPECIAL INSTRUCTIONS/COMMENTS:
Compliance Analysis: ☐ Yes ☐ No
ADEQ Forms: ☐ Yes ☐ No
Mail ADEQ Forms: ☐ Yes ☐ No

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