

AP - 42

ANNUAL MONITORING REPORT

YEAR(S):
2009



Infrastructure, environment, buildings

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Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources Dept.
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

ARCADIS
1004 North Big Spring Street
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Environmental

Subject: **2009 MONITOR WELL REPORT
JCT. M-16-1, EME SWD SYSTEM
UNIT 'M', SEC. 16, T20S, R37E
NMOCD CASE #AP-42 (formerly 1R0427-93)**

Date:
April 8, 2010

Contact:
Sharon E. Hall

Phone:
432 687-5400

Email:
sharon.hall@arcadis-us.com

Mr. Hansen:

On behalf of Rice Operating Company (ROC), ARCADIS respectfully submits the 2009 Monitor Well Report for the EME Jct. M-16-1 site located in the Eunice Monument Eumont (EME) Salt Water Disposal (SWD) System.

One monitoring well was installed on January 9, 2002 during delineation as part of the Junction Box Upgrade Program.

Our ref:
MT000856.0001

A Stage 1 Abatement Plan Proposal was submitted to NMOCD on June 23, 2005, and approved by NMOCD on February 21, 2006.

Monitor wells MW-2 and MW-3 were installed southeast and southwest of Jct. M-16-1 on February 28, 2006 and March 1, 2006, respectively and soil and groundwater samples were collected. Monitor wells MW-4 and MW-5 were installed June 1, 2006 south and north of Jct. M-16-1, respectively and soil and groundwater samples were collected. A Stage 1 Abatement Plan Report and Stage 2 Abatement Plan Proposal was submitted to NMOCD on January 30, 2007. The report details the investigation and investigation results.

A Stage 2 Abatement Plan proposal was submitted on August 27, 2008 and approved on May 12, 2009. A 4-inch recovery well was installed near the former junction box location on June 16, 2009. Groundwater removal from the recovery well began in the first quarter of 2010.

Edward Hansen
April 8, 2010

All wells are sampled quarterly per NMOCD guidelines. The attached tables summarize the analytical results from groundwater samples collected from the monitor wells at the site.

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

Thank you for your consideration concerning this annual summary of groundwater monitoring information. If you have any questions, do not hesitate to contact me.

Sincerely,

ARCADIS



Sharon E. Hall
Associate Vice President

Copies:
Hack Conder- ROC

Attachments:
MW Summary Tables
Monitor Well Location Figure

ROC EME Jct. M-16-1

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)	Sulfate (mg/L)
1	22.6	35.1	2	6.1	1/10/2002	2079	8016	<0.002	<0.002	<0.002	<0.006	3420
1	23.78	25.81	0.325	1	5/13/2002	2070	7620	<0.001	<0.001	<0.001	<0.001	2220
1	23.08	34.8	1.875	5.75	8/23/2002	2040	7740	<0.001	<0.001	<0.001	<0.001	2380
1	23.53	34.69	1.786	5.5	11/12/2002	2130	7230	<0.001	<0.001	<0.001	<0.001	2460
1	23.2	34.49	1.8	5.4	2/27/2003	1960	7520	<0.001	<0.001	<0.001	<0.001	1980
1	23.1	34.5	1.824	5.4	5/22/2003	2060	7350	<0.001	<0.001	<0.001	<0.001	2470
1	23.83	34.25	1.66	5	8/22/2003	2170	7390	<0.001	<0.001	<0.001	<0.001	2170
1	24.07	34.34	1.64	4.9	11/20/2003	1990	7400	<0.001	<0.001	<0.001	<0.001	2300
1	24.9	34.25	1.49	4.47	2/18/2004	2479	7368	<0.002	<0.002	<0.002	<0.006	1106
1	22.75	34.25	1.84	5.5	5/26/2004	1919	6784	<0.002	<0.002	<0.002	<0.006	1889
1	23.18	31.4	1.315	3.95	9/7/2004	2130	7200	<0.001	<0.001	<0.001	<0.001	2180
1	22.45	31.4	1.43	4.3	11/24/2004	2210	8020	<0.001	0.000766	0.00291	0.01019	2460
1	XXX	XXX	XXX	XXX	3/22/2005	2470	7810	<0.001	<0.001	<0.001	<0.001	2600
1	21	32	XXX	5.61	6/28/2005	2310	7230	<0.001	<0.001	<0.001	<0.001	2480
1	21.39	32	XXX	5.09	9/6/2005	2250	6950	<0.001	<0.001	<0.001	<0.001	1990
1	21.35	31.5	1.6	5	11/2/2005	1700	6600	<0.001	<0.001	<0.001	<0.001	1630
1	21.27	31.5	1.6	5	2/1/2006	1960	6340	<0.001	<0.001	<0.001	<0.001	1740
1	21.14	31.5	1.7	10	5/3/2006	1690	6420	<0.001	<0.001	<0.001	<0.001	1510
1	21.95	31.5	1.5	10	7/25/2006	1830	6435	<0.001	<0.001	<0.001	<0.001	2010
1	21.43	31.5	1.6	8	10/20/2006	1800	5990	<0.001	<0.001	<0.001	<0.001	2230
1	21.35	31.5	1.6	8	2/1/2007	2080	5700	<0.001	<0.001	<0.001	<0.001	2190
1	21.23	31.5	1.6	8	4/11/2007	1840	6400	0.001	0.001	0.001	0.001	2110
1	21.41	31.5	1.6	8	7/11/2007	1800		<0.001	<0.001	<0.001	<0.002	2030
1	22.11	31.5	1.5	8	9/5/2007	2239	7926	<0.002	<0.002	<0.002	<0.006	2724
1	21.72	31.5	1.6	8	10/12/2007	1880	6951	<0.001	<0.001	<0.001	<0.003	2055
1	21.67	31.5	1.6	8	1/17/2008	1960	7022	<0.001	<0.001	<0.001	<0.003	2221
1	21.58	31.5	1.6	8	4/8/2008	1940	7050	<0.001	<0.001	<0.001	<0.003	2990
1	22.27	31.5	1.5	8	7/23/2008	2200	7380	<0.002	<0.002	<0.002	<0.006	2270
1	22.26	31.5	1.5	8	10/21/2008	2140	7300	<0.001	<0.001	<0.001	<0.003	2060
1	22.01	31.76	1.6	8	2/6/2009	2160	7310	<0.001	<0.001	<0.001	<0.003	2320
1	21.92	31.76	1.6	6	5/6/2009	2100	7210	<0.001	<0.001	<0.001	<0.003	2370
1	22.61	31.76	1.5	6	8/13/2009	2160	7310	<0.001	<0.001	<0.001	<0.003	2130
1	22.86	31.76	1.4	6	10/29/2009	2400	7350	<0.001	<0.001	<0.001	<0.003	1870

mg/L = milligrams per liter

ROC EME Jct. M-16-1

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)	Sulfate (mg/L)
2	20.81	32.35	1.8	6	3/8/2006	1570	5780	<0.001	<0.001	<0.001	<0.001	1450
2	20.75	32.35	1.9	10	5/3/2006	1850	7330	<0.001	<0.001	<0.001	<0.001	1620
2	21.58	32.35	1.7	10	7/25/2006	2240	7535	<0.001	<0.001	<0.001	<0.001	2440
2	21.02	32.35	1.8	8	10/20/2006	2090	6740	<0.001	<0.001	<0.001	<0.001	2470
2	20.95	32.5	1.8	8	2/1/2007	2240	6680	<0.001	<0.001	<0.001	<0.001	2400
2	20.83	32.5	1.9	8	4/11/2007	1990	6920	<0.001	<0.001	<0.001	<0.001	2120
2	21.02	32.5	1.8	8	7/11/2007	2230	7050	<0.001	<0.001	<0.001	<0.002	2340
2	21.63	32.5	1.7	8	9/5/2007	2239	7926	<0.002	<0.002	<0.002	<0.006	2724
2	21.32	32.5	1.8	8	10/12/2007	2160	7920	<0.001	<0.001	<0.001	<0.003	2239
2	21.27	32.48	1.8	8	1/17/2008	2220	7850	<0.001	<0.001	<0.001	<0.003	2238
2	21.7	32.48	1.7	8	4/8/2008	2180	7750	<0.001	<0.001	<0.001	<0.003	3310
2	21.88	32.48	1.7	8	7/23/2008	2400	8240	<0.002	<0.002	<0.002	<0.006	2440
2	21.87	32.48	1.7	8	10/21/2008	2220	8050	<0.001	<0.001	<0.001	<0.003	2170
2	21.61	32.73	1.8	8	2/6/2009	2250	7740	<0.001	<0.001	<0.001	<0.003	2360
2	21.52	32.73	1.8	6	5/6/2009	2300	7750	<0.001	<0.001	<0.001	<0.003	2570
2	22.33	32.73	1.7	6	8/13/2009	2300	7810	<0.001	<0.001	<0.001	<0.003	2380
2	22.47	32.73	1.6	6	10/29/2009	2400	7950	<0.001	<0.001	<0.001	<0.003	2080

mg/L = milligrams per liter

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)	Sulfate (mg/L)
3	18.73	27.53	1.4	4.5	3/8/2006	2860	8960	<0.001	<0.001	<0.001	<0.001	2220
3	18.69	27.53	1.4	10	5/3/2006	2540	8350	<0.001	<0.001	<0.001	<0.001	1860
3	19.44	27.53	1.3	10	7/25/2006	2940	7840	<0.001	<0.001	<0.001	<0.001	2620
3	18.96	27.53	1.4	6	10/20/2006	2650	7960	<0.001	<0.001	<0.001	<0.001	2600
3	18.86	27.58	1.4	6	2/1/2007	2950	7420	<0.001	<0.001	<0.001	<0.001	2570
3	18.73	27.58	1.4	8	4/11/2007	2710	7130	<0.001	<0.001	<0.001	<0.001	2340
3	18.93	27.58	1.4	8	7/11/2007	2930	8220	<0.001	<0.001	<0.001	<0.002	
3	19.52	27.58	1.3	6	9/5/2007	2599	8908	<0.002	<0.002	<0.002	<0.006	2562
3	19.23	27.58	1.3	6	10/12/2007	2820	8890	<0.001	<0.001	<0.001	<0.003	2474
3	19.14	27.42	1.3	6	1/17/2008	2800	8770	<0.001	<0.001	<0.001	<0.003	2466
3	19.08	27.42	1.3	6	4/8/2008	2800	8760	<0.001	<0.001	<0.001	<0.003	3390
3	19.74	27.42	1.2	6	7/23/2008	3100	9020	<0.002	<0.002	<0.002	<0.006	2430
3	19.73	27.42	1.2	6	10/21/2008	2950	9060	<0.001	<0.001	<0.001	<0.003	2200
3	19.49	28.55	1.4	6	2/6/2009	3000	9240	<0.001	<0.001	<0.001	<0.003	2570
3	19.41	28.55	1.5	6	5/6/2009	3000	8860	<0.001	<0.001	<0.001	<0.003	2510
3	20.08	28.55	1.4	6	8/30/2009	2750	8460	<0.001	<0.001	<0.001	<0.003	2280
3	20.31	28.55	1.3	6	10/29/2009	2750	8470	<0.001	<0.001	<0.001	<0.003	1860

mg/L=milligrams per liter

ROC EME Jct. M-16-1

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)	Sulfate (mg/L)
4	20.82	31.4	1.7	10	6/13/2006	2680	7820	<0.001	<0.001	<0.001	<0.001	2220
4	21.08	31.4	1.7	10	7/25/2006	2500	7030	<0.001	<0.001	<0.001	<0.001	2530
4	20.59	31.4	1.7	8	10/20/2006	2430	7470	<0.001	<0.001	<0.001	<0.001	2680
4	20.49	30.73	1.6	6	2/1/2007	2620	7580	<0.001	<0.001	<0.001	<0.001	2640
4	20.33	30.73	1.7	8	4/11/2007	2520	7960	<0.001	<0.001	<0.001	<0.001	2470
4	20.51	30.73	1.6	8	7/11/2007	2540	6760	<0.001	<0.001	<0.001	<0.002	2550
4	21.17	30.73	1.5	6	9/5/2007	2599	8508	<0.002	<0.002	<0.002	<0.006	2562
4	20.85	30.73	1.6	6	10/12/2007	2480	8547	<0.001	<0.001	<0.001	<0.003	2518
4	20.79	30.71	1.6	6	1/17/2008	2450	8588	<0.001	<0.001	<0.001	<0.003	2378
4	20.71	30.71	1.6	6	4/8/2008	2240	7910	<0.001	<0.001	<0.001	<0.003	3990
4	21.41	30.71	1.5	6	7/23/2008	2500	8250	<0.002	<0.002	<0.002	<0.006	2360
4	21.34	30.71	1.5	6	10/21/2008	2080	7820	<0.001	<0.001	<0.001	<0.003	2160
4	21.13	33.25	1.9	6	2/6/2009	2550	7470	<0.001	<0.001	<0.001	<0.003	1910
4	21.03	33.25	2	8	5/6/2009	2300	7730	<0.001	<0.001	<0.001	<0.003	2550
4	21.74	33.25	1.8	8	8/13/2009	2300	7790	<0.001	<0.001	<0.001	<0.003	2290
4	21.97	33.25	1.8	8	10/29/2009	2350	7880	<0.001	<0.001	<0.001	<0.003	2040

mg/L= milligrams per liter

ROC EME Jct. M-16-1

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)	Sulfate (mg/L)
5	20.91	33.5	2	10	6/13/2006	2350	6760	<0.001	<0.001	<0.001	<0.001	1920
5	21.19	33.5	2	10	7/25/2006	2400	6245	<0.001	<0.001	<0.001	<0.001	2310
5	20.7	33.5	2	10	10/20/2006	2060	6910	<0.001	<0.001	<0.001	<0.001	2170
5	20.62	33.45	2.1	8	2/1/2007	2500	6490	<0.001	<0.001	<0.001	<0.001	2300
5	20.49	33.45	2.1	8	4/11/2007	2310	7220	<0.001	<0.001	<0.001	<0.001	2070
5	20.62	33.35	2.1	8	7/11/2007	2400	7780	<0.001	<0.001	<0.001	<0.002	2190
5	21.25	33.45	2	8	9/5/2007	2349	7518	<0.002	<0.002	<0.002	<0.006	2142
5	20.95	33.45	2	8	10/12/2007	2260	7576	<0.001	<0.001	<0.001	<0.003	2178
5	20.9	33.4	2	8	1/17/2008	2260	7713	<0.001	<0.001	<0.001	<0.003	2168
5	20.84	33.4	2	8	4/8/2008	2280	7640	<0.001	<0.001	<0.001	<0.003	3710
5	21.48	33.4	1.9	8	7/23/2008	2600	7680	<0.002	<0.002	<0.002	<0.006	2030
5	21.48	33.4	1.9	8	10/21/2008	2550	7790	<0.001	<0.001	<0.001	<0.003	1890
5	21.23	33.51	2	8	2/6/2009	2650	7870	<0.001	<0.001	<0.001	<0.003	2060
5	21.13	33.51	2	8	5/6/2009	2800	7950	<0.001	<0.001	<0.001	<0.003	2030
5	21.85	33.51	1.9	8	8/13/2009	2800	7900	<0.001	<0.001	<0.001	<0.003	1850
5	22.08	33.51	1.8	8	10/29/2009	3050	8080	<0.001	<0.001	<0.001	<0.003	1600

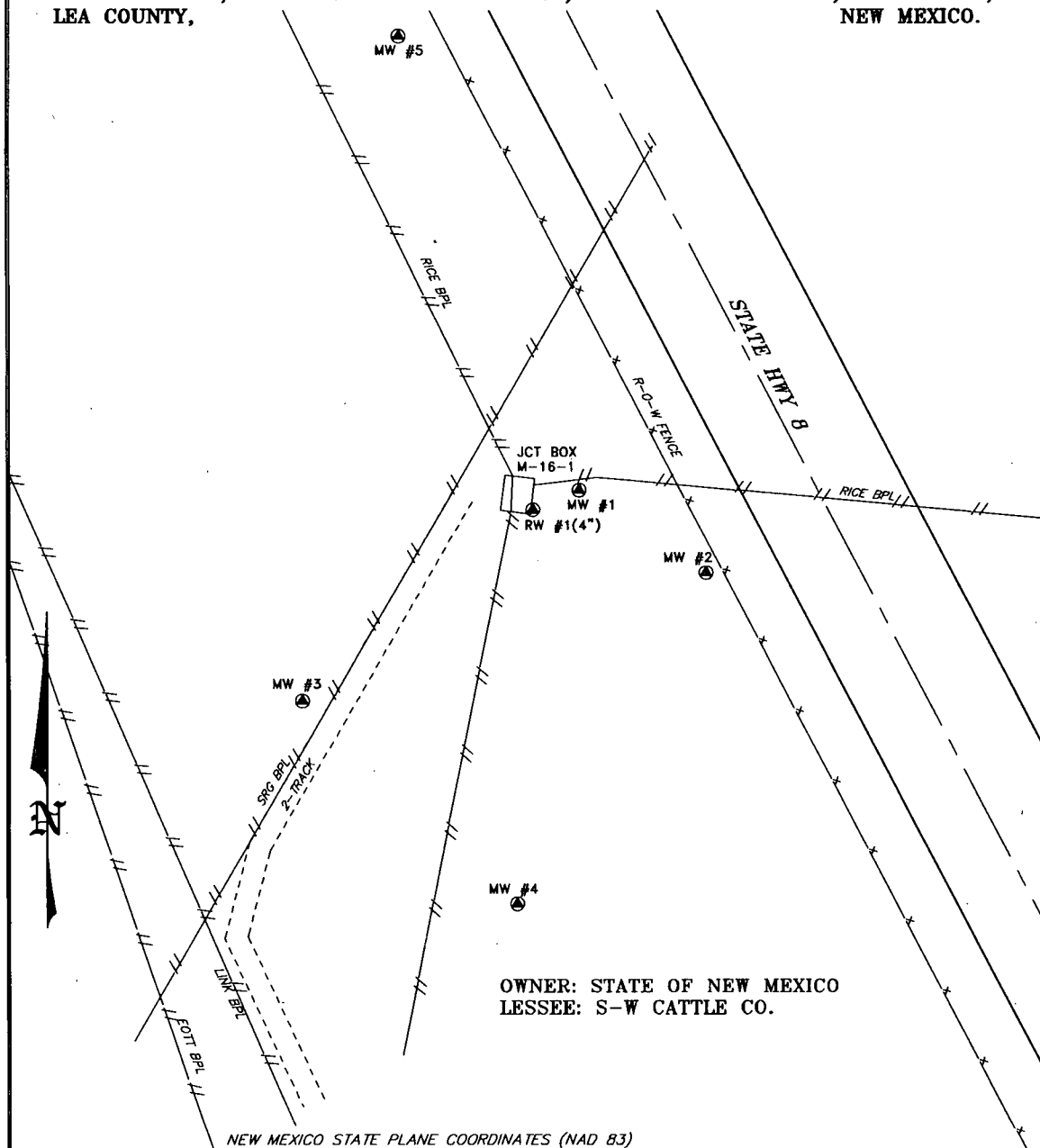
mg/L=milligrams per liter

ROC EME Jct. M-16-1

MW	Depth to Water (feet)	Total Depth (feet)	Well Volume (gallons)	Volume Purged (gallons)	Sample Date	Cl (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl Benzene (mg/L)	Total Xylenes (mg/L)	Sulfate (mg/L)
RW-1	21.5	66.18	29.0	100	8/13/2009	2200	7410	<0.001	<0.001	<0.001	<0.003	2340
RW-1	21.71	66.18	28.9	90	10/29/2009	2250	7630	<0.001	<0.001	<0.001	<0.003	1800

mg/L=milligrams per liter

SECTION 16, TOWNSHIP 20 SOUTH, RANGE 37 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.

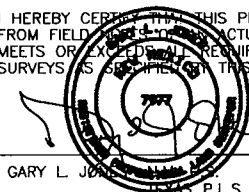


OWNER: STATE OF NEW MEXICO
LESSEE: S-W CATTLE CO.

NEW MEXICO STATE PLANE COORDINATES (NAD 83)

WELL#	NORTHING	EASTING	LATITUDE	LONGITUDE	ELEV(GRND)	ELEV(PVC)	ELEV(PVC)
MW #1	572244.598	871293.408	N32°34'06.9"	W103°15'44.2"	3520.47'	3523.52'	3520.80'
MW #2	572207.337	871351.488	N32°34'06.5"	W103°15'43.5"	3520.20'	3523.02'	3520.53'
MW #3	572147.491	871168.401	N32°34'05.9"	W103°15'45.7"	3517.96'	3520.86'	3520.26'
MW #4	572048.214	871244.243	N32°15'44.5"	W103°15'44.5"	3516.57'	3519.73'	3516.86'
MW #5	572443.922	871220.596	N32°34'08.9"	W103°15'45.1"	3517.61'	3520.54'	3517.98'
RW #1	572227.775	871281.586	N32°34'06.5"	W103°15'44.9"	3519.87'	3522.35'	3520.20'

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED
FROM FIELD SURVEY AND ACTUAL SURVEY AND
MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND
SURVEYS AS SPECIFIED BY THIS STATE.



GARY L. JORGENSEN, P.L.S. No. 7977
LEA COUNTY, N.M. No. 5074

60 0 60 120 FEET

RICE OPERATING COMPANY

REF: M-16-1 JCT BOX MONITOR WELLS

MONITOR WELLS LOCATED IN

SECTION 16, TOWNSHIP 20 SOUTH, RANGE 37 EAST,
N.M.P.M., LEA COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 21583 Drawn By: K. GOAD

Date: 07-31-2009 Disk: KJG - 21583MW

Survey Date: 07-24-2009

Sheet 1 of 1 Sheets