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REPORTS

DATE:

4/02/2007

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March 29, 2007

Samson State BD-04
March Progress Report

prepared for :

Samson Resources Company
2 W 2nd Street
Tulsa, OK 74103

R.T. Hicks Consultants, Ltd.

901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

April 2, 2007

Mr. Glenn von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Samson BD-04, T12S-R33E-Section 2, Unit Letter H, 1R0474

Dear Mr. von Gonten:

On behalf of Samson Resources, R.T. Hicks Consultants is pleased to submit this progress report for the above-referenced site. The report and accompanying CD will be mailed to your office this week. Currently the report is available on our ftp site. To access our FTP, please see the setup instructions at the end of this letter.

In response to recent NMOCD comments regarding the level of detail contained in our reports, we have modified our format and approach in this submission. We appreciate not only your evaluation of the data, conclusions and path forward, but also your comments on the readability and level of detail contained in the report.

Sincerely,
R.T. Hicks Consultants, Ltd.

Randall T. Hicks
Principal

Copy:
Samson Resources, Scott Rose
New Mexico State Land Office

To access our FTP site, perform the following. If you already have a FTP program installed, enter your FTP setting (user name, password etc) provided at the end of the instructions and skip the following setup details.

The setup process is as follows:

1. Download FileZilla (if you have Filezilla already installed, proceed to Step E)
2. Download the attached file (via email) to your Desktop.
3. Connect to our FTP site.

Setup Details (you only need to do this once):

a) Download the latest FileZilla Source Code for Windows: http://downloads.sourceforge.net/filezilla/FileZilla_2_2_31_setup.exe?modtime=1172667588&big_mirror=0
b) Run the setup accepting the default install options.
c) Copy the attached NMOCD.xml file to your desktop. This file contains the setup parameters (usename, password, etc)
d) Start FileZilla
e) Open the Site Manager (File>Site Manager) or press the icon directly below the FILE header.
f) In the Site Manager, select file import. Then import the NMOCD.xml file.
g) Then Connect.

It is now safe to delete the NMOCD.xml file from you desktop.

To connect at a later time, open Filezilla, then the Site Manager, then connect to NMOCD under ftp.rthicksconsult.com.

NOTE: I have the FTP server to log you off after 2 minutes of inactivity.

Your ftp settings are:

REMOVED

If you have problems connecting to our FTP site, please contact Andrew Parker at our Albuquerque office.

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Plates & Tables

Appendices

Location: T12s, R33e, Sec 2, Unit H
Latitude: 33° 18' 34.77"
Longitude: -103° 34' 37.92"
NMOCD#: 1R0474

1.0 Introduction

The Samson State BD-04 site, which is operated by Samson Resources Company, is located approximately 15 miles west of Tatum, New Mexico (Plate 1). This report

1) describes the activities completed at the site during the first quarter of 2007,

2) presents our conclusions and the data developed from the work, and

3) provides our recommendation for the near-term path forward.

This report is consistent with the commitments made in a letter submitted to the NMOCD, dated January 25, 2007.

2.0 Activities Completed Since Previous Report

The following list summarizes activities conducted since the previous report, submitted to the NMOCD in November, 2006. Detailed descriptions of the work elements associated with each list item are provided in Appendix A.

- Performed final grading of the evapotranspiration (ET) infiltration barrier within the former pit
- Conducted a borehole and soil sampling program to more accurately define the extent and magnitude of salt impact in the vadose and saturated zones. Plate 2 shows borehole and well locations and, in addition, shows elevation contours of the recent surface grading of the former pit.
- Installed a source-removal pump-and-dispose system for a ground water restoration program.
- Performed routine ground water sampling and monitoring activities.
- Installed vadose zone moisture ports to begin performance monitoring of the infiltration barrier.
- Performed a ground water pump test at MW-03 to determine hydraulic properties for use in MODFLOW simulation. During our initial MODFLOW simulations, cells were going dry, preventing the model from projecting a

solution. We believe this may be the result of improperly defined hydraulic conductivities. At this time, therefore, we propose to re-evaluate the value of MODFLOW after the cessation of ground water recovery.

3.0 Conclusions Based on Activities

The following conclusions are based on data collected from the activities conducted since the previous report and on the data presented in previous submissions to NMOCD. The data and discussion supporting each conclusion is presented in Appendix B.

1) Subsurface lithology is uniform across the site.

2) The release from the reserve pit migrated vertically downward.

3) Ground water flows southeast at a gradient of approximately 0.001 feet/foot.

4) Recovery test data suggest that the local hydraulic conductivity beneath the site is approximately 0.4 feet/day. The change in observed TDS and chloride concentrations over the past several months, however, suggest that local hydraulic conductivity may be 10–100 times greater than estimated by the initial recovery data.

5) More than 30 days of ground-water pumping have created a cone-shaped depression around the pumping well with a subsequent impact on the local ground water flow.

6) Ground water data indicate that MW-3 is properly designed and located to effectively remove the mass of chloride released by the former reserve pit.

7) Ground water impairment is restricted to the area below the former reserve pit.

8) The magnitude and extent of ground water impairment is sufficiently defined to meet the mandates of NMOCD rules and at this time additional monitoring wells are not required.

9) The construction of the ET infiltration barrier is consistent with the proposal submitted to NMOCD and with the general design criteria for landfill covers as tested by Sandia National Laboratories.

4.0 Continuing Activities—The Path Forward

1) Source-removal pumping will continue until two samples taken one month apart demonstrate that pumped ground water contains less than 3000 mg/L TDS.

2) If the data demonstrate that continued pumping will result in chloride concentrations significantly lower than 3000 mg/L, source-removal pumping will continue for an additional 30–60 days.

3) During the source-removal ground water restoration strategy, water levels and specific conductance will be measured twice per month. Ground water samples from MW-01, MW-02, MW-03 Shallow, MW-03 Deep, MW-04 Shallow, and MW-04 Deep will be laboratory-analyzed for chloride and TDS once per month.

4) Once TDS in ground water measures less than 3,000 mg/L, we will transition from a ground-water restoration strategy of source removal to a pump-and-use strategy. After this transition, the ground water sampling for laboratory analysis of chloride and TDS and the field monitoring of ground water elevations and specific conductance will take place on a quarterly basis.

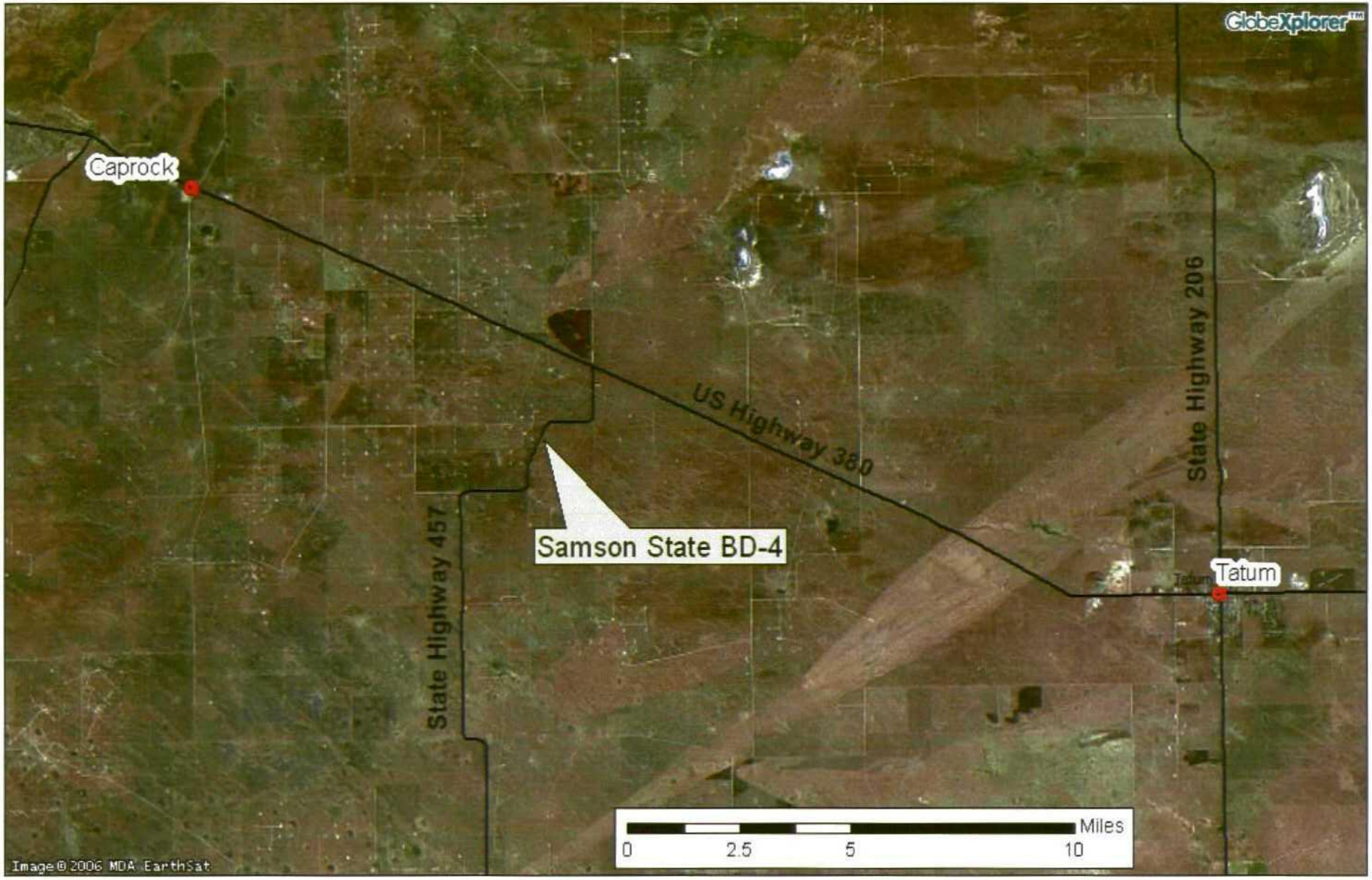
5) We will re-evaluate the value of MODFLOW and the fate and transport module, MT3D, to simulate the hydraulic response of the aquifer to long-term ground water pumping and the short-term response of the aquifer to cessation of pumping. Prediction of the response of the aquifer to the pump-and-use/natural restoration strategy using MODFLOW and MT3D will allow us to determine an effective path forward following the cessation of the source-removal program.

6) On or before August 30, 2007, we will submit a report summarizing the final results of the source-removal strategy, the initial results of the pump-and-use strategy, evidence of site re-vegetation, additional soil moisture data to verify the performance of the infiltration barrier, and a plan for site closure.

Plates & Tables

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

To access the site, proceed west from Tatum, NM approximately 15 miles on US Highway 380. Head south on State Highway 457 for approximately 2.5 miles. The site is on the east side of the highway.



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Site Location Map	Plate 1
	Samson Investment Company: State BD-04 1st Qtr 2007 Report	March 2007

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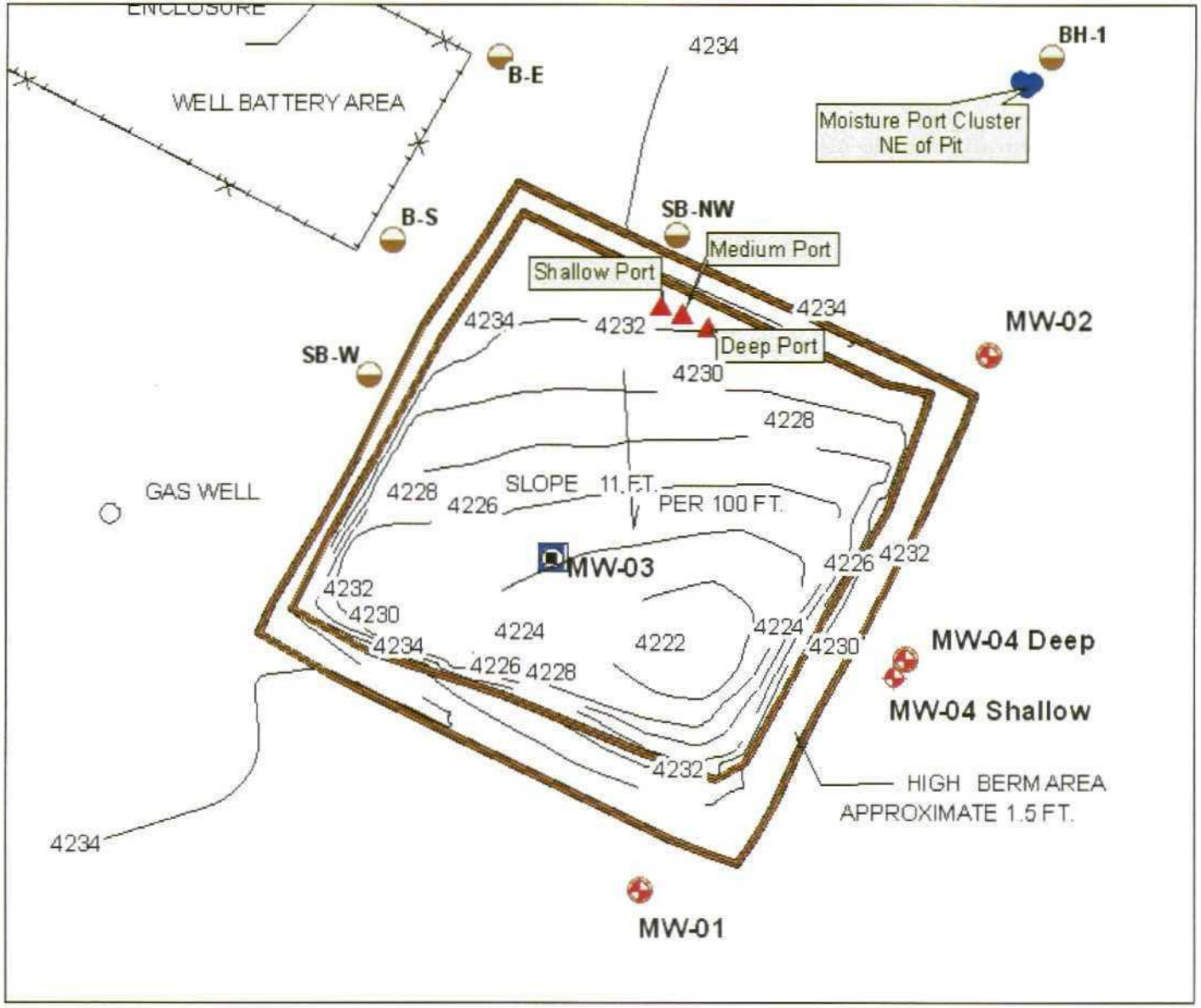
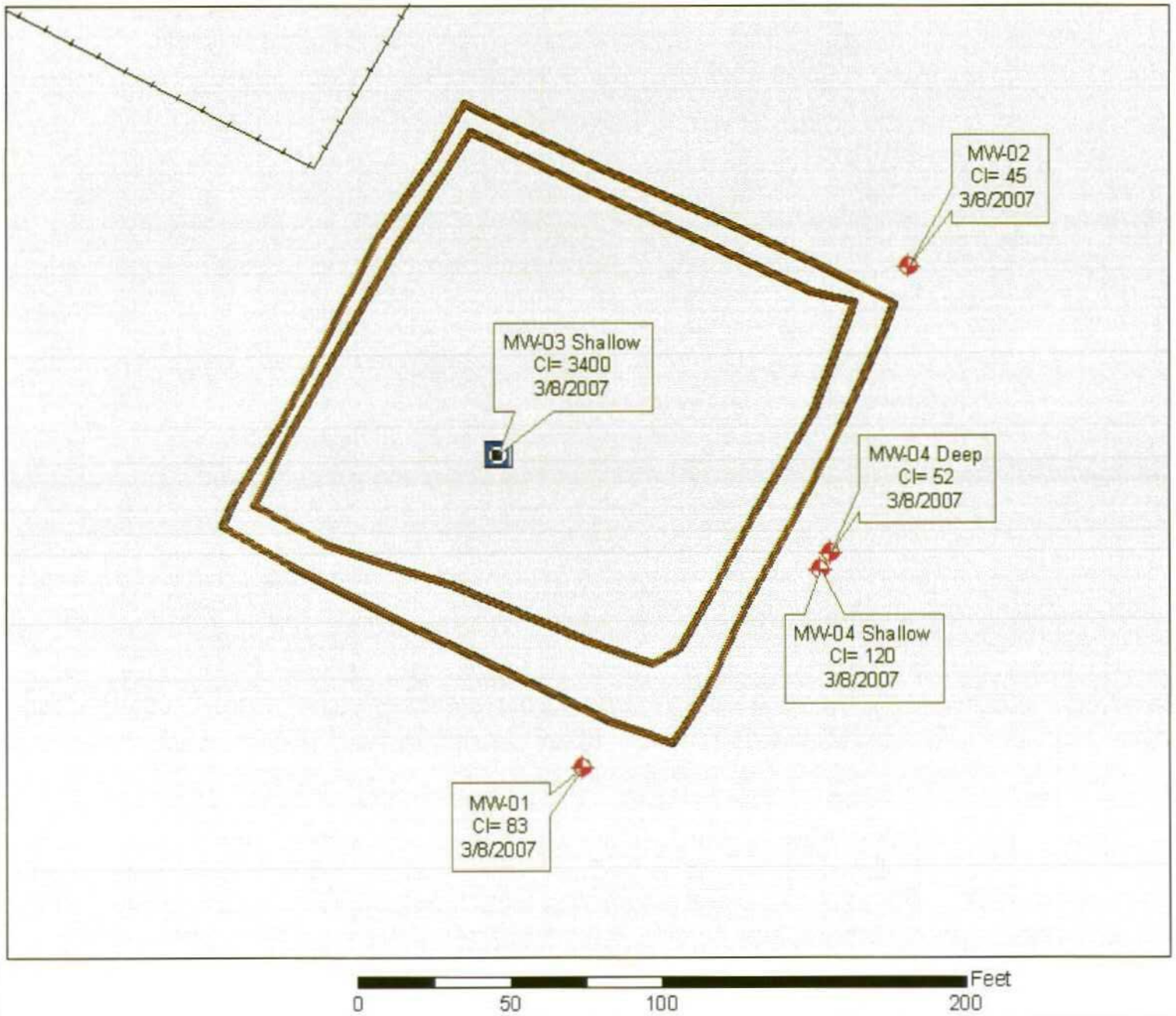
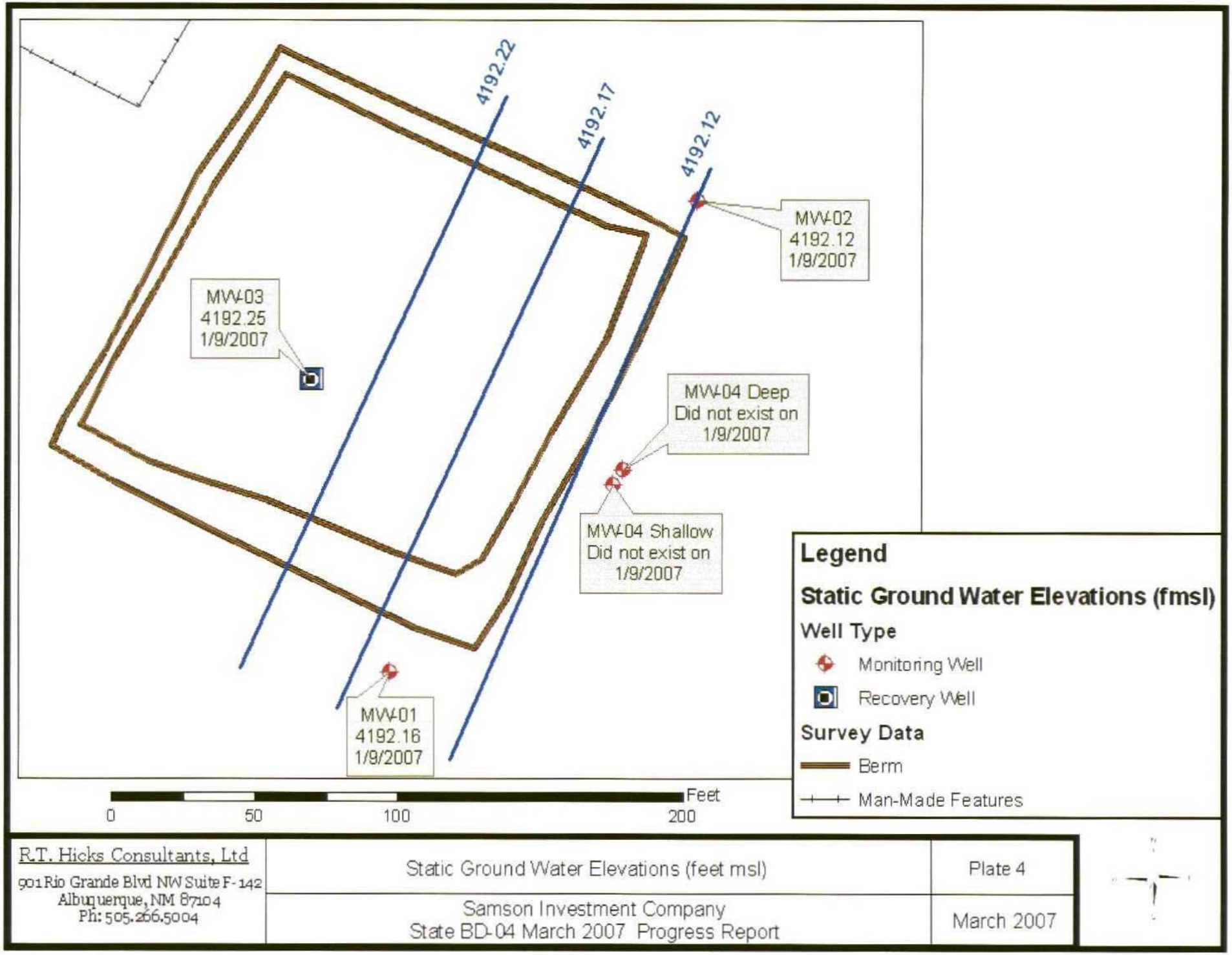


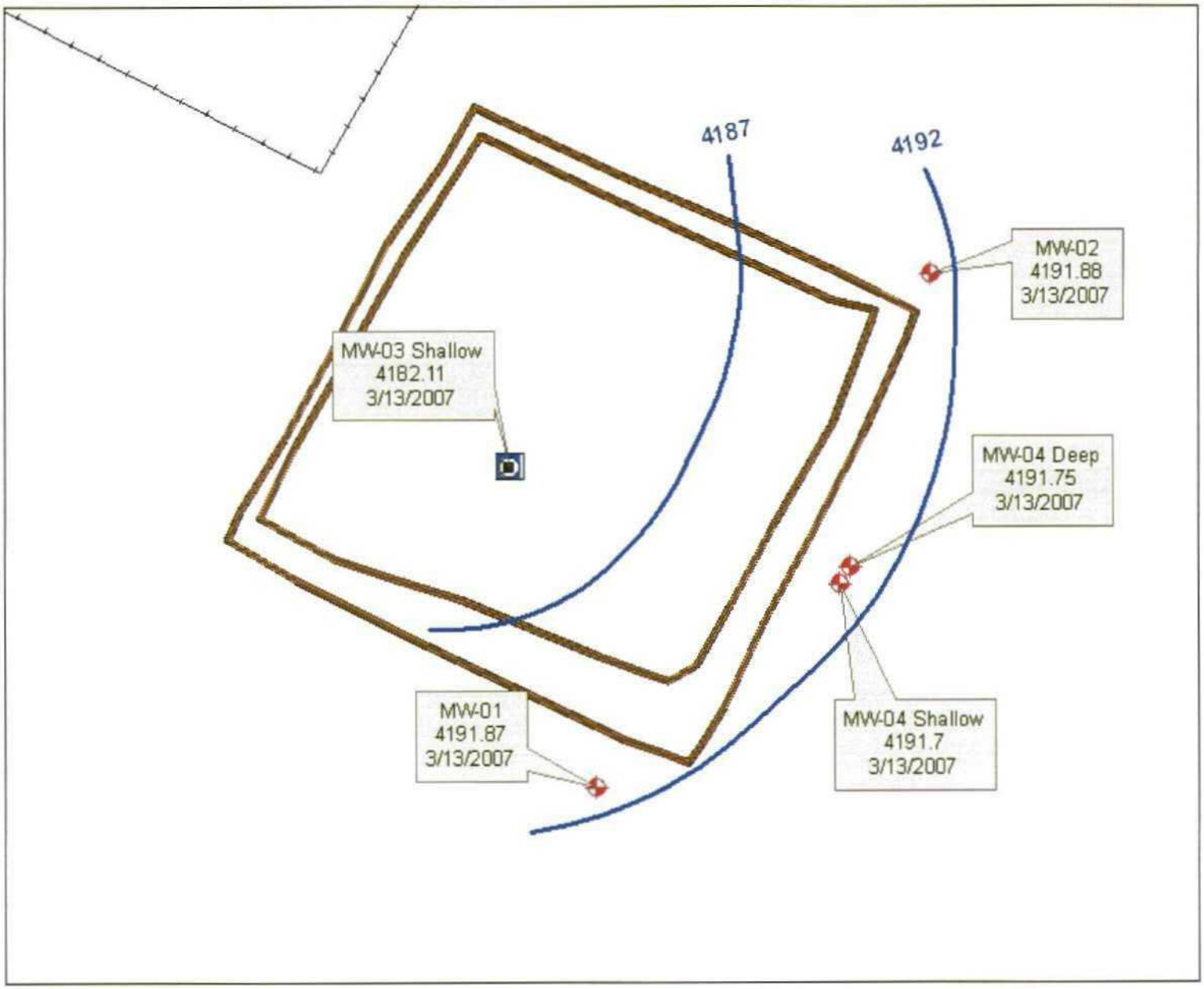
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Site map showing grading of pit surface and location of monitroing wells and soil borings	Plate 2
	Samson Investment Company State BD-04 March 2007 Progress Report	March 2007



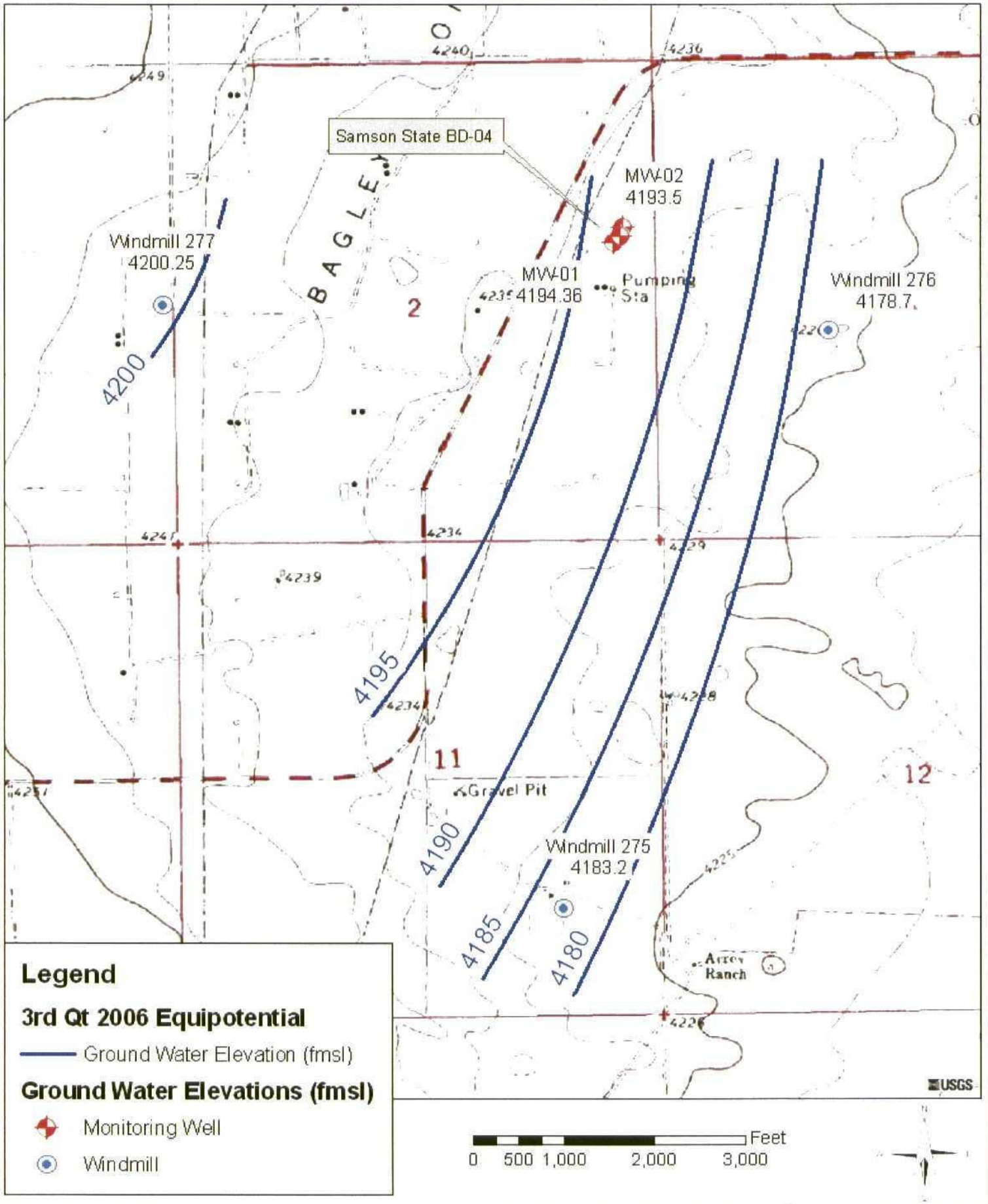
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Recent chloride concentrations (mg/L) in ground water	Plate 3
	Samson Investment Company State BD-04 Site Progress Report	March 2007



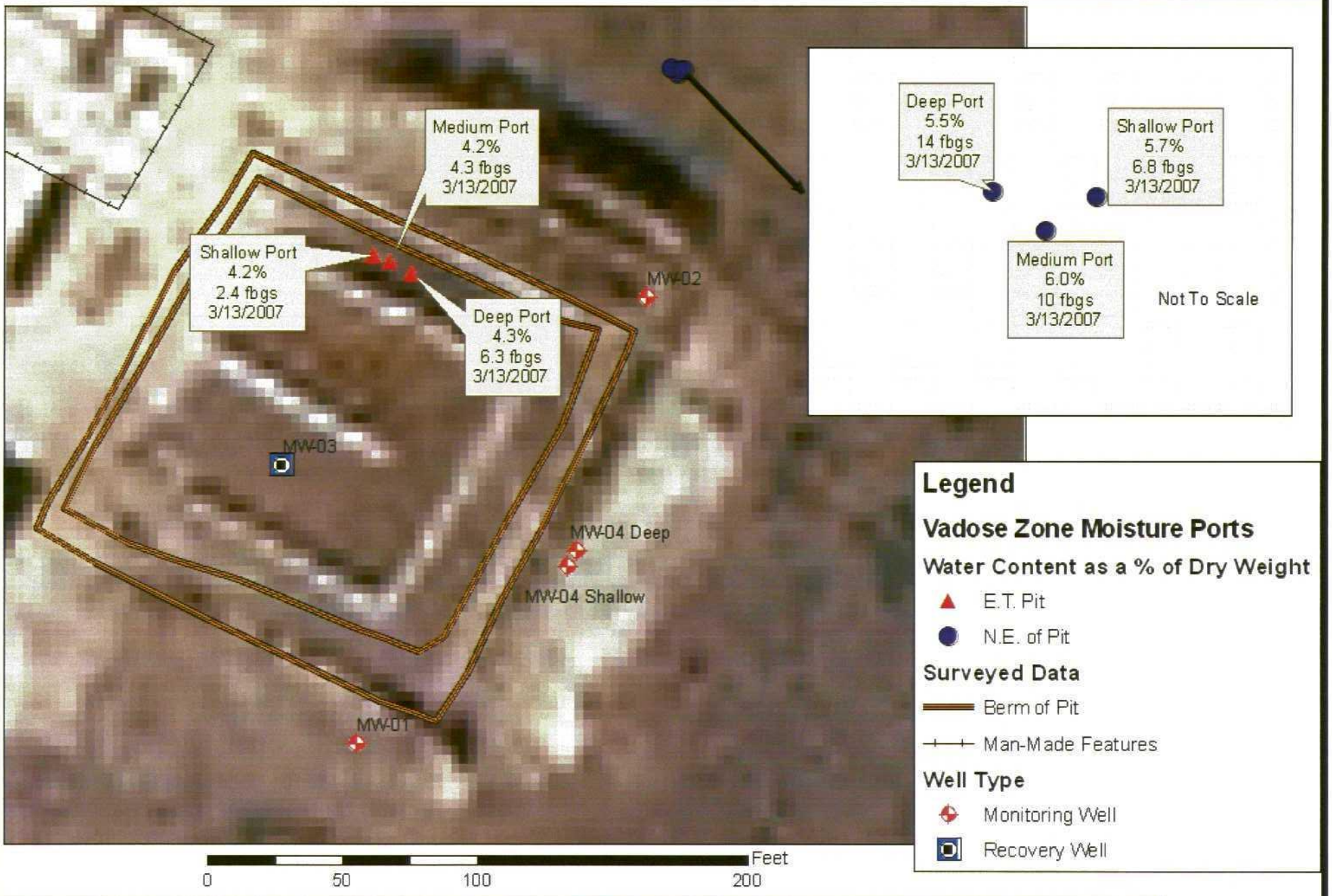
R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Static Ground Water Elevations (feet msl) Samson Investment Company State BD-04 March 2007 Progress Report	Plate 4 March 2007



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Recent ground water elevations (feet msl).	Plate 5
	Samson Investment Company State BD-04 Site Progress Report	March 2007



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	3rd Quarter 2006 (10/17/06) Potentiometric Surface	Plate 6
	Samson Investment Company State BD-04 March 2007 Report	March 2007



R.T. Hicks Consultants, Ltd 901 Rio Grande Blvd NW Suite F-142 Albuquerque, NM 87104 Ph: 505.266.5004	Measured Flux in Tensiometer Ports	Plate 7
	Samson Investment Company State BD-04 Site Progress Report	March 2007

Samson State BD-4

Table 1: Soil

Sample Name	Type	Sample Date	Depth (fbgs)	Analysis	Chloride (mg/Kg)	Bromide (mg/Kg)
MW-1	Soil Boring	5 /8 /2006	19	Lab	7.86	
	Soil Boring	5 /8 /2006	29	Lab	3.38	
	Soil Boring	5 /8 /2006	34	Lab	5.02	<0.100
MW-2	Soil Boring	5 /9 /2006	9	Lab	9.99	
	Soil Boring	5 /9 /2006	19	Lab	7.3	
	Soil Boring	5 /9 /2006	29	Lab	8.27	
	Soil Boring	5 /9 /2006	34	Lab	7.77	
	Soil Boring	5 /9 /2006	39	Lab	12.0	0.187
EDT-NC	Pit	7 /12/2006	0	Lab	3700	<3
EDT-NE	Pit	7 /12/2006	0	Lab	1700	<3
EDT-NW	Pit	7 /12/2006	0	Lab	2000	<3
EDT-SC	Pit	7 /12/2006	0	Lab	3000	<3
EDT-SE	Pit	7 /12/2006	0	Lab	850	<3
EDT-SW	Pit	7 /12/2006	0	Lab	5400	<3
EIPL	Pit	7 /12/2006	0	Lab	7.6	

Samson State BD-4

Table 1: Soil

Sample Name	Type	Sample Date	Depth (fbgs)	Analysis	Chloride (mg/Kg)	Bromide (mg/Kg)
NSEIP-E	Pit	7 /12/2006	0	Lab	110	
NSEIP-N	Pit	7 /12/2006	0	Lab	370	
NSEIP-S	Pit	7 /12/2006	0	Lab	320	
NSEIP-W	Pit	7 /12/2006	0	Lab	300	
SIP-E	Pit	7 /12/2006	0	Lab	940	
SIPL-SL	Pit	7 /12/2006	0	Lab	1400	
SIP-N	Pit	7 /12/2006	0	Lab	1700	
SIP-S	Pit	7 /12/2006	0	Lab	2300	
SIP-W	Pit	7 /12/2006	0	Lab	2500	
SSEIP-E	Pit	7 /12/2006	0	Lab	230	
SSEIP-N	Pit	7 /12/2006	0	Lab	220	
SSEIP-S	Pit	7 /12/2006	0	Lab	120	
SSEIP-W	Pit	7 /12/2006	0	Lab	190	
SW PIT 10.16	Pit	10/17/2006	0	Lab	950	

Samson State BD-4

Table 1: Soil

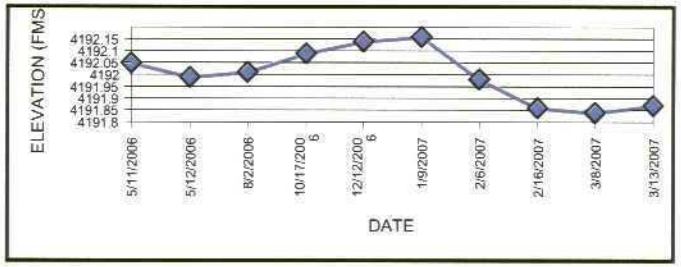
Sample Name	Type	Sample Date	Depth (fbgs)	Analysis	Chloride (mg/Kg)	Bromide (mg/Kg)
SB-4D	Soil Boring	1 /8 /2007	10	Lab	15	
	Soil Boring	1 /8 /2007	35	Lab	3.6	
	Soil Boring	1 /8 /2007	80	Lab	8.9	
SB-NW	Soil Boring	1 /8 /2007	10	Lab	1900	
	Soil Boring	1 /8 /2007	15	Lab	1100	
	Soil Boring	1 /8 /2007	35	Lab	25	
SB-W	Soil Boring	1 /9 /2007	5	Lab	2400	
	Soil Boring	1 /9 /2007	10	Lab	1300	
	Soil Boring	1 /9 /2007	35	Lab	4.8	

Table 2: Ground Water Data

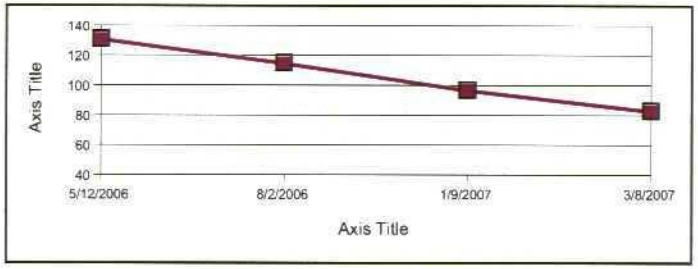
Samson State BD-4

MW-01

Ground Water Elevation



Chloride (mg/L) vs Time



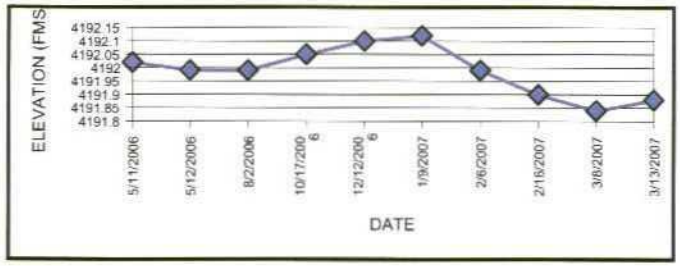
Sample Date	Type of Well	TOC (fmsl)	DTW (ft)	GW Elev (fmsl)	Conductivity (field)	Chloride (mg/L)	TDS (mg/L)	Comments
5/11/2006	Monitoring Well	4233.23	41.18	4192.05				
5/12/2006	Monitoring Well	4233.23	41.24	4191.99		131	838	
8/2/2006	Monitoring Well	4233.23	41.22	4192.01		115	648	
10/17/2006	Monitoring Well	4233.23	41.14	4192.09				
12/12/2006	Monitoring Well	4233.23	41.09	4192.14				
1/9/2007	Monitoring Well	4233.23	41.07	4192.16		97		
2/6/2007	Monitoring Well	4233.23	41.32	4191.91				
2/6/2007	Monitoring Well	4233.23	41.25	4191.98				
2/16/2007	Monitoring Well	4233.23	41.37	4191.86	985			
3/8/2007	Monitoring Well	4233.23	41.39	4191.84		83	620	
3/13/2007	Monitoring Well	4233.23	41.36	4191.87	1025			

Table 2: Ground Water Data

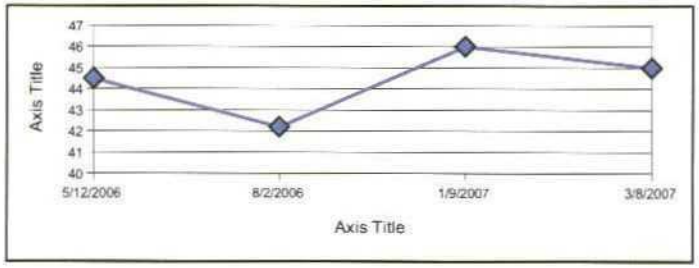
Samson State BD-4

MW-02

Ground Water Elevation



Chloride (mg/L) vs Time



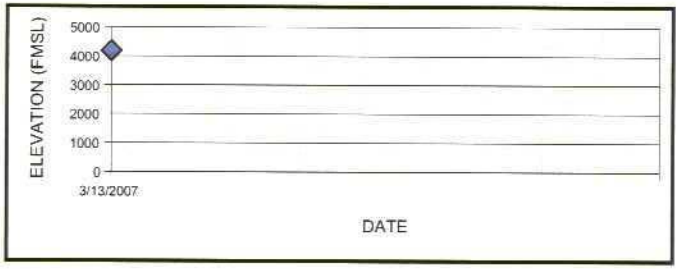
Sample Date	Type of Well	TOC (fmsl)	DTW (ft)	GW Elev (fmsl)	Conductivity (field)	Chloride (mg/L)	TDS (mg/L)	Comments
5/11/2006	Monitoring Well	4233.87	41.85	4192.02				
5/12/2006	Monitoring Well	4233.87	41.88	4191.99		44.5	530	
8/2/2006	Monitoring Well	4233.87	41.88	4191.99		42.2	444	
10/17/2006	Monitoring Well	4233.87	41.82	4192.05				
12/12/2006	Monitoring Well	4233.87	41.77	4192.1				
1/9/2007	Monitoring Well	4233.87	41.75	4192.12		46		
2/6/2007	Monitoring Well	4233.87	41.88	4191.99				
2/6/2007	Monitoring Well	4233.87	41.93	4191.94				
2/16/2007	Monitoring Well	4233.87	41.97	4191.9	924			
3/8/2007	Monitoring Well	4233.87	42.03	4191.84		45	510	
3/13/2007	Monitoring Well	4233.87	41.99	4191.88	663			

Table 2: Ground Water Data

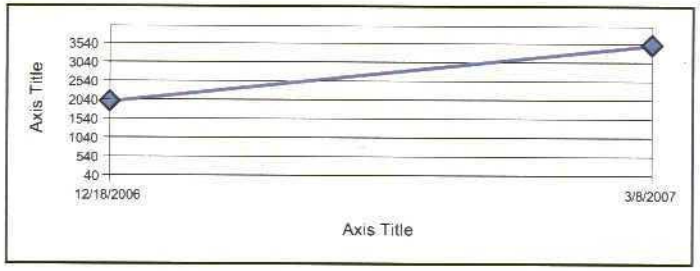
Samson State BD-4

MW-03 Deep

Ground Water Elevation



Chloride (mg/L) vs Time



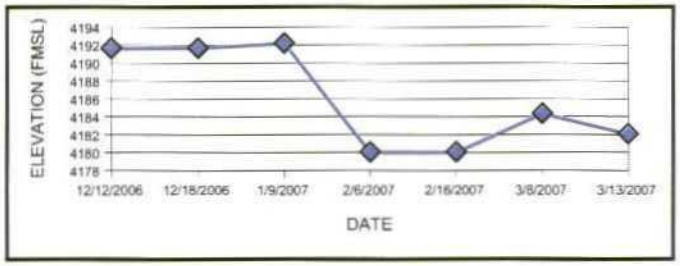
Sample Date	Type of Well	TOC (fmsl)	DTW (ft)	GW Elev (fmsl)	Conductivity (field)	Chloride (mg/L)	TDS (mg/L)	Comments
12/18/2006	Recovery Well	4224.52			870	2000	3700	
3/8/2007	Recovery Well	4224.52			10280	3500	6200	
3/13/2007	Recovery Well	4224.52	42.41	4182.11	10060			

Table 2: Ground Water Data

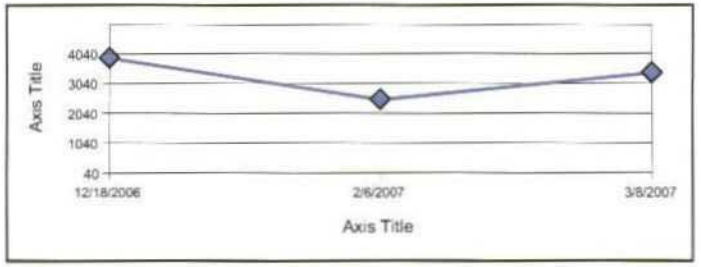
Samson State BD-4

MW-03 Shallow

Ground Water Elevation



Chloride (mg/L) vs Time



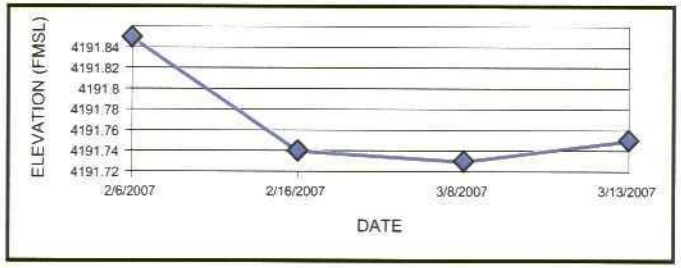
Sample Date	Type of Well	TOC (fmsl)	DTW (ft)	GW Elev (fmsl)	Conductivity (field)	Chloride (mg/L)	TDS (mg/L)	Comments
12/12/2006	Recovery Well	4224.52	32.81	4191.71				
12/18/2006	Recovery Well	4224.52	32.82	4191.7		3900	5800	
1/9/2007	Recovery Well	4224.52	32.27	4192.25				
2/6/2007	Recovery Well	4224.52	32.7	4191.82				Pump Off 8 hours
2/6/2007	Recovery Well	4224.52	44.47	4180.05		2500	4400	
2/16/2007	Recovery Well	4224.52	44.45	4180.07	8710			
3/8/2007	Recovery Well	4224.52	40.12	4184.4	10310	3400	6200	
3/13/2007	Recovery Well	4224.52	42.41	4182.11	10270			

Table 2: Ground Water Data

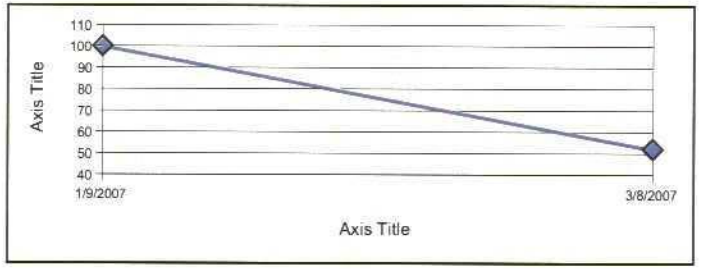
Samson State BD-4

MW-04 Deep

Ground Water Elevation



Chloride (mg/L) vs Time



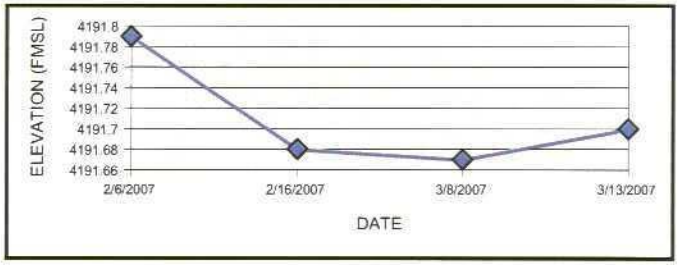
Sample Date	Type of Well	TOC (fmsl)	DTW (ft)	GW Elev (fmsl)	Conductivity (field)	Chloride (mg/L)	TDS (mg/L)	Comments
1/9/2007	Monitoring Well	4233.38				100		
2/6/2007	Monitoring Well	4233.38	41.61	4191.77				
2/6/2007	Monitoring Well	4233.38	41.53	4191.85				
2/16/2007	Monitoring Well	4233.38	41.64	4191.74	949			
3/8/2007	Monitoring Well	4233.38	41.65	4191.73		52	550	
3/13/2007	Monitoring Well	4233.38	41.63	4191.75	782			

Table 2: Ground Water Data

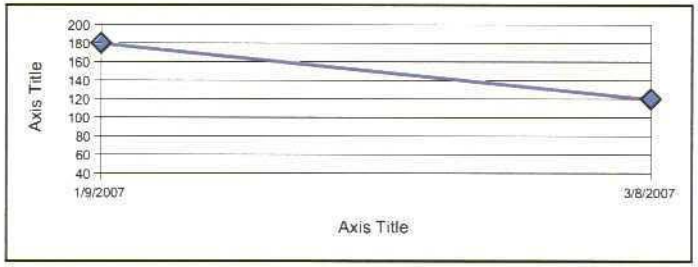
Samson State BD-4

MW-04 Shallow

Ground Water Elevation



Chloride (mg/L) vs Time



Sample Date	Type of Well	TOC (fmsl)	DTW (ft)	GW Elev (fmsl)	Conductivity (field)	Chloride (mg/L)	TDS (mg/L)	Comments
1/9/2007	Monitoring Well	4233.52				180		
2/6/2007	Monitoring Well	4233.52	41.8	4191.72				
2/6/2007	Monitoring Well	4233.52	41.73	4191.79				
2/16/2007	Monitoring Well	4233.52	41.84	4191.68	980			
3/8/2007	Monitoring Well	4233.52	41.85	4191.67		120	680	
3/13/2007	Monitoring Well	4233.52	41.82	4191.7	988			

Table 3:
MW-03 Recovery Test

Depth to Water (static) = 42-feet from TOC
Depth to Water (start of recharge) = 54.85-feet from TOC
Change in ground water depth = 12.85-feet

Recharge Data:			
time (min)	time (hours)	DTW (ft)	Change (ft)
0	0.00	54.85	0
0.5	0.01	**54.45**	0.4
1	0.02	54.04	0.81
2	0.03	53.11	1.74
3	0.05	48.41	6.44
4	0.07	46.53	8.32
5	0.08	44.92	9.93
6	0.10	44.38	10.47
7	0.12	43.98	10.87
8	0.13	43.71	11.14
9	0.15	43.57	11.28
10	0.17	43.44	11.41
11	0.18	43.31	11.54
12	0.20	43.31	11.54
13	0.22	43.17	11.68
14	0.23	43.17	11.68
15	0.25	43.04	11.81
16	0.27	43.17	11.68
17	0.28	43.04	11.81
18	0.30	43.04	11.81
19	0.32	43.04	11.81
20	0.33	43.04	11.81
21	0.35	43.04	11.81
22	0.37	43.04	11.81
23	0.38	43.04	11.81
24	0.40	43.04	11.81
25	0.42	43.04	11.81
26	0.43	43.04	11.81
27	0.45	42.9	11.95
28	0.47	42.9	11.95
29	0.48	42.9	11.95
30	0.50	43.04	11.81
31	0.52	42.9	11.95
32	0.53	42.9	11.95
33	0.55	42.9	11.95
34	0.57	42.9	11.95
35	0.58	42.9	11.95
36	0.60	42.9	11.95
37	0.62	42.9	11.95
38	0.63	42.9	11.95
39	0.65	42.9	11.95
40	0.67	42.9	11.95

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
41	0.68	42.9	11.95
42	0.70	42.9	11.95
43	0.72	42.9	11.95
44	0.73	42.9	11.95
45	0.75	42.9	11.95
46	0.77	42.9	11.95
47	0.78	42.9	11.95
48	0.80	42.77	12.08
49	0.82	42.77	12.08
50	0.83	42.9	11.95
51	0.85	42.9	11.95
52	0.87	42.77	12.08
53	0.88	42.77	12.08
54	0.90	42.9	11.95
55	0.92	42.9	11.95
56	0.93	42.77	12.08
57	0.95	42.77	12.08
58	0.97	42.77	12.08
59	0.98	42.77	12.08
60	1.00	42.77	12.08
61	1.02	42.77	12.08
62	1.03	42.77	12.08
63	1.05	42.77	12.08
64	1.07	42.77	12.08
65	1.08	42.77	12.08
66	1.10	42.77	12.08
67	1.12	42.77	12.08
68	1.13	42.77	12.08
69	1.15	42.77	12.08
70	1.17	42.77	12.08
71	1.18	42.77	12.08
72	1.20	42.77	12.08
73	1.22	42.77	12.08
74	1.23	42.77	12.08
75	1.25	42.77	12.08
76	1.27	42.77	12.08
77	1.28	42.77	12.08
78	1.30	42.77	12.08
79	1.32	42.77	12.08
80	1.33	42.77	12.08
81	1.35	42.77	12.08
82	1.37	42.77	12.08
83	1.38	42.77	12.08
84	1.40	42.77	12.08
85	1.42	42.77	12.08
86	1.43	42.77	12.08
87	1.45	42.77	12.08
88	1.47	42.77	12.08
89	1.48	42.77	12.08
90	1.50	42.77	12.08

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
91	1.52	42.77	12.08
92	1.53	42.77	12.08
93	1.55	42.77	12.08
94	1.57	42.77	12.08
95	1.58	42.77	12.08
96	1.60	42.77	12.08
97	1.62	42.77	12.08
98	1.63	42.77	12.08
99	1.65	42.64	12.21
100	1.67	42.77	12.08
101	1.68	42.77	12.08
102	1.70	42.77	12.08
103	1.72	42.77	12.08
104	1.73	42.77	12.08
105	1.75	42.77	12.08
106	1.77	42.77	12.08
107	1.78	42.64	12.21
108	1.80	42.77	12.08
109	1.82	42.77	12.08
110	1.83	42.64	12.21
111	1.85	42.64	12.21
112	1.87	42.64	12.21
113	1.88	42.64	12.21
114	1.90	42.64	12.21
115	1.92	42.64	12.21
116	1.93	42.77	12.08
117	1.95	42.64	12.21
118	1.97	42.64	12.21
119	1.98	42.64	12.21
120	2.00	42.64	12.21
121	2.02	42.77	12.08
122	2.03	42.64	12.21
123	2.05	42.64	12.21
124	2.07	42.64	12.21
125	2.08	42.64	12.21
126	2.10	42.64	12.21
127	2.12	42.64	12.21
128	2.13	42.64	12.21
129	2.15	42.64	12.21
130	2.17	42.64	12.21
131	2.18	42.64	12.21
132	2.20	42.64	12.21
133	2.22	42.64	12.21
134	2.23	42.64	12.21
135	2.25	42.64	12.21
136	2.27	42.64	12.21
137	2.28	42.64	12.21
138	2.30	42.64	12.21
139	2.32	42.64	12.21
140	2.33	42.64	12.21

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
141	2.35	42.64	12.21
142	2.37	42.64	12.21
143	2.38	42.64	12.21
144	2.40	42.64	12.21
145	2.42	42.64	12.21
146	2.43	42.64	12.21
147	2.45	42.64	12.21
148	2.47	42.64	12.21
149	2.48	42.64	12.21
150	2.50	42.64	12.21
151	2.52	42.64	12.21
152	2.53	42.64	12.21
153	2.55	42.64	12.21
154	2.57	42.64	12.21
155	2.58	42.64	12.21
156	2.60	42.64	12.21
157	2.62	42.64	12.21
158	2.63	42.64	12.21
159	2.65	42.64	12.21
160	2.67	42.64	12.21
161	2.68	42.64	12.21
162	2.70	42.64	12.21
163	2.72	42.64	12.21
164	2.73	42.64	12.21
165	2.75	42.64	12.21
166	2.77	42.64	12.21
167	2.78	42.64	12.21
168	2.80	42.64	12.21
169	2.82	42.64	12.21
170	2.83	42.64	12.21
171	2.85	42.64	12.21
172	2.87	42.64	12.21
173	2.88	42.64	12.21
174	2.90	42.64	12.21
175	2.92	42.64	12.21
176	2.93	42.64	12.21
177	2.95	42.64	12.21
178	2.97	42.64	12.21
179	2.98	42.64	12.21
180	3.00	42.64	12.21
181	3.02	42.64	12.21
182	3.03	42.64	12.21
183	3.05	42.64	12.21
184	3.07	42.64	12.21
185	3.08	42.64	12.21
186	3.10	42.64	12.21
187	3.12	42.64	12.21
188	3.13	42.64	12.21
189	3.15	42.64	12.21
190	3.17	42.64	12.21

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
191	3.18	42.64	12.21
192	3.20	42.64	12.21
193	3.22	42.64	12.21
194	3.23	42.64	12.21
195	3.25	42.64	12.21
196	3.27	42.64	12.21
197	3.28	42.64	12.21
198	3.30	42.64	12.21
199	3.32	42.64	12.21
200	3.33	42.64	12.21
201	3.35	42.64	12.21
202	3.37	42.64	12.21
203	3.38	42.64	12.21
204	3.40	42.64	12.21
205	3.42	42.64	12.21
206	3.43	42.64	12.21
207	3.45	42.64	12.21
208	3.47	42.64	12.21
209	3.48	42.64	12.21
210	3.50	42.64	12.21
211	3.52	42.64	12.21
212	3.53	42.64	12.21
213	3.55	42.64	12.21
214	3.57	42.64	12.21
215	3.58	42.64	12.21
216	3.60	42.64	12.21
217	3.62	42.64	12.21
218	3.63	42.64	12.21
219	3.65	42.64	12.21
220	3.67	42.64	12.21
221	3.68	42.64	12.21
222	3.70	42.64	12.21
223	3.72	42.64	12.21
224	3.73	42.64	12.21
225	3.75	42.64	12.21
226	3.77	42.64	12.21
227	3.78	42.64	12.21
228	3.80	42.64	12.21
229	3.82	42.64	12.21
230	3.83	42.5	12.35
231	3.85	42.5	12.35
232	3.87	42.64	12.21
233	3.88	42.64	12.21
234	3.90	42.64	12.21
235	3.92	42.5	12.35
236	3.93	42.64	12.21
237	3.95	42.64	12.21
238	3.97	42.64	12.21
239	3.98	42.5	12.35
240	4.00	42.5	12.35

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
241	4.02	42.64	12.21
242	4.03	42.64	12.21
243	4.05	42.5	12.35
244	4.07	42.5	12.35
245	4.08	42.64	12.21
246	4.10	42.5	12.35
247	4.12	42.64	12.21
248	4.13	42.64	12.21
249	4.15	42.64	12.21
250	4.17	42.5	12.35
251	4.18	42.64	12.21
252	4.20	42.64	12.21
253	4.22	42.5	12.35
254	4.23	42.5	12.35
255	4.25	42.64	12.21
256	4.27	42.64	12.21
257	4.28	42.5	12.35
258	4.30	42.5	12.35
259	4.32	42.64	12.21
260	4.33	42.5	12.35
261	4.35	42.5	12.35
262	4.37	42.5	12.35
263	4.38	42.5	12.35
264	4.40	42.64	12.21
265	4.42	42.5	12.35
266	4.43	42.5	12.35
267	4.45	42.5	12.35
268	4.47	42.5	12.35
269	4.48	42.5	12.35
270	4.50	42.64	12.21
271	4.52	42.5	12.35
272	4.53	42.5	12.35
273	4.55	42.5	12.35
274	4.57	42.5	12.35
275	4.58	42.5	12.35
276	4.60	42.5	12.35
277	4.62	42.64	12.21
278	4.63	42.5	12.35
279	4.65	42.64	12.21
280	4.67	42.5	12.35
281	4.68	42.5	12.35
282	4.70	42.5	12.35
283	4.72	42.64	12.21
284	4.73	42.5	12.35
285	4.75	42.5	12.35
286	4.77	42.5	12.35
287	4.78	42.5	12.35
288	4.80	42.5	12.35
289	4.82	42.5	12.35
290	4.83	42.5	12.35

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
291	4.85	42.5	12.35
292	4.87	42.5	12.35
293	4.88	42.5	12.35
294	4.90	42.5	12.35
295	4.92	42.5	12.35
296	4.93	42.5	12.35
297	4.95	42.5	12.35
298	4.97	42.5	12.35
299	4.98	42.5	12.35
300	5.00	42.5	12.35
301	5.02	42.5	12.35
302	5.03	42.5	12.35
303	5.05	42.5	12.35
304	5.07	42.5	12.35
305	5.08	42.5	12.35
306	5.10	42.5	12.35
307	5.12	42.5	12.35
308	5.13	42.5	12.35
309	5.15	42.5	12.35
310	5.17	42.5	12.35
311	5.18	42.5	12.35
312	5.20	42.5	12.35
313	5.22	42.5	12.35
314	5.23	42.5	12.35
315	5.25	42.5	12.35
316	5.27	42.5	12.35
317	5.28	42.5	12.35
318	5.30	42.5	12.35
319	5.32	42.5	12.35
320	5.33	42.5	12.35
321	5.35	42.5	12.35
322	5.37	42.5	12.35
323	5.38	42.5	12.35
324	5.40	42.5	12.35
325	5.42	42.5	12.35
326	5.43	42.5	12.35
327	5.45	42.5	12.35
328	5.47	42.5	12.35
329	5.48	42.5	12.35
330	5.50	42.5	12.35
331	5.52	42.5	12.35
332	5.53	42.5	12.35
333	5.55	42.5	12.35
334	5.57	42.5	12.35
335	5.58	42.5	12.35
336	5.60	42.5	12.35
337	5.62	42.5	12.35
338	5.63	42.5	12.35
339	5.65	42.5	12.35
340	5.67	42.5	12.35

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
341	5.68	42.5	12.35
342	5.70	42.5	12.35
343	5.72	42.5	12.35
344	5.73	42.5	12.35
345	5.75	42.5	12.35
346	5.77	42.5	12.35
347	5.78	42.5	12.35
348	5.80	42.5	12.35
349	5.82	42.5	12.35
350	5.83	42.5	12.35
351	5.85	42.5	12.35
352	5.87	42.5	12.35
353	5.88	42.5	12.35
354	5.90	42.5	12.35
355	5.92	42.5	12.35
356	5.93	42.5	12.35
357	5.95	42.5	12.35
358	5.97	42.5	12.35
359	5.98	42.5	12.35
360	6.00	42.5	12.35
361	6.02	42.5	12.35
362	6.03	42.5	12.35
363	6.05	42.5	12.35
364	6.07	42.5	12.35
365	6.08	42.5	12.35
366	6.10	42.5	12.35
367	6.12	42.5	12.35
368	6.13	42.5	12.35
369	6.15	42.5	12.35
370	6.17	42.5	12.35
371	6.18	42.5	12.35
372	6.20	42.5	12.35
373	6.22	42.5	12.35
374	6.23	42.5	12.35
375	6.25	42.5	12.35
376	6.27	42.5	12.35
377	6.28	42.5	12.35
378	6.30	42.5	12.35
379	6.32	42.5	12.35
380	6.33	42.5	12.35
381	6.35	42.5	12.35
382	6.37	42.5	12.35
383	6.38	42.5	12.35
384	6.40	42.5	12.35
385	6.42	42.5	12.35
386	6.43	42.5	12.35
387	6.45	42.5	12.35
388	6.47	42.5	12.35
389	6.48	42.5	12.35
390	6.50	42.5	12.35

Table 3:
MW-03 Recovery Test

time (min)	time (hours)	DTW (ft)	Change (ft)
391	6.52	42.5	12.35
392	6.53	42.5	12.35
393	6.55	42.5	12.35
394	6.57	42.5	12.35
395	6.58	42.5	12.35
396	6.60	42.5	12.35
397	6.62	42.5	12.35
398	6.63	42.5	12.35
399	6.65	42.5	12.35
400	6.67	42.5	12.35
401	6.68	42.5	12.35
402	6.70	42.5	12.35
403	6.72	42.5	12.35
404	6.73	42.5	12.35
405	6.75	42.5	12.35
406	6.77	42.5	12.35
407	6.78	42.5	12.35
408	6.80	42.5	12.35
409	6.82	42.5	12.35
410	6.83	42.5	12.35
411	6.85	42.5	12.35
412	6.87	42.5	12.35
413	6.88	42.5	12.35
414	6.90	42.5	12.35
415	6.92	42.5	12.35
416	6.93	42.5	12.35
417	6.95	**42.5**	12.35
418	6.97	**42.5**	12.35
419	6.98	**42.5**	12.35
420	7.00	**42.5**	12.35
421	7.02	**42.5**	12.35
422	7.03	**42.5**	12.35
423	7.05	**42.5**	12.35
424	7.07	**42.5**	12.35
425	7.08	**42.5**	12.35
426	7.10	**42.5**	12.35
427	7.12	**42.5**	12.35
428	7.13	**42.5**	12.35
429	7.15	42.5	12.35
430	7.17	42.5	12.35
431	7.18	42.5	12.35
432	7.20	42.5	12.35
433	7.22	42.5	12.35
434	7.23	42.5	12.35
435	7.25	42.5	12.35
436	7.27	42.5	12.35
437	7.28	**42.5**	12.35

Table 4: Cumulative Pump Data

DATE		Barrels Pumped	Comments
2/4/07		76	
2/5/07		150	
2/6/07		169	TEST RECOVERY
2/7/07		132	
2/8/07		146	
2/9/07		155	
2/10/07		95	
2/11/07		99	
2/12/07		101	
2/13/07		0	TURNED OFF
2/14/07		167	
2/15/07		163	
2/16/07		146	
2/17/07		139	
2/18/07		139	
2/19/07		140	
2/20/07		149	
2/21/07		105	
2/22/07		108	
2/23/07		105	
2/24/07		108	
2/25/07		110	
2/26/07		111	
2/27/07		109	
2/28/07		113	
3/1/07		100	
3/2/07		80	
3/3/07		79	
3/4/07		75	
3/5/07		99	
3/6/07		86	
3/7/07		77	
3/8/07		78	
3/9/07		70	
3/10/07		66	
3/11/07		56	
3/12/07		50	
3/13/07		66	
		4017	TOTAL

Appendix A

Details of Activities Completed

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Appendix A

1) PERFORMED FINAL GRADING AND SEEDING OF THE ET INFILTRATION BARRIER

Appendix F provides photographic documentation of this work element.

2) CONDUCTED A BOREHOLE AND SOIL SAMPLING PROGRAM

On January 6, 2007, we installed four additional boreholes. We completed two of the four boreholes as monitoring wells (MW-04 Shallow and MW-04 Deep). Plate 2 shows the location of the two boreholes (W Boring and NW Boring) and the location of all monitoring wells relative to the former pit. In addition, Plate 2 shows the location of the source-removal pumping well, MW-03, and the soil moisture monitoring ports installed within the former pit.

Using hollow-stem auger drilling techniques, we collected split-spoon soil samples at five-foot intervals from each of the four boreholes. The soils were field-screened for chlorides using a field titration method. In addition, select samples were submitted for laboratory analysis based upon field-screening results. Table 1 shows the results of recent and historic soil sampling events.

3) INSTALLED A PUMP AND DISPOSE SYSTEM

On February 4, 2007, we began a source-removal (pump and dispose) ground water restoration system to reduce total dissolved solids (TDS) concentration in ground water to less than 3,000 mg/L. The system, which was described in a January 25, 2007, letter to NMOCD, is located in Appendix G.

The system runs 24 hours a day and pumps at a rate of approximately 3.1 gallons per minute (gpm). From February 4 through March 13, 2007, the system has removed approximately 4,017 barrels of ground water to the nearby Samson Class II injection well.

4) PERFORMED ROUTINE SAMPLING AND MONITORING ACTIVITIES

During the first quarter of 2007, we collected ground water samples for laboratory analysis on January 9, February 6, and March 8. Table 2 presents both recent and past ground water data. The graphs included in Table 2 compare the chloride concentrations in ground water samples taken from on-site monitoring wells from before source-removal pumping began through the most recent laboratory analyses. Plate 3 shows recent chloride concentrations in ground water. The Certificate of Analyses is provided in Appendix D.

Table 2 also includes the results of periodic field testing of specific conductance and water level measurements. Plates 4 and 5 compare the potentiometric surface during static conditions (January 9, 2007) with conditions after more than 30 days of continual pumping (March 8, 2007), respectively. Plate 6 shows the regional potentiometric surface based on site wells and nearby windmills.

5) INSTALLED VADOSE ZONE MOISTURE MEASUREMENT PORTS

Six soil moisture sampling ports, open at the bottom, were installed at the site during two characterization and remediation activities (December, 2006, and February, 2006) in order to provide a measure of soil moisture content. Three were installed along the north side of the excavation pit and three were installed north of the affected area to provide background readings (see Plate 7) in a moist slurry of silica flour and screened cuttings in accordance with the manufacturer's recommendations (http://www.soilmoisture.com/PDF%20FILES/85201F1.pdf). The slurry, and hence the gypsum blocks, equilibrate with the surrounding vadose zone moisture content. After the "wet installation" of the blocks, the sampling devices can require several months to equilibrate to the ambient moisture content of the soil. The results of the February 6, 2007, and March 13, 2007, monitoring events are presented below.

Monitoring Results, February 7, 2007, and March 13, 2007

Location	Port Name	Depth (fbgs) on sample date:		Water Content (as % of dry wt.) on sample date:	
		2/6/2007	3/13/2007	2/6/2007	3/13/2007
E.T. Pit	Deep port	6	6	4.5%	4.3%
E.T. Pit	Medium port	4	4	4.2%	4.2%
E.T. Pit	Shallow port	2	2	NS	4.2%
NE of Pit	Deep port	14	14	NS	5.5%
NE of Pit	Medium port	10	10	6.0%	6.0%
NE of Pit	Shallow port	7	7	5.7%	5.7%

6) PERFORMED A GROUND WATER PUMP TEST AT MW-03 FOR USE IN MODFLOW SIMULATION

On February 6, 2007, we performed a drawdown/recovery test at MW-03 (the Recovery Well). The purpose of the test was to obtain the hydraulic properties of the underlying aquifer to use as input parameters for Visual MODFLOW. Results of the pumping test are provided in Table 3. The calculated hydraulic conductivity (K) based on this pumping test is 0.437 ft/day. This value compares favorably with the results of a single-well slug test conducted in October, 2006, on MW-1, where K = 0.358 ft/day. Because the pumping well was designed for source removal, however, we suspect that the pumping test data does not provide accurate estimates of aquifer properties. At this time, therefore, we propose to re-evaluate the value of MODFLOW after the cessation of ground water recovery.

Appendix B

Details of Conclusions Based On Activities Completed

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

APPENDIX B

1) SUBSURFACE LITHOLOGY IS UNIFORM ACROSS THE SITE.

During the boring event, we observed caliche and sandstone lenses in the uppermost fifteen feet below ground surface (bgs). From fifteen to eighty feet bgs, we observed silty sands (SM) with lenses of sandstone. We observed saturated conditions at approximately forty feet bgs. Soil boring logs and cross-sections with chloride results are provided in Appendix C.

2) THE RELEASE FROM THE RESERVE PIT MIGRATED VERTICALLY DOWNWARD.

As shown in the cross-sections presented in Appendix C, chloride concentrations are not materially above background in borings outside of the pit boundary.The Laboratory Certificate of Analyses for recent samples is provided in Appendix D.

3) GROUND WATER FLOWS SOUTHEAST AT A GRADIENT OF APPROXIMATELY 0.001 FEET/FOOT.

Plate 4 shows the potentiometric surface based on the four site wells before the source removal pumping program began. Plate 5 shows the March 13, 2007 potentiometric surface for the general area of the former pit.

4) RECOVERY TEST DATA SUGGEST THAT THE LOCAL HYDRAULIC CONDUCTIVITY BENEATH THE SITE IS APPROXIMATELY 0.4 FEET/DAY. OBSERVATIONAL DATA OVER THE PAST SEVERAL MONTHS, HOWEVER, SUGGEST THAT LOCAL HYDRAULIC CONDUCTIVITY MAY BE 10–100 TIMES GREATER THAN ESTIMATED BY THE INITIAL RECOVERY DATA.

Analysis of drawdown and recovery data associated with the start-up of the source-removal program suggest that partial well penetration, borehole skin effects or other factors may result in an under-estimate of the local hydaulic conductivity beneath the site. Analysis of test data show that the hydraulic conductivity is approximately 0.4 feet/day (see Table 3 and Appendix E).

We used the calculated hydraulic conductivity data in a simulation of ground water flow using MODFLOW. The simulation did not agree with the observed drawdown of MW-3 and the response in the nearby monitoring wells. Increasing the hydraulic conductivity a factor of 10–100 provided a better correlation between the observed hydraulic response of the aquifer and the simulation.

Additionally, using the observed hydraulic gradient and the hydraulic conductivity calculated in the pumping test yields an estimated ground water flux of 0.0004 feet/day, or 0.15 feet/year. We find it difficult to reconcile this estimate of ground water flux with the observed decline in chloride concentration in MW-1 due to dispersion and dilution.

We believe that a ground water flux that is 10–100 times greater than that calculated by the pumping test is required to achieve the observed decline in chloride due to dilution and dispersion.

5) MORE THAN 30 DAYS OF GROUND-WATER PUMPING HAVE CREATED A CONE-SHAPED DEPRESSION AROUND THE PUMPING WELL WITH A SUBSEQUENT IMPACT ON THE LOCAL GROUND WATER FLOW.

Plate 5 shows the site potentiometric surface on March 13, 2007, after more than 30 days of source-removal pumping. Figure B-1a, which plots water elevation vs. time for MW-1, MW-2, MW-4 Shallow, and MW-04 Deep, shows that pumping has affected the water level in these wells. Figure B-1b shows the rise in water level elevation in MW-03 Shallow on February 6. The rise in ground water elevation represents data collected when the pumping ceased for 8 hours to conduct a recovery test. Pumping resumed at the completion of the 8 hour recovery test.

Figure B-1a: Water Elevation vs. Time for MW-1, MW-2, and MW 3

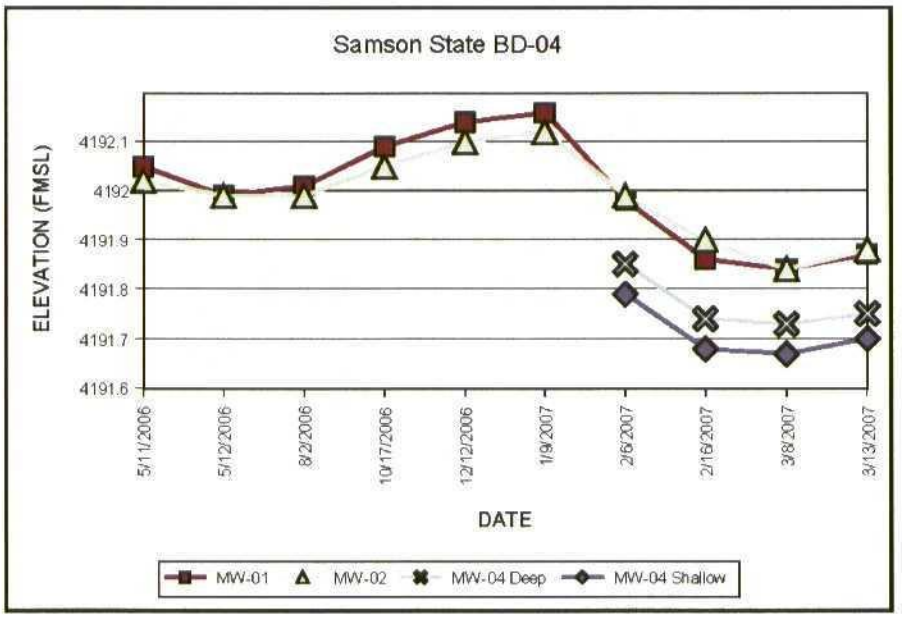


Figure B-1b: Water Elevation vs. Time for MW 3

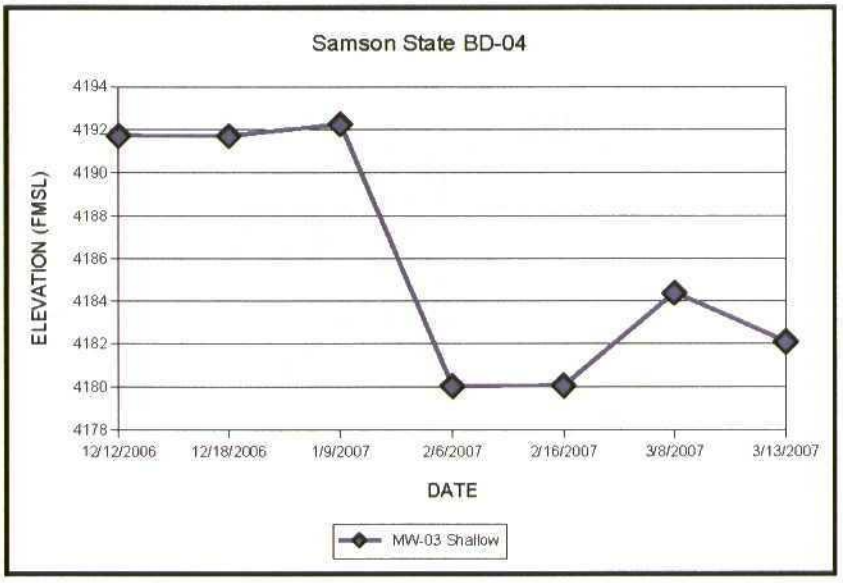


Table 4 shows the pumping data from MW-3.

6) GROUND WATER DATA INDICATE THAT MW-3 IS PROPERLY DESIGNED AND LOCATED TO EFFECTIVELY REMOVE THE MASS OF CHLORIDE RELEASED BY THE FORMER RESERVE PIT.

Table 2 shows that chloride concentration, prior to source removal, in MW-03 Shallow (3900 mg/L) is essentially two times higher than chloride concentration in MW-03 Deep (2000 mg/L). Focusing pumping in the upper screened zone of MW-03 (MW-03 Shallow) is appropriate for a source removal program.

7) GROUND WATER IMPAIRMENT IS RESTRICTED TO THE AREA BELOW THE FORMER RESERVE PIT.

Plate 3 and Table 2 show that chloride concentrations are below WQCC standards in monitoring wells located down-gradient from the former pit.

8) THE MAGNITUDE AND EXTENT OF GROUND WATER IMPAIRMENT IS SUFFICIENTLY DEFINED TO MEET THE MANDATES OF NMOCD RULES AND AT THIS TIME ADDITIONAL MONITORING WELLS ARE NOT REQUIRED.

Plate 3 and Table 2 show that chloride concentrations are below WQCC standards in monitoring wells located down-gradient from the former pit. Moreover, chlo-

ride concentrations in these down gradient wells are declining over time. At this time, additional monitoring wells are not required.

9) THE CONSTRUCTION OF THE ET INFILTRATION BARRIER IS CONSISTENT WITH THE PROPOSAL SUBMITTED TO NMOCD AND WITH THE GENERAL DESIGN CRITERIA FOR LANDFILL COVERS AS TESTED BY SANDIA NATIONAL LABORATORIES.

Appendix F provides photographic documentation of the construction of the monolithic evapotranspiration infiltration barrier. Plate 2 shows that the final grade of the site conforms to design criteria tested by Sandia national laboratory. The Sandia National Laboratories study was referenced in the Corrective Action Plan submitted to NMOCD in November, 2006.

The soil moisture data from sampling ports below the infiltration barrier show a lower moisture content than similar soil horizons at the background location, north of the former reserve pit. We conclude that the spoil piles placed into the pit had dried and are now artificially low in moisture. Over time, we expect moisture concentrations may rise to equal that observed in the background boring. Because of the low moisture content, the moisture flux through the vadose zone will be significantly lower than originally predicted in HYDRUS-1D simulations (see figure 4a of August 17 Closure Plan Design Document).

Appendix C

Soil Boring Logs, Cross-Sections

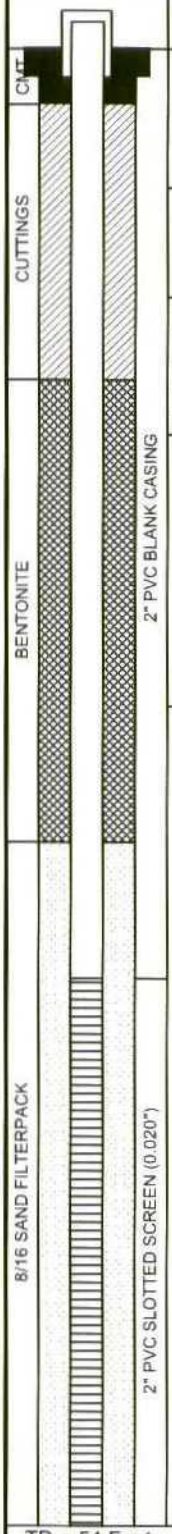
R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

LITHOLOGIC LOG (MONITORING WELL)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

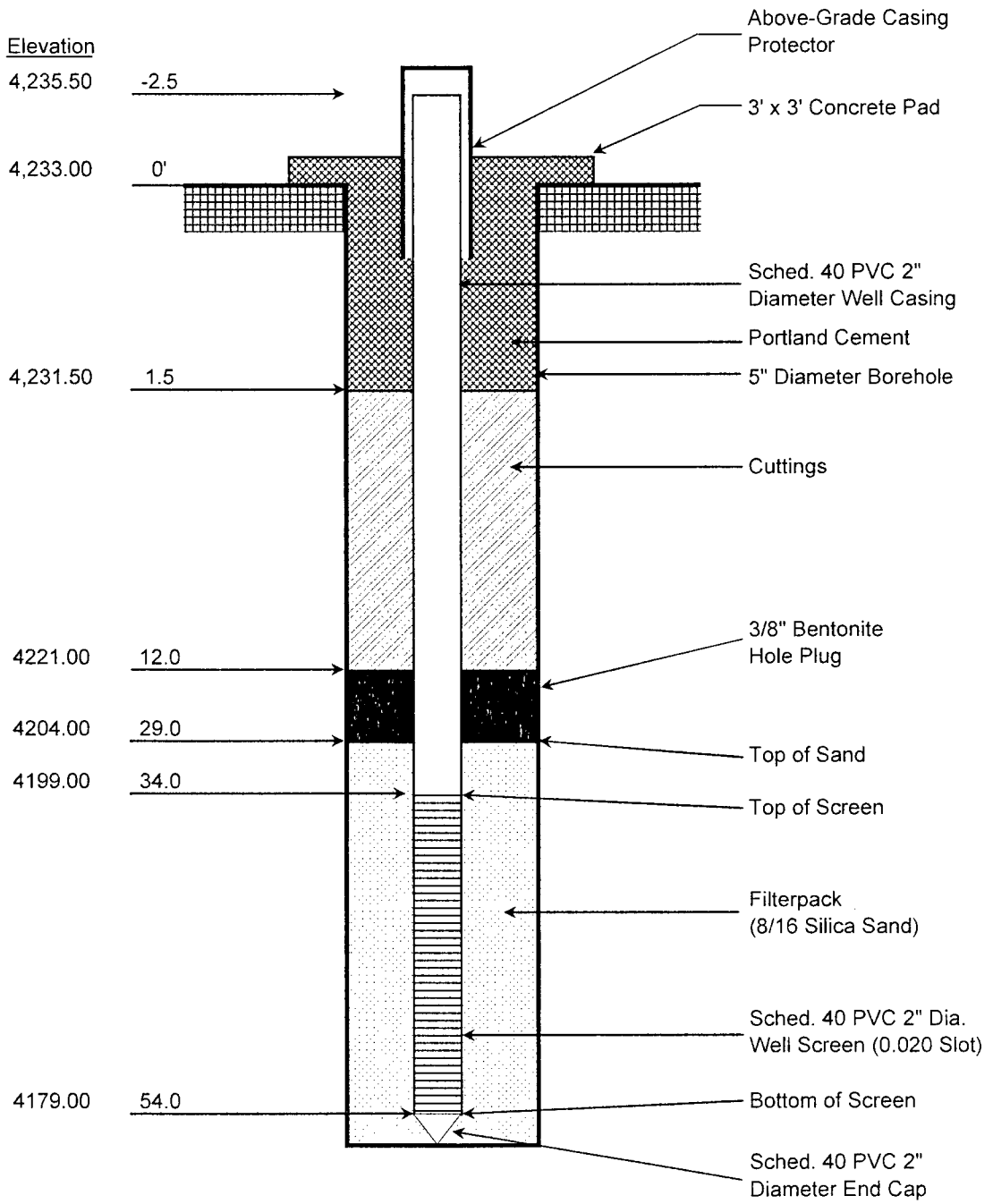
MONITOR WELL NO.:	MW-1	TOTAL DEPTH:	55.0 Ft
SITE ID:	Samson State BD #4	CLIENT:	Samson Investment Co.
SURFACE ELEVATION:	Approximately 4233	COUNTY:	Lea County
CONTRACTOR:	Atkins Engineering	STATE:	New Mexico
DRILLING METHOD:	Hollow-Stem	LOCATION:	T-12-S, R-33-E, Sec. 2 (H)
INSTALLATION DATE:	5/8/06	FIELD REP.:	Dale Littlejohn
WELL PLACEMENT:	South of reserve pit	FILE NAME:	\State BD-4\Lithlogs (5-06)
COMMENTS:	Lat. 33° 18' 34.3" North, Long. 103° 34' 38.8" West		



Lithology	SAMPLE DATA PHOTO	DEPTH	% REC	PID	Cl (Lab)	DEPTH	LITHOLOGIC DESCRIPTION LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOL., DIST. DEATURES
						5	CALICHE grayish white with silt.
							CALICHE gray to grayish tan with silt and very fine grain sand.
		9-11	35%	0 ppm	49.4 mg/kg	10	SILT tan to light brown, with some caliche and fine gain sand.
		19-21	25%	0 ppm	7.86 mg/kg	15 20	SAND light brown, fine grain, sub angular, well sorted, with some caliche.
	No Sample Recovery	29-31	30%	0 ppm	3.38 mg/kg	25 30	SAND light brown, fine grain, sub angular, well sorted, with no caliche.
		34-36	15%	0 ppm	5.02 mg/kg	35 40 45 50	Saturated formation at 39 feet (838 mg/L Cl)

TD = 54 Feet

MONITORING WELL CONSTRUCTION DIAGRAM



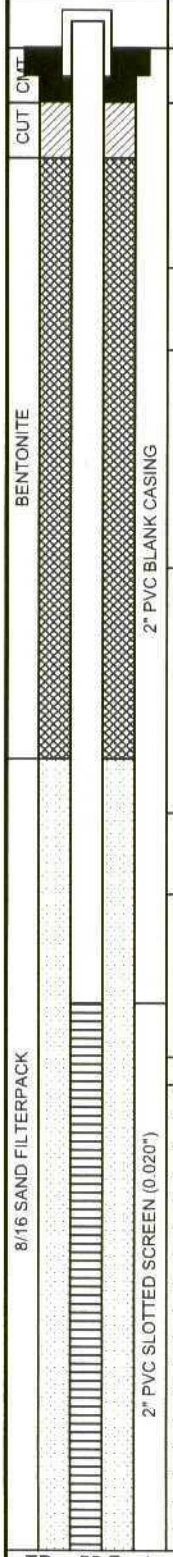
R T Hicks Consultants Ltd	SITE: Samson State "BD" No. 4 Site		**Monitoring Well No. MW-1**
	DATE: 5/8/2006	REV. NO.: 1	
	AUTHOR: DTL	TECH: DTL	
	DRILLER: Atkins	FILE: Lithlogs (5-06)	

LITHOLOGIC LOG (MONITORING WELL)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

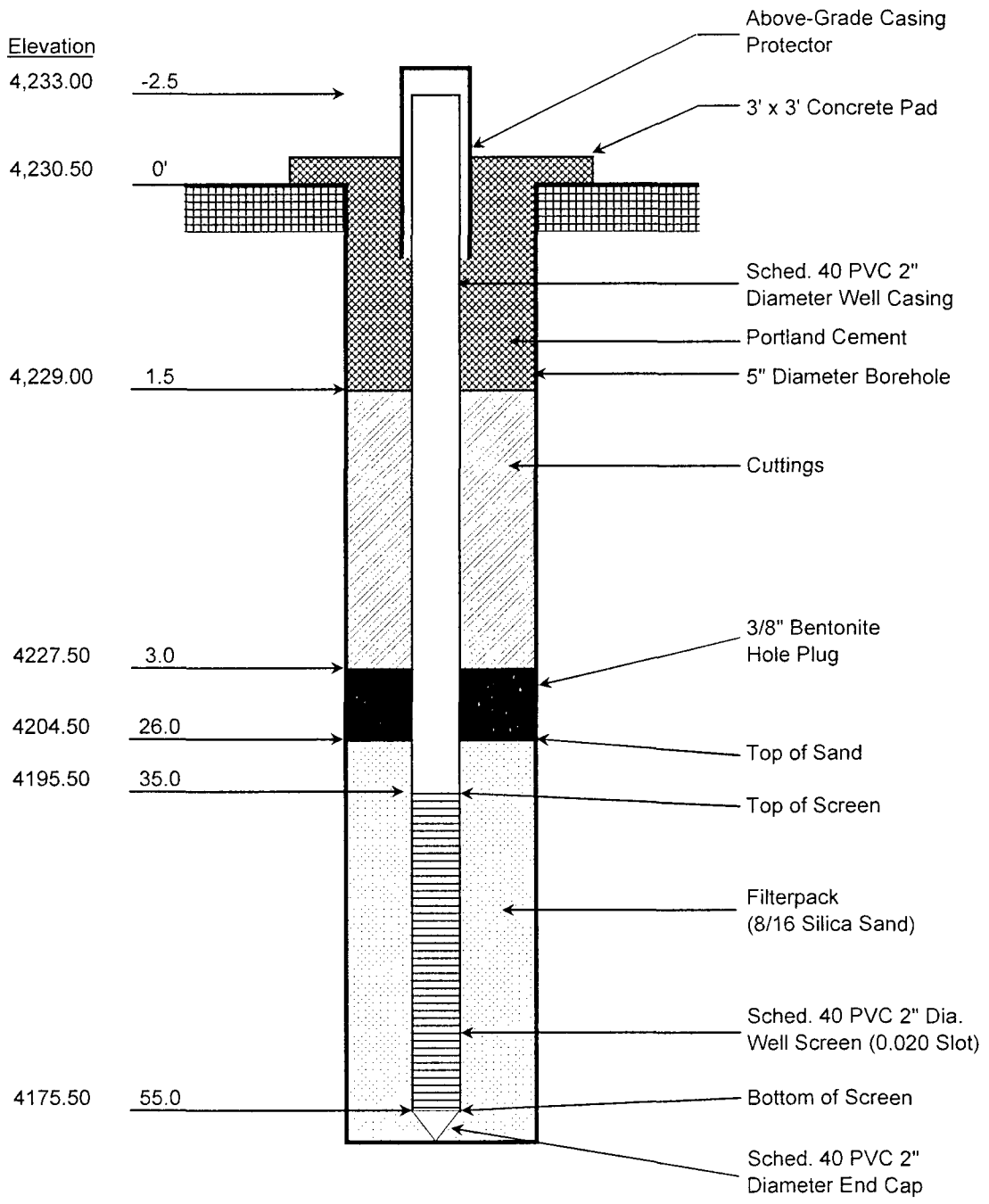
MONITOR WELL NO.:	MW-2	TOTAL DEPTH:	55.0 Ft
SITE ID:	Samson State BD #4	CLIENT:	Samson Investment Co.
SURFACE ELEVATION:	Approximately 4233	COUNTY:	Lea County
CONTRACTOR:	Atkins Engineering	STATE:	New Mexico
DRILLING METHOD:	Hollow-Stem	LOCATION:	T-12-S, R-33-E, Sec. 2 (H)
INSTALLATION DATE:	5/9/06	FIELD REP.:	Dale Littlejohn
WELL PLACEMENT:	East corner of reserve pit	FILE NAME:	\State BD-4\Lithlogs (5-06)
COMMENTS:	Lat. 33° 18' 35.5" North, Long. 103° 34' 37.6" West		



Lithology	SAMPLE DATA					DEPTH	LITHOLOGIC DESCRIPTION LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOL., DIST. DEATURES
	PHOTO	DEPTH	% REC	PID	Cl (Lab)		
							CALICHE with top soil, brownish gray, silty, hard.
						5	CALICHE AND SILT gray to pinkish gray.
		9-11	5%	0 ppm	10.0 mg/kg	10	CALICHE gray with very fine grain sandstone and silt. Very hard drilling to 11 feet.
						15	CALICHE AND SILT grayish white to grayish pink, with some interbedded sandstone.
		19-21	10%	0 ppm	7.30 mg/kg	20	CALICHE AND SILT gray to light brown with interbedded hard sandstone layers at 22 -23 feet and 27-28 feet.
		29-31	10%	0 ppm	8.27 mg/kg	25	CALICHE AND SILT gray to light brown with some fine grain sand.
		34-36	10%	0 ppm	7.77 mg/kg	30	SAND light brown, very fine grain, angular, poorly sorted, with some silt.
						35	SANDSTONE gray to lt brown, v fn gr, angular, p/s.
	No Sample Recovery	39-41	10%	0 ppm	12.0 mg/kg	40	SILTY SAND gray to light brown, very fine grain, angular, poorly sorted. Moist formation at 39 feet, wet at 40 feet.
						45	
						50	
						55	

TD = 55 Feet

MONITORING WELL CONSTRUCTION DIAGRAM



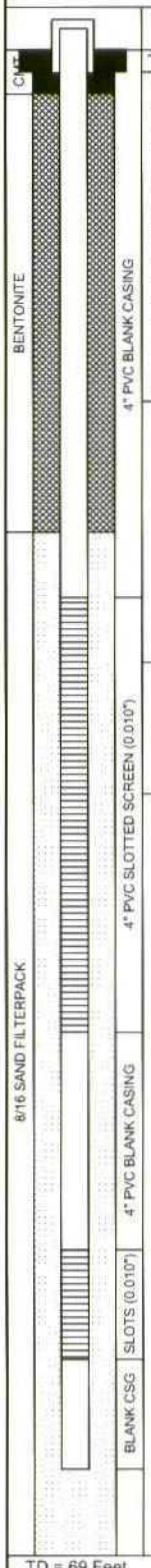
R T Hicks Consultants Ltd	SITE: Samson State "BD" No. 4 Site			**Monitoring Well No. MW-2**
	DATE: 5/9/2006	REV. NO.: 1		
	AUTHOR: DTL	TECH: DTL		
	DRILLER: Atkins	FILE: Lithlogs (5-06)		

LITHOLOGIC LOG (MONITORING WELL)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

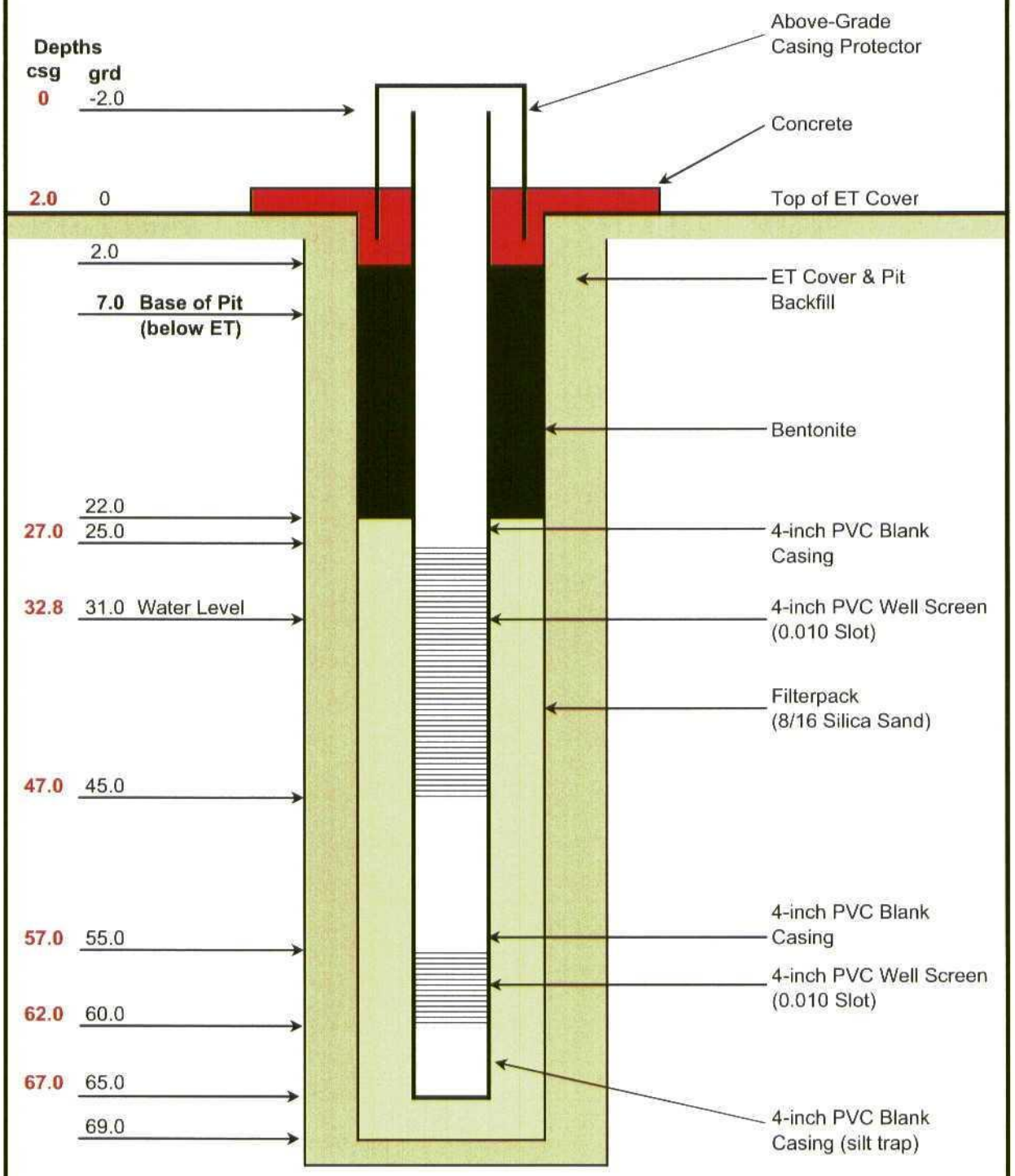
MONITOR WELL NO.:	MW-3	TOTAL DEPTH:	69.0 Ft
SITE ID:	Samson State BD No. 4	CLIENT:	Samson Investment Co.
SURFACE ELEVATION:	Csg = 4,224.48	COUNTY:	Lea County
CONTRACTOR:	Atkins Engineering	STATE:	New Mexico
DRILLING METHOD:	Hollow-Stem	LOCATION:	T-12-S, R-33-E, Sec. 2 (H)
INSTALLATION DATE:	12/11/06	FIELD REP.:	Dale Littlejohn
WELL PLACEMENT:	Center of Former Res. Pit	FILE NAME:	\BD-4\Lithlogs (12-06)
COMMENTS:	Lat. 32° 18' 35.0" North, Long. 103° 34' 39.2" West		



Lithology	SAMPLE DATA: PHOTO	DEPTH	% REC	PID	Cl (Lab)	DEPTH	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOL., DIST. DEATURES
							SILTY CLAY dark brown (top soil) with some caliche.
							CALICHE light grayish brown with some fine grain sand (10% gradient to 25% with depth). Very difficult to determine the base of former excavation.
						5	
							Possible base of original excavation
						10	
		14-16	20%	<1 ppm	5,740 mg/kg	15	
							SAND light brown, fine grain, sub-rounded, poorly sorted, with some caliche.
		19-21	20%	<1 ppm	5,320 mg/kg	20	
		24-26	30%	<1 ppm	5,7402 mg/kg	25	
		29-31	20%	<1 ppm	936 mg/kg	30	SAND light to medium brown, medium grain size, sub-rounded, poorly sorted with some clay.
							Moist Formation at 30 - 31 feet
		34-36	10%	<1 ppm	wet, no sample	35	SAND AND CLAY light reddish brown, very fine grain sand with 50 to 60% clay. Saturated formation (no returns) below 39 feet.
	No Sample Recovery					40	
						45	
						50	
						55	
						60	
						65	

TD = 69 Feet

E.T. PIT COVER MONITORING WELL CONSTRUCTION DIAGRAM



R T Hicks Consultants Ltd	SITE: Samson BD-4 Site Site		**E.T. Pit Cover Monitoring Well No. 3**
	DATE: 12/28/06	REV. NO.: 1	
	AUTHOR: DTL	TECH: DTL	
	DRILLER: Proposed	FILE: \Lith (12-06)	

Project No:

Project: Samson BD-04

Client: Samson

Location: T12S R33E Sec 2

Log of Borehole: MW-4S

Enclosure:

Engineer: Atkins/Hicks

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth (ft / m)	Symbol	Description	Elev.	Number	Type	Recovery	ppm: 125, 250, 375; %LEL: 10, 30, 50, 70, 90	
0 / 0		Ground Surface	0					Concrete
1–4 / 1		**SM** Silty sands, sand-silt mixtures. Med-fine grained, poorly sorted, dry, yellowish orange, trace gravel, clay, caliche nodules	-5					Bentonite Grout
5–9 / 2–3		**SM** Silty sands, sand-silt mixtures. Tan, white, chalky fine grained caliche nodules, 3/8" gravel	-10 / -15					6" Steel Casing Above Grade Vault
10–14 / 3–4		**SM** Silty sands, sand-silt mixtures.Light brown, tan, poorly sorted, fine grained sandstone & caliche nodules	-20 / -25					
15–19 / 5–6		**SM** Silty sands, sand-silt mixtures.Silty sand, tan, orangish yellow, fairly well sorted, some gravel, sandstone nodules.	-35					10/16 Silca Sand
20–24 / 6–7		**SM** Silty sands, sand-silt mixtures.Silty sand, fine grained, light brown, fairly well sorted, uniform. Small sandstone nodules	-40 / -45					January 8, 2007
25–29 / 7–8			-50					2" 20 slot screen - 15'

Drill Method: HSA CME -75

Drill Date: 1/8/07

Hole Size: 7.5

R.T. Hicks
Consultants, Ltd.
901 Rio Grande NW
Albuquerque, NM 87104

Datum: Ground Surface

Checked by: MS

Sheet: 1 of 1

Project No:

Project: Samson BD-04

Client: Samson

Location: T12S R33E Sec 2

Log of Borehole: MW-4D

Enclosure:

Engineer: Atkins/Hicks

Depth (ft)	Depth (m)	Symbol	Description	Elev.
0	0		Ground Surface	0
0–5	0–1	SM	Silty sands, sand-silt mixtures. Med-fine grained, poorly sorted, dry, yellowish orange, trace gravel, clay, caliche nodules	-5
5–10	1–3	SM	Silty sands, sand-silt mixtures. Tan, white, chalky fine grained caliche nodules, 3/8" gravel	-10
10–15	3–4	SM	Silty sands, sand-silt mixtures.Light brown, tan, poorly sorted, fine grained sandstone & caliche nodules	-15
15–20	4–6	SM	Silty sands, sand-silt mixtures.Silty sand, tan, orangish yellow, fairly well sorted, some gravel, sandstone nodules.	-20
20–25	6–7	SM	Silty sands, sand-silt mixtures.Silty sand, fine grained, light brown, fairly well sorted, uniform. Small sandstone nodules	-25
25–35	7–10			-35
35–40	10–12			-40

SAMPLE

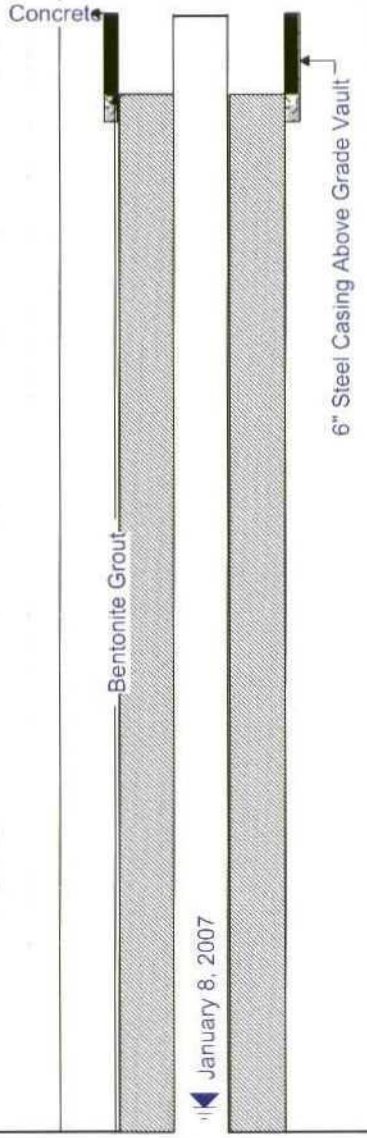
Number	Type	Recovery

VOC Concentration

ppm: 125, 250, 375

%LEL: 10, 30, 50, 70, 90

Well Completion Details



Drill Method: HSA CME -75

Drill Date: 1/8/07

Hole Size: 7.5

R.T. Hicks
Consultants, Ltd.
901 Rio Grande NW
Albuquerque NM, 87104

Datum: Ground Surface

Checked by: MS

Sheet: 1 of 2

Project No:

Project: Samson BD-04

Client: Samson

Location: T12S R33E Sec 2

Log of Borehole: MW-4D

Enclosure:

Engineer: Atkins/Hicks

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth	Symbol	Description	Elev.	Number	Type	Recovery	ppm: 125, 250, 375; %LEL: 10, 30, 50, 70, 90	
41–80		**SM** Silty sands, sand-silt mixtures.Silty sand, very fine grain moist, light brown	-45					
13–14		**SM** Silty sands, sand-silt mixtures.fine silty						
14–17		**SM** Silty sands, sand-silt mixtures.Fine grained - 40 to plus 200, very moist to wet, tan color, pooorly sorted, some caliche nodules, cemented sandstone.						
17–19		**SM** Silty sands, sand-silt mixtures.Very fine grain, light brown, uniform, some sandstone nodules	-65					
20–24		**SM** Silty sands, sand-silt mixtures.Fine silty sand , tan color, uniform, well sorted, wet.	-80					Bentonite Pellets; 10/16 Silca Sand; 2" 20 slot screen - 10'

Drill Method: HSA CME -75

Drill Date: 1/8/07

Hole Size: 7.5

Datum: Ground Surface

Checked by: MS

Sheet: 2 of 2

Project No:

Project: Samson BD-04

Client: Samson

Location: T12S R33E Sec 2

Log of Borehole: SB-West

Enclosure:

Engineer: Atkins/Hicks

SUBSURFACE PROFILE				SAMPLE			VOC Concentration	Well Completion Details
Depth (ft / m)	Symbol	Description	Elev.	Number	Type	Recovery	ppm: 125, 250, 375; %LEL: 10, 30, 50, 70, 90	
0 / 0		Ground Surface	0					
0–5 / 0–1		***SM*** Silty sands, sand-silt mixtures. Med-fine grained, poorly sorted, dry, yellowish orange, trace gravel, clay, caliche nodules	-5					
5–10 / 1–3		***SM*** Silty sands, sand-silt mixtures. Tan, white, chalky fine grained caliche nodules, loose dry	-10					
10–15 / 3–4		***SM*** Silty sands, sand-silt mixtures.Light brown, tan, poorly sorted, fine grained sandstone & caliche nodules	-15					
15–40 / 4–12		***SM*** Silty sands, sand-silt mixtures.Silty sand, tan, orangish yellow, fairly well sorted, some gravel, sandstone nodules.	-40					
40–45 / 12–13		***SM*** Silty sands, sand-silt mixtures.Fine grained - moist to wet, tan color, pooorly sorted, some caliche nodules, cemented sandstone.	-45					
45–50 / 13–15			-50					

Drill Method: HSA CME -75

Drill Date: 1/8/07

Hole Size: 7.5

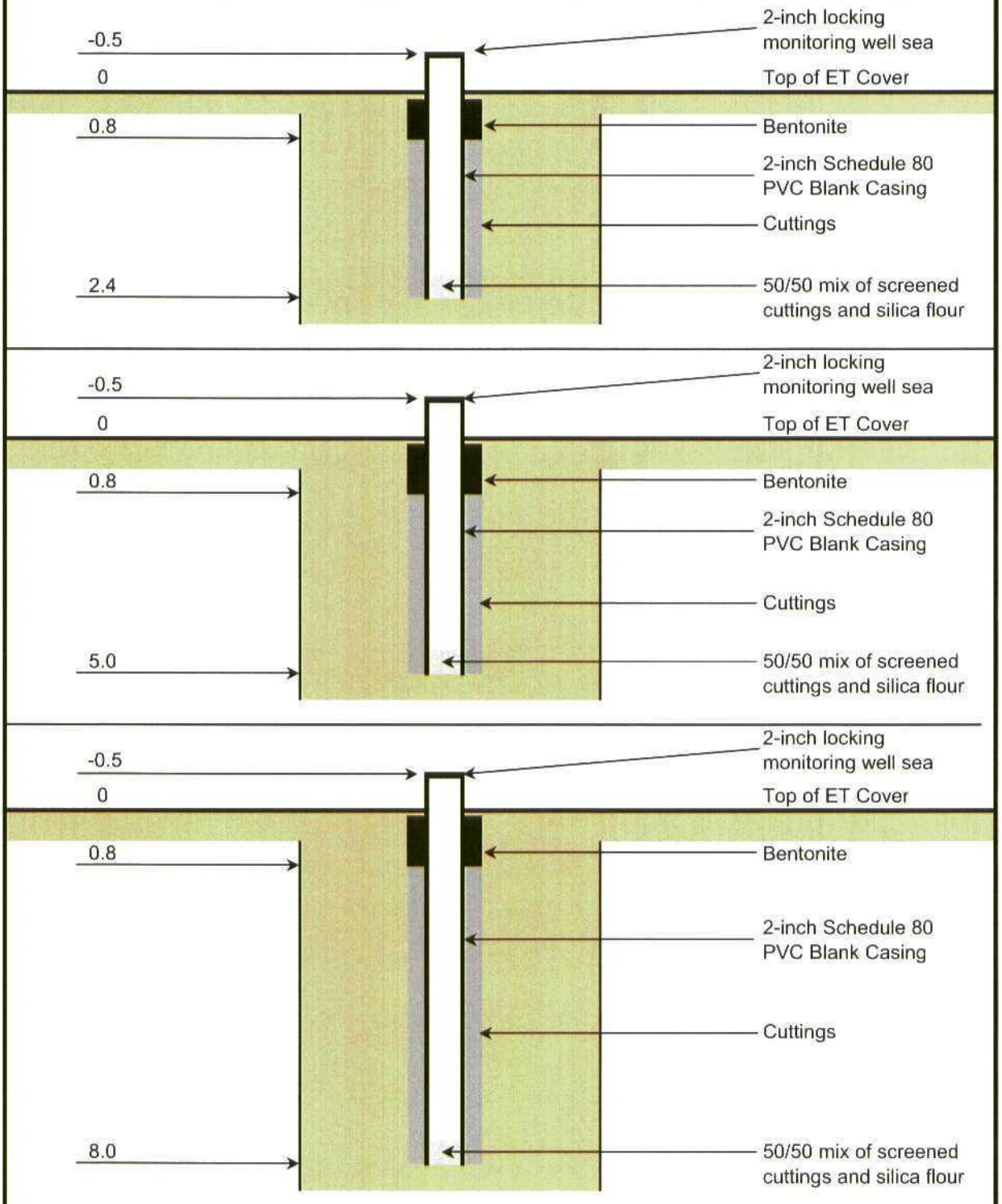
R.T. Hicks Consultants, Ltd.
901 Rio Grande NW
Albuquerque, NM 87104

Datum: Ground Surface

Checked by: MS

Sheet: 1 of 1

E.T. PIT COVER VADOSE ZONE ACCESS PORT CONSTRUCTION DIAGRAM



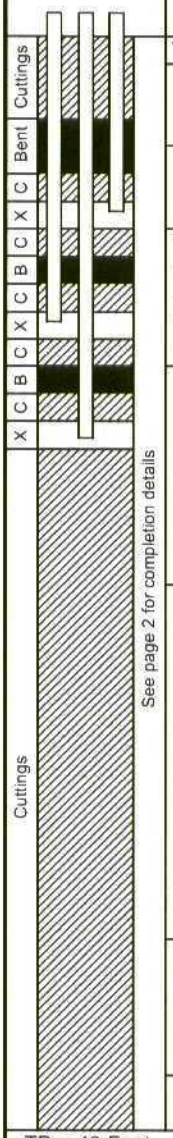
R T Hicks Consultants Ltd	SITE: Samson BD-4 Site Site			**E.T. Pit Cover Vadose Zone Monitoring Port**
	DATE: 12/28/06	REV. NO.:	1	
	AUTHOR: DTL	TECH:	DTL	
	DRILLER: Proposed	FILE:	\Lith (12-06)	

LITHOLOGIC LOG (SOIL BORING)

R T Hicks Consultants Ltd

P O Box 7624
Midland, TX 79708
(432) 528-3878

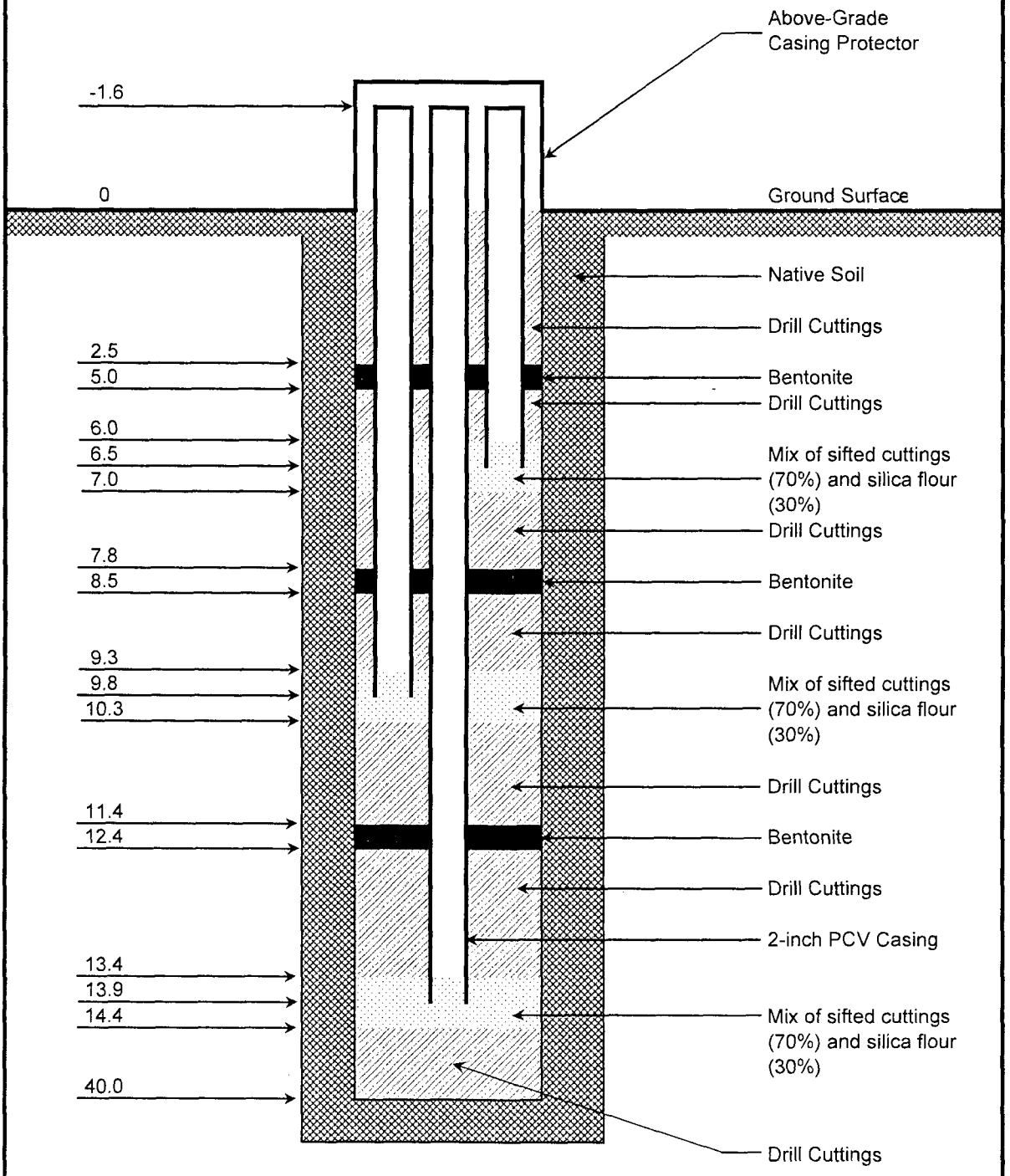
MONITOR WELL NO.:	B-1	TOTAL DEPTH:	40.0 Ft
SITE ID:	Samson State BD #4	CLIENT:	Samson Investment Co.
SURFACE ELEVATION:	Approximately 3396	COUNTY:	Lea County
CONTRACTOR:	Atkins Engineering	STATE:	New Mexico
DRILLING METHOD:	Hollow-Stem	LOCATION:	T-12-S, R-33-E, Sec. 2 (H)
INSTALLATION DATE:	5/10/06	FIELD REP.:	Dale Littlejohn
WELL PLACEMENT:	288' west-northwest of B-1	FILE NAME:	\State BD-4\Lithlogs (5-06)
COMMENTS:	Lat. 33° 18' 36.6" North, Long. 103° 34' 37.4" West		



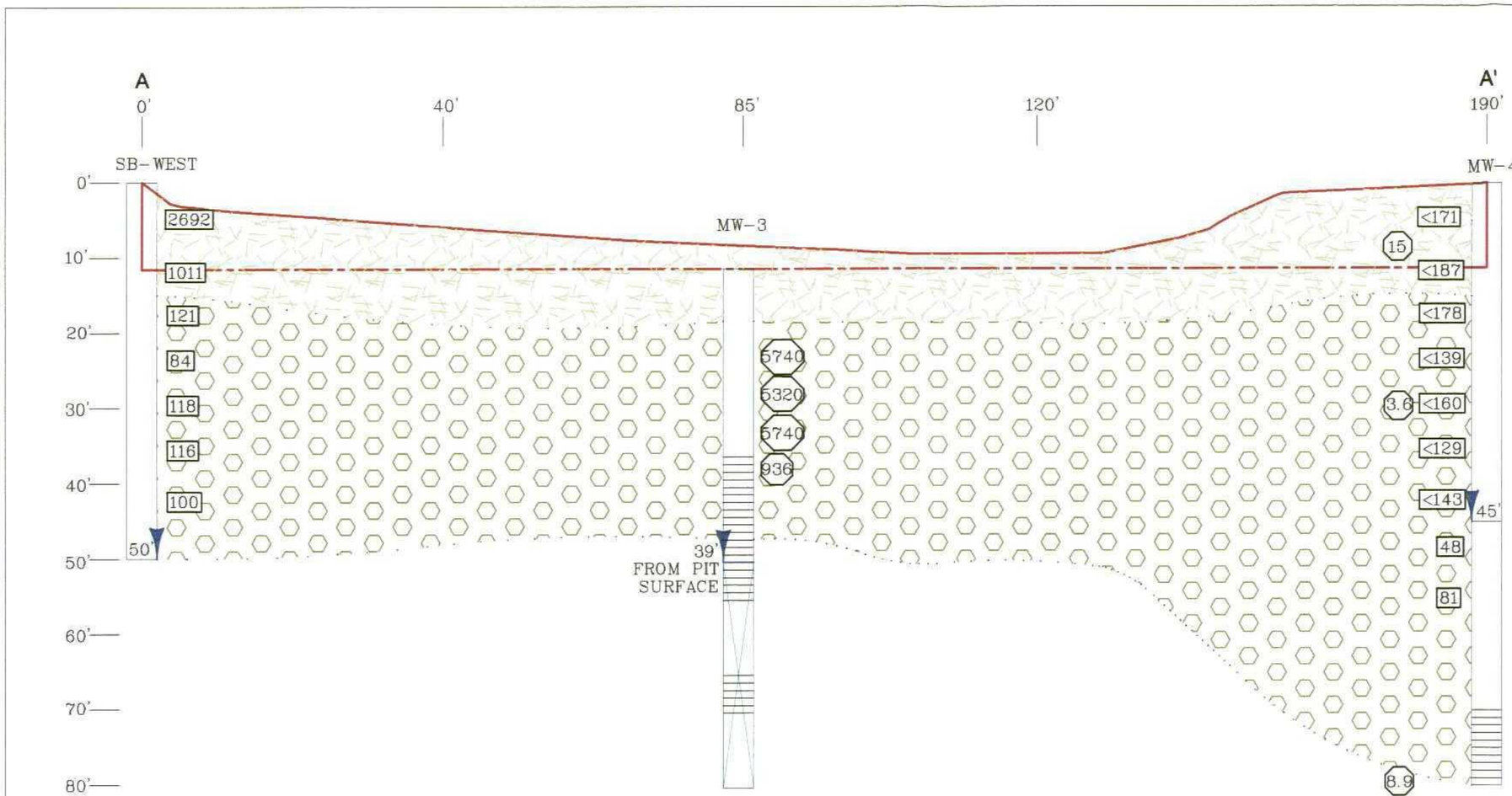
Lithology	SAMPLE DATA					DEPTH	LITHOLOGIC DESCRIPTION LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOL., DIST. DEATURES
	PHOTO	DEPTH	% REC	PID	CI (Lab)		
		0-1	50%	0 ppm			SILT (top soil) dark brown with roots.
		1-2	50%	0 ppm			CALICHE with top soil, brownish gray, silty, hard.
		2-3	50%	0 ppm			
		3-4	50%	0 ppm			
		4-5	50%	0 ppm		5	CALICHE gray to pinkish gray with silt.
		5-6	50%	0 ppm			
		6-7	50%	0 ppm			
		7-8	50%	0 ppm			CALICHE AND SILT, gray
		8-9	50%	0 ppm			
		9-10	50%	0 ppm		10	
		10-11	50%	0 ppm			
							CALICHE AND SAND grayish pink to light brown, very fine grain, medium sorted sand.
		13-14	50%	0 ppm			
		14-15	50%	0 ppm		15	
		17-18	50%	0 ppm			
		18-19	50%	0 ppm			
						20	
							SAND silty with caliche, light brown, very fine grain, sub angular, medium to poorly sorted sand.
		21-22	40%	0 ppm			
		22-23	20%	0 ppm			
						25	
		25-26	30%	0 ppm			
		29-30	20%	0 ppm		30	
		31-32	20%	0 ppm			
							SAND light brown, very fine grain, sub angular, medium sorted, with some silt.
		34-35	50%	0 ppm		35	
		37-38	50%	0 ppm			
							SAND brown, medium grain, angular, well sorted.
		39-40	50%	0 ppm		40	

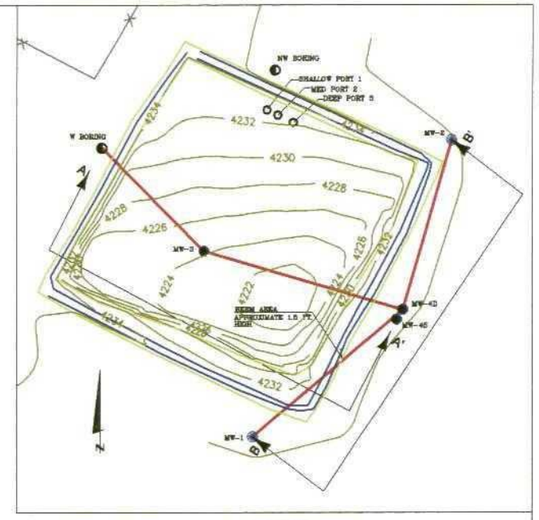
TD = 40 Feet

TENSIOMETER ACCESS CONSTRUCTION DIAGRAM



R T Hicks Consultants Ltd	SITE: Samson State BD #4		**Soil Boring B-1**
	DATE: 5/9/06	REV. NO.: 1	
	AUTHOR: DTL	TECH: DTL	
	DRILLER: Atkins	FILE: \Lithlog (5-06)	





SITE

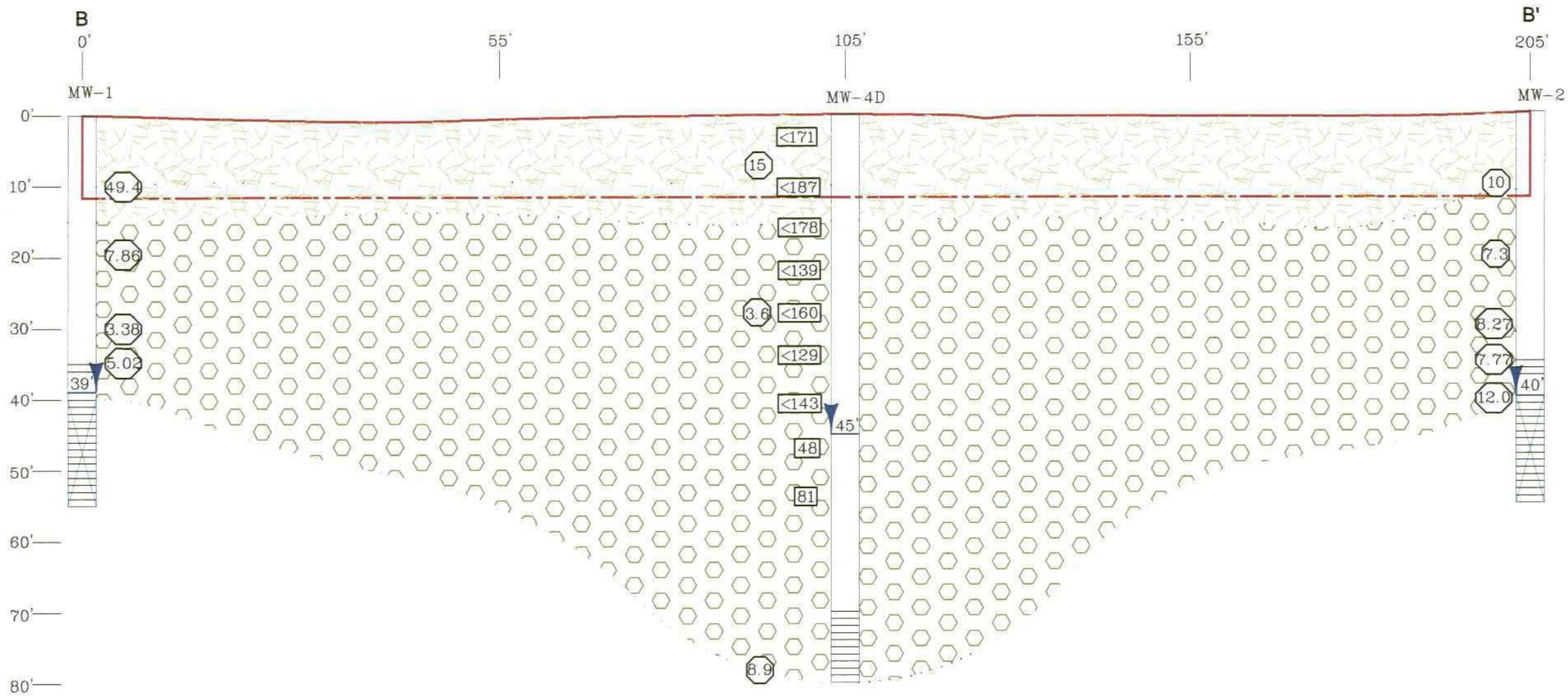
LEGEND

- CALICHE
- SILTY SAND
- DEPTH TO WATER
- NO RECOVERY
- CURRENT GROUND SURFACE
- FORMER PIT SURFACE
- STRATIGRAPHIC CONTACT
- WELL SCREEN

CHLORIDE LEVELS

- 1234 FIELD DATA
- 1234 LAB DATA

R. T. HICKS CONSULTANTS 901 RIO GRANDE BLVD. SUITE 142 ALBUQUERQUE, NM 87104 505.266.5004	SAMSON INVESTMENT COMPANY: STATE BD-04	APPENDIX C
	SECTION A-A' WEST BORING TO MW-4D	MARCH 2007



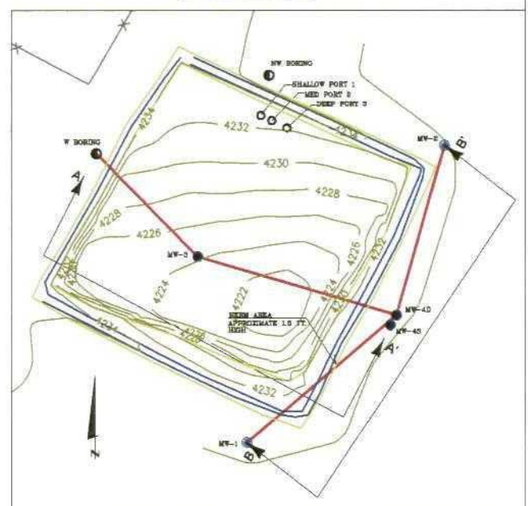
LEGEND

- CALICHE
- SILTY SAND
- DEPTH TO WATER
- NO RECOVERY
- CURRENT GROUND SURFACE
- FORMER PIT SURFACE
- STRATIGRAPHIC CONTACT
- WELL SCREEN

CHLORIDE LEVELS

- 1234 FIELD DATA
- 1234 LAB DATA

SITE



R. T. HICKS CONSULTANTS 901 RIO GRANDE BLVD. SUITE 142 ALBUQUERQUE, NM 87104 505.266.5004	SAMSON INVESTMENT COMPANY: STATE BD-04	APPENDIX C
	SECTION B-B' MW-01 TO MW-02	MARCH 2007

Appendix D

Laboratory Certificate of Analyses (COA)

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Dale Littlejohn

R.T. Hicks Consultants Ltd.- Midland

P.O. Box 7624

Midland, TX 79708

Project: Samson State BD No. 4

Project Number: L-126-5

Location: Lea Co., NM

Lab Order Number: 6E16008

Report Date: 06/22/06

R.T. Hicks Consultants Ltd.- Midland	Project: Samson State BD No. 4	Fax: (432) 689-4578
P.O. Box 7624	Project Number: L-126-5	
Midland TX, 79708	Project Manager: Dale Littlejohn	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 9'	6E16008-01	Soil	05/08/06 10:09	05/16/06 15:45
MW-1 19'	6E16008-02	Soil	05/08/06 10:30	05/16/06 15:45
MW-1 29'	6E16008-03	Soil	05/08/06 10:50	05/16/06 15:45
MW-1 34'	6E16008-04	Soil	05/08/06 11:10	05/16/06 15:45
MW-2 9'	6E16008-05	Soil	05/09/06 12:20	05/16/06 15:45
MW-2 19'	6E16008-06	Soil	05/09/06 12:45	05/16/06 15:45
MW-2 29'	6E16008-07	Soil	05/09/06 13:30	05/16/06 15:45
MW-2 34'	6E16008-08	Soil	05/09/06 13:55	05/16/06 15:45
MW-2 39'	6E16008-09	Soil	05/09/06 14:20	05/16/06 15:45
MW-1	6E16008-10	Water	05/12/06 10:25	05/16/06 15:45
MW-2	6E16008-11	Water	05/12/06 11:00	05/16/06 15:45

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

R.T. Hicks Consultants Ltd.- Midland	Project: Samson State BD No. 4	Fax: (432) 689-4578
P.O. Box 7624	Project Number: L-126-5	
Midland TX, 79708	Project Manager: Dale Littlejohn	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 9' (6E16008-01) Soil									
Chloride	**49.4**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-1 19' (6E16008-02) Soil									
Chloride	**7.86**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-1 29' (6E16008-03) Soil									
Chloride	**3.38**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-1 34' (6E16008-04) Soil									
Bromide	ND	0.100	mg/kg	2	EE61905	05/18/06	05/18/06	EPA 300.0	
Chloride	**5.02**	1.00	"	"	EE61902	05/18/06	05/18/06	"	
MW-2 9' (6E16008-05) Soil									
Chloride	**9.99**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 19' (6E16008-06) Soil									
Chloride	**7.30**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 29' (6E16008-07) Soil									
Chloride	**8.27**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 34' (6E16008-08) Soil									
Chloride	**7.77**	1.00	mg/kg	2	EE61902	05/18/06	05/18/06	EPA 300.0	
MW-2 39' (6E16008-09) Soil									
Bromide	**0.187**	0.100	mg/kg	2	EE61905	05/18/06	05/18/06	EPA 300.0	
Chloride	**12.0**	1.00	"	"	EE61902	05/18/06	05/18/06	"	
MW-1 (6E16008-10) Water									
Bromide	**0.482**	0.0500	mg/L	1	EE61705	05/17/06	05/17/06	EPA 300.0	
Chloride	**131**	5.00	"	10	EE61704	05/17/06	05/17/06	"	
Total Dissolved Solids	**838**	5.00	"	1	EE61718	05/17/06	05/17/06	EPA 160.1	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (6E16008-11) Water									
Bromide	**0.446**	0.0500	mg/L	1	EE61705	05/17/06	05/17/06	EPA 300.0	
Chloride	**44.5**	2.50	"	5	EE61704	05/17/06	05/17/06	"	
Total Dissolved Solids	**530**	5.00	"	1	EE61718	05/17/06	05/17/06	EPA 160.1	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE61704 - General Preparation (WetChem)										
Blank (EE61704-BLK1)				Prepared & Analyzed: 05/17/06						
Chloride	ND	0.500	mg/L							
LCS (EE61704-BS1)				Prepared & Analyzed: 05/17/06						
Chloride	10.1	0.500	mg/L	10.0		101	80-120			
Calibration Check (EE61704-CCV1)				Prepared & Analyzed: 05/17/06						
Chloride	10.2		mg/L	10.0		102	80-120			
Duplicate (EE61704-DUP1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Chloride	26200	250	mg/L		25800			1.54	20	
Matrix Spike (EE61704-MS1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Chloride	31700	250	mg/L	5000	25800	118	80-120			
Batch EE61705 - General Preparation (WetChem)										
Blank (EE61705-BLK1)				Prepared & Analyzed: 05/17/06						
Bromide	ND	0.0500	mg/L							
LCS (EE61705-BS1)				Prepared & Analyzed: 05/17/06						
Bromide	1.96	0.0500	mg/L	2.00		98.0	80-120			
Calibration Check (EE61705-CCV1)				Prepared & Analyzed: 05/17/06						
Bromide	2.05		mg/L	2.00		102	80-120			
Duplicate (EE61705-DUP1)		**Source: 6E16004-04**		Prepared & Analyzed: 05/17/06						
Bromide	66.0	5.00	mg/L		66.1			0.151	20	

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R.T. Hicks Consultants Ltd.- Midland
P.O. Box 7624
Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE61705 - General Preparation (WetChem)										
Matrix Spike (EE61705-MS1)	**Source: 6E16004-04**			Prepared & Analyzed: 05/17/06						
Bromide	264	0.0500	mg/L	200	66.1	99.0	80-120			
Batch EE61718 - Filtration Preparation										
Blank (EE61718-BLK1)				Prepared & Analyzed: 05/17/06						
Total Dissolved Solids	ND	5.00	mg/L							
Duplicate (EE61718-DUP1)	**Source: 6E16010-01**			Prepared & Analyzed: 05/17/06						
Total Dissolved Solids	3990	5.00	mg/L		3900			2.28	5	
Batch EE61902 - Water Extraction										
Blank (EE61902-BLK1)				Prepared & Analyzed: 05/18/06						
Chloride	ND	0.500	mg/kg							
LCS (EE61902-BS1)				Prepared & Analyzed: 05/18/06						
Chloride	10.3	0.500	mg/kg	10.0		103	80-120			
Calibration Check (EE61902-CCV1)				Prepared & Analyzed: 05/18/06						
Chloride	10.6		mg/L	10.0		106	80-120			
Duplicate (EE61902-DUP1)	**Source: 6E16007-04**			Prepared & Analyzed: 05/18/06						
Chloride	4350	50.0	mg/kg		4360			0.230	20	
Duplicate (EE61902-DUP2)	**Source: 6E16008-13**			Prepared & Analyzed: 05/18/06						
Chloride	71000	1000	mg/kg		71000			0.00	20	

R.T. Hicks Consultants Ltd.- Midland
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Midland TX, 79708

Project: Samson State BD No. 4
Project Number: L-126-5
Project Manager: Dale Littlejohn

Fax: (432) 689-4578

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE61902 - Water Extraction										
Matrix Spike (EE61902-MS1)	**Source: 6E16007-04**			Prepared & Analyzed: 05/18/06						
Chloride	5640	50.0	mg/kg	1000	4360	128	80-120			S-07
Matrix Spike (EE61902-MS2)	**Source: 6E16008-13**			Prepared & Analyzed: 05/18/06						
Chloride	95000	1000	mg/kg	20000	71000	120	80-120			
Batch EE61905 - Water Extraction										
Blank (EE61905-BLK1)				Prepared & Analyzed: 05/18/06						
Bromide	ND	0.0500	mg/kg							
LCS (EE61905-BS1)				Prepared & Analyzed: 05/18/06						
Bromide	2.17	0.0500	mg/kg	2.00		108	80-120			
Calibration Check (EE61905-CCV1)				Prepared & Analyzed: 05/18/06						
Bromide	2.27		mg/kg	2.00		114	80-120			
Duplicate (EE61905-DUP1)	**Source: 6E16007-04**			Prepared & Analyzed: 05/18/06						
Bromide	0.990	0.100	mg/kg		1.01			2.00	20	
Duplicate (EE61905-DUP2)	**Source: 6E16008-13**			Prepared & Analyzed: 05/18/06						
Bromide	ND	100	mg/kg		ND				20	
Matrix Spike (EE61905-MS1)	**Source: 6E16007-04**			Prepared & Analyzed: 05/18/06						
Bromide	208	5.00	mg/kg	200	1.01	103	80-120			
Matrix Spike (EE61905-MS2)	**Source: 6E16008-13**			Prepared & Analyzed: 05/18/06						
Bromide	4130	100	mg/kg	4000	ND	103	80-120			

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Notes and Definitions

S-07	Recovery outside Laboratory historical or method prescribed limits.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 6/22/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Dale Littlejohn
Company Name: RT Hicks Consultants Ltd
Company Address: P.O. Box 7624
City/State/Zip: Midland, Texas 79708
Telephone No: (432) 528-3878
Fax No: (432) 689-4578 (Fax)
Sampler Signature: Dale Littlejohn

Project Name: Samson State BD No. 4
Project #: L-126-5
Project Loc: Lea Co., NM
PO #:

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO3	HCl	NaOH	H2SO4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TPH: 418.1 / 8015M / 1005 / 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	TOTAL: Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Bromide	Total Dissolved Solids		RUSH TAT (Pre-Schedule)	Standard TAT
01	MW-1 (9')	5/8/06	1009	1	X					X				X												X					X
02	MW-1 (19')	5/8/06	1030	1	X					X				X												X					X
03	MW-1 (29')	5/8/06	1050	1	X					X				X												X					X
04	MW-1 (34')	5/8/06	1110	1	X					X				X												X	X				X
05	MW-2 (9')	5/9/06	1220	1	X					X				X												X					X
06	MW-2 (19')	5/9/06	1245	1	X					X				X												X					X
07	MW-2 (29')	5/9/06	1330	1	X					X				X												X					X
08	MW-2 (34')	5/9/06	1355	1	X					X				X												X					X
09	MW-2 (39')	5/9/06	1420	1	X					X				X												X	X				X

Special Instructions: Send Invoice to RT Hicks Consult. 901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104; Send results to Dale Littlejohn at the adress above.

Sample Containers Intact? Y N
Temperature Upon Receipt: 1.0 °C
Laboratory Comments: 1L-poly
4oz jar glass
w/o seals/labels

Relinquished by:	Date	Time	Received by:	Date	Time
Dale Littlejohn	5/10/06	8:45			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Carrie Kelly	5/10/06	345

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Dale Littlejohn
Company Name: RT Hicks Consultants Ltd
Company Address: P.O. Box 7624
City/State/Zip: Midland, Texas 79708
Telephone No: (432) 528-3878
Fax No: (432) 689-4578 (Fax)
Sampler Signature: Dale Littlejohn

Project Name: Samson State BD No. 4
Project #: L-126-5
Project Loc: Lea Co., NM
PO #:

LAB # (lab use only) 6E16008	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	TOTAL: Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Bromide	Total Dissolved Solids		RUSH TAT (Pre-Schedule)	Standard TAT
-10	MW-1	5/12/06	1025	1	X					X		X														X	X	X			X
-11	MW-2	5/12/06	1100	1	X					X		X														X	X	X			X
-12	Pit A (28')	5/12/06	1130	1	X					X				X												X	X				X
-13	Pit B (28')	5/12/06	1132	1	X					X				X												X	X				X
-14	Pit C (28')	5/12/06	1135	1	X					X				X												X	X				X
-15	Pit D (28')	5/12/06	1125	1	X					X				X												X	X				X
-16	Pit E (28')	5/12/06	1121	1	X					X				X												X	X				X
-17	Pit F (28')	5/12/06	1137	1	X					X				X												X	X				X

Special Instructions: Send Invoice to RT Hicks Consult. 901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104; Send results to Dale Littlejohn at the adress above.

Sample Containers Intact? Y N
Temperature Upon Receipt:
Laboratory Comments:

Relinquished by:	Date	Time	Received by:	Date	Time
Dale Littlejohn	5/16/06	3:45			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Carlin Kelly	5/16/06	3:45

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

ient R.T. Hicks

ate/Time: 5/16/08 3:45

rder #: 8E16008

itials: CK

Sample Receipt Checklist

mperature of container/cooler?	Yes	No	1.0 C
ipping container/cooler in good condition?	Yes	No	
stody Seals intact on shipping container/cooler?	Yes	No	Not present
stody Seals intact on sample bottles?	Yes	No	Not present
ain of custody present?	Yes	No	
mple Instructions complete on Chain of Custody?	Yes	No	
ain of Custody signed when relinquished and received?	Yes	No	
ain of custody agrees with sample label(s)	Yes	No	
ntainer labels legible and intact?	Yes	No	
mple Matrix and properties same as on chain of custody?	Yes	No	
mples in proper container/bottle?	Yes	No	
mples properly preserved?	Yes	No	
mple bottles intact?	Yes	No	
servations documented on Chain of Custody?	Yes	No	
ntainers documented on Chain of Custody?	Yes	No	
fficient sample amount for indicated test?	Yes	No	
samples received within sufficient hold time?	Yes	No	
C samples have zero headspace?	Yes	No	Not Applicable

her observations:

Variance Documentation:

ntact Person: - Date/Time: Contacted by:

garding:

rrective Action Taken:

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

ient: R.T. Hicks

ate/ Time: 8/3/06 10:51

ab ID # : 6H03002

nitials: CK

Sample Receipt Checklist

					Client Initials
1	Temperature of container/ cooler?	Yes	No	-1.0 °C	
2	Shipping container in good condition?	~~Yes~~	No		
3	Custody Seals intact on shipping container/ cooler?	Yes	No	~~Not Present~~	
4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
5	Chain of Custody present?	~~Yes~~	No		
6	Sample instructions complete of Chain of Custody?	~~Yes~~	No		
7	Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
9	Container label(s) legible and intact?	Yes	No	~~Not Applicable~~	
10	Sample matrix/ properties agree with Chain of Custody?	~~Yes~~	No		
#11	Containers supplied by ELOT?	~~Yes~~	No		
#12	Samples in proper container/ bottle?	~~Yes~~	No	See Below	
#13	Samples properly preserved?	~~Yes~~	No	See Below	
#14	Sample bottles intact?	~~Yes~~	No		
#15	Preservations documented on Chain of Custody?	~~Yes~~	No		
#16	Containers documented on Chain of Custody?	~~Yes~~	No		
#17	Sufficient sample amount for indicated test(s)?	~~Yes~~	No	See Below	
#18	All samples received within sufficient hold time?	~~Yes~~	No	See Below	
#19	VOC samples have zero headspace?	Yes	No	~~Not Applicable~~	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Dale Littlejohn

R.T. Hicks Consultants Ltd.

901 Rio Grande Blvd, NW Ste., F-142

Albuquerque, NM 87104

Project: Samson State BD No.4

Project Number: None Given

Location: BD State #4

Lab Order Number: 6H03002

Report Date: 08/09/06

R.T. Hicks Consultants Ltd.
901 Rio Grande Blvd, NW Ste., F-142
Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2 (0608021500))	6H03002-01	Water	08-02-2006 15:00	08-03-2006 10:51
MW-1 (0608021555)	6H03002-02	Water	08-02-2006 15:55	08-03-2006 10:51

R.T. Hicks Consultants Ltd.	Project: Samson State BD No.4	Fax: (413) 403-9968
901 Rio Grande Blvd, NW Ste., F-142	Project Number: None Given	
Albuquerque NM, 87104	Project Manager: Dale Littlejohn	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 (0608021500)) (6H03002-01) Water									
Chloride	**42.2**	5.00	mg/L	10	EH60306	08/03/06	08/03/06	EPA 300.0	
Total Dissolved Solids	**444**	10.0	"	1	EH60901	08/04/06	08/08/06	EPA 160.1	
MW-1 (0608021555) (6H03002-02) Water									
Chloride	**115**	5.00	mg/L	10	EH60306	08/03/06	08/03/06	EPA 300.0	
Total Dissolved Solids	**648**	10.0	"	1	EH60901	08/04/06	08/08/06	EPA 160.1	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

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Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EH60306 - General Preparation (WetChem)										
Blank (EH60306-BLK1)				Prepared & Analyzed: 08/03/06						
Chloride	ND	0.500	mg/L							
LCS (EH60306-BS1)				Prepared & Analyzed: 08/03/06						
Chloride	9.71	0.500	mg/L	10.0		97.1	80-120			
Calibration Check (EH60306-CCV1)				Prepared & Analyzed: 08/03/06						
Chloride	9.89		mg/L	10.0		98.9	80-120			
Duplicate (EH60306-DUP1)	**Source: 6H02012-01**			Prepared & Analyzed: 08/03/06						
Chloride	ND	0.500	mg/L		ND				20	
Matrix Spike (EH60306-MS1)	**Source: 6H02012-01**			Prepared & Analyzed: 08/03/06						
Chloride	10.2	0.500	mg/L	10.0	ND	102	80-120			
Batch EH60901 - Filtration Preparation										
Blank (EH60901-BLK1)				Prepared: 08/04/06 Analyzed: 08/08/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EH60901-DUP1)	**Source: 6H03002-01**			Prepared: 08/04/06 Analyzed: 08/08/06						
Total Dissolved Solids	470	10.0	mg/L		444			5.69	5	R5

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Albuquerque NM, 87104

Project: Samson State BD No.4
Project Number: None Given
Project Manager: Dale Littlejohn

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Notes and Definitions

R5	RPD is outside of historic values
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 8/9/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Dale Littlejohn
Company Name: R.T. Hicks Consultants Ltd.
Company Address: 901 Rio Grande Blvd., NW Ste., F-142
City/State/Zip: Albuquerque, NM 87104 (438-7333)
Telephone No: 505-266-5004 Fax No: 413-403-9968
Sampler Signature:

Project Name: Samson Resources
Project #:
Project Loc: B.D. State #4
PO #:
Report Format: [X] Standard [ ] TRRP [ ] NPDES
e-mail:

(lab use only) ORDER #: 0701302

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	No. of Containers	Preservation & # of Containers: Ice	HNO_3	HCl	H_2SO_4	NaOH	$Na_2S_2O_3$	None	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge GW=Groundwater S=Soil/Solid NP=Non-Potable Specify Other	Analyze For: TCLP / TOTAL: TPH: 418.1 8015M 1005 1006	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chlorides	TDS	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	MW-2 (060802,1500)			8/2/06	1500	1	✓						✓		GW											✓	✓		✓
02	MW-1 (060802,1555)			8/2/06	~~1500~~ 1555	1	✓						✓		GW											✓	✓		✓

Special Instructions:

Relinquished by:	Date	Time	Received by:	Date	Time
	8/2/06	1050			
Relinquished by:	Date	Time	Received by:	Date	Time
Relinquished by:	Date	Time	Received by ELOT: Carrie Koontz	8/3/06	10:5

Laboratory Comments:
Sample Containers Intact? Y N
VOCs Free of Headspace? Y N
Custody seals on container(s) Y N
Custody seals on cooler(s) Y N
Sample Hand Delivered by Sampler/Client Rep. ? Y N
by Courier? UPS DHL FedEx Lone Star
1L-poly
Temperature Upon Receipt: -1.0 °C
not frozen

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

ent: R.T. Hicks

ate/ Time: 8/3/06 10:51

ab ID # : 60403002

itials: CK

Sample Receipt Checklist

					Client Initials
1	Temperature of container/ cooler?	Yes	No	-1.0 °C	
2	Shipping container in good condition?	~~Yes~~	No		
3	Custody Seals intact on shipping container/ cooler?	Yes	No	~~Not Present~~	
4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
5	Chain of Custody present?	~~Yes~~	No		
6	Sample instructions complete of Chain of Custody?	~~Yes~~	No		
7	Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
9	Container label(s) legible and intact?	Yes	No	~~Not Applicable~~	
10	Sample matrix/ properties agree with Chain of Custody?	~~Yes~~	No		
11	Containers supplied by ELOT?	~~Yes~~	No		
12	Samples in proper container/ bottle?	~~Yes~~	No	See Below	
13	Samples properly preserved?	~~Yes~~	No	See Below	
14	Sample bottles intact?	~~Yes~~	No		
15	Preservations documented on Chain of Custody?	~~Yes~~	No		
16	Containers documented on Chain of Custody?	~~Yes~~	No		
17	Sufficient sample amount for indicated test(s)?	~~Yes~~	No	See Below	
18	All samples received within sufficient hold time?	~~Yes~~	No	See Below	
19	VOC samples have zero headspace?	Yes	No	~~Not Applicable~~	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

HALL
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LABORATORY

COVER LETTER

Wednesday, July 26, 2006

Randall Hicks
R.T. Hicks Consultants, LTD
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

TEL: (505) 266-5004
FAX (505) 266-0745

RE: Samson BD-04

Order No.: 0607165

Dear Randall Hicks:

Hall Environmental Analysis Laboratory, Inc. received 20 sample(s) on 7/14/2006 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

AZ license # AZ0682
ORELAP Lab # NM100001

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD-04

Lab Order: 0607165

Lab ID: 0607165-01 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-EAST **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	940	6.0		mg/Kg	20	7/25/2006 7:39:36 AM

Lab ID: 0607165-02 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-North **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1700	6.0		mg/Kg	20	7/25/2006 7:57:00 AM

Lab ID: 0607165-03 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-South **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2300	15		mg/Kg	50	7/25/2006 8:14:25 AM

Lab ID: 0607165-04 **Collection Date:** 7/12/2006 10:00:00 AM
Client Sample ID: UID0028-SIP-West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2500	15		mg/Kg	50	7/25/2006 8:31:50 AM

Lab ID: 0607165-05 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	110	3.0		mg/Kg	10	7/24/2006 12:26:05 PM

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT:	R.T. Hicks Consultants, LTD	Lab Order:	0607165
Project:	Samson BD-04		

Lab ID: 0607165-06 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-North **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	370	3.0		mg/Kg	10	7/24/2006 12:43:29 PM

Lab ID: 0607165-07 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-South **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	320	3.0		mg/Kg	10	7/24/2006 1:00:53 PM

Lab ID: 0607165-08 **Collection Date:** 7/12/2006 10:40:00 AM
Client Sample ID: UID0028-NSEIP-West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	300	3.0		mg/Kg	10	7/24/2006 8:55:31 PM

Lab ID: 0607165-09 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	230	3.0		mg/Kg	10	7/24/2006 9:12:55 PM

Lab ID: 0607165-10 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-North **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	220	3.0		mg/Kg	10	7/24/2006 9:30:19 PM

Qualifiers:	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
	S	Spike Recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD-04

Lab Order: 0607165

Lab ID: 0607165-11 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-South **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	120	3.0		mg/Kg	10	7/24/2006 9:47:44 PM

Lab ID: 0607165-12 **Collection Date:** 7/12/2006 10:15:00 AM
Client Sample ID: UID0028-SSEIP-West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	190	3.0		mg/Kg	10	7/24/2006 10:05:09 PM

Lab ID: 0607165-13 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-South Center **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	3000	15		mg/Kg	50	7/25/2006 3:09:15 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 10:22:33 PM

Lab ID: 0607165-14 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-South East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	850	3.0		mg/Kg	10	7/24/2006 10:39:58 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 10:39:58 PM

Lab ID: 0607165-15 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-South West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	5400	15		mg/Kg	50	7/25/2006 3:26:40 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 10:57:22 PM

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- J Analyte detected below quantitation limits
- S Spike Recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit

Hall Environmental Analysis Laboratory, Inc.

Date: *26-Jul-06*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD-04

Lab Order: 0607165

Lab ID: 0607165-16 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-North Center **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	3700	15		mg/Kg	50	7/25/2006 3:44:05 PM
Bromide	ND	3.0		mg/Kg	10	7/24/2006 11:49:35 PM

Lab ID: 0607165-17 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-North East **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1700	6.0		mg/Kg	20	7/25/2006 4:01:30 PM
Bromide	ND	3.0		mg/Kg	10	7/25/2006 12:06:59 AM

Lab ID: 0607165-18 **Collection Date:** 7/12/2006 10:55:00 AM
Client Sample ID: UID0028-EDT-North West **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2000	6.0		mg/Kg	20	7/25/2006 4:18:54 PM
Bromide	ND	3.0		mg/Kg	10	7/25/2006 12:24:23 AM

Lab ID: 0607165-19 **Collection Date:** 7/12/2006 11:05:00 AM
Client Sample ID: UID0028-SIPL-South Large **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1400	6.0		mg/Kg	20	7/25/2006 4:36:19 PM

Lab ID: 0607165-20 **Collection Date:** 7/12/2006 11:00:00 AM
Client Sample ID: UID0028-EIPL **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	7.6	3.0		mg/Kg	10	7/25/2006 12:59:11 AM

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

QA/QC SUMMARY REPORT

Client: R.T. Hicks Consultants, LTD
Project: Samson BD-04 **Work Order:** 0607165

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: E300									
Sample ID: MB-10840		*MBLK*			Batch ID:	10840	Analysis Date:	7/24/2006 10:24:13 AM	
Chloride	ND	mg/Kg	0.30						
Bromide	ND	mg/Kg	0.30						
Sample ID: MB-10840		*MBLK*			Batch ID:	10840	Analysis Date:	7/24/2006 10:41:37 AM	
Chloride	ND	mg/Kg	0.30						
Bromide	ND	mg/Kg	0.30						
Sample ID: LCS-10840		*LCS*			Batch ID:	10840	Analysis Date:	7/24/2006 10:59:02 AM	
Chloride	14.77	mg/Kg	0.30	98.4	90	110			
Bromide	7.710	mg/Kg	0.30	103	90	110			

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recovery limits

HALL
ENVIRONMENTAL
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COVER LETTER

Wednesday, October 18, 2006

Randall Hicks
R.T. Hicks Consultants, LTD
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

TEL: (505) 266-5004
FAX (505) 266-0745

RE: Samson BD-04

Order No.: 0610174

Dear Randall Hicks:

Hall Environmental Analysis Laboratory, Inc. received 1 sample(s) on 10/17/2006 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001

Hall Environmental Analysis Laboratory, Inc.

Date: *18-Oct-06*

CLIENT:	R.T. Hicks Consultants, LTD	**Client Sample ID:**	SW Pit 10.16
Lab Order:	0610174	**Collection Date:**	10/17/2006 10:00:00 AM
Project:	Samson BD-04	**Date Received:**	10/17/2006
Lab ID:	0610174-01	**Matrix:**	SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	950	3.0		mg/Kg	10	10/17/2006 4:44:43 PM

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: R.T. Hicks Consultants, LTD
Project: Samson BD-04 **Work Order:** 0610174

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: SW9056A									
Sample ID: MB-11511		*MBLK*			**Batch ID:**	11511	**Analysis Date:**	10/17/2006 1:25:11 PM	
Chloride	ND	mg/Kg	5.0						

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name RT HICKS | Date and Time Received: 10/17/2006

Work Order Number 0610174 | Received by AT

Checklist completed by _____ 10/17/06
Signature | Date

Matrix | Carrier name Client drop-off

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☐	Not Shipped ☑
Custody seals intact on sample bottles?	Yes ☐	No ☑	N/A ☐	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	
Container/Temp Blank temperature?	19°	*4° C ± 2 Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

CHAIN-OF-CUSTODY RECORD

QA / QC Package:
Std ☐ Level 4 ☐
Other: _____

Client: R.T. Hicks Consulting

Address: 901 Rio Grande NW F-142

Phone #:

Fax #:

Project Name: SAMSON BD-04

Project #:

Project Manager: R. Hicks

Sampler: R Hicks

Sample Temperature: Ambient 19°

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No.
10.17.06	1000	SOIL	SW PIT 10.16					061074 -1

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	Chloride				Air Bubbles or Headspace (Y or N)

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
10.17.06	1005		
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
			10/17/06 1005

Remarks: USE THE BIG BUCKETS!

DONE WED NOON? PLEASE

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Thursday, December 21, 2006

Randall Hicks
Atkins Engineering Associates
2904 West Second Street
Roswell, NM 88201

TEL: (505) 624-2420
FAX (505) 624-2421

RE: Samson State BD-04 Samples

Order No.: 0612227

Dear Randall Hicks:

Hall Environmental Analysis Laboratory, Inc. received 2 sample(s) on 12/20/2006 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001

4901 Hawkins NE ▪ Suite D ▪ Albuquerque, NM 87109
505.345.3975 ▪ Fax 505.345.4107
www.hallenvironmental.com

Hall Environmental Analysis Laboratory, Inc.

Date: *21-Dec-06*

CLIENT:	Atkins Engineering Associates	**Client Sample ID:**	4" Monitor Well Lower
Lab Order:	0612227	**Collection Date:**	12/18/2006 12:00:00 PM
Project:	Samson State BD-04 Samples	**Date Received:**	12/20/2006
Lab ID:	0612227-01	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: TES
Chloride	2000	10		mg/L	100	12/21/2006
EPA METHOD 160.1: TDS						Analyst: KS
Total Dissolved Solids	3700	20		mg/L	1	12/20/2006

Qualifiers:					
	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *21-Dec-06*

CLIENT:	Atkins Engineering Associates	**Client Sample ID:**	4" Monitor Well Upper
Lab Order:	0612227	**Collection Date:**	12/18/2006 12:15:00 PM
Project:	Samson State BD-04 Samples	**Date Received:**	12/20/2006
Lab ID:	0612227-02	**Matrix:**	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: **TES**
Chloride	3900	10		mg/L	100	12/20/2006 3:09:42 PM
EPA METHOD 160.1: TDS						Analyst: **KS**
Total Dissolved Solids	5800	20		mg/L	1	12/20/2006

Qualifiers:					
	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: Atkins Engineering Associates
Project: Samson State BD-04 Samples **Work Order:** 0612227

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: E300									
Sample ID: MBLK		*MBLK*			Batch ID: **R21895**		Analysis Date: 12/20/2006 12:33:03 PM		
Chloride	ND	mg/L	0.10						
Sample ID: MBLK		*MBLK*			Batch ID: **R21901**		Analysis Date: 12/21/2006 8:18:18 AM		
Chloride	ND	mg/L	0.10						
Sample ID: LCS ST300-06026		*LCS*			Batch ID: **R21895**		Analysis Date: 12/20/2006 12:50:27 PM		
Chloride	4.780	mg/L	0.10	95.6	90	110			
Method: E160.1									
Sample ID: MB-12010		*MBLK*			Batch ID: **12010**		Analysis Date: 12/20/2006		
Total Dissolved Solids	ND	mg/L	20						
Sample ID: LCS-12010		*LCS*			Batch ID: **12010**		Analysis Date: 12/20/2006		
Total Dissolved Solids	977.0	mg/L	20	97.7	80	120			

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name ATK | Date and Time Received: 12/20/2006

Work Order Number 0612227 | Received by AT

Checklist completed by _____ 12/20/06
Signature | Date

Matrix | Carrier name Greyhound

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐	Not Shipped ☐
Custody seals intact on sample bottles?	Yes ☐	No ☑	N/A ☐	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	

Container/Temp Blank temperature? 1° *4° C ± 2 Acceptable* If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

_____

_____

_____

_____

Corrective Action _____

_____

_____

CHAIN-OF-CUSTODY RECORD

QA / QC Package:
Std ☐ Level 4 ☐
Other:

Client: Atkins Engineering Associates, Inc.

Address: 2904 West Second St. Roswell, NM 88201

Phone #: 505.624.2420

Fax #: 505.624.2421

Project Name: Samson State BD-04 Samples

Project #: RTH BD04.SAM.06

Project Manager: Randall Hicks

Sampler: M. Bates

Sample Temperature: 1.4

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative $HgCl_2$	Preservative HNO_3	Preservative	HEAL No.
								606227
12/18/06	1200	Aqueous	4" Monitor Well Lower	1-300mL bottle				-1
12/18/06	1215	↓	4" Monitor Well Upper	↓				-2

ANALYSIS REQUEST

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO$_2$, NO$_3$, PO$_4$, SO$_4$)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	TDS 160.1				Air Bubbles or Headspace (Y or N)
								✓				✓				
								✓				✓				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
12-19-06	9:30	Tina Valenzuela	
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)
			12/20/06 1030

Remarks: ⇒ 24-hour Turn Around ←
Send Results to Randall Hicks
@ RT Hicks
→ Chloride & TDS ←

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Dale Littlejohn

R.T. Hicks Consultants Ltd.

901 Rio Grande Blvd, NW Ste., F-142

Albuquerque, NM 87104

Project: Samson Livestock 30

Project Number: L-124-1206

Location: Lea Co., NM

Lab Order Number: 6L14006

Report Date: 12/20/06

R.T. Hicks Consultants Ltd.	Project: Samson Livestock 30	Fax: (413) 403-9968
901 Rio Grande Blvd, NW Ste., F-142	Project Number: L-124-1206	
Albuquerque NM, 87104	Project Manager: Dale Littlejohn	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	6L14006-01	Water	12/12/06 15:05	12-14-2006 14:30

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

R.T. Hicks Consultants Ltd.	Project: Samson Livestock 30	Fax: (413) 403-9968
901 Rio Grande Blvd, NW Ste., F-142	Project Number: L-124-1206	
Albuquerque NM, 87104	Project Manager: Dale Littlejohn	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (6L14006-01) Water									
Chloride	**5210**	5.00	mg/L	1	EL61513	12/15/06	12/15/06	SW846-9253	
Total Dissolved Solids	**9600**	10.0	"	"	EL61530	12/18/06	12/19/06	EPA 160.1	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

R.T. Hicks Consultants Ltd.
901 Rio Grande Blvd, NW Ste., F-142
Albuquerque NM, 87104

Project: Samson Livestock 30
Project Number: L-124-1206
Project Manager: Dale Littlejohn

Fax: (413) 403-9968

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EL61513 - General Preparation (WetChem)										
Blank (EL61513-BLK1)				Prepared & Analyzed: 12/15/06						
Chloride	0.00	5.00	mg/L							
LCS (EL61513-BS1)				Prepared & Analyzed: 12/15/06						
Chloride	91.5	5.00	mg/L	100		91.5	80-120			
Matrix Spike (EL61513-MS1)	**Source: 6L14006-01**			Prepared & Analyzed: 12/15/06						
Chloride	5480	5.00	mg/L	250	5210	108	80-120			
Matrix Spike Dup (EL61513-MSD1)	**Source: 6L14006-01**			Prepared & Analyzed: 12/15/06						
Chloride	5480	5.00	mg/L	250	5210	108	80-120	0.00	20	
Reference (EL61513-SRM1)				Prepared & Analyzed: 12/15/06						
Chloride	50.0		mg/L	50.0		100	80-120			
Batch EL61530 - Filtration Preparation										
Blank (EL61530-BLK1)				Prepared: 12/18/06 Analyzed: 12/19/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EL61530-DUP1)	**Source: 6L14006-01**			Prepared: 12/18/06 Analyzed: 12/19/06						
Total Dissolved Solids	9510	10.0	mg/L		9600			0.942	20	
Duplicate (EL61530-DUP2)	**Source: 6L15006-03**			Prepared: 12/18/06 Analyzed: 12/19/06						
Total Dissolved Solids	1250	10.0	mg/L		1300			3.92	20	

R.T. Hicks Consultants Ltd.	Project: Samson Livestock 30	Fax: (413) 403-9968
901 Rio Grande Blvd, NW Ste., F-142	Project Number: L-124-1206	
Albuquerque NM, 87104	Project Manager: Dale Littlejohn	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 12/20/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Dale Littlejohn
Company Name: RT Hicks Consultants Ltd
Company Address: P.O. Box 7624
City/State/Zip: Midland, Texas 79708
Telephone No: (432) 528-3878
Fax No: (432) 689-4578 (Fax)
Sampler Signature: Dale T Littlejohn

Project Name: Samson Livestock 30
Project #: L-124-1206
Project Loc: Lea Co., NM
PO #:

1 poly

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	HNO_3	HCl	NaOH	H_2SO_4	None	Other (Specify)	Matrix: Water	Sludge	Soil	Other (specify):	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	TOTAL: Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Chloride	Bromide	Total Dissolved Solids		RUSH TAT (Pre-Schedule)	Standard TAT
12L14006																															
-9	MW-1	12/12/06	1505	1	X					X		X														X		X			X

Special Instructions: Send Invoice to RT Hicks Consult. 901 Rio Grande Blvd. NW, Suite F-142, Albuquerque, NM 87104; Send results to Dale Littlejohn at the adress above.

Sample Containers Intact? Y N
Temperature Upon Receipt: 2.0
Laboratory Comments: w/o label RG

Relinquished by:	Date	Time	Received by:	Date	Time
Dale T Littlejohn	12/14/06	2:30			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Cecil Cole	12/14/06	2:30

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: RT Hicks

Date/ Time: 12/14/06 2:30

Lab ID #: 6h14006

Initials: CK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	2.0 °C	
#2	Shipping container in good condition?	Yes	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
#5	Chain of Custody present?	Yes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	Yes	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
#11	Containers supplied by ELOT?	Yes	No		
#12	Samples in proper container/ bottle?	Yes	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	Not Applicable	
#20	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Monday, January 22, 2007

Randall Hicks
R.T. Hicks Consultants, LTD
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

TEL: (505) 266-5004
FAX (505) 266-0745

RE: Samson BD 04

Order No.: 0701130

Dear Randall Hicks:

Hall Environmental Analysis Laboratory, Inc. received 13 sample(s) on 1/10/2007 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001

Hall Environmental Analysis Laboratory, Inc.

Date: *22-Jan-07*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD 04

Lab Order: 0701130

Lab ID: 0701130-01 **Collection Date:** 1/8/2007 9:32:00 AM
Client Sample ID: SB-NW 10' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1900	6.0		mg/Kg	20	1/16/2007 5:45:20 PM

Lab ID: 0701130-02 **Collection Date:** 1/8/2007 9:44:00 AM
Client Sample ID: SB-NW 15' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1100	3.0		mg/Kg	10	1/16/2007 6:37:34 PM

Lab ID: 0701130-03 **Collection Date:** 1/8/2007 10:18:00 AM
Client Sample ID: SB-NW 35' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	25	0.30		mg/Kg	1	1/16/2007 6:36:43 AM

Lab ID: 0701130-04 **Collection Date:** 1/8/2007 12:35:00 PM
Client Sample ID: SB-4D 10' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	15	0.30		mg/Kg	1	1/16/2007 6:54:07 AM

Lab ID: 0701130-05 **Collection Date:** 1/8/2007 1:20:00 PM
Client Sample ID: SB-4D 35' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	3.6	0.30		mg/Kg	1	1/16/2007 7:11:31 AM

Qualifiers:
- * Value exceeds Maximum Contaminant Level
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- S Spike recovery outside accepted recovery limits
- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- MCL Maximum Contaminant Level
- RL Reporting Limit

1 / 5

Hall Environmental Analysis Laboratory, Inc.

Date: *22-Jan-07*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD 04

Lab Order: 0701130

Lab ID: 0701130-06 **Collection Date:** 1/8/2007 4:10:00 PM
Client Sample ID: SB-4D 80' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	8.9	0.30		mg/Kg	1	1/16/2007 2:45:54 PM

Lab ID: 0701130-07 **Collection Date:** 1/9/2007 12:01:00 PM
Client Sample ID: SB-W 5' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	2400	15		mg/Kg	50	1/18/2007 4:05:32 PM

Lab ID: 0701130-08 **Collection Date:** 1/9/2007 12:10:00 PM
Client Sample ID: SB-W 10' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	1300	6.0		mg/Kg	20	1/17/2007 11:07:05 PM

Lab ID: 0701130-09 **Collection Date:** 1/9/2007 1:09:00 PM
Client Sample ID: SB-W 35' **Matrix:** SOIL

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 9056A: ANIONS						Analyst: TES
Chloride	4.8	0.30		mg/Kg	1	1/19/2007 4:02:28 PM

Lab ID: 0701130-10 **Collection Date:** 1/9/2007 1:40:00 PM
Client Sample ID: MW-1 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: TES
Chloride	97	0.50		mg/L	5	1/11/2007 4:24:03 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

Hall Environmental Analysis Laboratory, Inc.

Date: *22-Jan-07*

CLIENT: R.T. Hicks Consultants, LTD
Project: Samson BD 04

Lab Order: 0701130

Lab ID: 0701130-11 **Collection Date:** 1/9/2007 1:10:00 PM
Client Sample ID: MW-2 **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: TES
Chloride	46	0.50		mg/L	5	1/11/2007 4:41:28 PM

Lab ID: 0701130-12 **Collection Date:** 1/9/2007 3:55:00 PM
Client Sample ID: MW-4D **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: TES
Chloride	100	0.50		mg/L	5	1/11/2007 4:58:52 PM

Lab ID: 0701130-13 **Collection Date:** 1/9/2007 4:00:00 PM
Client Sample ID: MW-4S **Matrix:** AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: TES
Chloride	180	0.50		mg/L	5	1/11/2007 5:16:16 PM

Qualifiers:

*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
ND	Not Detected at the Reporting Limit	RL	Reporting Limit
S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: R.T. Hicks Consultants, LTD
Project: Samson BD 04 **Work Order:** 0701130

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: SW9056A									
Sample ID: 0701130-09AMSD		*MSD*			Batch ID: 12146		Analysis Date: 1/19/2007 4:19:53 PM		
Chloride	19.14	mg/Kg	0.30	95.3	80	120	1.48	20	
Sample ID: MB-12117		*MBLK*			Batch ID: 12117		Analysis Date: 1/15/2007 12:54:47 PM		
Chloride	ND	mg/Kg	0.30						
Sample ID: LCS-12117		*LCS*			Batch ID: 12117		Analysis Date: 1/15/2007 1:12:12 PM		
Chloride	15.35	mg/Kg	0.30	102	90	110			
Sample ID: 0701130-09AMS		*MS*			Batch ID: 12146		Analysis Date: 1/19/2007 4:37:17 PM		
Chloride	19.42	mg/Kg	0.30	97.2	80	120			
Method: E300									
Sample ID: MBLK		*MBLK*			Batch ID: R22088		Analysis Date: 1/11/2007 11:10:43 AM		
Chloride	ND	mg/L	0.10						
Sample ID: LCS ST300-06026		*LCS*			Batch ID: R22088		Analysis Date: 1/11/2007 11:28:07 AM		
Chloride	4.688	mg/L	0.10	93.8	90	110			

Qualifiers:

E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
J	Analyte detected below quantitation limits	ND	Not Detected at the Reporting Limit
R	RPD outside accepted recovery limits	S	Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name RT HICKS | Date and Time Received: 1/10/2007

Work Order Number 0701130 | Received by GLS

Checklist completed by Tanya Shan (Signature) Jan 10, 07 (Date)

Matrix | Carrier name Client drop-off

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☐	Not Shipped ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	N/A ☑	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace?	No VOA vials submitted ☑	Yes ☐	No ☐	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	

Container/Temp Blank temperature? 3° *4° C ± 2 Acceptable* If given sufficient time to cool.

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: Mark called and confirmed collection times & dates for Samples 1-6 as collected on 1-8-07. GS 1-11-07

Corrective Action _____

CHAIN-OF-CUSTODY RECORD

QA / QC Package:
Std ☐ Level 4 ☐
Other:

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: R.T. Hicks Consultants, LTD.
Address:
Phone #: 505-266-5004
Fax #:

Project Name: Samson BD 04
Project #:
Project Manager: Randy Hicks
Sampler:
Sample Temperature: 3°

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HNO_3	Preservative: Cool	HEAL No. 0701130
1-8-07	0932	Soil	SB-NW 10'	1-4oz			cool	1
1-8-07	0944	Soil	SB-NW 15'					2
1-8-07	1018	Soil	SB-NW 35'					3
1-8-07	1235	Soil	SB-4D 10'					4
1-8-07	1320	Soil	SB-4D 35'					5
1-8-07	1610	Soil	SB-4D 80'					6
1-9-07	1201	Soil	SB-W 5'					7
1-9-07	1210	Soil	SB-W 10'					8
1-9-07	1309	Soil	SB-W 35'					9

ANALYSIS REQUEST

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions ($F, Cl, NO_3, NO_2, PO_4, SO_4$)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	Chloride				Air Bubbles or Headspace (Y or N)
												X				
												X				
												X				
												X				
												X				
												X				
												X				
												X				
												X				

Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)	
1/10/07	1646			1-10-07 @ 1646
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)	

Remarks:

CHAIN-OF-CUSTODY RECORD

QA / QC Package:
Std ☐ Level 4 ☐
Other:

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: R.T. Hicks Consultants, LTD.
Address:
Phone #: 505-266-5004
Fax #:

Project Name: Samson BD 04
Project #:
Project Manager: Randy Hicks
Sampler:
Sample Temperature: 3°

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HNO_3	Preservative: Cool	HEAL No.
								0701130
1-9-07	1340	Water	MW-1	125mL			Cool	10
1-9-07	1310	Water	MW-2					11
1-9-07	1555	Water	MW-4D					12
1-9-07	1600	Water	MW-4S					13

ANALYSIS REQUEST

	BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO_2, NO_3, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260B (VOA)	8270 (Semi-VOA)	Chloride				Air Bubbles or Headspace (Y or N)
10													X				
11													X				
12													X				
13													X				

Date	Time	Relinquished By: (Signature)	Received By: (Signature)	
1/10/07	1646			1-10-07 1646
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)	

Remarks:

HALL
ENVIRONMENTAL
ANALYSIS
LABORATORY

COVER LETTER

Monday, February 19, 2007

Randall Hicks
R.T. Hicks Consultants, LTD
901 Rio Grande Blvd. NW
Suite F-142
Albuquerque, NM 87104

TEL: (505) 266-5004
FAX (505) 266-0745

RE: Samson BD 04

Order No.: 0702070

Dear Randall Hicks:

Hall Environmental Analysis Laboratory, Inc. received 1 sample(s) on 2/7/2007 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent.

Reporting limits are determined by EPA methodology. No determination of compounds below these (denoted by the ND or < sign) has been made.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

Andy Freeman, Business Manager
Nancy McDuffie, Laboratory Manager

NM Lab # NM9425
AZ license # AZ0682
ORELAP Lab # NM100001

Hall Environmental Analysis Laboratory, Inc.

Date: *19-Feb-07*

CLIENT:	R.T. Hicks Consultants, LTD	Client Sample ID:	MW-3 upper 600 BBL's pumped
Lab Order:	0702070	Collection Date:	2/6/2007 9:45:00 AM
Project:	Samson BD 04	Date Received:	2/7/2007
Lab ID:	0702070-01	Matrix:	AQUEOUS

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
EPA METHOD 300.0: ANIONS						Analyst: TES
Chloride	2500	10		mg/L	100	2/8/2007 3:50:25 PM
EPA METHOD 160.1: TDS						Analyst: KS
Total Dissolved Solids	4400	20		mg/L	1	2/13/2007

Qualifiers:				
	*	Value exceeds Maximum Contaminant Level	B	Analyte detected in the associated Method Blank
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	MCL	Maximum Contaminant Level
	ND	Not Detected at the Reporting Limit	RL	Reporting Limit
	S	Spike recovery outside accepted recovery limits		

QA/QC SUMMARY REPORT

Client: R.T. Hicks Consultants, LTD
Project: Samson BD 04 **Work Order:** 0702070

Analyte	Result	Units	PQL	%Rec	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Method: E300									
Sample ID: MBLK		*MBLK*			Batch ID:	**R22409**	Analysis Date:		2/7/2007 10:47:06 AM
Chloride	ND	mg/L	0.10						
Sample ID: MBLK		*MBLK*			Batch ID:	**R22428**	Analysis Date:		2/8/2007 11:12:36 AM
Chloride	ND	mg/L	0.10						
Sample ID: LCS ST300-06026		*LCS*			Batch ID:	**R22409**	Analysis Date:		2/7/2007 11:04:31 AM
Chloride	4.773	mg/L	0.10	95.5	90	110			
Sample ID: LCS ST300-06026		*LCS*			Batch ID:	**R22428**	Analysis Date:		2/8/2007 11:30:00 AM
Chloride	4.837	mg/L	0.10	96.7	90	110			
Method: E160.1									
Sample ID: MB-12301		*MBLK*			Batch ID:	**12301**	Analysis Date:		2/13/2007
Total Dissolved Solids	ND	mg/L	20						
Sample ID: LCS-12301		*LCS*			Batch ID:	**12301**	Analysis Date:		2/13/2007
Total Dissolved Solids	992.0	mg/L	20	99.2	80	120			

Qualifiers:

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- S Spike recovery outside accepted recovery limits

Hall Environmental Analysis Laboratory, Inc.

Sample Receipt Checklist

Client Name RT HICKS | Date and Time Received: 2/7/2007

Work Order Number 0702070 | Received by AT

Checklist completed by _____ 2/7/07
Signature | Date

Matrix | Carrier name Client drop-off

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐	
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☐	Not Shipped ☑
Custody seals intact on sample bottles?	Yes ☐	No ☑	N/A ☐	
Chain of custody present?	Yes ☑	No ☐		
Chain of custody signed when relinquished and received?	Yes ☑	No ☐		
Chain of custody agrees with sample labels?	Yes ☑	No ☐		
Samples in proper container/bottle?	Yes ☑	No ☐		
Sample containers intact?	Yes ☑	No ☐		
Sufficient sample volume for indicated test?	Yes ☑	No ☐		
All samples received within holding time?	Yes ☑	No ☐		
Water - VOA vials have zero headspace? No VOA vials submitted	☑	Yes ☐	No ☐	
Water - Preservation labels on bottle and cap match?	Yes ☐	No ☐	N/A ☑	
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑	
Container/Temp Blank temperature?	6°	*4° C ± 2 Acceptable* If given sufficient time to cool.		

COMMENTS:

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

CHAIN-OF-CUSTODY RECORD

QA / QC Package:
Std ☐ Level 4 ☐
Other:

HALL ENVIRONMENTAL ANALYSIS LABORATORY
4901 Hawkins NE, Suite D
Albuquerque, New Mexico 87109
Tel. 505.345.3975 Fax 505.345.4107
www.hallenvironmental.com

Client: RT Hicks Consultants LTD
Address:
RD RTHicksConsult.com
Phone #: 266 5004
Fax #:

Project Name: Samson BD 04
Project #: Samson BD-04
Project Manager: Randy Hicks
Sampler: MJS
Sample Temperature: 6°

ANALYSIS REQUEST

Date	Time	Matrix	Sample I.D. No.	Number/Volume	Preservative: $HgCl_2$	Preservative: HNO_3	Preservative: Cool None	HEAL No.
2/6/07	0945	Aqueous	MW-3 upper 600 BBLS pumped	1-500ml			X	0702070-1

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gasoline Only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	EDC (Method 8021)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO_3, NO_2, PO_4, SO_4)	8081 Pesticides / PCB's (8082)	8260B (VOA)	827D (Semi-VOA)	Chlor. das	TDS			Air Bubbles or Headspace (Y or N)
												X				

Date	Time	Relinquished By: (Signature)	Received By: (Signature)
2/7/2007	1220		2/7/07
Date:	Time:	Relinquished By: (Signature)	Received By: (Signature)

Remarks:

Appendix E

Hydraulic Conductivity Analysis

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

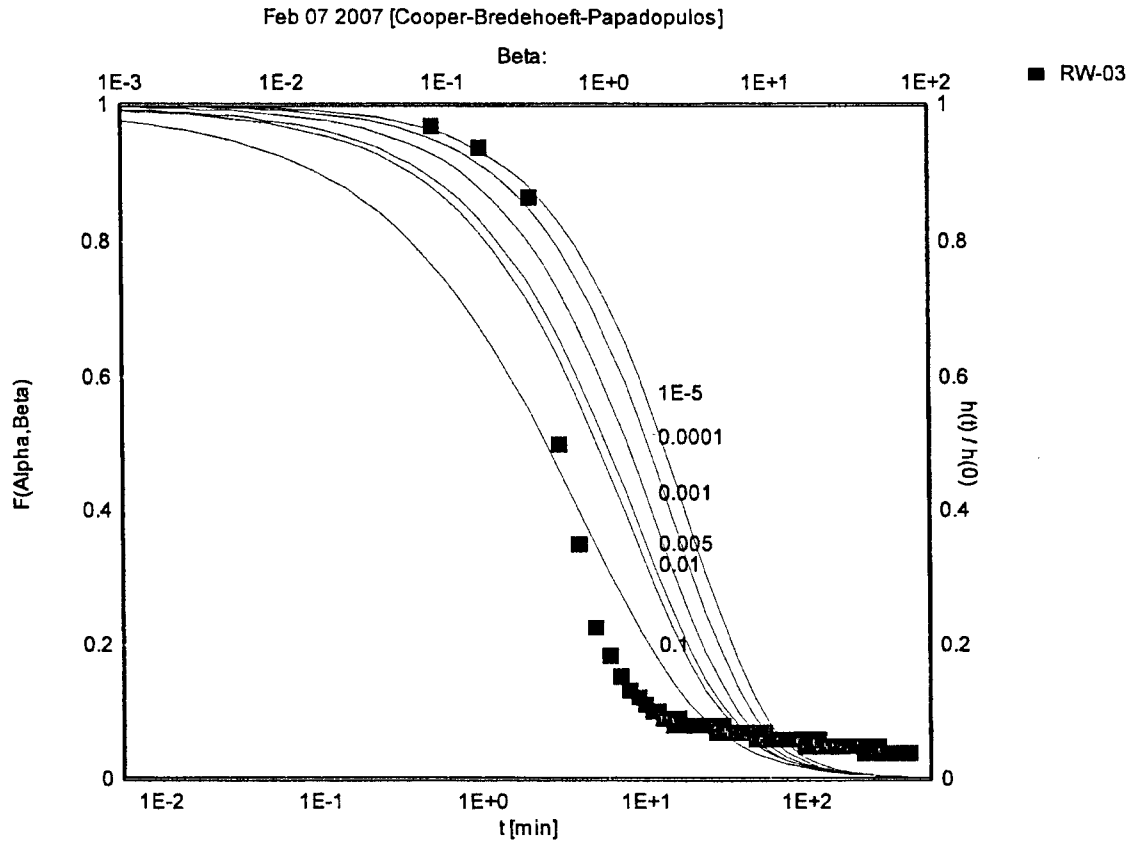
R.T. Hicks Consultants
901 Rio Grande Blvd NW, F-142
Albuquerque, NM 87104
Phone: 505-266-5004

Slug Test Analysis Report

Project: Samson State BD-04

Number: MW-03 Recovery

Client: Samson Investment Company



Slug Test: **Feb 07 2007**

Analysis Method: **Cooper-Bredehoeft-Papadopulos**

Analysis Results:	Transmissivity:	6.57E+0 [ft²/d]	Conductivity:	4.38E-1 [ft/d]
	Storativity:	2.18E-5		
Test parameters:	Test Well:	RW-03	Aquifer Thickness:	15 [ft]
	Casing radius:	0.165 [ft]	Alpha:	0.005
	Screen length:	20 [ft]		
	Boring radius:	0.5 [ft]		
	r(c):	2.5 [ft]		

Comments:

Evaluated by:

Evaluation Date: 2/21/2007

Appendix F

Photo-Documentation of ET Infiltration Barrier Construction

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

Figure 1: View north from MW-1 showing sampling trenches and coarse-grained east spoil pile

Figure 2: View south from MW-2 showing finer-grained south spoil pile

Figure 3: Placing south spoil pile in bottom of former pit

Figure 4: Placing coarse-grained east spoil pile material over south pile with northern soil pile in background. Layers show 5% slope.

Figure 5: Placing topsoil from north pile over east spoil pile material

Figure 6: Grading to achieve 5% slope of topsoil cover

Figure 7: View east showing grading of topsoil

Figure 8: Drilling MW-4 prior to final grading

Figure 9: View south of final grade from MW-2 showing MW-4 (center) and MW-1 (center right)

Figure 10: View south from MW-2 showing MW-3 (center) and MW-1 (arrow)

Figure 11: Final grade showing MW-3 (center) and berm (foreground)

Figure 12: View west from MW-2 of final grade showing berm

Appendix G

Letter to NMOCD
dated January 25, 2007

R.T. Hicks Consultants, Ltd.
901 Rio Grande Blvd. NW, Suite F-142
Albuquerque, NM 87104

R. T. HICKS CONSULTANTS, LTD.
901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

January 25, 2007

Mr. Glenn von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

RE: Samson BD-04, T12S-R33E-Section 2, Unit Letter H, 1R0474

Dear Mr. von Gonten:

On behalf of Samson Resources, R.T. Hicks Consultants presents this Letter Report in accordance with the commitments made in the January 3, 2007 Revision to the December 13 Remediation Plan. Because freezing weather prevented the mid-January commencement of ground water restoration pumping, we respectfully request delaying submission of our proposed report scheduled for the end of February. Please expect the report 40-days after we begin the ground water restoration strategy. We hope to begin pumping next week, which would mean submission of a report on or before March 15 that:

1. Describes the field programs and discusses any variation from the protocols outlined in previous submittals to NMOCD.
2. Describes the final grading and installation of the ET infiltration barrier
3. Presents the results of vadose zone sampling to
   a. define the magnitude and extent of salt impact to the vadose zone, and
   b. measure the moisture content below the infiltration barrier
4. Presents the results of the investigation of the saturated zone and includes
   a. Potentiometric surface maps
   b. Interpretation of the planned 4-day pumping test
   c. Tables and graphs of ground water analyses for each well
   d. Interpretation of the magnitude and extent of chloride impact
   e. A hydrogeologic cross-section of the site area
   f. Tables and graphs showing the hydraulic effect of the first 30-days of the source removal pumping program (described below)
5. Presents the results of numerical modeling of the fate and transport of the chloride introduced to the saturated zone
   a. During source removal pumping phase of the remedy and
   b. During the pump-and-use ground water restoration phase
6. Proposes a site monitoring plan and proposed criteria for closure of the regulatory file based upon the results of the monitoring

Source Removal Pumping

Current data suggests that MW-3 can produce about 5 gallons/minute from the upper screened interval (see Appendix A for a description of the pumping system). Ground water

produced from MW-3 will discharge to a 500-barrel storage tank at the site. From the storage tank, the water flows to the Samson injection well located about 500 feet south of the site. Although we believe that most of the pumped water will flow to the Samson disposal well during this phase of the ground water remedy, we are negotiating with several oilfield service companies to take the water for use in oil and gas well drilling programs.

We anticipate that this aggressive source removal pumping will continue for 30 to 90 days. During this phase of the remedy we will:

- monitor the volume of pumped ground water with a totalizing flow meter
- coordinate water rights permitting with the office of the State Engineer
- routinely measure ground water levels of on-site wells
- routinely measure field conductance of pumped water
- measure the volume of water flowing to the disposal well
- measure the volume of water used in oil and gas drilling operations

Proposed Pump-and-Use Ground Water Restoration

When the TDS concentration of pumped water from MW-3 declines from the current level of about 5000 mg/L to 3000 mg/L, we will transition from source removal pumping to the pump-and-use strategy. According to New Mexico State University (http://cahe.nmsu.edu/pubs/_m/m-112.html) water with a TDS of 3000 mg/L or less is "Very satisfactory for all classes of livestock and poultry". Therefore, the ground water remedy calls for supplying the surface leaseholder with a water source for cattle since this area of the state lease does not have a water source for stock. Additionally, we anticipate that oilfield service companies will periodically take water from the stock tank for use in nearby oil and gas well drilling operations.

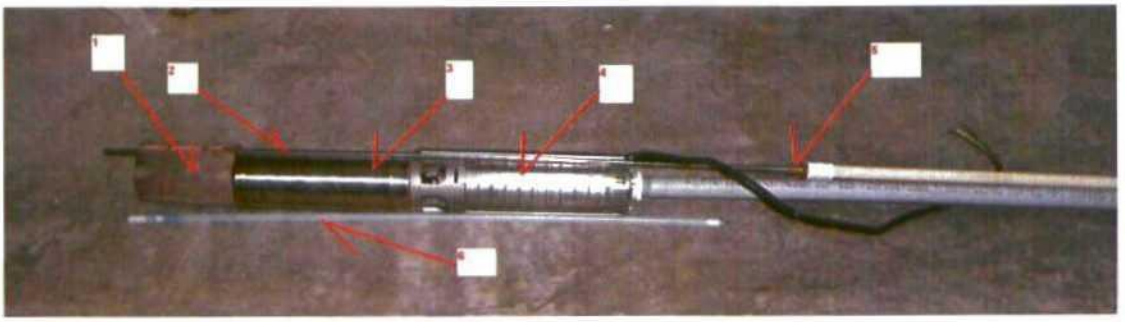
We also request that NMOCD forego any formal evaluation of the site activities until we have submitted the March report. Please contact Mr. Scott Rose of Samson if you have any questions or concerns regarding this plan as he has reviewed and approved this submission.

Sincerely,
R.T. Hicks Consultants, Ltd.

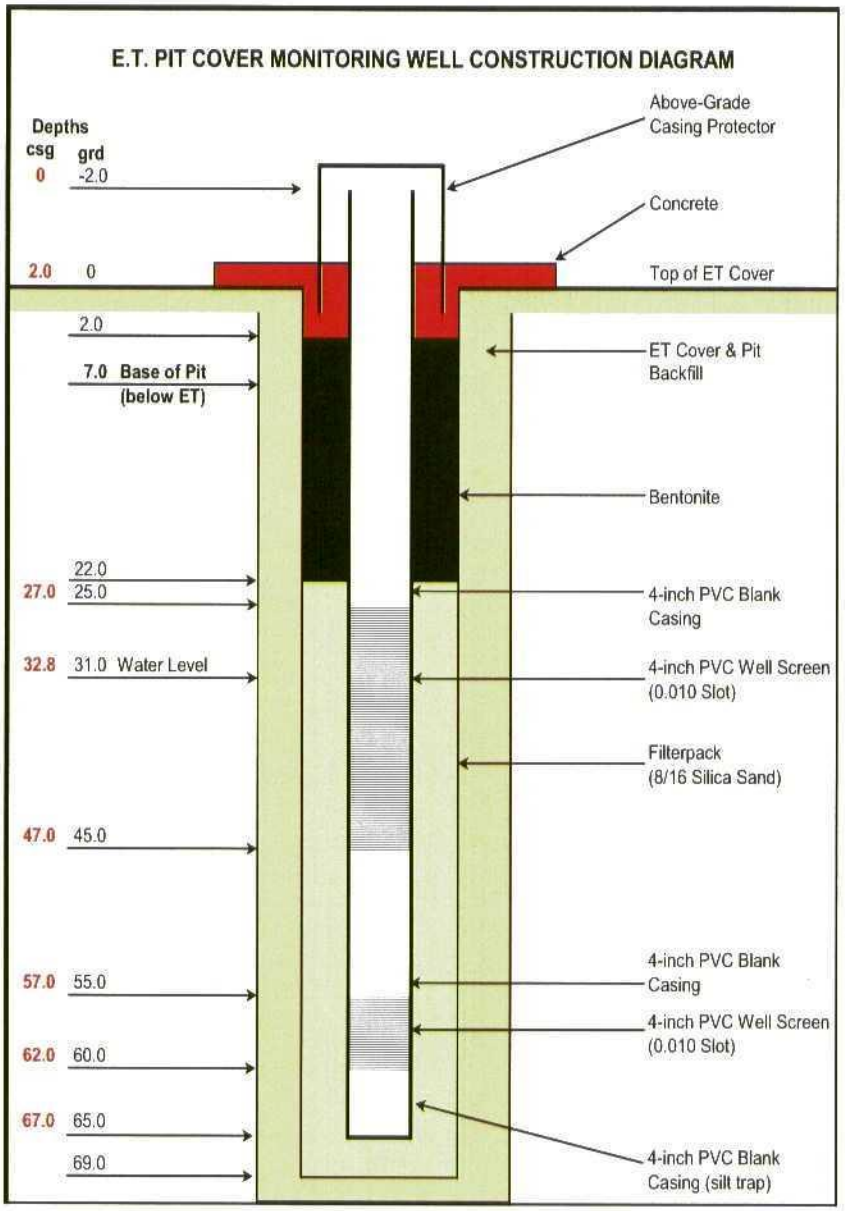
Randall T. Hicks
Principal

Copy:
Samson Resources, Scott Rose
New Mexico State Land Office

Appendix A – Pump and Packer System for MW-3



1) milled redwood plug
2) 1/4 in stainless steel tube
3) submersible pump motor
4) liquid pump end discharging to 1 in schedule 80 pvc column pipe
5) bushing from 1/4 in ss tube to 1/2 in sch 40 pvc riser tube
6) disposable bailer to bail through 1/2 in riser tube



The milled redwood plug is placed at 50-feet below ground surface, within the blank casing. This plug focuses water withdrawal from the upper screen.

During pumping, water enters the well from the upper screen and a small bailer lowered into the well can obtain a sample of ground water produced from the upper screen.

Because the redwood plug only restricts flow from the lower screen, water enters the well through the lower screen but at a low rate.

The ¼ inch tube connects the ½ inch riser to the area of the well below the packer. When the well is pumping, a small bailer can draw a discrete sample from the lower well screen

Discrete water level measurements may be obtained using the same protocol as that described for sampling