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Annual GW Mon. REPORTS

DATE:

2005

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March 9, 2006

Mr. Wayne Price
New Mexico Energy, Minerals, & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: 2005 MONITOR WELL REPORT
GROUNDWATER REMEDIATION/MONITORING
N-6 PIPELINE LEAK, WEST COUNTY ROAD SITE
HOBBS SWD SYSTEM
SW1/4, NW ¼, SEC. 5 & 6, T19S, R38E, LEA COUNTY, NEW MEXICO

Dear Mr. Price:

Rice Operating Company (ROC) takes this opportunity to submit the 2005 Monitor Well Report for the Hobbs Salt Water Disposal (SWD) System N-6 Release Site in the SW ¼ NW ¼ of Sections 5, 6, T19S, R38E, Lea County, New Mexico. The site is located immediately south of the intersection of Highway 62-180 and the South Loop of the Hobbs West County Road By-Pass (Figure 1).

Introduction and Site Background

ROC is the service provider (operator) for the Hobbs Salt Water Disposal System and has no ownership of any portion of the subject pipeline, well or facility. The Hobbs SWD System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. The Hobbs SWD System is in the process of abandonment.

The site is directly underlain by sediments of the Pliocene Ogallala Formation which in turn are underlain by Triassic red beds. In 1994, a leak was discovered in a buried SWD pipeline. An assessment program was completed and a free product recovery program initiated. The free product has historically been collected from Monitor Well 1, initially in 1996 in conjunction with groundwater recovery, and then beginning in 2000 with just product recovery. The total volume of oil recovered by 2002 was 766 gallons. The highest yearly oil recovery rate was 289 gallons in 2000, with a declining trend in the volume of oil recovered since to 22 gallons in 2002 and 32.2 gallons in 2005.

A biosparge well designed to maximize in-situ biodegradation and minimize volatilization of hydrocarbons was installed at the site and became operational in August 2005. Well locations, including the biosparge well, are shown on Figure 2.

Product Removal

ROC has actively worked toward recovering the phase-separated hydrocarbon (PSH) at Recovery Well MW-1. A skimmer-type pump was installed in September 1999, but ROC soon discovered that the pump was not working properly and removed it from the well. ROC sought other methods of recovery but the viscosity of the PSH makes recovery difficult. In 2004 ROC recovered the PSH using an absorbent sock placed in the well weekly. In September of 2004, Basin assumed the maintenance and weekly replacement of the socks. A total of 32.2 gallons of PSH were removed from the MW-1 for 2005. The weekly average for measured PSH thickness is 0.142 feet. Weekly measurements of PSH volume and thickness are recorded in Table 2.

Biosparge Well Operation and Evaluation

A biosparge well designed to maximize in-situ biodegradation and minimize volatilization of hydrocarbons was installed at the site and became operational in August 2005. The operation was optimized by October 2005. Preliminary evaluation indicates that the well is effective in the remediation of free-phase hydrocarbons at the site. This is evidenced by an increased average product thickness in MW-1 interpreted to be a result of the formation of biosurfactants, indicative of active bioremediation. Preliminary biochemical results also suggest groundwater chemistry indicative of bioremediation, however, additional sampling (1 to 2 additional quarters) will be necessary to evaluate the groundwater chemistry. Operation of the biosparge well in conjunction with use of absorbent socks and evaluation of its effectiveness will continue in 2006.Groundwater Quality Assessment

Quarterly sampling was performed by Basin Environmental and Arc Environmental. Environmental Lab of Texas conducted the laboratory analysis of the water samples.

Purging and sampling of the monitoring wells were conducted on March 29, June 28, September 6 and December 6, 2005. The biosparge well was sampled December 6, 2005. Laboratory analytical results are included in Table 1.
Table 1 is a historical summary of the results of the analytical testing of groundwater samples from the monitoring wells and inactive water well for the 2005 annual report. Samples were analyzed for chloride, total dissolved solids (TDS), benzene, toluene, ethylbenzene, total xylenes and sulfate in monitoring wells MW-2, MW-3, MW-4, MW-5, MW-6, MW-7 and the inactive water well IWW.

Concentrations versus time graphs have been prepared for each of the monitoring wells and the inactive water well for chloride and TDS. The graphs compare the changes in a compound's concentration in a well over time. They accompany Table 1.

Chloride concentrations in monitoring wells MW-2, MW-4, MW-5, MW-6 and MW-7 were below the New Mexico Water Quality Control Commission (WQCC) standard of 250 milligrams per liter (mg/L) for each of the 4 sampling events in 2005. Chloride concentrations in MW-3 ranged from 4,660 to 7,300 mg/L in 2005. The chloride concentration the inactive water well IWW was 419 mg/L in March, 2005, and below WQCC standards for the other quarterly sampling events.

Benzene was detected in MW-2 (March 2005 and December 2005), and MW-5 (December 2005) at concentrations below the WQCC standard of 0.01 mg/L. In 2005 benzene was detected above the WQCC standard in MW-3 and the biosparge well.

Toluene was detected in monitoring well MW-3 and the biosparge well at concentrations less than the WQCC standard of 0.75 mg/L.

Ethylbenzene and total xylenes were detected in MW-2, MW-3, MW-6, MW-7 and the biosparge well in 2005 at concentrations less than the WQCC standards of 0.75 mg/L.

Total dissolved solids exceeded the WQCC standard of 1,000 mg/L in MW-3 and IWW in 2005.

Groundwater Monitoring

Groundwater monitoring will continue on a quarterly schedule for 2006.

Recommendations

Based on the historical analytical results, ARCADIS recommends modification of the sampling at the site. With the exception of MW-3, all of the monitoring wells have exhibited chloride concentrations below the WQCC standard of 250 mg/L and TDS concentrations below the WQCC standard of 1,000 mg/L for the last 7 consecutive quarters. Further, chloride and TDS concentrations in MW-2, MW-4, and MW-6 have been below WQCC standards for the last 12 consecutive quarters. MW-5 exhibited a spike in chloride and TDS concentrations in March 2004 and MW-7 exhibited a spike in concentrations in March 2003 and March 2004 above the WQCC standards. IWW exhibited a spike in concentrations in March 2004 and March 2005. The consistently low concentration for all other sampling events suggest that these concentration spikes are anomalous and may be indicative of laboratory error. It is recommended that sampling of these wells be discontinued and the wells plugged.

The source of chloride impact was removed in 1994 and groundwater recovery to remove chlorides was initiated in 1996, yet MW-3 continues to exhibit elevated chloride and TDS concentrations. This well, unlike the others at the site, was drilled to the base of the Ogallala which is underlain by Triassic red-beds. The elevated chloride, TDS and sulfate concentrations in this well are markedly higher than the other wells at the site and are strongly indicative of naturally occurring geochemical conditions at the base of the Ogallala. Therefore, it is recommended that sampling of MW-3 be discontinued and the well plugged.

Product removal from MW-1 will continue in 2006. Operation and sampling of the biosparge well will continue in 2006, and the effectiveness of the biosparge well in remediation of hydrocarbons at the site evaluated.

Thank you for consideration concerning this information. Should you have any questions regarding this submission, please do not hesitate to contact me.

Very truly yours,

ARCADIS G&M Inc.

Sharon E. Hall

Sharon E. Hall
Site Evaluation Department Manager

enclosures: Table 1 – Historical Summary of Analytical Results with Graphs
Table 2 – PSH Summary for 2005
Figure 1 – Site Location
Figure 2- Site Map

cc:
Carolyn Haynes ROC
Kristin Farris Pope ROC

Jobs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE Operating Company
Monitor Well Data Sheet

4-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
Bio Sparge	40.90	65.70	16.100	25.00	12/06/05	92.6	608	0.0323	0.0209	0.107	0.0825	54.4

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE *Operating Company*
Monitor Well Data Sheet

4-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
2	40.20	52.18	7.780	23.36	8/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
2	40.34	52.11	7.650	22.75	12/6/02	XXX	XXX	XXX	XXX	XXX	XXX	
2	40.61	52.20	7.530	22.60	3/14/03	53.20	XXX	0.003	0.001	0.006	0.004	109
2	40.29	52.13	7.69	23.08	6/27/03	40.80	499	<0.001	<0.001	<0.001	<0.001	112
2	XXX	XXX	XXX	XXX	9/22/03	31.90	504	<0.001	<0.001	<0.001	<0.001	88.8
2	40.39	52.13	7.66	22.99	12/18/03	44.00	458	<0.002	<0.002	<0.002	<0.006	37.7
2	41.53	52.13	6.92	20.76	3/15/04	39.00	484	0.00458	<0.001	0.00236	0.001929	108
2	XXX	XXX	XXX	XXX	5/27/04	31.90	481	0.000448	<0.001	0.000482	<0.001	89.4
2	41.69	52.24	6.86	20.57	9/8/04	70.90	577	0.0289	0.00219	0.0126	0.00837	91.4
2	39.40	52.24	8.35	25.04	11/22/04	58.10	XXX	0.0238	0.00269	0.0239	0.01051	90.2
2	38.73	52.24	XXX	32.00	3/29/05	39.10	444	0.00169	<0.001	0.00151	0.00101	93.6
2	39.12	55.00	XXX	31.40	06/28/05	42.40	515	<0.001	<0.001	<0.001	<0.001	100
2	39.21	55.00	XXX	31.00	9/6/05	49.50	517	<0.001	<0.001	<0.001	<0.001	69.5
2	39.30	52.24	8.400	30.00	12/6/05	58.00	380	0.00325	<0.001	<0.001	<0.001	107

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE *Operating Company*
Monitor Well Data Sheet

4-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl⁻	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
3	40.57	156.05	7.650	225.18	8/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
3	40.76	156.02	74.920	224.76	12/6/02	XXX	XXX	XXX	XXX	XXX	XXX	
3	10.95	156.02	74.790	224.38	3/14/03	5850	XXX	0.060	0.001	0.001	0.003	888
3	40.69	156.04	74.97	224.93	6/27/03	5320	10700	0.013	<0.001	<0.001	0.001	1120
3	XXX	XXX	XXX	XXX	9/22/03	5320	10900	0.008	<0.001	<0.001	0.001	1050
3	40.82	156.03	75.23	225.69	12/18/03	5398	10512	0.018	<0.002	<0.002	<0.006	399
3	41.82	156.03	74.57	223.73	3/15/04	5140	8990	0.0354	<0.001	0.000821	0.001646	793
3	XXX	XXX	XXX	XXX	5/27/04	5230	8060	0.0131	0.000238	0.000248	0.000975	664
3	41.93	156.15	74.27	222.73	9/8/04	5140	8600	0.0152	<0.001	0.00184	0.003572	762
3	39.64	156.15	75.73	227.19	11/23/04	3890	XXX	0.0281	0.000202	0.000775	0.004491	683
3	38.73	156.15	XXX	235.00	3/29/05	7300	14700	0.0805	<0.001	0.00291	0.00422	1030
3	39.35	156.15	XXX	39.35	06/28/05	7280	8930	0.00619	<0.001	<0.001	<0.001	2760
3	39.43	155.78	XXX	40.00	9/6/05	4660	7070	0.00566	<0.001	0.00219	0.00455	874
3	39.52	156.15	75.800	230.00	12/6/05	7130	12100	0.0529	0.000572	0.00312	<0.001	848

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE *Operating Company*
Monitor Well Data Sheet

4-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl-	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
4	42.42	56.65	9.240	27.74	8/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
4	42.60	56.66	9.140	27.42	12/6/02	XXX	XXX	XXX	XXX	XXX	XXX	
4	42.84	56.63	8.960	26.89	3/14/03	84.2	XXX	<0.001	<0.001	<0.001	<0.001	123
4	42.58	56.65	9.14	27.43	6/27/03	62	520	<0.001	<0.001	<0.001	0.002	138
4	XXX	XXX	XXX	XXX	9/22/03	65	569	<0.001	<0.001	<0.001	<0.001	123
4	42.69	56.67	9.12	27.38	12/18/03	64	547	<0.002	<0.002	<0.002	<0.006	44.8
4	43.77	56.67	8.42	25.27	3/15/04	124	560	0.00103	<0.001	<0.001	<0.001	127
4	XXX	XXX	XXX	XXX	5/27/04	49.6	484	<0.001	<0.001	<0.001	<0.001	107
4	43.92	56.71	8.31	24.94	9/8/04	49.6	492	0.00142	<0.001	<0.001	<0.001	114
4	41.26	56.71	10.04	30.13	11/23/04	55.2	XXX	<0.001	<0.001	<0.001	<0.001	99.2
4	40.85	56.71	XXX	32.00	3/29/05	47	424	<0.001	<0.001	<0.001	<0.001	101
4	41.32	61.65	XXX	40.00	06/28/05	44.8	519	<0.001	<0.001	<0.001	<0.001	102
4	41.42	61.65	XXX	40.00	9/6/05	69.7	523	<0.001	<0.001	<0.001	<0.001	92.5
4	41.58	56.71	9.800	30.00	12/6/05	40.4	370	<0.001	<0.001	<0.001	<0.001	82.2

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE *Operating Company*
Monitor Well Data Sheet

4-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
5	38.66	51.29	8.200	24.62	08/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
5	38.82	51.18	8.010	24.04	12/06/02	XXX	XXX	XXX	XXX	XXX	XXX	
5	39.04	51.18	7.890	23.67	03/14/03	39	XXX	<0.001	<0.001	<0.001	<0.001	105
5	38.81	51.21	8.06	24.18	06/27/03	35.4	513	<0.001	<0.001	<0.001	0.002	120
5	XXX	XXX	XXX	XXX	09/22/03	33.7	508	<0.001	<0.001	<0.001	<0.001	88.2
5	38.91	51.19	8.01	24.05	12/18/03	56	474	<0.002	<0.002	<0.002	<0.006	39.4
5	40.00	51.19	7.30	21.92	03/15/04	762	1620	0.0107	<0.001	0.000543	0.000876	216
5	XXX	XXX	XXX	XXX	05/27/04	33.7	473	<0.001	<0.001	<0.001	<0.001	94
5	40.18	51.31	7.23	21.70	09/08/04	35.4	517	<0.001	<0.001	<0.001	<0.001	79.4
5	38.12	51.31	8.57	25.72	11/23/04	57.3	XXX	<0.001	<0.001	<0.001	<0.001	85.4
5	37.30	51.31	XXX	32.00	03/29/05	35	449	<0.001	<0.001	<0.001	<0.001	83.1
5					06/28/05	38.1	504	<0.001	<0.001	<0.001	<0.001	95.8
5	37.74	51.07	XXX	26.11	09/06/05	66.8	488	< 0.001	<0.001	<0.001	<0.001	103
5	37.80	51.31	8.800	30.00	12/6/2005	29.6	442	0.00044	<0.001	<0.001	<0.001	67

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE *Operating Company*
Monitor Well Data Sheet

2-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl-	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
6	40.70	52.98	1.960	5.89	08/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
6	40.87	53.02	1.940	5.83	12/06/02	XXX	XXX	XXX	XXX	XXX	XXX	
6	41.10	53.00	1.900	5.71	03/14/03	42.5	XXX	<0.001	<0.001	<0.001	<0.001	96.6
6	40.81	53.03	1.95	5.86	06/27/03	35.4	743	<0.001	<0.001	<0.001	<0.001	97.5
6	XXX	XXX	XXX	XXX	09/22/03	39	484	<0.001	<0.001	<0.001	<0.001	88.4
6	40.93	53.00	1.96	5.90	12/18/03	44	452	<0.002	<0.002	<0.002	<0.006	36.8
6	42.02	53.00	1.78	5.36	03/15/04	222	692	0.0026	<0.001	<0.001	<0.001	94.2
6	XXX	XXX	XXX	XXX	05/27/04	31.9	443	<0.001	<0.001	<0.001	<0.001	86.6
6	42.16	53.10	1.75	5.25	09/08/04	53.2	488	<0.001	<0.001	<0.001	<0.001	85
6	39.62	53.10	2.16	6.47	11/23/04	76.1	XXX	<0.001	<0.001	<0.001	<0.001	84
6	39.14	53.10	XXX	8.00	03/29/05	97.8	473	<0.001	<0.001	<0.001	<0.001	81.1
6	39.60	54.49	XXX	7.60	06/28/05	122	541	<0.001	<0.001	0.000812	0.002845	103
6	39.61	61.65	XXX	10.78	09/06/05	40.4	442	<0.001	<0.001	<0.001	<0.001	23.4
6	39.75	53.10	2.100	7.00	12/6/2005	52.7	458	<0.001	<0.001	<0.001	<0.001	58.2

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

RICE *Operating Company*
Monitor Well Data Sheet

2-inch well

(ft) (gal) All concentrations are in mg/L

MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
7	40.74	47.20	1.030	3.10	08/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
7	40.94	47.17	0.990	2.98	12/06/02	XXX	XXX	XXX	XXX	XXX	XXX	
7	41.22	47.18	0.950	2.86	03/14/03	266	XXX	0.001	<0.001	<0.001	<0.001	
7	40.88	47.15	1.00	3.00	06/27/03	222	802	<0.001	<0.001	<0.001	<0.001	122
7	XXX	XXX	XXX	XXX	09/22/03	222	861	<0.001	<0.001	<0.001	<0.001	133
7	41.03	47.18	1.00	3.00	12/18/03	208	827	<0.002	<0.002	<0.002	<0.006	110
7	42.17	47.18	0.81	2.44	03/15/04	1080	2220	0.0131	<0.001	<0.001	<0.001	44.4
7	XXX	XXX	XXX	XXX	05/27/04	213	986	<0.001	<0.001	<0.001	<0.001	220
7	42.34	47.25	0.79	2.36	09/08/04	230	731	<0.001	<0.001	<0.001	<0.001	105
7	39.82	47.25	1.19	178.98	11/23/04	188	XXX	<0.001	<0.001	<0.001	<0.001	111
7	39.33	47.25	XXX	4.00	03/29/05	234	791	<0.001	<0.001	<0.001	<0.001	96.1
7	39.60	47.00	XXX	3.70	06/28/05	216	783	<0.001	<0.001	0.00114	0.0038	96.9
7	39.86	47.00	XXX	3.50	09/06/05	187	802	<0.001	<0.001	<0.001	<0.001	76.9
7	39.93	47.25	1.200	4.00	12/6/2005	201	670	<0.001	<0.001	<0.001	<0.0001	85.2

Hobbs N-6 Leak
Sec. 5 & 6, T19S, R38E

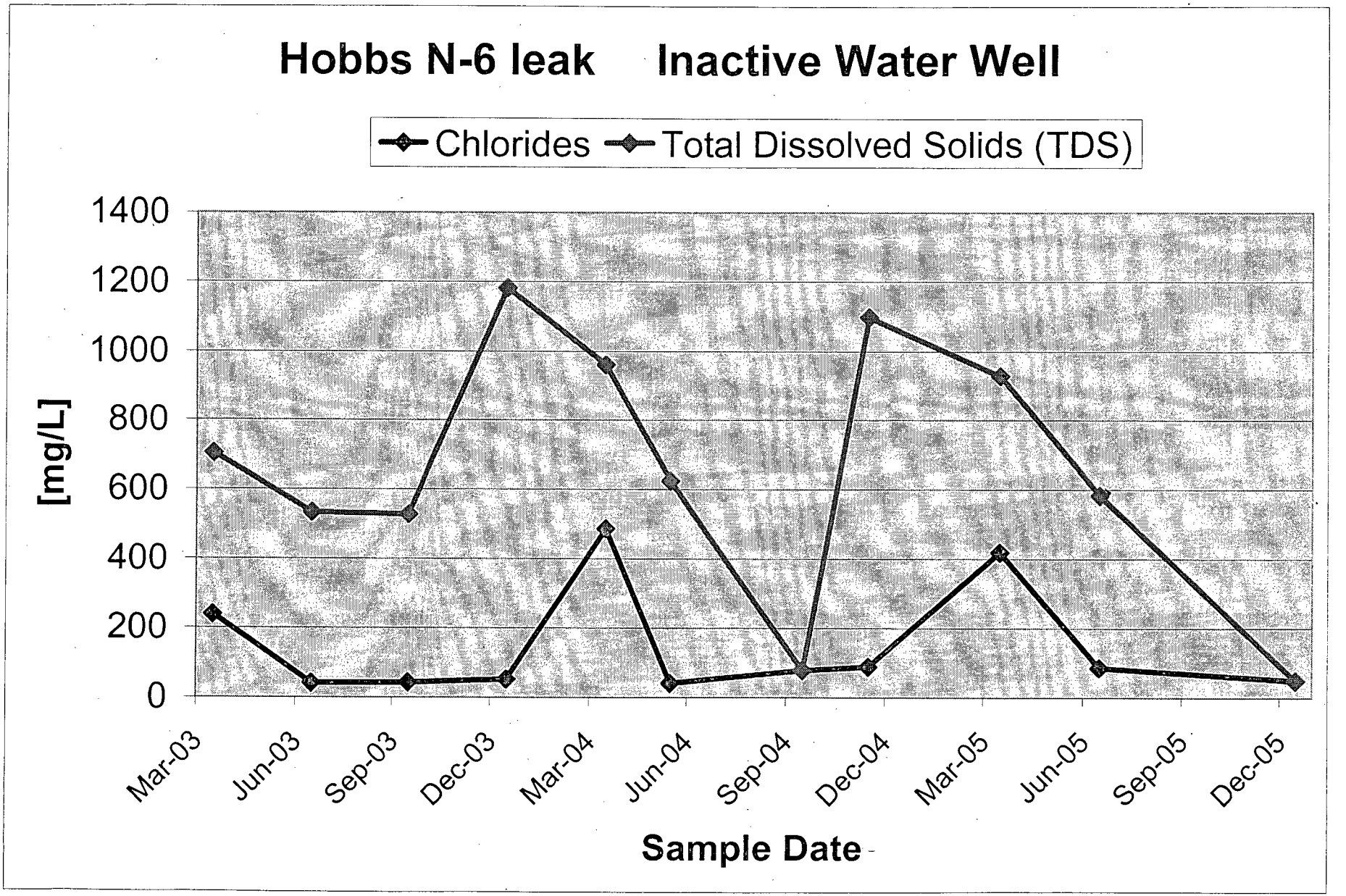
TABLE 1
HISTORICAL SUMMARY OF ANALYTICAL RESULTS

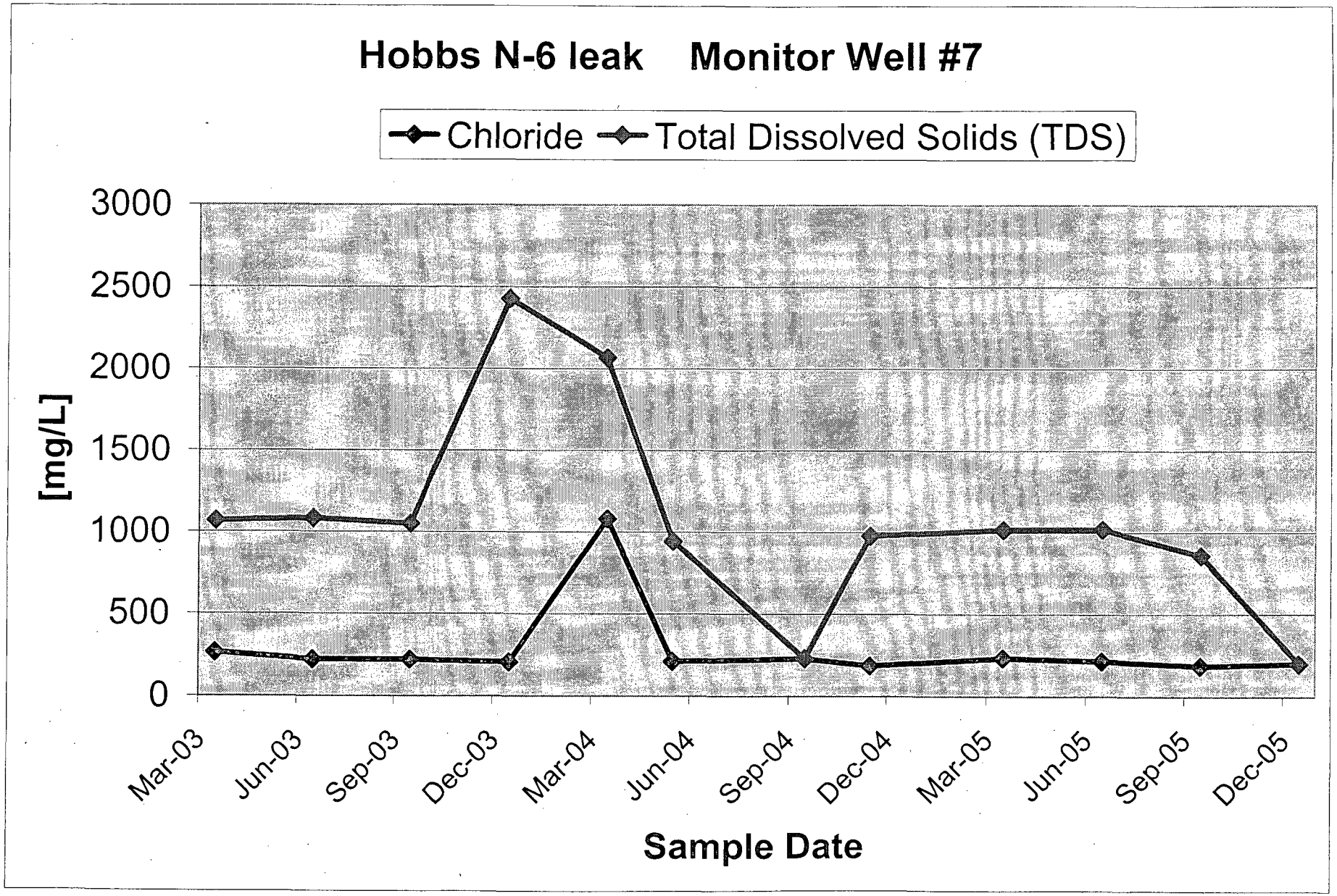
RICE *Operating Company*
Monitor Well Data Sheet

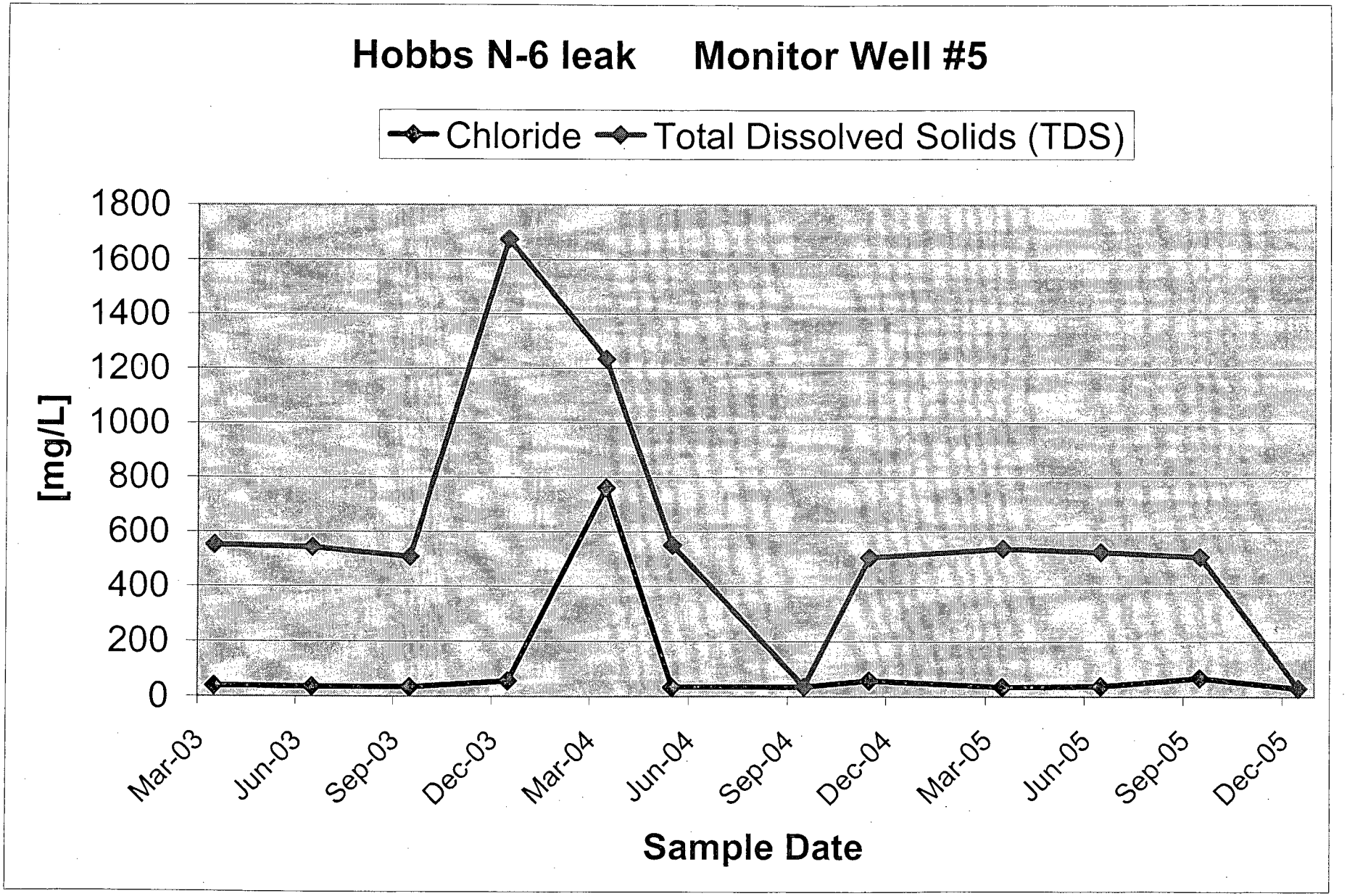
5-inch well

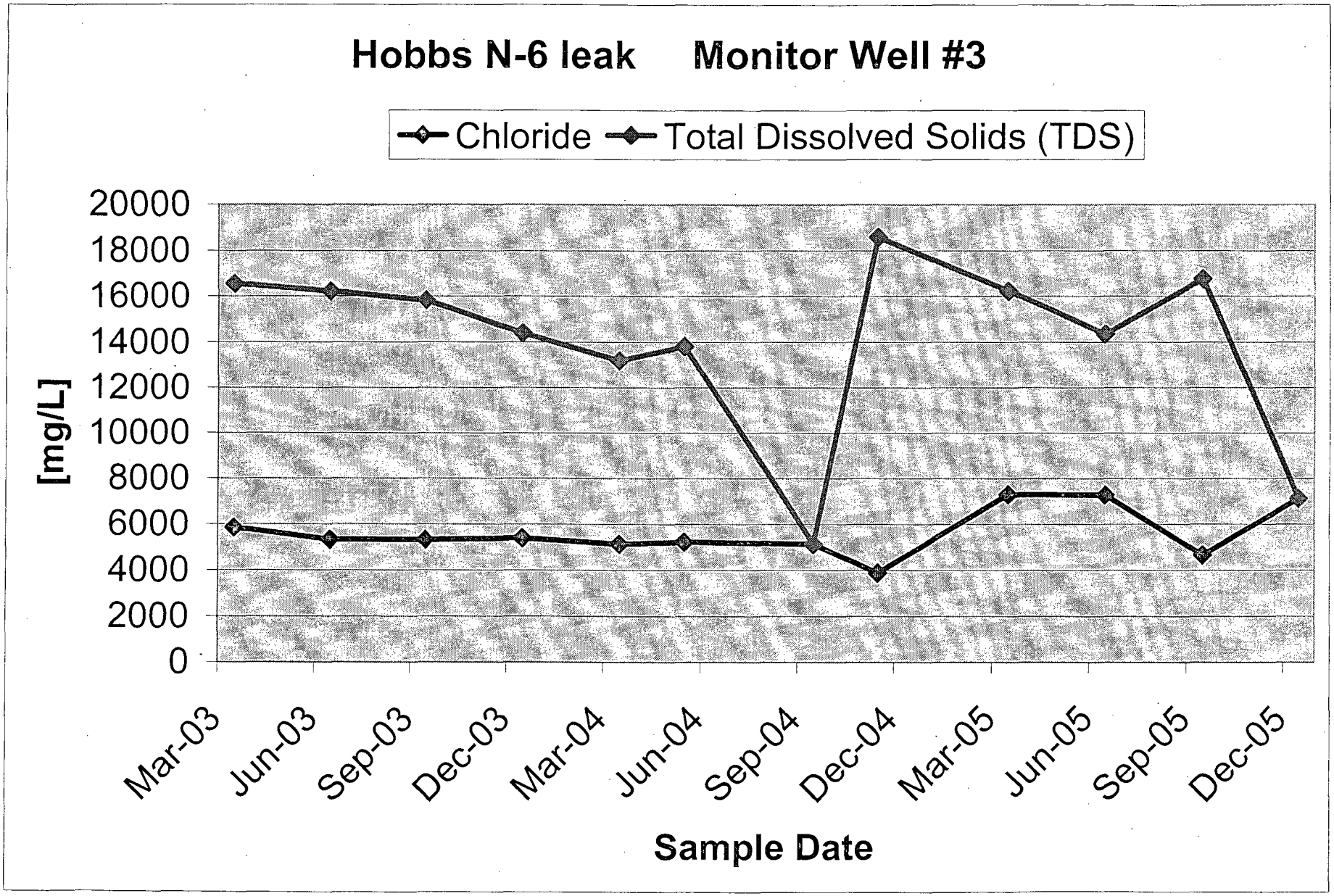
(ft) (gal) All concentrations are in mg/L

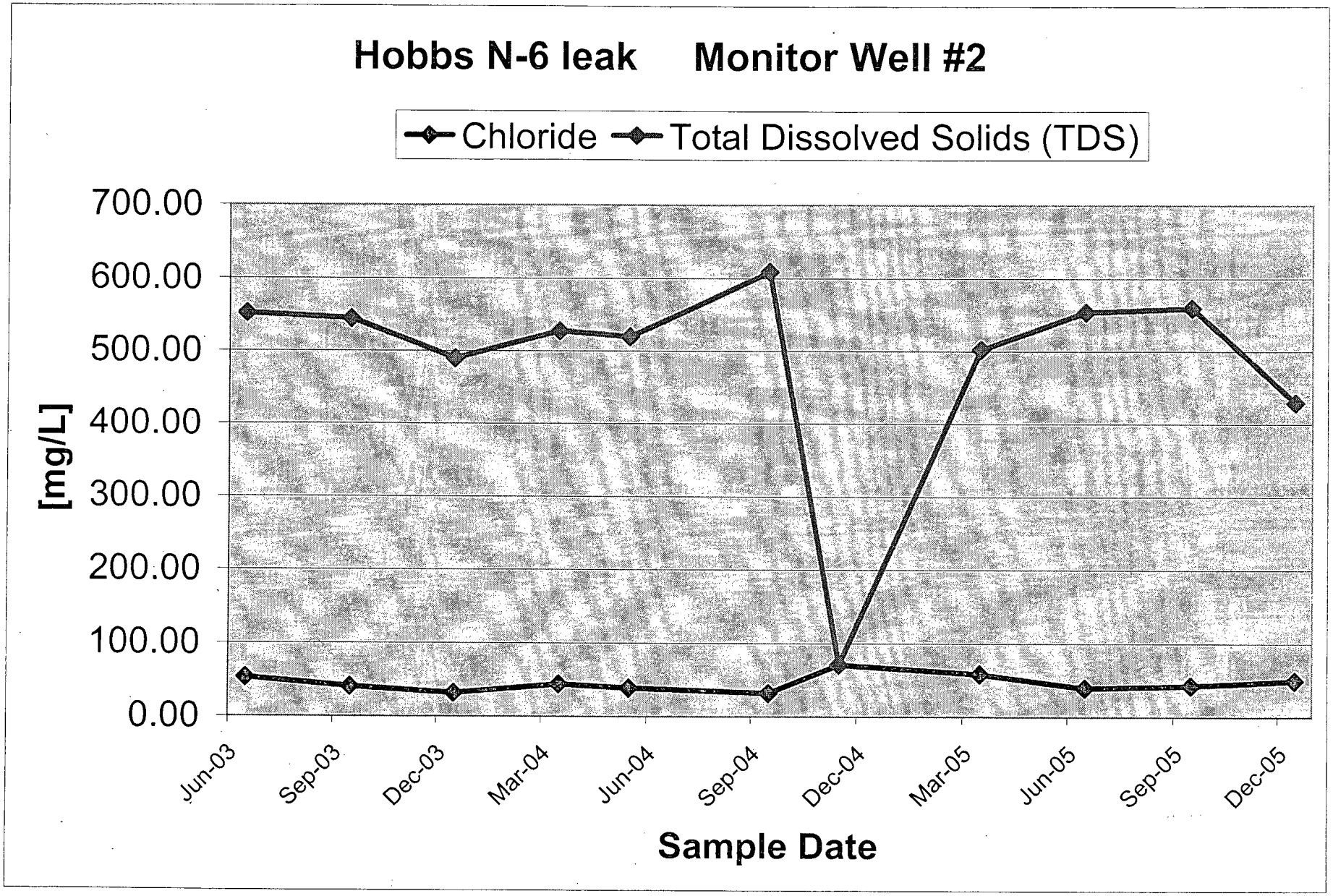
MW #	DEPTH TO WATER	TOTAL DEPTH	WELL VOLUME	VOLUME PURGED	SAMPLE DATE	Cl	TDS	BENZENE	TOLUENE	ETHYLBENZENE	TOTAL XYLENES	SULFATE
IWW	40.42	98.25	58.980	176.95	08/14/02	XXX	XXX	XXX	XXX	XXX	XXX	
IWW	40.79	98.18	37.300	111.91	03/14/03	239	XXX	0.004	<0.001	<0.001	<0.001	110
IWW	40.45	98.24	37.56	112.69	06/27/03	40.7	465	<0.001	<0.001	<0.001	<0.001	102
IWW	XXX	XXX	XXX	XXX	09/22/03	42.5	493	<0.001	<0.001	<0.001	<0.001	79.6
IWW	40.33	98.23	37.80	113.42	12/18/03	52	485	<0.002	<0.002	<0.002	<0.006	38.6
IWW	41.75	98.23	82.96	248.90	03/15/04	487	1130	0.00619	<0.001	<0.001	<0.001	130
IWW	XXX	XXX	XXX	XXX	05/27/04	40.8	474	<0.001	<0.001	<0.001	<0.001	100
IWW	41.93	98.20	57.40	172.19	09/08/04	78	583	<0.001	<0.001	<0.001	<0.001	89.6
IWW	39.71	98.20	59.66	178.98	11/23/04	88.3	XXX	<0.001	<0.001	<0.001	<0.001	82.5
IWW	39.01	98.20	XXX	250.00	03/29/05	419	1010	<0.001	<0.001	<0.001	<0.001	81
IWW	39.39	50.00	XXX	21.00	06/28/05	85.3	510	<0.001	<0.001	<0.001	<0.001	73.5
IWW	39.60	98.20	59.800	185.00	12/06/05	49	498	<0.001	<0.001	<0.001	<0.001	64.2

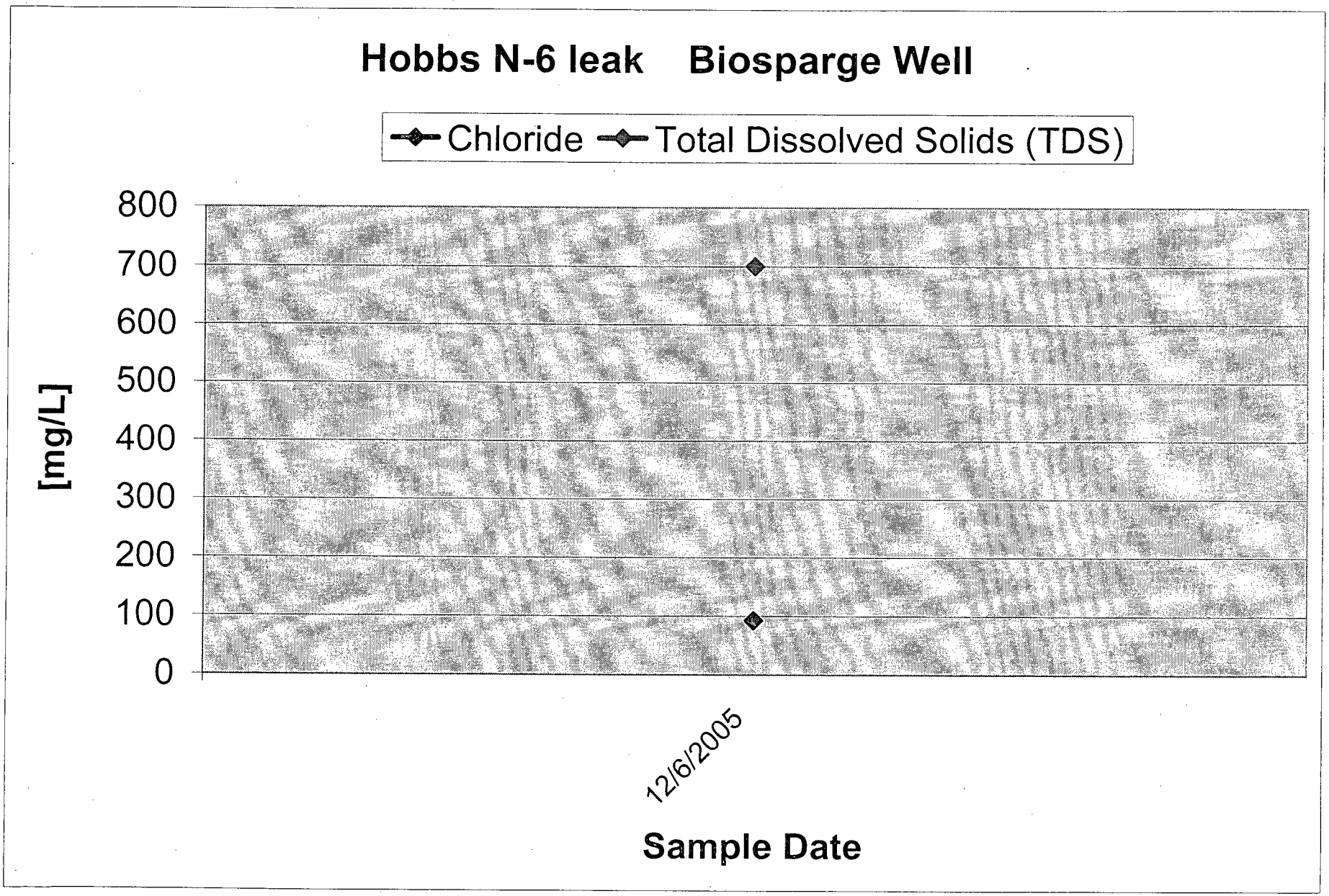

Hobbs N-6 leak Inactive Water Well
Chlorides
Total Dissolved Solids (TDS)
[mg/L]
1400
1200
1000
800
600
400
200
0
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date

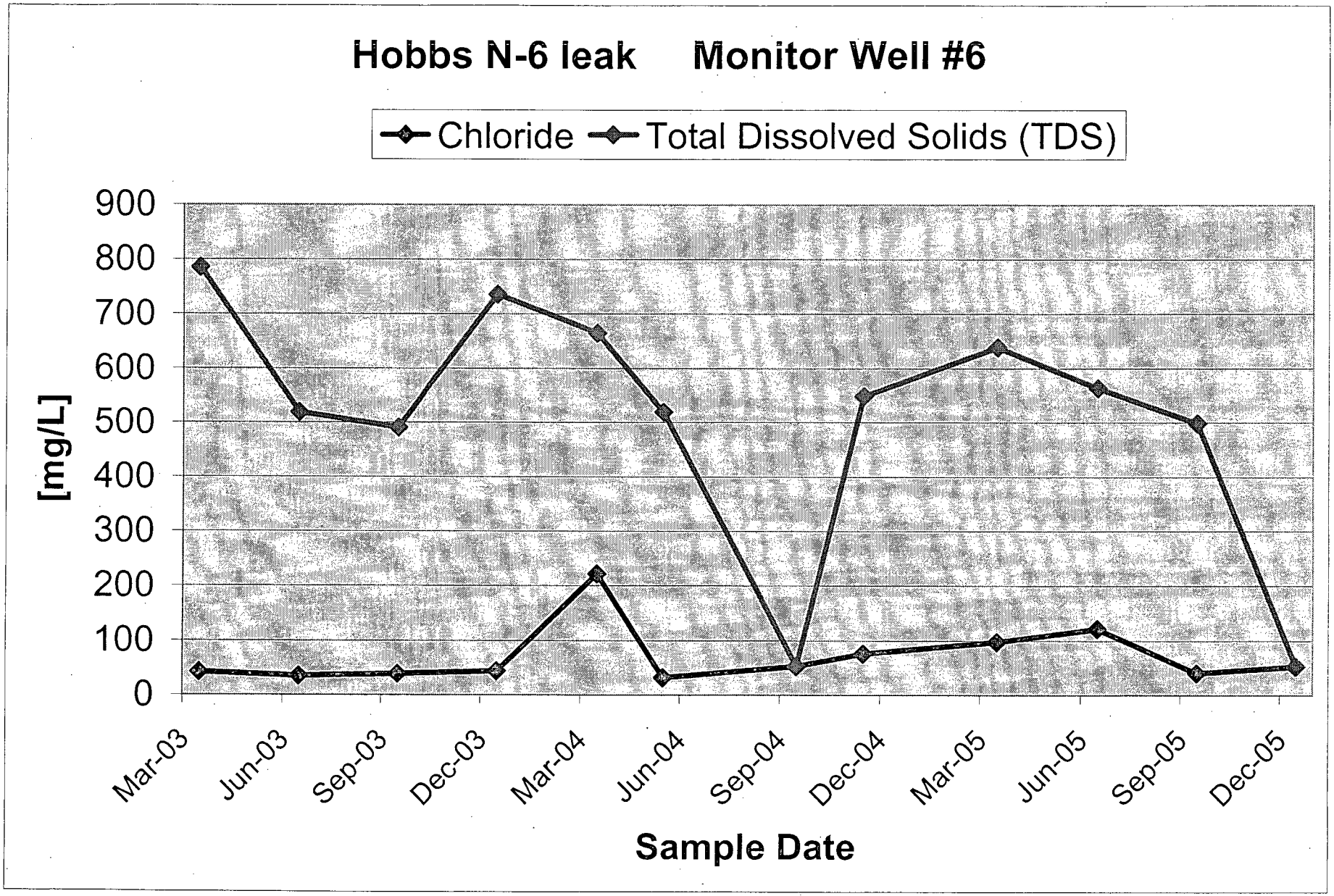

Hobbs N-6 leak Monitor Well #7
Chloride
Total Dissolved Solids (TDS)
[mg/L]
3000
2500
2000
1500
1000
500
0
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date


Hobbs N-6 leak Monitor Well #5
Chloride
Total Dissolved Solids (TDS)
[mg/L]
1800
1600
1400
1200
1000
800
600
400
200
0
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date


Hobbs N-6 leak Monitor Well #3
Chloride
Total Dissolved Solids (TDS)
[mg/L]
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date


Hobbs N-6 leak Monitor Well #2
Chloride
Total Dissolved Solids (TDS)
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
[mg/L]
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date


Hobbs N-6 leak Biosparge Well
Chloride
Total Dissolved Solids (TDS)
800
700
600
500
400
300
200
100
0
[mg/L]
12/6/2005
Sample Date


Hobbs N-6 leak Monitor Well #6
Chloride
Total Dissolved Solids (TDS)
[mg/L]
900
800
700
600
500
400
300
200
100
0
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date

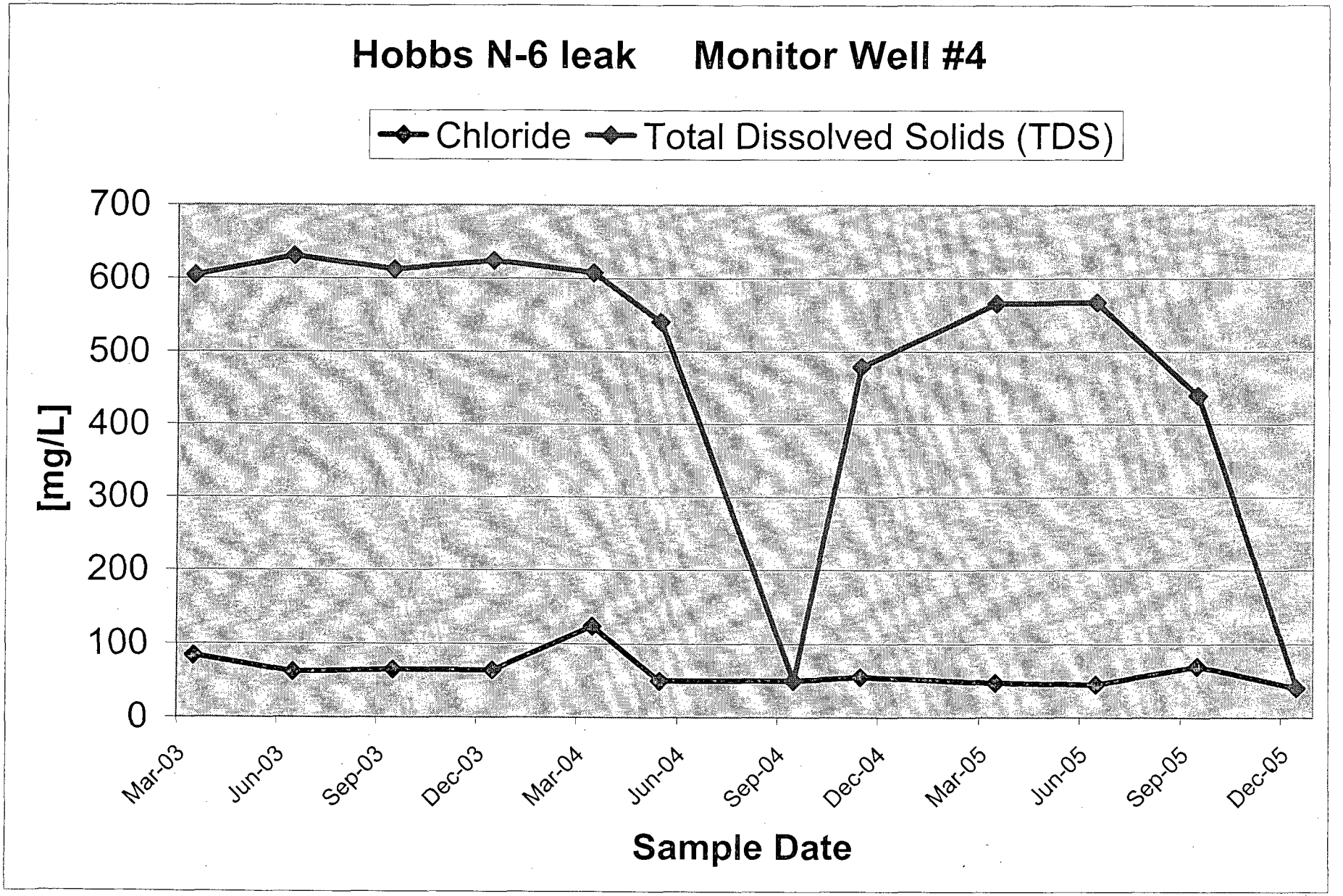

Hobbs N-6 leak Monitor Well #4
Chloride
Total Dissolved Solids (TDS)
[mg/L]
700
600
500
400
300
200
100
0
Mar-03
Jun-03
Sep-03
Dec-03
Mar-04
Jun-04
Sep-04
Dec-04
Mar-05
Jun-05
Sep-05
Dec-05
Sample Date

TABLE 2
PSH SUMMARY FOR 2005
MW-1, HOBBS N-6 LEAK

BASIN ENVIRONMENTAL

FIELD MEASUREMENT/OBSERVATION LOG

PROJECT NAME: Rice Operating Company

PROJECT NUMBER: Hobbs N-6 Leak (PO# 641)

LEAK NUMBER:

PROJECT MANAGER: Kristin Farris Pope - Rice Operating Company

FIELD TECHNICIAN: Jake Nave - Basin Environmental

DATE: Weekly Gauge January 2005-March 2005

WELL # /SAMPLE LOCATION	TOTAL WELL DEPTH (feet)	DEPTH TO PRODUCT (feet)	DEPTH TO WATER (feet)	HEIGHT WATER COLUMN (feet)	PSH THICKNESS (feet)	WELL FACTOR 2"=.16 4"=.65 6"=1.5	PSH Removed (gallons)	Water Removed (gallons)	TOTAL PURGED (gal)	Temp (°C)	pH	Cond. (µs)	DATE/TIME SAMPLE TAKEN	Comments
MW-1		40.56	40.57		0.01		0.3	0.7	1.0				1/05/05 - 14:50	2' sock stained to 1' Sock replaced
MW-1		40.59	40.68		0.09		0.5	1.5	2.0				1/13/05 - 17:45	2' sock stained to 9" Sock replaced
MW-1		40.55	40.58		0.03		0.4	0.1	0.5				1/19/05 - 14:44	2' sock stained to 9" Sock replaced
MW-1		40.56	40.68		0.12		0.7	0.3	1.0				1/26/05 - 11:40	2' sock stained to 1' Sock replaced
MW-1		40.56	40.80		0.24		0.7	0.3	1.0				2/3/05 - 12:30	2' sock stained to 1' Sock replaced
MW-1		40.61	40.71		0.10		0.8	0.2	1.0				2/9/05 - 12:00	2' sock stained to 6" Sock replaced
MW-1		40.62	40.75		0.13		0.8	0.2	1.0				2/16/05 - 10:47	2' sock stained to 6" Sock replaced
MW-1		40.64	40.77		0.13		0.6	0.4	1.0				2/23/05 - 10:54	2' sock stained to 6" Sock replaced
MW-1		40.64	40.97		0.33		0.7	0.3	1.0				3/2/05 - 11:30	2' sock stained to 7" Sock replaced
MW-1		40.72	40.73		0.01		0.4	0.1	0.5				3/10/05 - 10:37	2' sock stained to 7" Sock replaced
MW-1		40.73	40.93		0.20		0.6	0.4	1.0				3/16/05 - 11:30	2' sock stained to 7" Sock replaced
MW-1		40.74	40.75		0.01		0.1	0.3	0.4				3/23/05 - 11:19	2' sock stained to 6" Sock replaced
MW-1		40.83	40.97		0.14		0.4	0.1	0.5				3/30/05 - 20:21	2' sock stained to 6" Sock replaced
Totals					1.54		7.0	4.9	11.9					

TABLE 2
PSH SUMMARY FOR 2005
MW-1, HOBBS N-6 LEAK

BASIN ENVIRONMENTAL

FIELD MEASUREMENT/OBSERVATION LOG

PROJECT NAME: Rice Operating Company
PROJECT NUMBER: Hobbs N-6 Leak (PO# 641)
LEAK NUMBER:
PROJECT MANAGER: Kristin Farris Pope - Rice Operating Company
FIELD TECHNICIAN: Jake Nave - Basin Environmental
DATE: Weekly Gauge April 2005-June 2005

WELL # /SAMPLE LOCATION	TOTAL WELL DEPTH (feet)	DEPTH TO PRODUCT (feet)	DEPTH TO WATER (feet)	HEIGHT WATER COLUMN (feet)	PSH THICKNESS (feet)	WELL FACTOR 2"=.16 4"=.65 6"=1.5	PSH Removed (gallons)	Water Removed (gallons)	TOTAL PURGED (gal)	Temp (°C)	pH	Cond. (µs)	DATE/TIME SAMPLE TAKEN	Comments
MW-1		40.84	41.00		0.16		0.6	0.4	1.0				4/6/05 @ 12:53	2' sock stained to 7" Sock replaced
MW-1		40.88	40.92		0.04		0.6	0.4	1.0				4/13/05 @ 21:31	2' sock stained to 7" Sock replaced
MW-1		40.86	40.97		0.11		0.7	0.3	1.0				4/20/05 @ 16:22	2' sock stained to 7" Sock replaced
MW-1		40.96	41.02		0.06		0.6	0.4	1.0				4/27/05 @ 19:59	2' sock stained to 8" Sock replaced
MW-1		40.95	40.96		0.01		0.5	0.2	0.7				5/4/05 @ 15:06	2' sock stained to 10" Sock replaced
MW-1		40.95	41.18		0.23		0.7	0.3	1.0				5/12/05 @ 15:25	2' sock stained to 6" Sock replaced
MW-1		41.00	41.05		0.05		0.5	0.2	0.7				5/18/05 @ 14:54	2' sock stained to 9" Sock replaced
MW-1		41.02	41.19		0.17		0.7	0.3	1.0				5/25/05 @ 17:42	2' sock stained to 8" Sock replaced
MW-1		41.01	41.23		0.22		1.0	0.5	1.5				6/1/05 @ 18:50	2' sock stained to 11" Sock replaced
MW-1		41.10	41.26		0.16		0.7	0.3	1.0				6/9/05 @ 18.10	2' sock stained to 8" Sock replaced
MW-1		41.15	41.20		0.05		0.5	0.2	0.7				6/16/05 @ 18:30	2' sock stained to 9" Sock replaced
MW-1		41.21	41.35		0.14		0.5	0.2	0.7				6/22/05 @ 16.20	2' sock stained to 10" Sock replaced
MW-1		41.24	41.30		0.06		0.7	0.3	1.0				6/30/05 @ 19.22	2' sock stained to 10" Sock replaced
Totals					1.46		8.3	4.0	12.3					

TABLE 2
PSH SUMMARY FOR 2005
MW-1, HOBBS N-6 LEAK

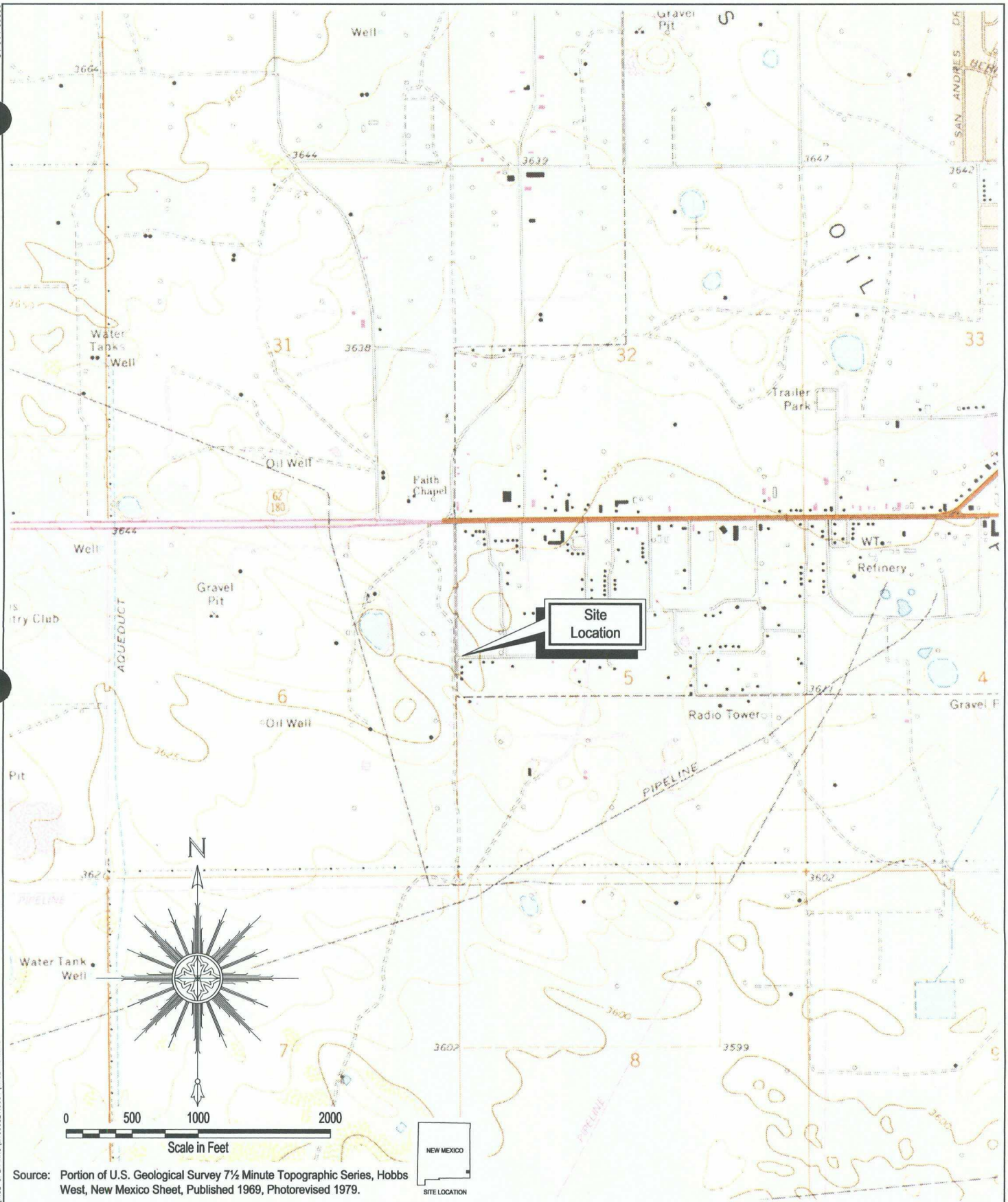
BASIN ENVIRONMENTAL	FIELD MEASUREMENT/OBSERVATION LOG		
	PROJECT NAME: Rice Operating Company	PROJECT NUMBER: Hobbs N-6 Leak (PO# 641)	LEAK NUMBER:
PROJECT MANAGER: Kristin Farris Pope - Rice Operating Company	FIELD TECHNICIAN: Rozanne Johnson - Basin Environmental		DATE: Weekly Gauge July 2005-September 2005

WELL # /SAMPLE LOCATION	TOTAL WELL DEPTH (feet)	DEPTH TO PRODUCT (feet)	DEPTH TO WATER (feet)	HEIGHT WATER COLUMN (feet)	PSH THICKNESS (feet)	WELL FACTOR 2"=.16 4"=.65 6"=1.5	PSH Removed (gallons)	Water Removed (gallons)	TOTAL PURGED (gal)	Temp (°C)	pH	Cond. (µs)	DATE/TIME SAMPLE TAKEN	Comments
MW-1		41.26	41.41		0.15		0.6	0.4	1.0				7/7/05 @ 14:46	2' sock stained to 8" Sock replaced
MW-1		41.30	41.34		0.04		0.5	0.3	0.8				7/14/05 @ 17:57	2' sock stained to 9" Sock replaced
MW-1		41.35	41.47		0.12		0.6	0.4	1.0				7/21/05 @ 16:20	2' sock stained to 9" Sock replaced
MW-1		41.39	41.42		0.03		0.5	0.2	0.7				7/28/05 @ 17:45	2' sock stained to 8" Sock replaced
MW-1		41.40	41.70		0.30		0.9	0.2	1.1				8/4/05 @ 19:55	2' sock stained to 10" Sock replaced
MW-1		41.44	41.45		0.01		0.3	0.2	0.5				8/11/05 @ 19:58	2' sock stained to 8" Sock replaced
MW-1		41.42	41.71		0.29		0.7	0.5	1.2				8/18/05 @ 15:50	2' sock stained to 14" Sock replaced
MW-1		41.41	41.70		0.29		0.8	0.3	1.1				8/25/05 @ 17:20	2' sock stained to 10" Sock replaced
MW-1		41.30	41.40		0.10		0.6	0.2	0.8				9/1/05 @ 17:15	2' sock stained to 9.5" Sock replaced
MW-1		41.28	41.35		0.07		0.5	0.5	1.0				9/9/05 @ 15:45	2' sock stained to 10" Sock replaced
MW-1		41.25	41.33		0.08		0.7	0.3	1.0				9/15/05 @ 17:25	2' sock stained to 10" Sock replaced
MW-1		41.26	41.35		0.09		0.5	0.2	0.7				9/22/05 @ 16:10	2' sock stained to 10" Sock replaced
MW-1		41.25	41.36		0.11		0.6	0.4	1.0				9/29/05 @ 15:25	2' sock stained to 11.5" Sock replaced
Totals					1.68		7.8	4.1	11.9					

TABLE 2
PSH SUMMARY FOR 2005
MW-1, HOBBS N-6 LEAK

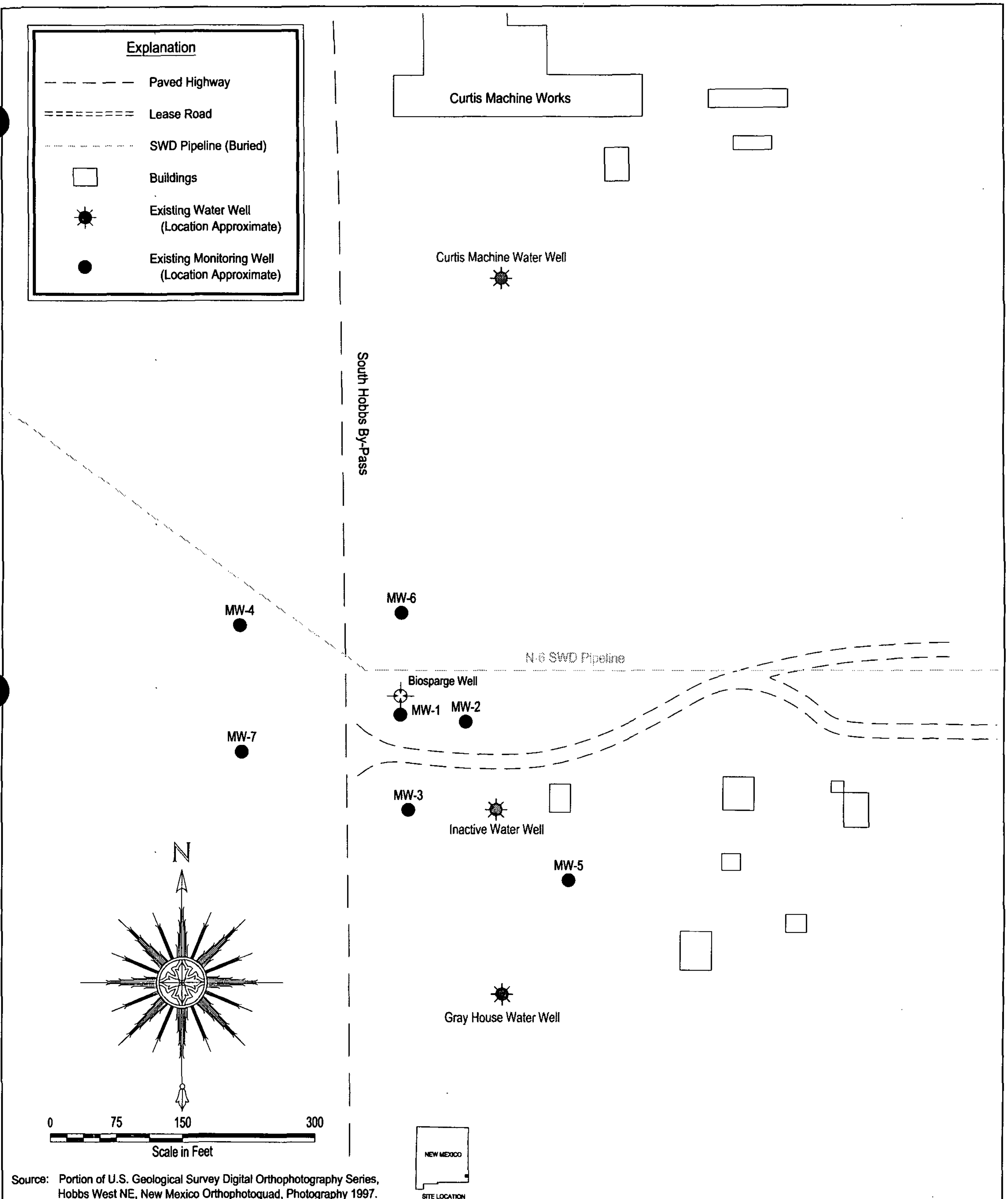
ARC ENVIRONMENTAL	FIELD MEASUREMENT/OBSERVATION LOG		
	PROJECT NAME: RICE Operating Company		PROJECT NUMBER: Hobbs N-6 Leak (PO# 641)
PROJECT MANAGER: Kristin Farris Pope - Rice Operating Company	FIELD TECHNICIAN: Rozanne Johnson - Arc Environmental		DATE: Weekly Gauge October 2005-December 2005

WELL # /SAMPLE LOCATION	TOTAL WELL DEPTH (feet)	DEPTH TO PRODUCT (feet)	DEPTH TO WATER (feet)	HEIGHT WATER COLUMN (feet)	PSH THICKNESS (feet)	WELL FACTOR 2"=.16 4"=.65 6"=1.5	PSH Removed (gallons)	Water Removed (gallons)	TOTAL PURGED (gal)	DATE/TIME SAMPLE TAKEN	Comments
MW-1		41.26	41.41		0.15		0.6	0.4	1.0	10/6/05 @ 16:20	3' sock stained to 8" Sock replaced
MW-1		41.25	41.41		0.16		0.7	0.4	1.1	10/13/05 @ 8:15	3' sock stained to 10" Sock replaced
MW-1		41.24	41.41		0.17		0.7	0.3	1.0	10/20/05 @ 7:00	3' sock stained to 10.5" Sock replaced
MW-1		41.23	41.45		0.22		0.8	0.5	1.3	10/27/05 @ 15.45	3' sock stained to 10.5" Sock replaced
MW-1		41.23	41.47		0.24		0.7	0.3	1.0	11/3/05@ 16:00	3' sock stained to 10.5" Sock replaced
MW-1		41.22	41.42		0.20		0.7	0.3	1.0	11/10/05 @ 15:40	3' sock stained to 10.5" Sock replaced
MW-1		41.20	41.42		0.22		0.7	0.3	1.0	11/17/05 @ 7:45	3' sock stained to 10.5" Sock replaced
MW-1		41.20	41.41		0.21		0.6	0.4	1.0	11/25/05 @ 8:15	3' sock stained to 10.5" Sock replaced
MW-1		41.19	41.41		0.22		0.6	0.4	1.0	12/2/05 @ 7:45	14" sock stained to 14" Sock Replaced
MW-1		41.20	41.42		0.22		0.6	0.4	1.0	12/6/05 @ 14:30	14" sock stained to 14" Sock Replaced
MW-1		41.19	41.42		0.23		0.6	0.4	1.0	12/9/05 @ 8:10	14" sock stained to 14" Sock Replaced
MW-1		41.18	41.41		0.23		0.6	0.4	1.0	12/16/05 @ 8:45	14" sock stained to 14" Sock Replaced
MW-1		41.18	41.41		0.23		0.6	0.4	1.0	12/23/05 @ 8:55	14" sock stained to 14" Sock Replaced
MW-1		41.18	41.41		0.23		0.6	0.4	1.0	12/30/05 @ 9:25	14" sock stained to 14" Sock Replaced
Totals					2.93		9.1	5.3	9.0		



Area Manager: A. Schmidt Project Manager: S. Hall Task Manager: D. Gann Technical Review: D. Gann	ARCADIS 1004 North Big Spring Street Suite 300 Midland, TX 79701-3383 Tel: 432-687-5400 Fax: 432-687-5401 www.arcadis-us.com	Rice Operating Company Hobbs SWD N-6 -- West County Road Investigation Site Location Map Lea County, New Mexico	Project Number: MT000821.0001 Drawing Date: 17 February 2006 Figure: 1	

31-014-00838
2/17/06 14:10 HCLARDY R:\CAD\DWG\RICE OPERATING\MT000821.0001\MT821104.DWG



Source: Portion of U.S. Geological Survey Digital Orthophotography Series, Hobbs West NE, New Mexico Orthophotoquad, Photography 1997.

Area Manager: A. Schmidt Project Manager: S. Hall Task Manager: D. Gann Technical Review: D. Gann	ARCADIS 1004 North Big Spring Street Suite 300 Midland, TX 79701-3383 Tel: 432-687-5400 Fax: 432-687-5401 www.arcadis-us.com	Rice Operating Company Hobbs SWD N-6 -- West County Road Investigation **Well Locations** Lea County, New Mexico	Project Number: MT000821.0001 Drawing Date: 17 February 2006 Figure: 2

31-014-00839