1R – 1595

2014 GWMR

07 / 30 / 2014

July 30, 2014

NMOCD

1220 South St. Francis Dr.

Santa Fe, New Mexico 87505

Effective June 1, 2014 Legacy Reserves Operating LP took over operations of certain properties in the state of New Mexico from Celero Energy. Along with this acquisition Legacy Reserves Operating LP assumed seven sites that had existing case numbers, they are listed below.

Rock Queen Unit Tract Battery #11	1RP-1595
Rock Queen Saltwater Plant #1	1RP-1594
Rock Queen Unit Tract Battery #13	1RP-1614
Rock Queen Unit Tract Battery #33	1RP-1664
Rock Queen Unit Tract Battery #1	1RP-1554
Rock Queen Unit Tract Battery #7	1RP-1645
Drickey Queen Saltwater Plant #3	1RP-1648

As per the included studies, Legacy Reserves recommends all cases to be closed.

Sincerely,

Gregg Skelton

Operations Manager

Legacy Reserves Operating LP

Legacy Reserves
303 West Wall, Suite 1400 • Midland, Texas 79701 • P.O. Box 10848 • Midland, Texas 79702
OFFICE 432-689-5200 • FAX 432-689-5297

TETRA TECH

July 11, 2014

Mr. Glenn von Gonten
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

Re: Groundwater Aquifer Evaluation/Determination for the Legacy Reserves (Formerly Celero Energy II, LP), Rock Queen Unit Tract Battery #11, Located in Unit Letter G, Section 26, Township 13 South, Range 31 East, Chaves Country, New Mexico (NMOCD 1RP#1595)

Mr. Von Gonten:

This report details the results of the Groundwater Aquifer Slug Test Evaluation for the Rock Queen Unit Tract Battery #11, located in Chaves County, New Mexico.

Additional Monitor Well Installation

Between January 30 and February 12, 2014, Tetra Tech was onsite to oversee the installation of four additional monitor wells (MW-8, MW-9, MW-10, and MW-11) for delineation purposes. Each of the four monitor wells were installed with 2-inch PVC casing. The lithology of the newly installed wells was relatively consistent with limestone and sandstone generally encountered to approximately 20 feet below ground surface (bgs) for MW-8, MW-9, and MW-11. From 20 feet to 150 feet bgs is a mixture of brown fine grain sand with intermittent sandstone intermixed. From 150 feet bgs to terminus is a blue to red clay. In MW-10, fine grained sand and occasional sandstone extended from 25 feet to 85 feet bgs. From 85 feet bgs to the total depth, fine sand with minor white, brown and red clay sandstone with gravel was encountered. See Figures 1 and 2 for site locations and Appendix A for soil boring logs.

During the investigation, groundwater was encountered at depths of approximately 142 feet bgs. The monitor wells were extended to depths of between 156 and 164 feet bgs. The monitor wells had 30 feet of 0.02" screen installed at the base. From the top of the screens to the surface of the boring, the wells were completed with blank schedule 40 PVC casing. A sand pack,

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bentonite, and cement were installed in the annulus of the wells. See Figure 3 detailing monitor well locations and Appendix B monitor well completion diagrams.

2014 Groundwater Gauging and Sampling Results

Tetra Tech was onsite March 25, 2014 to gauge all monitor wells. No PSH was measured in any of the monitor wells. Utilizing water level elevation calculations, a groundwater gradient map was generated for the sampling event with a hydraulic gradient to the southeast. Groundwater gradient map for the sampling event is included as Figure 4. Gauging data is summarized as Table 1.

On February 28, 2014, each of the monitor wells was sampled for BTEX utilizing Method SW8021B, chlorides and sulfates utilizing Method E 300.0, TDS utilizing Method SM2540C, and general chemistry. The samples were collected and submitted to Trace Analysis (Trace) of Midland, Texas. All samples collected and submitted were below the NMWQCC standard of 0.01 milligrams per Liter (mg/L) benzene. Chlorides for the sampling period ranged from 80.6 mg/L in monitor well MW-11 to 44,100 mg/L in monitor well MW-10. Monitor wells MW-9 and MW-11 were the only wells with chlorides below the NMWQCC standard of 250 mg/L. The general chemistry and BTEX analyses are shown in Tables 2 and 3, respectively. Chloride concentration map for the sampling event is included as Figure 5. See Appendix C for Laboratory Analytical Reports.

Aquifer Evaluation/Determination

Between March 25, 2014 and March 28, 2014, Tetra Tech was onsite to perform slug tests on Monitor Wells MW-7, MW-8, and RW-1. Due to low volumes at the site, a pump test was not feasible for performing aquifer characteristic testing on the underlying formation. In order to determine hydraulic conductivity (K) and Transmissivity values (T) for the underlying groundwater, an In-Situ Level Troll 700 Data Logger was placed in each of the tested wells along with a 3-foot slug consisting of 1 ½" PVC with sand packing in MW-7 and MW-8, and 1 3/4" PVC with sand packing in RW-1. Upon collection of the data, the information was evaluated based upon the Bouwer-Rice Method.

Based on the collected data, monitor well MW-7 had a K value of 2.133E-5 m/day and a T value of 1.287E-4 m^2/day. Monitor well MW-8 had a K value of 2.772E-3 m/day and a T value of 1.398E-2 m^2/day. Recovery well RW-1 had a K value of 1.05E-4 m/day and a T value of 6.719E-4 m^2/day. From *Groundwater Hydrology*, by David Keith Todd, the K values for the three wells indicate characteristics of a tight clay/shale with extremely low Transmissivity. Based on this data, it appears the underlying groundwater is not a viable aquifer and will not render much water. As such, remediation of the underlying groundwater

would be neither technologically nor economically feasible. See Appendix D for slug test results.

CONCLUSIONS AND RECOMMENDATIONS

Based on the low hydraulic conductivity and transmissivity of the groundwater bearing unit at the site presented in this report, coupled with the infeasibility of remediating the site due to the poor aquifer characteristics, Legacy respectfully requests that the NMOCD consider closure of the site based on deed recordation/restriction of the impacted area. Upon closure of the site all monitor/recovery wells located onsite will be plugged and abandoned (P&A) in accordance to New Mexico Office of the State Engineer (OSE). Upon completion of the P&A of the wells, a final report detailing the removal of the wells along with the drillers plugging reports will be submitted to the NMOCD for final closure.

If you have any questions or comments concerning the assessment or the activities performed at the Site, please call me at (432) 682-4559.

Respectfully submitted,
Tetra Tech, Inc.

Jeffrey Kindley, P.G.
Senior Environmental Geologist

Greg W. Pope, P.G.
Senior Project Manager

cc: Gregg Skelton – Legacy Reserves

FIGURES

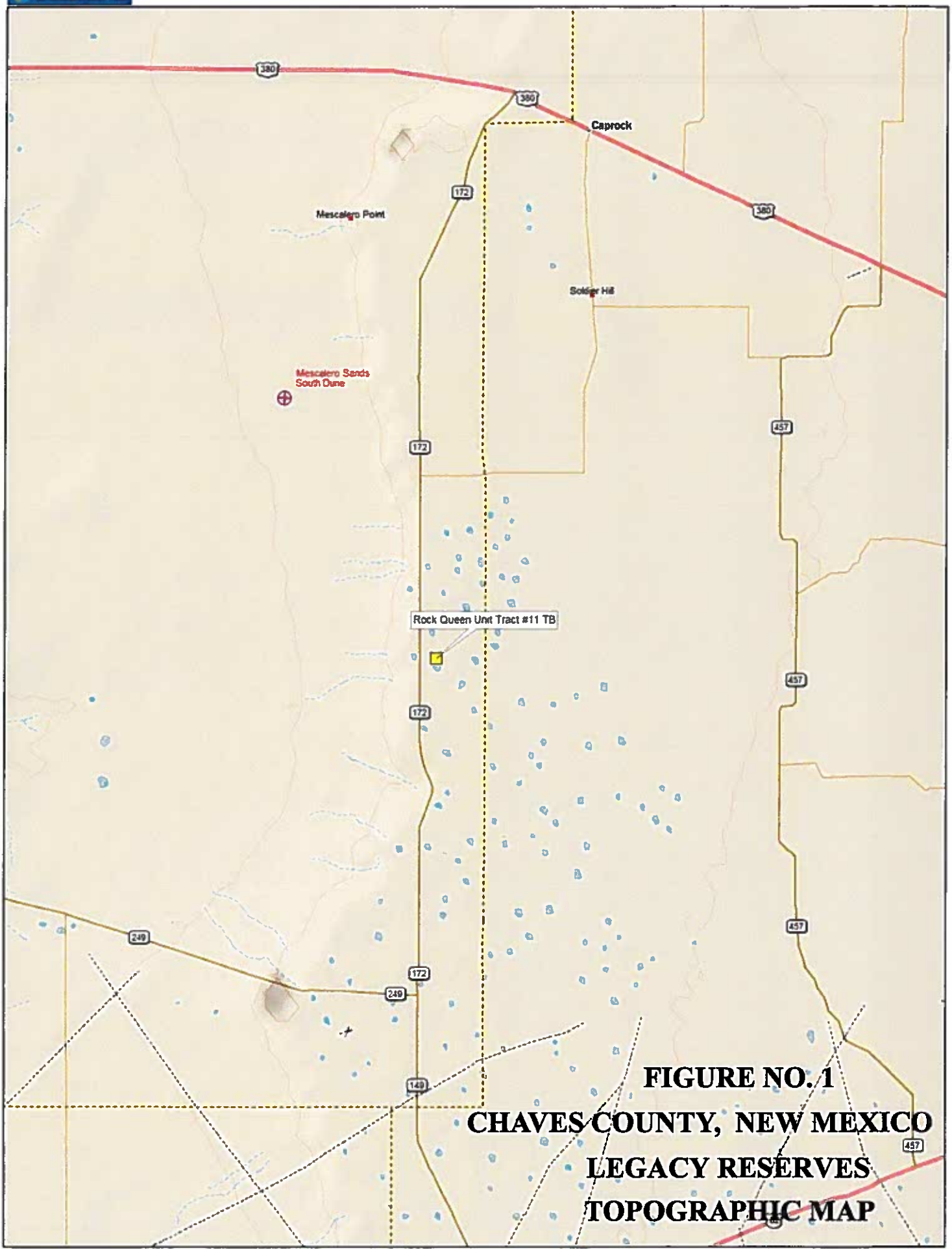


FIGURE NO. 1

CHAVES COUNTY, NEW MEXICO

LEGACY RESERVES

TOPOGRAPHIC MAP

TN
MN (7.7°E)

Scale 1 : 250,000
1" = 3.95 mi
Data Zoom 9-7

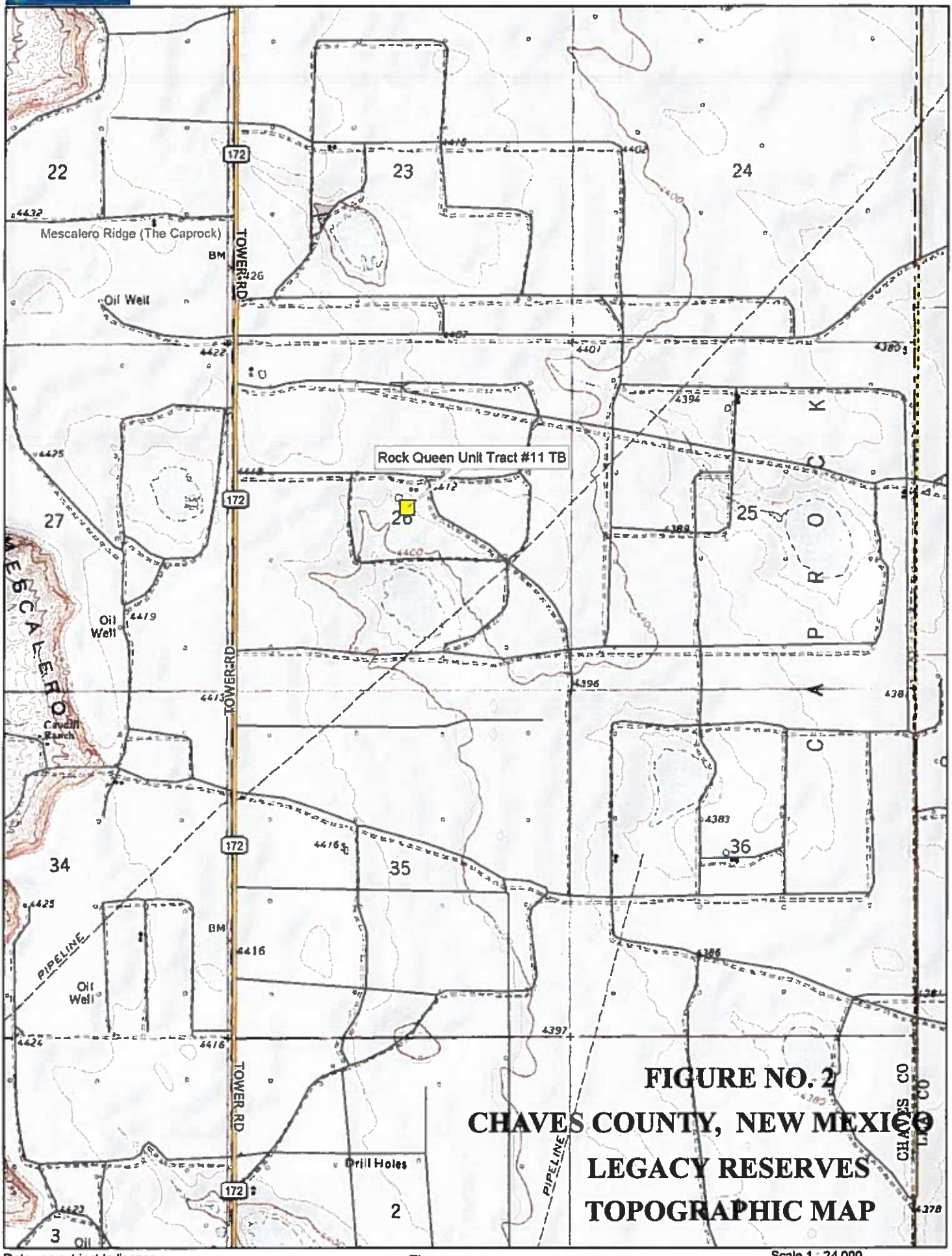


FIGURE NO. 2
CHAVES COUNTY, NEW MEXICO
LEGACY RESERVES
TOPOGRAPHIC MAP

TN
MN (7.7°E)

Scale 1 : 24,000
1" = 2,000.0 ft
Data Zoom 12-7

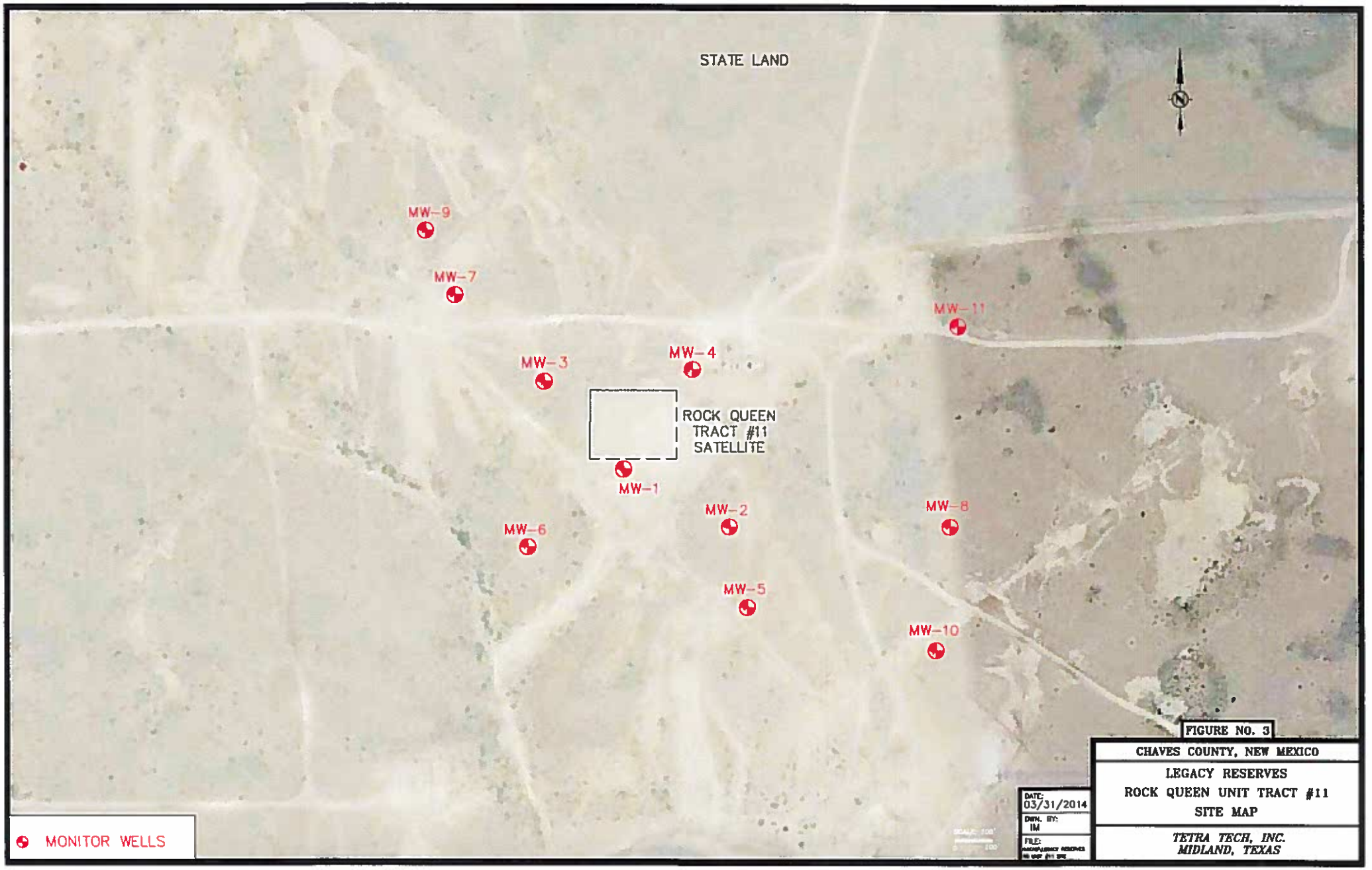


FIGURE NO. 3

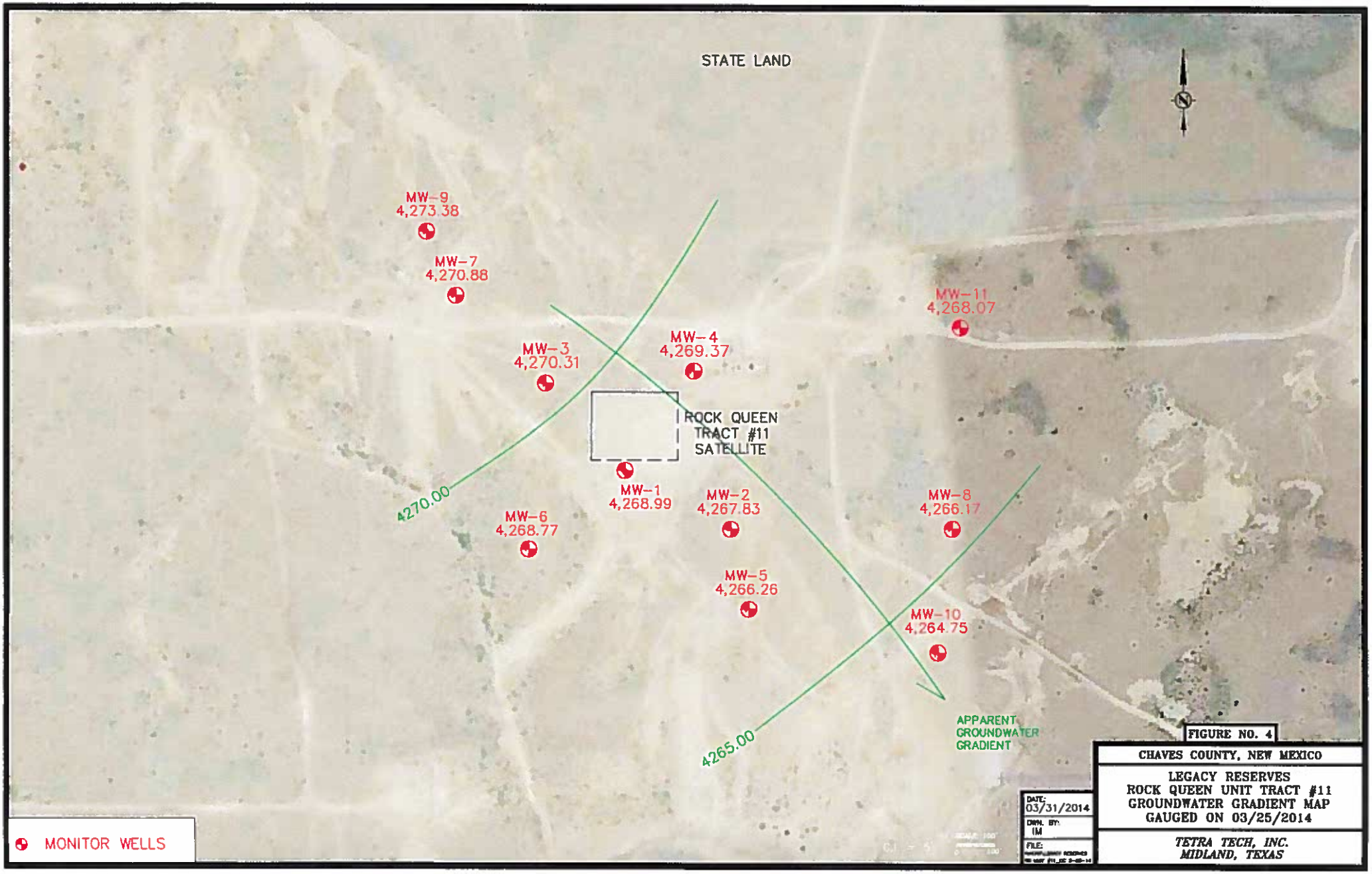
CHAVES COUNTY, NEW MEXICO

LEGACY RESERVES

ROCK QUEEN UNIT TRACT #11

SITE MAP

TETRA TECH, INC.
MIDLAND, TEXAS


STATE LAND
MW-9
4,273.38
MW-7
4,270.88
MW-3
4,270.31
MW-4
4,269.37
MW-11
4,268.07
ROCK QUEEN
TRACT #11
SATELLITE
MW-1
4,268.99
MW-2
4,267.83
MW-8
4,266.17
MW-6
4,268.77
MW-5
4,266.26
MW-10
4,264.75
4270.00
4265.00
APPARENT
GROUNDWATER
GRADIENT
MONITOR WELLS
DATE:
03/31/2014
DWN. BY:
IM
FILE:
FIGURE NO. 4
CHAVES COUNTY, NEW MEXICO
LEGACY RESERVES
ROCK QUEEN UNIT TRACT #11
GROUNDWATER GRADIENT MAP
GAUGED ON 03/25/2014
TETRA TECH, INC.
MIDLAND, TEXAS

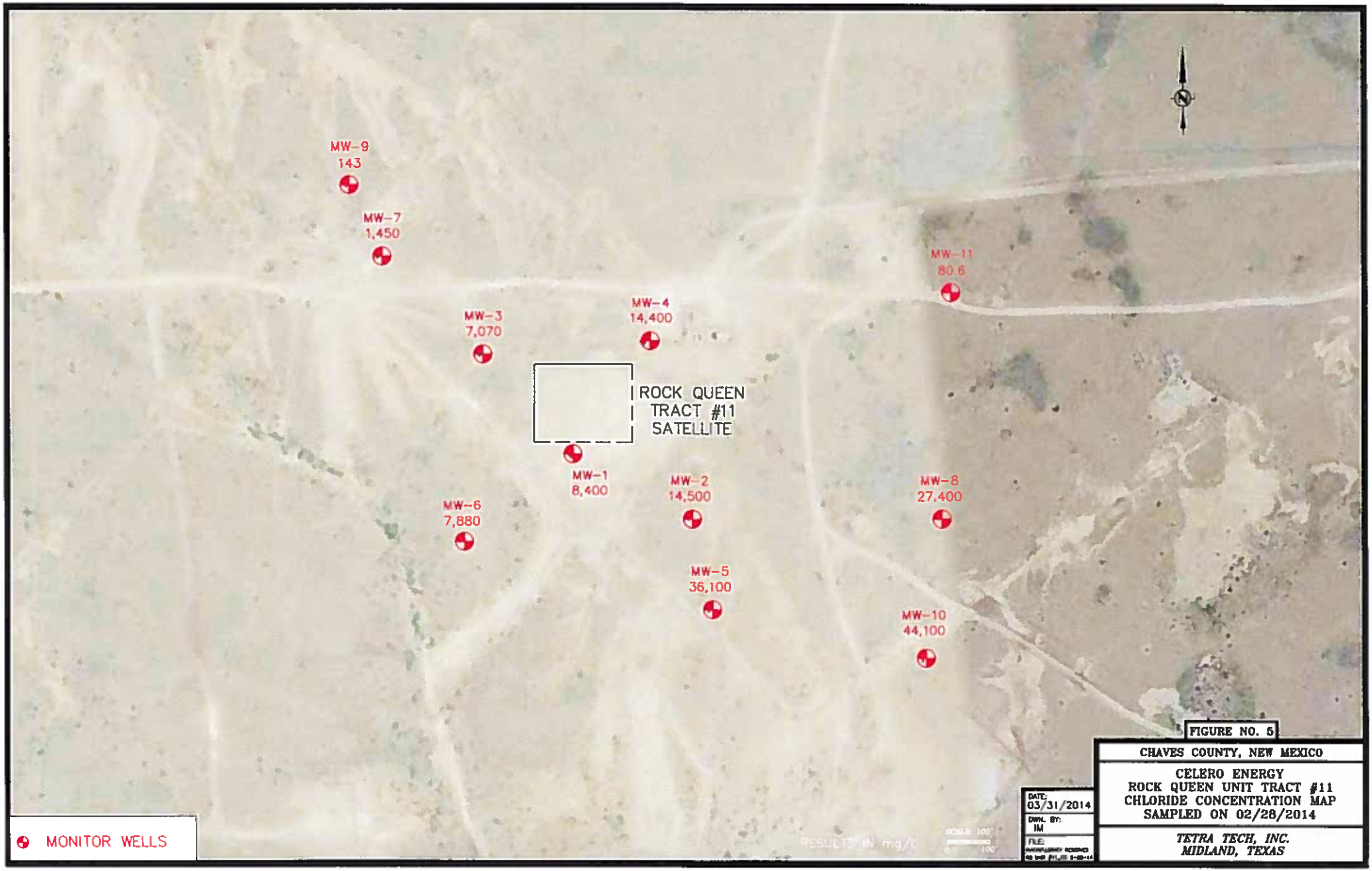


FIGURE NO. 5

CHAVES COUNTY, NEW MEXICO

CELERO ENERGY
ROCK QUEEN UNIT TRACT #11
CHLORIDE CONCENTRATION MAP
SAMPLED ON 02/28/2014

TETRA TECH, INC.
MIDLAND, TEXAS

DATE: 03/31/2014
DWN. BY: IM
FILE:

TABLES

Table 1
Legacy Reserves
Groundwater Gauging Data
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Gauged	of Well Installation	Elevation (ft)	Depth of Well (bgs in ft)	Depth to Groundwater (ft)	Elevation (ft)
MW-1	05/25/07	05/24/07	4,407.40	161.30	138.60	4,268.80
	02/25/10				138.19	4,269.21
	07/13/10				138.14	4,269.26
	10/11/10				138.25	4,269.15
	01/17/11				138.03	4,269.37
	04/11/11				138.14	4,269.26
	07/26/11				138.92	4,268.48
	10/24/11				138.18	4,269.22
	01/03/12				138.31	4,269.09
	04/09/12				138.19	4,269.21
	07/24/12				138.16	4,269.24
	10/23/12				138.34	4,269.06
	01/28/13				138.18	4,269.22
	04/22/13				138.31	4,269.09
	07/25/13				138.28	4,269.12
	10/29/13				137.19	4,270.21
	03/25/14				138.41	4,268.99
MW-2	02/25/10	02/17/10	4,408.61	166.18	140.36	4,268.25
	07/13/10				140.28	4,268.33
	10/11/10				140.41	4,268.20
	01/17/11				140.15	4,268.46
	04/11/11				140.19	4,268.42
	07/26/11				141.05	4,267.56
	10/24/11				140.39	4,268.22
	01/03/12				140.49	4,268.12
	04/09/12				140.44	4,268.17
	07/24/12				140.49	4,268.12
	10/23/12				140.58	4,268.03
	01/28/13				140.48	4,268.13
	04/22/13				140.61	4,268.00
	07/25/13				140.64	4,267.97
	10/29/13				140.65	4,267.96
	03/25/14				140.78	4,267.83

Table 1
Legacy Reserves
Groundwater Gauging Data
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Gauged	of Well Installation	Elevation (ft)	Depth of Well (bgs in ft)	Depth to Groundwater (ft)	Elevation (ft)
MW-3	02/25/10	02/17/10	4,409.84	169.00	139.49	4,270.35
	07/13/10				139.45	4,270.39
	10/11/10				139.57	4,270.27
	01/17/11				139.43	4,270.41
	04/11/11				139.50	4,270.34
	07/26/11				140.25	4,269.59
	10/24/11				139.48	4,270.36
	01/03/12				139.55	4,270.29
	04/09/12				139.44	4,270.40
	07/24/12				139.43	4,270.41
	10/23/12				139.53	4,270.31
	01/28/13				139.36	4,270.48
	04/22/13				139.44	4,270.40
	07/25/13				139.56	4,270.28
	10/30/13				139.52	4,270.32
	03/25/14				139.53	4,270.31
MW-4	02/25/10	02/17/10	4,411.68	172.90	142.25	4,269.43
	07/13/10				142.23	4,269.45
	10/11/10				142.32	4,269.36
	01/17/11				142.16	4,269.52
	04/11/11				142.24	4,269.44
	07/26/11				143.04	4,268.64
	10/24/11				142.19	4,269.49
	01/03/12				142.33	4,269.35
	04/09/12				142.24	4,269.44
	07/24/12				142.14	4,269.54
	10/23/12				142.33	4,269.35
	01/28/13				142.16	4,269.52
	04/22/13				142.16	4,269.52
	07/25/13				142.24	4,269.44
	10/30/13				142.23	4,269.45
	03/25/14				142.31	4,269.37

Table 1
Legacy Reserves
Groundwater Gauging Data
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Gauged	of Well Installation	Elevation (ft)	Depth of Well (bgs in ft)	Depth to Groundwater (ft)	Elevation (ft)
MW-5	01/17/11	12/01/10	4,407.26	160.00	139.99	4,267.27
	04/11/11				140.05	4,267.21
	07/26/11				140.98	4,266.28
	10/24/11				140.30	4,266.96
	01/03/12				140.38	4,266.88
	04/09/12				140.42	4,266.84
	07/24/12				140.55	4,266.71
	10/23/12				140.68	4,266.58
	01/28/13				140.56	4,266.70
	04/22/13				140.69	4,266.57
	07/25/13				140.75	4,266.51
	10/30/13				140.76	4,266.50
	03/25/14				141.00	4,266.26
MW-6	01/17/11	12/01/10	4,404.87	156.42	135.51	4,269.36
	04/11/11				135.58	4,269.29
	07/26/11				136.37	4,268.50
	10/24/11				135.68	4,269.19
	01/03/12				135.81	4,269.06
	04/09/12				135.74	4,269.13
	07/24/12				135.80	4,269.07
	10/23/12				135.91	4,268.96
	01/28/13				135.75	4,269.12
	04/22/13				135.55	4,269.32
	07/25/13				136.05	4,268.82
	10/30/13				136.03	4,268.84
	03/25/14				136.1	4,268.77
MW-7	01/17/11	12/02/10	4,413.08	161.37	142.22	4,270.86
	04/11/11				142.17	4,270.91
	07/26/11				142.98	4,270.10
	10/24/11				142.19	4,270.89
	01/03/12				142.22	4,270.86

Table 1
Legacy Reserves
Groundwater Gauging Data
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Gauged	of Well Installation	Elevation (ft)	Depth of Well (bgs in ft)	Depth to Groundwater (ft)	Elevation (ft)
MW-7	04/09/12				142.19	4,270.89
	07/24/12				142.16	4,270.92
	10/23/12				142.19	4,270.89
	01/28/13				142.23	4,270.85
	04/22/13				142.13	4,270.95
	07/25/13				142.25	4,270.83
	10/30/13				142.24	4,270.84
	03/25/14				142.2	4,270.88
MW-8	03/25/14	02/26/14	4,409.62		143.45	4,266.17
MW-9	03/25/14	02/26/14	4,416.50		143.12	4,273.38
MW-10	03/25/14	02/26/14	4,407.63		142.88	4,264.75
MW-11	03/25/14	02/26/14	4,410.48		142.41	4,268.07
RW-1	01/17/11	12/08/10	4,405.75	161.80	136.05	4,269.70
	04/11/11				136.15	4,269.60
	07/26/11				137.03	4,268.72
	10/24/11				136.32	4,269.43
	01/03/12				136.41	4,269.34
	04/09/12				136.20	4,269.55
	07/24/12				136.40	4,269.35
	10/23/12				136.45	4,269.30
	01/28/13				136.20	4,269.55
	04/22/13				136.42	4,269.33
	07/25/13				136.48	4,269.27
	10/30/13				136.43	4,269.32
	03/25/14				142.00	4,263.75

Table 2
Legacy Reserves
Groundwater Analytical Results
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Sampled	Dissolved Calcium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Potassium (mg/L)	Hydroxide Alkalinity (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalinity (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	TDS (mg/L)	Hardness (mg/L)	pH
MW-1	05/31/07	1,300	1,050	19,400	416	<1.00	<1.00	110	110	1,080	37,800	59,400	7,570	7.06
	02/25/10	3,280	2,240	28,500	737	<1.00	<1.00	101	101	1,360	60,700	104,000	17,400	6.24
	07/13/10	-	-	-	-	-	-	-	-	186	12,300	11,600	-	-
	10/11/10	-	-	-	-	-	-	-	-	455	20,400	42,700	-	-
	01/19/11	-	-	-	-	-	-	-	-	2,270	122,000	210,000	-	-
	02/25/11	-	-	-	-	-	-	-	-	2,150	109,000	193,000	-	-
	04/14/11	-	-	-	-	-	-	-	-	1,620	57,400	96,800	-	-
	07/27/11	-	-	-	-	-	-	-	-	625	22,100	56,000	-	-
	10/27/11	-	-	-	-	-	-	-	-	1,740	47,300	73,900	-	-
	01/06/12	-	-	-	-	-	-	-	-	615	29,000	43,800	-	-
	04/11/12	-	-	-	-	-	-	-	-	2,690	110,000	140,000	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	32,900	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	849	36,700	76,400	-	-
	01/30/13	-	-	-	-	-	-	-	-	1,390	47,000	92,600	-	-
	04/25/13	2,920	820	12,800	194	<1.00	<1.00	121	121	401	21,600	37,400	10,700	6.62
	07/25/13	2,620	590	9,130	135	<20.0	<20.0	91	91	<2500	18,000	22,600	8,970	6.68
	10/30/13	1,930	433	6,090	84.5	<20.0	<20.0	112	112	<250	16,800	24,100	6,600	7.00
	02/28/14	2,060	460	7,020	121.0	<20.0	<20.0	130	130	143	8,400	62,700	7,120	6.40
MW-2	02/25/10	723	265	3,850	47.6	<1.00	<1.00	132	132	176	5,670	17,800	-	7.70
	07/13/10	-	-	-	-	-	-	-	-	355	16,400	31,700	-	-
	10/11/10	-	-	-	-	-	-	-	-	547	24,000	38,400	-	-
	01/19/11	-	-	-	-	-	-	-	-	2,060	118,000	220,000	-	-
	02/25/11	-	-	-	-	-	-	-	-	1,500	67,600	146,000	-	-
	04/14/11	-	-	-	-	-	-	-	-	1,170	53,300	84,500	-	-
	07/27/11	-	-	-	-	-	-	-	-	1,610	91,700	143,000	-	-
	10/27/11	-	-	-	-	-	-	-	-	1,990	68,200	102,000	-	-
	01/06/12	-	-	-	-	-	-	-	-	747	37,400	50,400	-	-
	04/11/12	-	-	-	-	-	-	-	-	2,480	174,000	212,000	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	13,800	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	730	48,300	61,000	-	-
	01/30/13	-	-	-	-	-	-	-	-	588	23,500	41,200	-	-
	04/25/13	4,290	1,050	13,900	115	<1.00	<1.00	291	291	650	35,700	49,200	15,000	6.46
	07/25/13	3,130	816	11,300	122	<20.0	<20.0	109	109	<2500	32,600	42,100	11,200	6.55
	10/30/13	2,550	483	7,240	54.7	<20.0	<20.0	111	111	407	17,700	31,600	8,360	6.88
	02/28/14	2,760	604	8,200	88.6	<20.0	<20.0	58.0	58.0	402	14,500	56,200	9,380	6.53

Table 2
Legacy Reserves
Groundwater Analytical Results
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Sampled	Dissolved Calcium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Potassium (mg/L)	Hydroxide Alkalinity (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalinity (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	TDS (mg/L)	Hardness (mg/L)	pH
MW-3	02/25/10	370	88.4	1,060	14.2	<1.00	<1.00	138	138	120	1,990	3,460	1,290	8.13
	07/13/10	-	-	-	-	-	-	-	-	52.8	3,260	4,190	-	-
	10/11/10	-	-	-	-	-	-	-	-	73.6	2,700	6,290	-	-
	01/19/11	-	-	-	-	-	-	-	-	1,170	50,100	103,000	-	-
	02/25/11	-	-	-	-	-	-	-	-	115	5,190	10,100	-	-
	04/14/11	-	-	-	-	-	-	-	-	73.2	2,880	4,440	-	-
	07/27/11	-	-	-	-	-	-	-	-	881	53,400	74,700	-	-
	10/27/11	-	-	-	-	-	-	-	-	173	12,000	22,800	-	-
	01/06/12	-	-	-	-	-	-	-	-	52.4	2,200	3,400	-	-
	04/11/12	-	-	-	-	-	-	-	-	72.7	4,730	6,440	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	1,690	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	73.2	3,640	6,010	-	-
	01/30/13	-	-	-	-	-	-	-	-	63.7	4,320	6,490	-	-
	04/25/13	1,090	207	479	8.05	<1.00	<1.00	119	119	52.4	4,240	8,860	3,580	7.16
	07/25/13	950	166	328	12.60	<20.0	<20.0	78	78	<250	2,500	6,650	3,050	7.18
	10/30/13	822	136	206	9.04	<20.0	<20.0	75	75	41.6	2,230	4,110	2,610	7.06
	02/28/14	1,910	365	2,210	20.2	<20.0	<20.0	84.0	84.0	137	7,070	13,800	6,270	7.01
MW-4	02/25/10	540	385	4,670	295	<1.00	<1.00	148	148	290	10,700	25,800	2,930	7.37
	07/13/10	-	-	-	-	-	-	-	-	47.4	857	1,610	-	-
	10/11/10	-	-	-	-	-	-	-	-	176.0	7,140	14,500	-	-
	01/19/11	-	-	-	-	-	-	-	-	1,850.0	109,000	194,000	-	-
	02/25/11	-	-	-	-	-	-	-	-	182.0	7,210	14,100	-	-
	04/14/11	-	-	-	-	-	-	-	-	347.0	12,200	26,400	-	-
	07/27/11	-	-	-	-	-	-	-	-	134	5,080	7,980	-	-
	10/26/11	-	-	-	-	-	-	-	-	967	56,400	97,300	-	-
	01/06/12	-	-	-	-	-	-	-	-	144	5,500	8,800	-	-
	04/11/12	-	-	-	-	-	-	-	-	65.3	1,560	2,820	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	2,130	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	134	5,480	10,200	-	-
	01/30/13	-	-	-	-	-	-	-	-	220	12,600	26,700	-	-
	04/25/13	668	474	10,500	323	<1.00	<1.00	161	161	395	16,200	32,100	3,620	7.21
	07/25/13	84.5	47.8	895	65.3	<20.0	<20.0	170	170	<250	1,540	4,230	408	7.70
	10/30/13	72	42.1	890	65.2	<20.0	<20.0	181	181	92.4	1,440	3,730	354	7.64
	02/28/14	546	355	7,950	314.0	<20.0	<20.0	139	139	339	14,400	24,700	2,820	7.17

Table 2
Legacy Reserves
Groundwater Analytical Results
Rock Queen Unit Tract 11 Tank Battery
Chaves County, New Mexico

Monitor Well	Date Sampled	Dissolved Calcium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Potassium (mg/L)	Hydroxide Alkalinity (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalinity (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	TDS (mg/L)	Hardness (mg/L)	pH
MW-5	01/19/11	-	-	-	-	-	-	-	-	939	56,300	109,000	-	-
	02/25/11	-	-	-	-	-	-	-	-	764	49,900	93,000	-	-
	04/14/11	-	-	-	-	-	-	-	-	1,100	67,500	109,000	-	-
	07/27/11	-	-	-	-	-	-	-	-	422	48,500	60,900	-	-
	10/27/11	-	-	-	-	-	-	-	-	1,020	71,600	106,000	-	-
	01/06/12	-	-	-	-	-	-	-	-	<250	21,300	30,700	-	-
	04/11/12	-	-	-	-	-	-	-	-	1,340	94,400	127,000	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	48,500	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	1,180	78,900	144,000	-	-
	01/30/13	-	-	-	-	-	-	-	-	1,080	70,400	120,000	-	-
	04/25/13	8,040	1,990	15,300	40.3	<1.00	<1.00	221	221	334	32,100	58,700	28,300	6.32
	07/25/13	6,570	1,080	6,990	50.1	<20.0	<20.0	83	83	<2500	35,600	87,700	20,800	6.17
	10/30/13	6,520	1,550	12,600	70.3	<20.0	<20.0	70	70	309	43,400	44,000	22,600	6.77
	02/28/14	5,080	1,100	13,500	60.9	<20.0	<20.0	134	134	455	36,100	61,000	17,200	6.35
MW-6	01/19/11	-	-	-	-	-	-	-	-	378	25,800	56,700	-	-
	02/25/11	-	-	-	-	-	-	-	-	422	26,600	56,700	-	-
	04/14/11	-	-	-	-	-	-	-	-	77.6	1,800	3,320	-	-
	07/27/11	-	-	-	-	-	-	-	-	80	493	934	-	-
	10/26/11	-	-	-	-	-	-	-	-	378	29,300	73,100	-	-
	01/06/12	-	-	-	-	-	-	-	-	71.0	1,130	2,020	-	-
	04/11/12	-	-	-	-	-	-	-	-	57.7	488	1,210	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	484	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	61.0	391	1,320	-	-
	01/30/13	-	-	-	-	-	-	-	-	63.5	326	756	-	-
	04/25/13	160	28.2	62.4	0.854	<1.00	<1.00	172	172	57.2	318	956	515	7.83
	07/25/13	132	19.7	76.0	6.260	<20.0	<20.0	133	133	56.7	257	748	411	8.00
	10/30/13	102	13.5	58.9	<10.0	<20.0	<20.0	174	174	60.7	183	730	310	7.66
	02/28/14	2,480	491	978	15.1	<20.0	<20.0	129	129	156	7,880	14,600	8,210	6.68

Table 2

Legacy Reserves

Groundwater Analytical Results

Rock Queen Unit Tract 11 Tank Battery

Chaves County, New Mexico

Monitor Well	Date Sampled	Dissolved Calcium (mg/L)	Dissolved Magnesium (mg/L)	Dissolved Sodium (mg/L)	Dissolved Potassium (mg/L)	Hydroxide Alkalinity (mg/L)	Carbonate Alkalinity (mg/L)	Bicarbonate Alkalinity (mg/L)	Total Alkalinity (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	TDS (mg/L)	Hardness (mg/L)	pH
MW-7	01/19/11	-	-	-	-	-	-	-	-	77	994	2,110	-	-
	02/25/11	-	-	-	-	-	-	-	-	79.4	1,230	2,580	-	-
	04/14/11	-	-	-	-	-	-	-	-	92.2	1,350	2,700	-	-
	07/27/11	-	-	-	-	-	-	-	-	84.1	1,580	2,440	-	-
	10/26/11	-	-	-	-	-	-	-	-	139	1,860	2,910	-	-
	01/06/12	-	-	-	-	-	-	-	-	83.6	1,680	2,080	-	-
	04/11/12	-	-	-	-	-	-	-	-	74.9	1,440	1,780	-	-
	07/25/12	-	-	-	-	-	-	-	-	-	1,660	-	-	-
	10/25/12	-	-	-	-	-	-	-	-	86.2	1,550	3,980	-	-
	01/30/13	-	-	-	-	-	-	-	-	81.7	1,380	2,490	-	-
	04/25/13	688	131	145	4.50	<1.00	<1.00	91.0	91.0	99.3	1,960	3,760	2,260	7.37
	07/25/13	635	115	113	8.88	<20.0	<20.0	108.0	108.0	<250	1,520	3,900	2,060	7.34
	10/30/13	612	115	127	<10.0	<20.0	<20.0	104.0	104.0	81.8	1,620	3,690	2,000	7.18
	02/28/14	544	99.9	113	7.86	<20.0	<20.0	103	103	77.4	1,450	3,030	1,770	7.11
MW-8	02/28/14	4,660	1,680	14,200	54.0	<20.0	<20.0	241	241	536	27,400	54,900	18,600	6.36
MW-9	02/28/14	82.9	9.33	58.0	4.98	<20.0	<20.0	123	123	52.6	143	590	245	7.79
MW-10	02/28/14	7,290	2,300	19,000	66.0	<20.0	<20.0	92.0	92.0	684	44,100	65,100	27,700	6.30
MW-11	02/28/14	54.2	8.12	72.5	11.8	<20.0	24.0	159	183	65.6	80.6	529	169	7.93
RW-1	01/19/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	02/25/11	-	-	-	-	-	-	-	-	1,690	94,000	174,000	-	-
	04/14/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	07/27/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/26/11	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	01/06/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	04/11/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	07/25/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/25/12	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	01/30/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	04/25/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	07/25/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	10/30/13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	02/28/14	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

NS - Not sampled

(-) Not Analyzed

Table 3
Legacy Reserves
Groundwater Analytical Results
Rock Queen Unit Tract #11
Chaves County, New Mexico

Monitor Well	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethyl-Benzene (mg/L)	Xylene (mg/L)	Total BTEX (mg/L)
MW-1	02/25/10	<0.001	<0.001	<0.001	<0.001	<0.001
	07/13/10	<0.001	<0.001	<0.001	<0.001	<0.001
	10/11/10	<0.001	<0.001	<0.001	<0.001	<0.001
	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	<0.001	<0.001	<0.001	<0.001	<0.001
	07/27/11	<0.001	<0.001	<0.001	0.0185	0.0185
	10/27/11	<0.001	<0.001	<0.001	0.0014	0.0014
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-2	02/25/10	<0.001	<0.001	<0.001	<0.001	<0.001
	07/13/10	<0.001	<0.001	<0.001	<0.001	<0.001
	10/11/10	<0.001	<0.001	<0.001	<0.001	<0.001
	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	<0.001	<0.001	<0.001	<0.001	<0.001
	07/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	10/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-3	02/25/10	<0.001	<0.001	<0.001	<0.001	<0.001
	07/13/10	<0.001	<0.001	<0.001	<0.001	<0.001
	10/11/10	<0.001	<0.001	<0.001	<0.001	<0.001
	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	<0.001	<0.001	<0.001	<0.001	<0.001
	07/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	10/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001

Table 3
Legacy Reserves
Groundwater Analytical Results
Rock Queen Unit Tract #11
Chaves County, New Mexico

Monitor Well	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethyl-Benzene (mg/L)	Xylene (mg/L)	Total BTEX (mg/L)
MW-3	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-4	02/25/10	<0.001	<0.001	<0.001	<0.001	<0.001
	07/13/10	<0.001	<0.001	<0.001	<0.001	<0.001
	10/11/10	<0.001	<0.001	<0.001	<0.001	<0.001
	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	<0.001	<0.001	<0.001	<0.001	<0.001
	07/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	10/26/11	<0.001	<0.001	<0.001	0.0066	0.0066
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-5	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	0.0065	<0.001	<0.001	<0.001	0.0065
	07/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	10/27/11	<0.001	<0.001	<0.001	0.0010	0.0010
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	0.0010	0.0117
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-6	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	<0.001	<0.001	<0.001	<0.001	<0.001
	07/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	10/26/11	<0.001	<0.001	<0.001	<0.001	<0.001
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	0.0044	<0.0010	<0.0010	<0.0010	0.0044
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300

Table 3

Legacy Reserves

Groundwater Analytical Results

Rock Queen Unit Tract #11

Chaves County, New Mexico

Monitor Well	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethyl-Benzene (mg/L)	Xylene (mg/L)	Total BTEX (mg/L)
MW-7	01/19/11	<0.001	<0.001	<0.001	<0.001	<0.001
	04/14/11	<0.001	<0.001	<0.001	<0.001	<0.001
	07/27/11	<0.001	<0.001	<0.001	<0.001	<0.001
	10/26/11	<0.001	<0.001	<0.001	<0.001	<0.001
	01/06/12	<0.001	<0.001	<0.001	<0.001	<0.001
	04/11/12	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	10/25/12	<0.001	<0.001	<0.001	<0.001	<0.001
	01/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	04/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	07/25/13	<0.001	<0.001	<0.001	<0.001	<0.001
	10/30/13	<0.001	<0.001	<0.001	<0.001	<0.001
	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
RW-1	01/19/11	NS	NS	NS	NS	NS
	04/14/11	NS	NS	NS	NS	NS
	07/27/11	NS	NS	NS	NS	NS
	10/27/11	NS	NS	NS	NS	NS
	01/06/12	NS	NS	NS	NS	NS
	04/11/12	NS	NS	NS	NS	NS
	07/25/12	NS	NS	NS	NS	NS
	10/25/12	NS	NS	NS	NS	NS
	01/30/13	NS	NS	NS	NS	NS
	04/25/13	NS	NS	NS	NS	NS
	04/25/13	NS	NS	NS	NS	NS
	10/30/13	NS	NS	NS	NS	NS
	02/28/14	NS	NS	NS	NS	NS
MW-8	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-9	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300
MW-10	02/28/14	<0.00100	0.00170	<0.00100	<0.00300	0.00170
MW-11	02/28/14	<0.00100	<0.00100	<0.00100	<0.00300	<0.00300

NS - Not sampled

APPENDIX A
SOIL BORING LOGS

SAMPLE LOG

Boring/ Well MW-8
GPS N33.16290° W103.79356°
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract 11 Tank Battery
Site Location Chaves, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 158'
Date Installed 02/10/14 to 02/11/14

Depth (Ft)	OVM	Sample Description
5-6'	--	Sandstone and chert (20%)
10-11'	--	Sandstone and chert (20%) and caliche (10%)
15-16'	--	Sandstone and chert (5%) and caliche (70%)
20-21'	--	Light tan fine brown sand and sandstone (20%)
25-26'	--	Light tan fine brown sand and sandstone (20%)
30-31'	--	Light tan fine brown sand and sandstone (20%)
35-36'	--	Light tan fine brown sand and sandstone (20%)
40-41'	--	Light brown fine sand and sandstone (10%)
45-46'	--	Light brown fine sand and sandstone (10%)
50-51'	--	Light brown fine sand and sandstone (10%)
55-56'	--	Light brown fine sand
60-61'	--	Light brown fine sand
65-66'	--	Light brown fine sand
70-71'	--	Light brown fine sand
75-76'	--	Light brown fine sand
80-81'	--	Light brown fine sand
85-86'	--	Light brown fine sand
90-91'	--	Light brown fine sand
95-96'	--	Light brown fine sand
100-101'	--	Light brown fine sand
105-106'	--	Light brown fine sand
110-111'	--	Light brown fine sand
115-116'	--	Brown fine sand and sandstone (20%)
120-121'	--	Brown fine sand and sandstone (20%)

SAMPLE LOG

Boring/ Well MW-8
GPS N33.16290° W103.79356°
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract 11 Tank Battery
Site Location Chaves, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 158'
Date Installed 02/10/14 to 02/11/14

Depth (Ft)	OVM	Sample Description
125-126'	--	Brown fine sand and sandstone (20%)
130-131'	--	Brown fine sand and sandstone (20%)
135-136'	--	Brown fine sand and sandstone (20%)
140-141'	--	Brown fine sand and sandstone (20%)
145-146'	--	Brown fine sand and sandstone (20%)
150-151'	--	Brown fine sand and blue clay (20%)
155-156'	--	Red clay (80%) and blue clay (20%)
158'	--	Red Bed

Total Depth: 158'

SAMPLE LOG

Boring/ Well MW-9
GPS
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract 11 Tank Battery
Site Location Chaves, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 156'
Date Installed 02/11/14 to 02/12/14

Depth (Ft)	OVM	Sample Description
5-6'	--	Sandstone and caliche (40%)
10-11'	--	Sandstone and caliche (70%)
15-16'	--	Light tan fine sand with caliche (80%) and sandstone (20%)
20-21'	--	Light tan fine sand with caliche (80%) and sandstone (20%)
25-26'	--	Light tan fine sand
30-31'	--	Light tan fine sand
35-36'	--	Light tan fine sand
40-41'	--	Light tan find sand
45-46'	--	Tan fine sand
50-51'	--	Tan fine sand
55-56'	--	Tan fine sand
60-61'	--	Light brown fine sand
65-66'	--	Light brown fine sand
70-71'	--	Light brown fine sand
75-76'	--	Light brown fine sand
80-81'	--	Light brown fine sand
85-86'	--	Brown fine sand
90-91'	--	Brown fine sand
95-96'	--	Brown fine sand and sandstone (30%)
100-101'	--	Brown fine sand and sandstone (30%)
105-106'	--	Brown fine sand and sandstone (30%)
110-111'	--	Brown fine sand and sandstone (40%)
115-116'	--	Brown fine sand and sandstone (40%)
120-121'	--	Brown fine sand and sandstone (40%)

SAMPLE LOG

Boring/ Well MW-9
GPS
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract 11 Tank Battery
Site Location Chaves, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 156'
Date Installed 02/11/14 to 02/12/14

Depth (Ft)	OVM	Sample Description
125-126'	--	Brown fine sand and sandstone (40%)
130-131'	--	Brown fine sand and sandstone (40%)
135-136'	--	Brown fine sand and sandstone (40%)
140-141'	--	Brown fine sand and sandstone (40%)
145-146'	--	Brown fine sand and sandstone (40%)
150-151'	--	Brown fine sand and blue clay (10%) and red clay (10%)
155-156'	--	Blue clay (40%) and red clay (60%)
156'	--	Red clay (75%) and blue clay (25%)

Total Depth: 156'

SAMPLE LOG

Boring/Well MW-10
GPS 33.16034 -103.78977
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract #11 Tank Battery
Site Location Chaves County, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 164'
Date Installed 01/30/14

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6	NA	Caliche and sandstone (50%)
10-11	NA	Caliche and sandstone (50%)
15-16	NA	Caliche, sandstone (40%) and chert (10%)
20-21	NA	Caliche, sandstone (10%) and chert (60%)
25-26	NA	Caliche, sandstone (10%) and chert (60%)
30-31	NA	Tan fine grained sand and sandstone (10%)
35-36	NA	Tan fine grained sand and sandstone (10%)
40-1	NA	Tan fine grained sand and sandstone (10%)
45-46	NA	Tan fine grained sand and sandstone (10%)
50-51	NA	Tan fine grained sand and sandstone (10%)
55-56	NA	Tan fine grained sand and sandstone (10%)
60-61	NA	Light brown fine grained sand
65-66	NA	Light brown fine grained sand
70-71	NA	Light brown fine grained sand
75-56	NA	Light brown fine grained sand
80-81	NA	Light brown fine grained sand and silt
85-86	NA	Brown fine grained sand and white clay (5%)
90-91	NA	Brown fine grained sand and white clay (5%)
95-96	NA	Brown fine grained sand and white clay (5%)
100-101	NA	Brown fine grained sand and white clay (5%)
105-106	NA	Brown fine grained sand and white clay (5%)
110-111	NA	Brown fine grained sand and white clay (5%)
115-116	NA	Brown fine grained sand and white clay (5%)
120-121	NA	Brown fine grained sand, white clay (10%0, and sandstone (20%)

SAMPLE LOG

Boring/Well MW-10
GPS 33.16034 -103.78977
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract #11 Tank Battery
Site Location Chaves County, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 164'
Date Installed 01/30/14

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
125-126	NA	Brown fine grained sand, brown clay (20%0, and sandstone (20%)
130-131	NA	Brown fine grained sand, brown clay (20%0, and sandstone (20%)
135-136	NA	Brown fine grained sand and brown clay (20%)
140-141	NA	Brown fine grained sand, sandstone (10%), and red clay (10%)
145-146	NA	Brown fine grained sand, sandstone (10%), and red clay (10%)
150-151	NA	Brown fine grained sand, sandstone (10%), and red clay (10%)
155-156	NA	Brown fine grained sand, gravel (20%), and red clay (30%)
160-161	NA	Brown fine grained sand, gravel (20%), and red clay (30%)
164	NA	Brown fine grained sand and red clay (60%)

Total Depth: 164'

SAMPLE LOG

Boring/Well MW-11
GPS 33.1628 -103.78965
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract #11 Tank Battery
Site Location Chaves County, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 164'
Date Installed 01/31/14

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
5-6	NA	Caliche, sandstone (50%) and chert (20%)
10-11	NA	Caliche, sandstone (30%) and chert (20%)
15-16	NA	Caliche, sandstone (30%) and chert (30%)
20-21	NA	Caliche, sandstone (30%) and chert (10%)
25-26	NA	Light tan fine grained sand and sandstone (10%)
30-31	NA	Light tan fine grained sand and sandstone (10%)
35-36	NA	Light tan fine grained sand and sandstone (20%)
40-1	NA	Light tan fine grained sand and sandstone (20%)
45-46	NA	Tan fine grained sand and sandstone (20%)
50-51	NA	Tan fine grained sand
55-56	NA	Light brown fine grained sand
60-61	NA	Light brown fine grained sand
65-66	NA	Light brown fine grained sand
70-71	NA	Light brown fine grained sand
75-56	NA	Light brown fine grained sand
80-81	NA	Light brown fine grained sand
85-86	NA	Light brown fine grained sand and caliche (10%)
90-91	NA	Light brown fine grained sand and caliche (10%)
95-96	NA	Light brown fine grained sand and sandstone (10%)
100-101	NA	Light brown fine grained sand and sandstone (30%)
105-106	NA	Brown fine grained sand
110-111	NA	Brown fine grained sand
115-116	NA	Brown fine grained sand
120-121	NA	Brown fine grained sand

SAMPLE LOG

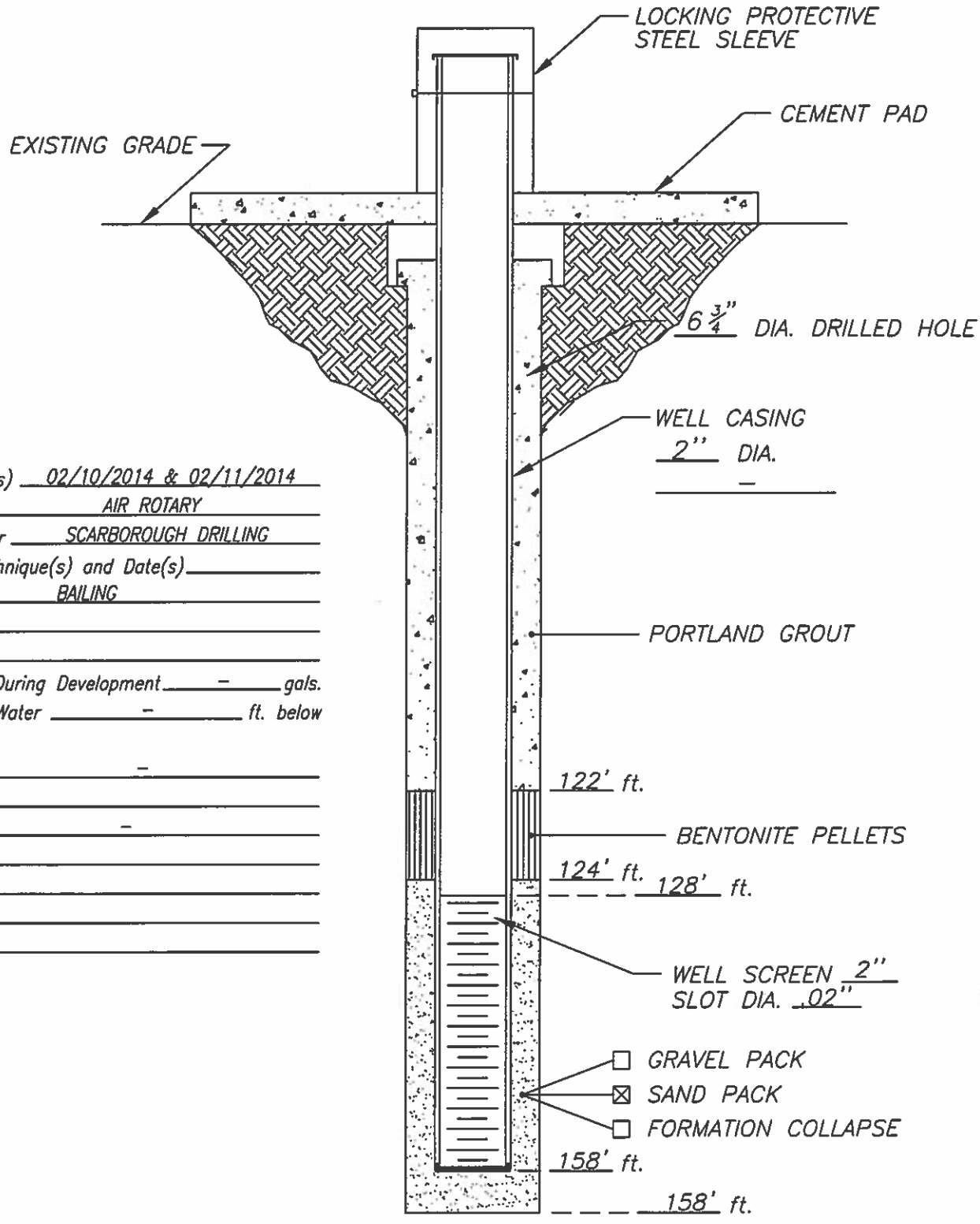
Boring/Well MW-11
GPS 33.1628 -103.78965
Project Number 114-6401629
Client Celero Energy II, LP
Site Name Rock Queen Unit Tract #11 Tank Battery
Site Location Chaves County, New Mexico
Letter F, Section 26, Township 13 South, Range 31 East
Total Depth 164'
Date Installed 01/31/14

DEPTH (Ft)	OVM	SAMPLE DESCRIPTION
125-126	NA	Brown fine grained sand and sandstone (30%)
130-131	NA	Brown fine grained sand and sandstone (30%)
135-136	NA	Brown fine grained sand and sandstone (30%)
140-141	NA	Brown fine grained sand and sandstone (30%)
145-146	NA	Brown fine grained sand and sandstone (10%)
150-151	NA	Brown fine grained sand and sandstone (10%)
155-156	NA	Brown fine grained sand and red clay (70%)
160-164	NA	Red clay and gravel (30%)

Total Depth: 164'

APPENDIX B
MONITOR WELL COMPLETION DIAGRAMS

WELL CONSTRUCTION LOG



Installation Date(s) 02/10/2014 & 02/11/2014
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s) BAILING

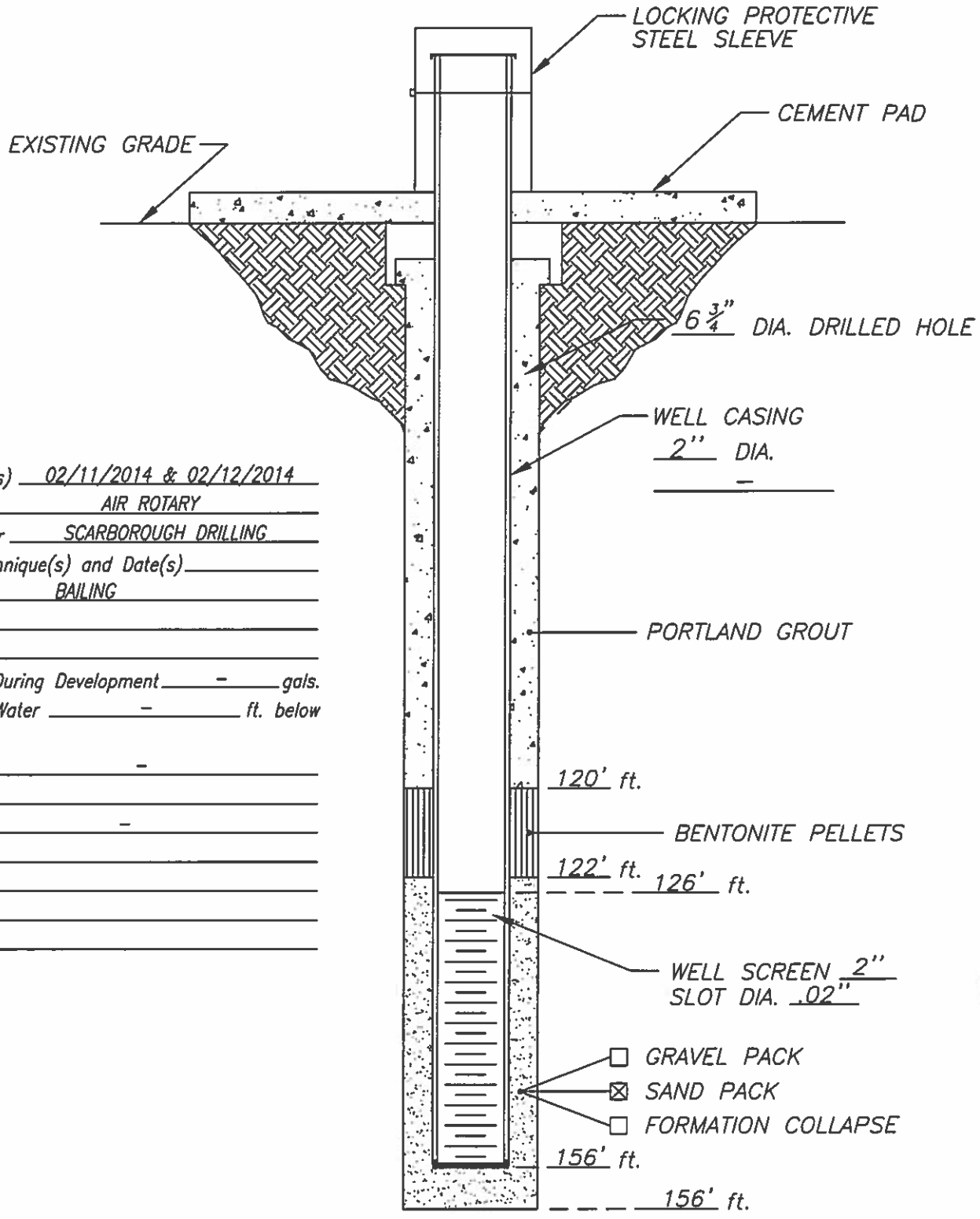
Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose –

Remarks –

DATE: 03/03/2014	CLIENT: CELERO ENERGY II, LLC	WELL NO.
TETRA TECH, INC. MIDLAND, TEXAS	PROJECT: ROCK QUEEN TRACT #11	MW-8
	LOCATION: CHAVES COUNTY, NEW MEXICO	

114-6401629

WELL CONSTRUCTION LOG



Installation Date(s) 02/11/2014 & 02/12/2014
Drilling Method AIR ROTARY
Drilling Contractor SCARBOROUGH DRILLING
Development Technique(s) and Date(s)
BAILING

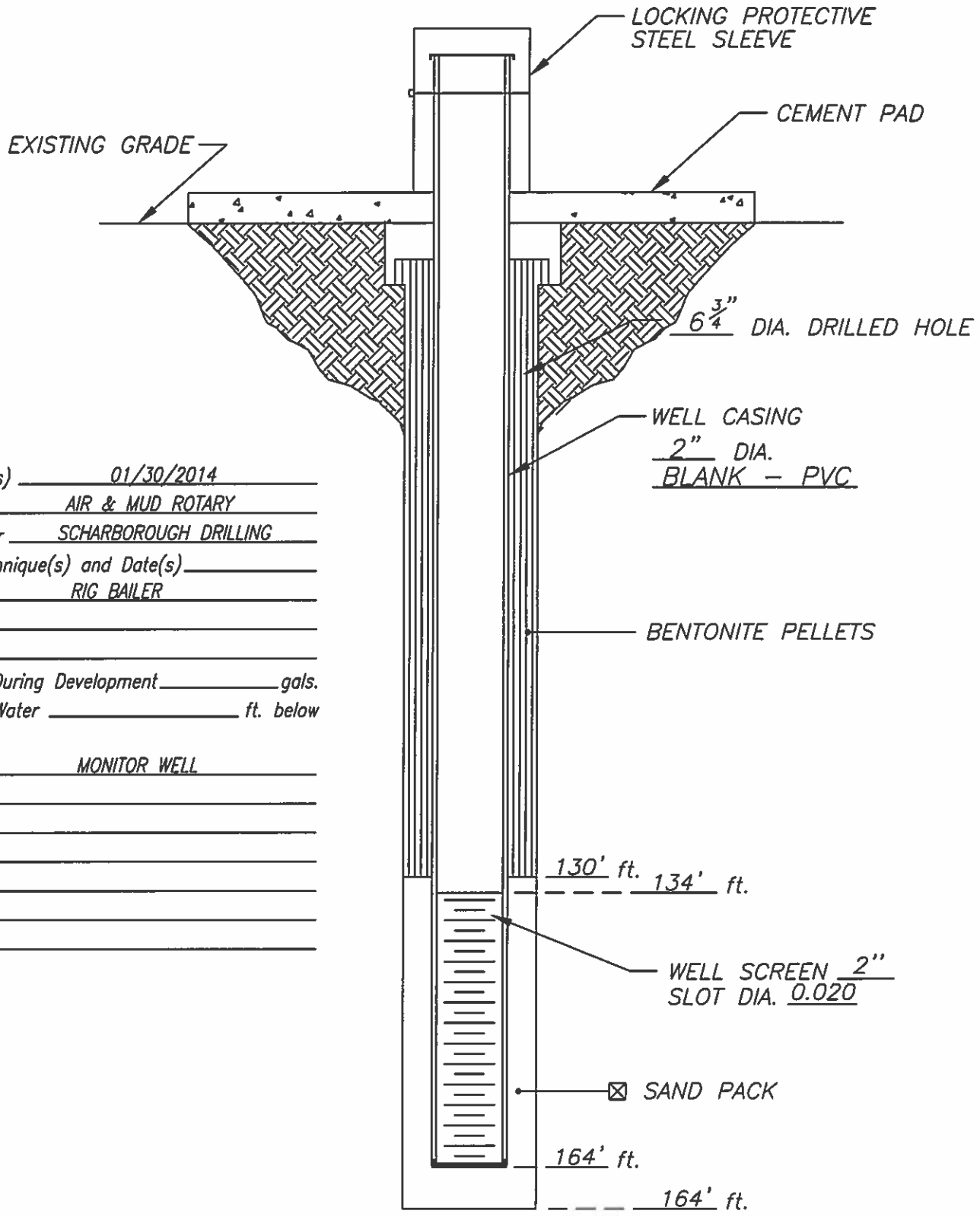
Water Removed During Development – gals.
Static Depth to Water – ft. below Ground Level
Well Purpose –

Remarks –

DATE: 03/03/2014	CLIENT: CELERO ENERGY II, LLC	WELL NO.
TETRA TECH, INC. MIDLAND, TEXAS	PROJECT: ROCK QUEEN TRACT #11	MW-9
	LOCATION: CHAVES COUNTY, NEW MEXICO	

114-6401629

WELL CONSTRUCTION LOG



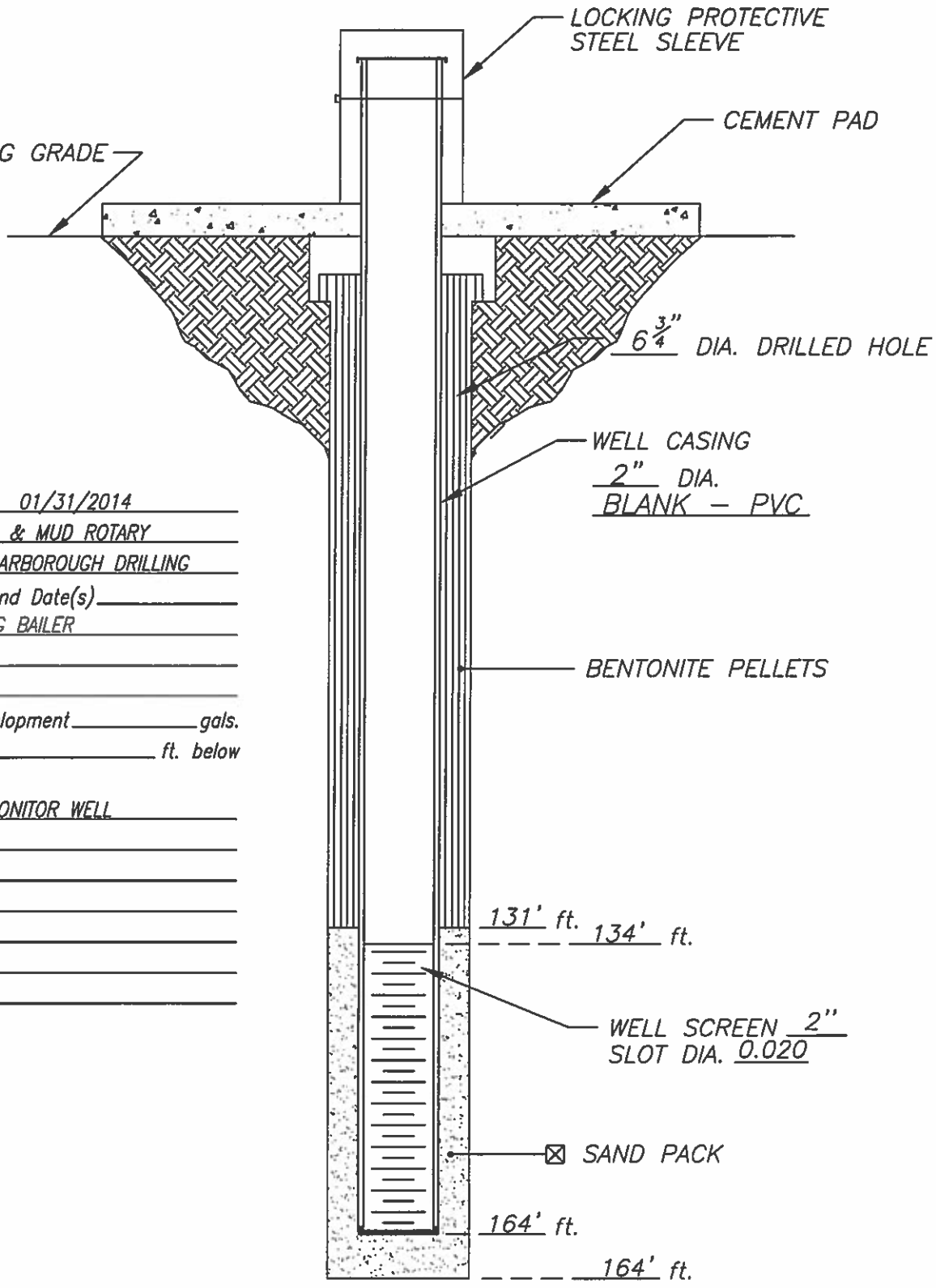
Installation Date(s) 01/30/2014
Drilling Method AIR & MUD ROTARY
Drilling Contractor SCHARBOROUGH DRILLING
Development Technique(s) and Date(s) RIG BAILER

Water Removed During Development _____ gals.
Static Depth to Water _____ ft. below Ground Level
Well Purpose MONITOR WELL

Remarks

DATE: 02/10/2013	CLIENT: CELERO ENERGY II, LLC	WELL NO.
TETRA TECH, INC. MIDLAND, TEXAS	PROJECT: ROCK QUEEN TRACT 11 TB	MW-10
	LOCATION: CHAVES COUNTY, NEW MEXICO	
	114-6401629	

WELL CONSTRUCTION LOG



Installation Date(s) 01/31/2014
Drilling Method AIR & MUD ROTARY
Drilling Contractor SCHARBOROUGH DRILLING
Development Technique(s) and Date(s)
RIG BAILER

Water Removed During Development ____ gals.
Static Depth to Water ____ ft. below Ground Level
Well Purpose MONITOR WELL

Remarks

DATE: 02/10/2013	CLIENT: CELERO ENERGY II, LLC	WELL NO.
TETRA TECH, INC. MIDLAND, TEXAS	PROJECT: ROCK QUEEN TRACT 11 TB	MW-11
	LOCATION: CHAVES COUNTY, NEW MEXICO	

114-6401629

APPENDIX C
LABORATORY ANALYTICAL RESULTS

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Greg Pope
Tetra Tech
1901 N. Big Spring St.
Midland, TX, 79705

Report Date: March 31, 2014

Work Order: 14030420

Project Location: Chavez Co., NM
Project Name: Celero/Rock Queen #11
Project Number: 114-6401629

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
356531	MW-1	water	2014-02-28	15:55	2014-03-03
356532	MW-2	water	2014-02-28	15:45	2014-03-03
356533	MW-3	water	2014-02-28	16:15	2014-03-03
356534	MW-4	water	2014-02-28	16:45	2014-03-03
356535	MW-5	water	2014-02-28	17:00	2014-03-03
356536	MW-6	water	2014-02-28	16:05	2014-03-03
356537	MW-7	water	2014-02-28	16:25	2014-03-03
356538	MW-8	water	2014-02-28	17:20	2014-03-03
356539	MW-9	water	2014-02-28	16:35	2014-03-03
356540	MW-10	water	2014-02-28	17:10	2014-03-03
356541	MW-11	water	2014-02-28	17:35	2014-03-03

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project Celero/Rock Queen #11 were received by TraceAnalysis, Inc. on 2014-03-03 and assigned to work order 14030420. Samples for work order 14030420 were received intact without headspace and at a temperature of -0.8 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Alkalinity	SM 2320B	93157	2014-03-07 at 10:43	110194	2014-03-10 at 13:32
Alkalinity	SM 2320B	93157	2014-03-07 at 10:43	110195	2014-03-11 at 13:36
BTEX	S 8021B	92992	2014-03-08 at 10:07	109973	2014-03-09 at 20:19
BTEX	S 8021B	93006	2014-03-10 at 10:18	109990	2014-03-10 at 11:28
BTEX	S 8021B	93022	2014-03-10 at 14:09	110031	2014-03-11 at 09:42
Ca, Dissolved	S 6010C	93203	2014-03-17 at 13:32	110300	2014-03-18 at 15:22
Ca, Dissolved	S 6010C	93247	2014-03-18 at 14:11	110343	2014-03-19 at 15:07
Chloride (IC)	E 300.0	93063	2014-03-06 at 13:11	110056	2014-03-06 at 13:11
Chloride (IC)	E 300.0	93149	2014-03-07 at 22:57	110167	2014-03-07 at 22:57
Chloride (IC)	E 300.0	93385	2014-03-21 at 17:12	110458	2014-03-21 at 17:12
Chloride (IC)	E 300.0	93603	2014-03-28 at 17:01	110708	2014-03-28 at 17:01
Hardness	S 6010C	93203	2014-03-17 at 13:32	110300	2014-03-18 at 15:22
Hardness	S 6010C	93247	2014-03-18 at 14:11	110343	2014-03-19 at 15:07
K, Dissolved	S 6010C	93203	2014-03-17 at 13:32	110300	2014-03-18 at 15:22
K, Dissolved	S 6010C	93247	2014-03-18 at 14:11	110343	2014-03-19 at 15:07
Mg, Dissolved	S 6010C	93203	2014-03-17 at 13:32	110300	2014-03-18 at 15:22
Mg, Dissolved	S 6010C	93247	2014-03-18 at 14:11	110343	2014-03-19 at 15:07
Na, Dissolved	S 6010C	93203	2014-03-17 at 13:32	110300	2014-03-18 at 15:22
Na, Dissolved	S 6010C	93247	2014-03-18 at 14:11	110343	2014-03-19 at 15:07
pH	SM 4500-H+	92947	2014-03-04 at 08:23	110113	2014-03-04 at 15:48
pH	SM 4500-H+	92947	2014-03-04 at 08:23	110114	2014-03-04 at 16:49
SO4 (IC)	E 300.0	93063	2014-03-06 at 13:11	110056	2014-03-06 at 13:11
SO4 (IC)	E 300.0	93149	2014-03-07 at 22:57	110167	2014-03-07 at 22:57
SO4 (IC)	E 300.0	93190	2014-03-12 at 23:05	110217	2014-03-12 at 23:05
SO4 (IC)	E 300.0	93206	2014-03-14 at 18:53	110230	2014-03-14 at 18:53
SO4 (IC)	E 300.0	93385	2014-03-21 at 17:12	110458	2014-03-21 at 17:12
TDS	SM 2540C	92983	2014-03-06 at 14:23	110086	2014-03-12 at 14:55
TDS	SM 2540C	92986	2014-03-07 at 10:02	110090	2014-03-10 at 15:33

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14030420 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 356531 - MW-1

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**130**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**130**	mg/L as CaCo3	1	20.0

Sample: 356531 - MW-1

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene	U	3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0970	mg/L	1	0.100	97	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0696	mg/L	1	0.100	70	70 - 130

Sample: 356531 - MW-1

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Dissolved Calcium		2	**2060**		mg/L	10	1.00
Dissolved Potassium		2	**121**		mg/L	1	1.00
Dissolved Magnesium		2	**480**		mg/L	1	1.00
Dissolved Sodium	Qr,Qs	2	**7020**		mg/L	10	1.00

Sample: 356531 - MW-1

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110458	Date Analyzed:	2014-03-21	Analyzed By:	JR
Prep Batch:	93385	Sample Preparation:	2014-03-21	Prepared By:	JR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride		1	**8400**		mg/L	500	2.50

Sample: 356531 - MW-1

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Hardness (by ICP)			**7120**		mg eq CaCO3/L	1	0.00

Sample: 356531 - MW-1

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110113	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
pH		3	**6.40**		s.u.	1	0.00

Sample: 356531 - MW-1

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110458	Date Analyzed:	2014-03-21	Analyzed By:	JR
Prep Batch:	93385	Sample Preparation:	2014-03-21	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**143**	mg/L	25	2.50

Sample: 356531 - MW-1

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110086	Date Analyzed:	2014-03-12	Analyzed By:	AR
Prep Batch:	92983	Sample Preparation:	2014-03-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**62700**	mg/L	50	2.50

Sample: 356532 - MW-2

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**58.0**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**58.0**	mg/L as CaCo3	1	20.0

Sample: 356532 - MW-2

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene	U	3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0985	mg/L	1	0.100	98	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0698	mg/L	1	0.100	70	70 - 130

Sample: 356532 - MW-2

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Calcium		2	**2760**	mg/L	10	1.00
Dissolved Potassium		2	**88.6**	mg/L	1	1.00
Dissolved Magnesium		2	**604**	mg/L	1	1.00
Dissolved Sodium	Qr, Qs	2	**8200**	mg/L	10	1.00

Sample: 356532 - MW-2

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110458	Date Analyzed:	2014-03-21	Analyzed By:	JR
Prep Batch:	93385	Sample Preparation:	2014-03-21	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**14500**	mg/L	500	2.50

Sample: 356532 - MW-2

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**9380**	mg eq CaCO3/L	1	0.00

Sample: 356532 - MW-2

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110113	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**6.53**	s.u.	1	0.00

Sample: 356532 - MW-2

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110458	Date Analyzed:	2014-03-21	Analyzed By:	JR
Prep Batch:	93385	Sample Preparation:	2014-03-21	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**402**	mg/L	50	2.50

Sample: 356532 - MW-2

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110086	Date Analyzed:	2014-03-12	Analyzed By:	AR
Prep Batch:	92983	Sample Preparation:	2014-03-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**56200**	mg/L	50	2.50

Sample: 356533 - MW-3

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**84.0**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**84.0**	mg/L as CaCo3	1	20.0

Sample: 356533 - MW-3

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene	U	3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0974	mg/L	1	0.100	97	70 - 130
4-Bromofluorobenzene (4-BFB)	[1] Qar	Qar	0.0691	mg/L	1	0.100	69	70 - 130

Sample: 356533 - MW-3

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Calcium		2	**1910**	mg/L	10	1.00
Dissolved Potassium		2	**20.2**	mg/L	1	1.00
Dissolved Magnesium		2	**365**	mg/L	1	1.00

continued ...

sample 356533 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Q1 Q8	2	**2210**	mg/L	10	1.00

Sample: 356533 - MW-3

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**7070**	mg/L	500	2.50

Sample: 356533 - MW-3

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**6270**	mg eq CaCO3/L	1	0.00

Sample: 356533 - MW-3

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110113	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**7.01**	s.u.	1	0.00

Sample: 356533 - MW-3

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**137**	mg/L	50	2.50

Sample: 356533 - MW-3

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110086	Date Analyzed:	2014-03-12	Analyzed By:	AR
Prep Batch:	92983	Sample Preparation:	2014-03-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**13800**	mg/L	20	2.50

Sample: 356534 - MW-4

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**139**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**139**	mg/L as CaCo3	1	20.0

Sample: 356534 - MW-4

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109973	Date Analyzed:	2014-03-09	Analyzed By:	AK
Prep Batch:	92992	Sample Preparation:	2014-03-08	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Benzene	U	3	<0.00100		mg/L	1	0.00100
Toluene	U	3	<0.00100		mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100		mg/L	1	0.00100
Xylene	U	3	<0.00300		mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0959	mg/L	1	0.100	96	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0701	mg/L	1	0.100	70	70 - 130

Sample: 356534 - MW-4

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Dissolved Calcium		2	**546**		mg/L	1	1.00
Dissolved Potassium		2	**314**		mg/L	1	1.00
Dissolved Magnesium		2	**355**		mg/L	1	1.00
Dissolved Sodium	Q1,Q2	2	**7950**		mg/L	10	1.00

Sample: 356534 - MW-4

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride		1	**14400**		mg/L	1000	2.50

Sample: 356534 - MW-4

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**2820**	mg eq CaCO3/L	1	0.00

Sample: 356534 - MW-4

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110113	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**7.17**	s.u.	1	0.00

Sample: 356534 - MW-4

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**339**	mg/L	50	2.50

Sample: 356534 - MW-4

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110086	Date Analyzed:	2014-03-12	Analyzed By:	AR
Prep Batch:	92983	Sample Preparation:	2014-03-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**24700**	mg/L	50	2.50

Sample: 356535 - MW-5

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**134**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**134**	mg/L as CaCo3	1	20.0

Sample: 356535 - MW-5

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene	U	3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0966	mg/L	1	0.100	97	70 - 130
4-Bromofluorobenzene (4-BFB)	2 Qar	Qar	0.0692	mg/L	1	0.100	69	70 - 130

Sample: 356535 - MW-5

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Calcium		2	**5080**	mg/L	100	1.00
Dissolved Potassium		2	**60.9**	mg/L	1	1.00
Dissolved Magnesium		2	**1100**	mg/L	100	1.00

continued ...

sample 356535 continued ...

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Dissolved Sodium	Qr,Qs	2	**13500**		mg/L	100	1.00

Sample: 356535 - MW-5

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride		1	**36100**		mg/L	1000	2.50

Sample: 356535 - MW-5

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Hardness (by ICP)			**17200**		mg eq CaCO3/L	100	0.00

Sample: 356535 - MW-5

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110113	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
pH		3	**6.35**		s.u.	1	0.00

Sample: 356535 - MW-5

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**455**	mg/L	100	2.50

Sample: 356535 - MW-5

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110086	Date Analyzed:	2014-03-12	Analyzed By:	AR
Prep Batch:	92983	Sample Preparation:	2014-03-06	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**61000**	mg/L	50	2.50

Sample: 356536 - MW-6

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**129**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**129**	mg/L as CaCo3	1	20.0

Sample: 356536 - MW-6

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Benzene	U	3	<0.00100		mg/L	1	0.00100
Toluene	U	3	<0.00100		mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100		mg/L	1	0.00100
Xylene	U	3	<0.00300		mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0982	mg/L	1	0.100	98	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0697	mg/L	1	0.100	70	70 - 130

Sample: 356536 - MW-6

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Dissolved Calcium		2	**2480**		mg/L	10	1.00
Dissolved Potassium		2	**15.1**		mg/L	1	1.00
Dissolved Magnesium		2	**491**		mg/L	1	1.00
Dissolved Sodium	Qr,Qs	2	**978**		mg/L	1	1.00

Sample: 356536 - MW-6

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride		1	**7880**		mg/L	500	2.50

Sample: 356536 - MW-6

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**8210**	mg eq CaCO3/L	1	0.00

Sample: 356536 - MW-6

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110114	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**6.68**	s.u.	1	0.00

Sample: 356536 - MW-6

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**156**	mg/L	50	2.50

Sample: 356536 - MW-6

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	Sample Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**14600**	mg/L	20	2.50

Sample: 356537 - MW-7

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**103**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**103**	mg/L as CaCo3	1	20.0

Sample: 356537 - MW-7

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene	U	3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0960	mg/L	1	0.100	96	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0712	mg/L	1	0.100	71	70 - 130

Sample: 356537 - MW-7

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Calcium		2	**544**	mg/L	1	1.00
Dissolved Potassium		2	**7.86**	mg/L	1	1.00
Dissolved Magnesium		2	**99.9**	mg/L	1	1.00

continued ...

sample 356537 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium	Qr, Qs	2	**113**	mg/L	1	1.00

Sample: 356537 - MW-7

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**1450**	mg/L	50	2.50

Sample: 356537 - MW-7

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110300	Date Analyzed:	2014-03-18	Analyzed By:	LM
Prep Batch:	93203	Sample Preparation:	2014-03-17	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**1770**	mg eq CaCO3/L	1	0.00

Sample: 356537 - MW-7

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110114	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**7.11**	s.u.	1	0.00

Sample: 356537 - MW-7

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110056	Date Analyzed:	2014-03-06	Analyzed By:	JR
Prep Batch:	93063	Sample Preparation:	2014-03-06	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**77.4**	mg/L	10	2.50

Sample: 356537 - MW-7

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	Sample Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**3030**	mg/L	5	2.50

Sample: 356538 - MW-8

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**241**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**241**	mg/L as CaCo3	1	20.0

Sample: 356538 - MW-8

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	110031	Date Analyzed:	2014-03-11	Analyzed By:	AK
Prep Batch:	93022	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Benzene		3	<0.00100		mg/L	1	0.00100
Toluene	U	3	<0.00100		mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100		mg/L	1	0.00100
Xylene	U	3	<0.00300		mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0885	mg/L	1	0.100	88	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0811	mg/L	1	0.100	81	70 - 130

Sample: 356538 - MW-8

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Dissolved Calcium		2	**4660**		mg/L	10	1.00
Dissolved Potassium		2	**54.0**		mg/L	1	1.00
Dissolved Magnesium		2	**1680**		mg/L	10	1.00
Dissolved Sodium		2	**14200**		mg/L	100	1.00

Sample: 356538 - MW-8

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110708	Date Analyzed:	2014-03-28	Analyzed By:	JR
Prep Batch:	93603	Sample Preparation:	2014-03-28	Prepared By:	JR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride		1	**27400**		mg/L	1000	2.50

Sample: 356538 - MW-8

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**18600**	mg eq CaCO3/L	1	0.00

Sample: 356538 - MW-8

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110114	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**6.36**	s.u.	1	0.00

Sample: 356538 - MW-8

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110217	Date Analyzed:	2014-03-12	Analyzed By:	JR
Prep Batch:	93190	Sample Preparation:	2014-03-12	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**536**	mg/L	50	2.50

Sample: 356538 - MW-8

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	Sample Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**54900**	mg/L	50	2.50

Sample: 356539 - MW-9

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**123**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**123**	mg/L as CaCo3	1	20.0

Sample: 356539 - MW-9

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene	U	3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0963	mg/L	1	0.100	96	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0711	mg/L	1	0.100	71	70 - 130

Sample: 356539 - MW-9

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Calcium		2	**82.9**	mg/L	1	1.00
Dissolved Potassium		2	**4.98**	mg/L	1	1.00
Dissolved Magnesium		2	**9.33**	mg/L	1	1.00

continued ...

sample 356539 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2	**58.0**	mg/L	1	1.00

Sample: 356539 - MW-9

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	Sample Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**143**	mg/L	5	2.50

Sample: 356539 - MW-9

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**245**	mg eq CaCO3/L	1	0.00

Sample: 356539 - MW-9

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110114	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**7.79**	s.u.	1	0.00

Sample: 356539 - MW-9

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	Sample Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**52.6**	mg/L	5	2.50

Sample: 356539 - MW-9

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	Sample Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**590**	mg/L	1	2.50

Sample: 356540 - MW-10

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110195	Date Analyzed:	2014-03-11	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**92.0**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**92.0**	mg/L as CaCo3	1	20.0

Sample: 356540 - MW-10

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Benzene		3	<0.00100		mg/L	1	0.00100
Toluene		3	**0.00170**		mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100		mg/L	1	0.00100
Xylene	U	3	<0.00300		mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0919	mg/L	1	0.100	92	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0704	mg/L	1	0.100	70	70 - 130

Sample: 356540 - MW-10

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Dissolved Calcium		2	**7290**		mg/L	10	1.00
Dissolved Potassium		2	**66.0**		mg/L	1	1.00
Dissolved Magnesium		2	**2300**		mg/L	10	1.00
Dissolved Sodium		2	**19000**		mg/L	100	1.00

Sample: 356540 - MW-10

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	Sample Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	Result	RL	Units	Dilution	RL
Chloride		1	**44100**		mg/L	1000	2.50

Sample: 356540 - MW-10

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**27700**	mg eq CaCO3/L	1	0.00

Sample: 356540 - MW-10

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110114	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**6.30**	s.u.	1	0.00

Sample: 356540 - MW-10

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110230	Date Analyzed:	2014-03-14	Analyzed By:	JR
Prep Batch:	93206	Sample Preparation:	2014-03-14	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**684**	mg/L	50	2.50

Sample: 356540 - MW-10

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	Sample Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**65100**	mg/L	50	2.50

Sample: 356541 - MW-11

Laboratory:	Midland				
Analysis:	Alkalinity	Analytical Method:	SM 2320B	Prep Method:	N/A
QC Batch:	110195	Date Analyzed:	2014-03-11	Analyzed By:	AR
Prep Batch:	93157	Sample Preparation:	2014-03-11	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hydroxide Alkalinity	U	3	<20.0	mg/L as CaCo3	1	20.0
Carbonate Alkalinity		3	**24.0**	mg/L as CaCo3	1	20.0
Bicarbonate Alkalinity		3	**159**	mg/L as CaCo3	1	20.0
Total Alkalinity		3	**183**	mg/L as CaCo3	1	20.0

Sample: 356541 - MW-11

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5030B
QC Batch:	110031	Date Analyzed:	2014-03-11	Analyzed By:	AK
Prep Batch:	93022	Sample Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	3	<0.00100	mg/L	1	0.00100
Toluene	U	3	<0.00100	mg/L	1	0.00100
Ethylbenzene	U	3	<0.00100	mg/L	1	0.00100
Xylene		3	<0.00300	mg/L	1	0.00300

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0952	mg/L	1	0.100	95	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0824	mg/L	1	0.100	82	70 - 130

Sample: 356541 - MW-11

Laboratory:	Lubbock				
Analysis:	Cations	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Calcium		2	**54.2**	mg/L	1	1.00
Dissolved Potassium		2	**11.8**	mg/L	1	1.00
Dissolved Magnesium		2	**8.12**	mg/L	1	1.00

continued ...

sample 356541 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2	**72.5**	mg/L	1	1.00

Sample: 356541 - MW-11

Laboratory:	El Paso				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	Sample Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**80.6**	mg/L	10	2.50

Sample: 356541 - MW-11

Laboratory:	Lubbock				
Analysis:	Hardness	Analytical Method:	S 6010C	Prep Method:	N/A
QC Batch:	110343	Date Analyzed:	2014-03-19	Analyzed By:	LM
Prep Batch:	93247	Sample Preparation:	2014-03-18	Prepared By:	PM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Hardness (by ICP)			**169**	mg eq CaCO3/L	1	0.00

Sample: 356541 - MW-11

Laboratory:	Midland				
Analysis:	pH	Analytical Method:	SM 4500-H+	Prep Method:	N/A
QC Batch:	110114	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	Sample Preparation:	2014-03-04	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		3	**7.93**	s.u.	1	0.00

Sample: 356541 - MW-11

Laboratory:	El Paso				
Analysis:	SO4 (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	Sample Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Sulfate		1	**65.6**	mg/L	10	2.50

Sample: 356541 - MW-11

Laboratory:	Midland				
Analysis:	TDS	Analytical Method:	SM 2540C	Prep Method:	N/A
QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	Sample Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		3	**529**	mg/L	1	2.50

Method Blanks

Method Blank (1) QC Batch: 109973

QC Batch:	109973	Date Analyzed:	2014-03-09	Analyzed By:	AK
Prep Batch:	92992	QC Preparation:	2014-03-08	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		a	<0.000238	mg/L	0.001
Toluene		a	<0.000181	mg/L	0.001
Ethylbenzene		a	<0.000247	mg/L	0.001
Xylene		a	<0.000189	mg/L	0.003

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0997	mg/L	1	0.100	100	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0717	mg/L	1	0.100	72	70 - 130

Method Blank (1) QC Batch: 109990

QC Batch:	109990	Date Analyzed:	2014-03-10	Analyzed By:	AK
Prep Batch:	93006	QC Preparation:	2014-03-10	Prepared By:	AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		a	<0.000238	mg/L	0.001
Toluene		a	<0.000181	mg/L	0.001
Ethylbenzene		a	<0.000247	mg/L	0.001
Xylene		a	<0.000189	mg/L	0.003

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0997	mg/L	1	0.100	100	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0728	mg/L	1	0.100	73	70 - 130

Method Blank (1) QC Batch: 110031

QC Batch: 110031 | Date Analyzed: 2014-03-11 | Analyzed By: AK
Prep Batch: 93022 | QC Preparation: 2014-03-10 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		3	<0.000238	mg/L	0.001
Toluene		3	<0.000181	mg/L	0.001
Ethylbenzene		3	<0.000247	mg/L	0.001
Xylene		3	<0.000189	mg/L	0.003

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0993	mg/L	1	0.100	99	70 - 130
4-Bromofluorobenzene (4-BFB)			0.0846	mg/L	1	0.100	85	70 - 130

Method Blank (1) QC Batch: 110056

QC Batch: 110056 | Date Analyzed: 2014-03-06 | Analyzed By: JR
Prep Batch: 93063 | QC Preparation: 2014-03-06 | Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	<0.678	mg/L	2.5

Method Blank (1) QC Batch: 110056

QC Batch: 110056 | Date Analyzed: 2014-03-06 | Analyzed By: JR
Prep Batch: 93063 | QC Preparation: 2014-03-06 | Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Sulfate		1	<0.0260	mg/L	2.5

Method Blank (1) QC Batch: 110086

QC Batch: 110086 | Date Analyzed: 2014-03-12 | Analyzed By: AR
Prep Batch: 92983 | QC Preparation: 2014-03-06 | Prepared By: AR

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		3	4.00	mg/L	2.5

Method Blank (1) QC Batch: 110090

QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	QC Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		3	5.00	mg/L	2.5

Method Blank (1) QC Batch: 110167

QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	QC Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	1.26	mg/L	2.5

Method Blank (1) QC Batch: 110167

QC Batch:	110167	Date Analyzed:	2014-03-07	Analyzed By:	JR
Prep Batch:	93149	QC Preparation:	2014-03-07	Prepared By:	JR

Parameter	Flag	Cert	MDL Result	Units	RL
Sulfate		1	<0.0260	mg/L	2.5

Method Blank (1) QC Batch: 110194

QC Batch:	110194	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	93157	QC Preparation:	2014-03-07	Prepared By:	AR

Parameter	Flag	Cert	MDL Result	Units	RL
Hydroxide Alkalinity		3	<20.0	mg/L as CaCo3	20
Carbonate Alkalinity		3	<20.0	mg/L as CaCo3	20
Bicarbonate Alkalinity		3	<20.0	mg/L as CaCo3	20
Total Alkalinity		3	<20.0	mg/L as CaCo3	20

Method Blank (1) QC Batch: 110195

QC Batch: 110195 Date Analyzed: 2014-03-11 Analyzed By: AR
Prep Batch: 93157 QC Preparation: 2014-03-07 Prepared By: AR

Parameter	Flag	Cert	MDL Result	Units	RL
Hydroxide Alkalinity		3	<20.0	mg/L as CaCo3	20
Carbonate Alkalinity		3	<20.0	mg/L as CaCo3	20
Bicarbonate Alkalinity		3	<20.0	mg/L as CaCo3	20
Total Alkalinity		3	<20.0	mg/L as CaCo3	20

Method Blank (1) QC Batch: 110217

QC Batch: 110217 Date Analyzed: 2014-03-12 Analyzed By: JR
Prep Batch: 93190 QC Preparation: 2014-03-12 Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Sulfate		1	<0.0260	mg/L	2.5

Method Blank (1) QC Batch: 110230

QC Batch: 110230 Date Analyzed: 2014-03-14 Analyzed By: JR
Prep Batch: 93206 QC Preparation: 2014-03-14 Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Sulfate		1	0.839	mg/L	2.5

Method Blank (1) QC Batch: 110300

QC Batch: 110300 | Date Analyzed: 2014-03-18 | Analyzed By: LM
Prep Batch: 93203 | QC Preparation: 2014-03-17 | Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Calcium		2	<0.0441	mg/L	1
Dissolved Potassium		2	<0.0443	mg/L	1
Dissolved Magnesium		2	<0.0296	mg/L	1
Dissolved Sodium		2	<0.172	mg/L	1

Method Blank (1) QC Batch: 110343

QC Batch: 110343 | Date Analyzed: 2014-03-19 | Analyzed By: LM
Prep Batch: 93247 | QC Preparation: 2014-03-18 | Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Calcium		2	<0.0441	mg/L	1
Dissolved Potassium		2	<0.0443	mg/L	1
Dissolved Magnesium		2	<0.0296	mg/L	1
Dissolved Sodium		2	<0.172	mg/L	1

Method Blank (1) QC Batch: 110458

QC Batch: 110458 | Date Analyzed: 2014-03-21 | Analyzed By: JR
Prep Batch: 93385 | QC Preparation: 2014-03-21 | Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	<0.678	mg/L	2.5

Method Blank (1) QC Batch: 110458

QC Batch: 110458 | Date Analyzed: 2014-03-21 | Analyzed By: JR
Prep Batch: 93385 | QC Preparation: 2014-03-21 | Prepared By: JR

Parameter	Flag	Cert	MDL Result	Units	RL
Sulfate		1	<0.0260	mg/L	2.5

Method Blank (1) QC Batch: 110708

QC Batch:	110708	Date Analyzed:	2014-03-28	Analyzed By:	JR
Prep Batch:	93603	QC Preparation:	2014-03-28	Prepared By:	JR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	1.33	mg/L	2.5

Duplicates (1) Duplicated Sample: 356535

QC Batch:	110086	Date Analyzed:	2014-03-12	Analyzed By:	AR
Prep Batch:	92983	QC Preparation:	2014-03-06	Prepared By:	AR

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	3	61000	61000	mg/L	50	0	10

Duplicates (1) Duplicated Sample: 356540

QC Batch:	110090	Date Analyzed:	2014-03-10	Analyzed By:	AR
Prep Batch:	92986	QC Preparation:	2014-03-07	Prepared By:	AR

Param	Flag	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	3	71500	65100	mg/L	50	9	10

Duplicates (1) Duplicated Sample: 356523

QC Batch:	110113	Date Analyzed:	2014-03-04	Analyzed By:	AR
Prep Batch:	92947	QC Preparation:	2014-03-04	Prepared By:	AR

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	J	7.35	7.42	s.u.	1	1	10

Duplicates (1) Duplicated Sample: 356539

QC Batch: 110114 | Date Analyzed: 2014-03-04 | Analyzed By: AR
Prep Batch: 92947 | QC Preparation: 2014-03-04 | Prepared By: AR

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	J	7.76	7.79	s.u.	1	0	10

Duplicates (1) Duplicated Sample: 356539

QC Batch: 110194 | Date Analyzed: 2014-03-10 | Analyzed By: AR
Prep Batch: 93157 | QC Preparation: 2014-03-07 | Prepared By: AR

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	J	<20.0	<20.0	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	J	<20.0	<20.0	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	J	116	123	mg/L as CaCo3	1	6	20
Total Alkalinity	J	116	123	mg/L as CaCo3	1	6	20

Duplicates (1) Duplicated Sample: 356738

QC Batch: 110195 | Date Analyzed: 2014-03-11 | Analyzed By: AR
Prep Batch: 93157 | QC Preparation: 2014-03-07 | Prepared By: AR

Param		Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Hydroxide Alkalinity	J	<20.0	<20.0	mg/L as CaCo3	1	0	20
Carbonate Alkalinity	J	<20.0	<20.0	mg/L as CaCo3	1	0	20
Bicarbonate Alkalinity	J	259	257	mg/L as CaCo3	1	1	20
Total Alkalinity	J	259	257	mg/L as CaCo3	1	1	20

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 109973 | Date Analyzed: 2014-03-09 | Analyzed By: AK
Prep Batch: 92992 | QC Preparation: 2014-03-08 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	0.107	mg/L	1	0.100	<0.000238	107	70 - 130
Toluene		3	0.107	mg/L	1	0.100	<0.000181	107	70 - 130
Ethylbenzene		3	0.102	mg/L	1	0.100	<0.000247	102	70 - 130
Xylene		3	0.312	mg/L	1	0.300	<0.000189	104	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	0.110	mg/L	1	0.100	<0.000238	110	70 - 130	3	20
Toluene		3	0.110	mg/L	1	0.100	<0.000181	110	70 - 130	3	20
Ethylbenzene		3	0.106	mg/L	1	0.100	<0.000247	106	70 - 130	4	20
Xylene		3	0.322	mg/L	1	0.300	<0.000189	107	70 - 130	3	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.101	0.102	mg/L	1	0.100	101	102	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0864	0.0869	mg/L	1	0.100	86	87	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 109990 | Date Analyzed: 2014-03-10 | Analyzed By: AK
Prep Batch: 93006 | QC Preparation: 2014-03-10 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	0.106	mg/L	1	0.100	<0.000238	106	70 - 130
Toluene		3	0.107	mg/L	1	0.100	<0.000181	107	70 - 130
Ethylbenzene		3	0.103	mg/L	1	0.100	<0.000247	103	70 - 130
Xylene		3	0.314	mg/L	1	0.300	<0.000189	105	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	0.110	mg/L	1	0.100	<0.000238	110	70 - 130	4	20
Toluene		3	0.111	mg/L	1	0.100	<0.000181	111	70 - 130	4	20
Ethylbenzene		3	0.106	mg/L	1	0.100	<0.000247	106	70 - 130	3	20
Xylene		3	0.322	mg/L	1	0.300	<0.000189	107	70 - 130	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.102	0.102	mg/L	1	0.100	102	102	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0878	0.0869	mg/L	1	0.100	88	87	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 110031 | Date Analyzed: 2014-03-11 | Analyzed By: AK
Prep Batch: 93022 | QC Preparation: 2014-03-10 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	0.104	mg/L	1	0.100	<0.000238	104	70 - 130
Toluene		3	0.108	mg/L	1	0.100	<0.000181	108	70 - 130
Ethylbenzene		3	0.109	mg/L	1	0.100	<0.000247	109	70 - 130
Xylene		3	0.333	mg/L	1	0.300	<0.000189	111	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	0.104	mg/L	1	0.100	<0.000238	104	70 - 130	0	20
Toluene		3	0.108	mg/L	1	0.100	<0.000181	108	70 - 130	0	20
Ethylbenzene		3	0.109	mg/L	1	0.100	<0.000247	109	70 - 130	0	20
Xylene		3	0.332	mg/L	1	0.300	<0.000189	111	70 - 130	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.101	0.101	mg/L	1	0.100	101	101	70 - 130
4-Bromofluorobenzene (4-BFB)	0.106	0.105	mg/L	1	0.100	106	105	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 110056 | Date Analyzed: 2014-03-06 | Analyzed By: JR
Prep Batch: 93063 | QC Preparation: 2014-03-06 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	24.4	mg/L	1	25.0	<0.678	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	24.3	mg/L	1	25.0	<0.678	97	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110056 | Date Analyzed: 2014-03-06 | Analyzed By: JR
Prep Batch: 93063 | QC Preparation: 2014-03-06 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	24.5	mg/L	1	25.0	<0.0260	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	24.4	mg/L	1	25.0	<0.0260	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110086 | Date Analyzed: 2014-03-12 | Analyzed By: AR
Prep Batch: 92983 | QC Preparation: 2014-03-06 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		3	1010	mg/L	1	1000	<2.50	101	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		3	1040	mg/L	1	1000	<2.50	104	90 - 110	3	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110090 | Date Analyzed: 2014-03-10 | Analyzed By: AR
Prep Batch: 92986 | QC Preparation: 2014-03-07 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		3	998	mg/L	1	1000	<2.50	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		3	941	mg/L	1	1000	<2.50	94	90 - 110	6	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110167 | Date Analyzed: 2014-03-07 | Analyzed By: JR
Prep Batch: 93149 | QC Preparation: 2014-03-07 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	26.3	mg/L	1	25.0	<0.678	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	26.4	mg/L	1	25.0	<0.678	106	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110167 | Date Analyzed: 2014-03-07 | Analyzed By: JR
Prep Batch: 93149 | QC Preparation: 2014-03-07 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	26.4	mg/L	1	25.0	<0.0260	106	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	26.6	mg/L	1	25.0	<0.0260	106	90 - 110	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110217 | Date Analyzed: 2014-03-12 | Analyzed By: JR
Prep Batch: 93190 | QC Preparation: 2014-03-12 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	26.3	mg/L	1	25.0	<0.0260	105	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	26.3	mg/L	1	25.0	<0.0260	105	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110230 | Date Analyzed: 2014-03-14 | Analyzed By: JR
Prep Batch: 93206 | QC Preparation: 2014-03-14 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	24.4	mg/L	1	25.0	<0.0260	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	24.3	mg/L	1	25.0	<0.0260	97	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110300 | Date Analyzed: 2014-03-18 | Analyzed By: LM
Prep Batch: 93203 | QC Preparation: 2014-03-17 | Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Calcium		2	52.9	mg/L	1	50.0	<0.0441	106	85 - 115
Dissolved Potassium		2	52.1	mg/L	1	50.0	<0.0443	104	85 - 115
Dissolved Magnesium		2	51.8	mg/L	1	50.0	<0.0296	104	85 - 115
Dissolved Sodium		2	52.2	mg/L	1	50.0	<0.172	104	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Calcium		2	53.5	mg/L	1	50.0	<0.0441	107	85 - 115	1	20
Dissolved Potassium		2	52.6	mg/L	1	50.0	<0.0443	105	85 - 115	1	20
Dissolved Magnesium		2	51.8	mg/L	1	50.0	<0.0296	104	85 - 115	0	20
Dissolved Sodium		2	53.5	mg/L	1	50.0	<0.172	107	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110343 | Date Analyzed: 2014-03-19 | Analyzed By: LM
Prep Batch: 93247 | QC Preparation: 2014-03-18 | Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Calcium		2	58.6	mg/L	1	52.5	<0.0441	112	85 - 115
Dissolved Potassium		2	55.8	mg/L	1	57.5	<0.0443	97	85 - 115
Dissolved Magnesium		2	58.7	mg/L	1	52.5	<0.0296	112	85 - 115
Dissolved Sodium		2	56.4	mg/L	1	52.5	<0.172	107	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Calcium		2	58.9	mg/L	1	52.5	<0.0441	112	85 - 115	0	20
Dissolved Potassium		2	56.4	mg/L	1	57.5	<0.0443	98	85 - 115	1	20
Dissolved Magnesium		2	57.8	mg/L	1	52.5	<0.0296	110	85 - 115	2	20
Dissolved Sodium		2	56.6	mg/L	1	52.5	<0.172	108	85 - 115	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110458 | Date Analyzed: 2014-03-21 | Analyzed By: JR
Prep Batch: 93385 | QC Preparation: 2014-03-21 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	24.3	mg/L	1	25.0	<0.678	97	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	24.4	mg/L	1	25.0	<0.678	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110458 | Date Analyzed: 2014-03-21 | Analyzed By: JR
Prep Batch: 93385 | QC Preparation: 2014-03-21 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	24.5	mg/L	1	25.0	<0.0260	98	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	24.4	mg/L	1	25.0	<0.0260	98	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 110708 | Date Analyzed: 2014-03-28 | Analyzed By: JR
Prep Batch: 93603 | QC Preparation: 2014-03-28 | Prepared By: JR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	25.0	mg/L	1	25.0	<0.678	100	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	25.1	mg/L	1	25.0	<0.678	100	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 356496

QC Batch: 109973 | Date Analyzed: 2014-03-09 | Analyzed By: AK
Prep Batch: 92992 | QC Preparation: 2014-03-08 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	0.116	mg/L	1	0.100	<0.000238	116	70 - 130
Toluene		3	0.116	mg/L	1	0.100	<0.000181	116	70 - 130
Ethylbenzene		3	0.111	mg/L	1	0.100	<0.000247	111	70 - 130
Xylene		3	0.337	mg/L	1	0.300	<0.000189	112	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	0.113	mg/L	1	0.100	<0.000238	113	70 - 130	3	20
Toluene		3	0.113	mg/L	1	0.100	<0.000181	113	70 - 130	3	20
Ethylbenzene		3	0.110	mg/L	1	0.100	<0.000247	110	70 - 130	1	20
Xylene		3	0.334	mg/L	1	0.300	<0.000189	111	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.102	0.102	mg/L	1	0.1	102	102	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0882	0.0893	mg/L	1	0.1	88	89	70 - 130

Matrix Spike (MS-1) Spiked Sample: 356537

QC Batch: 109990 | Date Analyzed: 2014-03-10 | Analyzed By: AK
Prep Batch: 93006 | QC Preparation: 2014-03-10 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	0.111	mg/L	1	0.100	<0.000238	111	70 - 130
Toluene		3	0.111	mg/L	1	0.100	<0.000181	111	70 - 130
Ethylbenzene		3	0.108	mg/L	1	0.100	<0.000247	108	70 - 130

continued ...

matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Xylene		3	0.327	mg/L	1	0.300	<0.000189	109	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	0.112	mg/L	1	0.100	<0.000238	112	70 - 130	1	20
Toluene		3	0.106	mg/L	1	0.100	<0.000181	106	70 - 130	5	20
Ethylbenzene		3	0.0890	mg/L	1	0.100	<0.000247	89	70 - 130	19	20
Xylene		3	0.269	mg/L	1	0.300	<0.000189	90	70 - 130	20	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.103	0.0929	mg/L	1	0.1	103	93	70 - 130
4-Bromofluorobenzene (4-BFB)	0.0884	0.0827	mg/L	1	0.1	88	83	70 - 130

Matrix Spike (MS-1) Spiked Sample: 356878

QC Batch: 110031 | Date Analyzed: 2014-03-11 | Analyzed By: AK
Prep Batch: 93022 | QC Preparation: 2014-03-10 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		3	0.105	mg/L	1	0.100	<0.000238	105	70 - 130
Toluene		3	0.108	mg/L	1	0.100	<0.000181	108	70 - 130
Ethylbenzene		3	0.106	mg/L	1	0.100	<0.000247	106	70 - 130
Xylene		3	0.324	mg/L	1	0.300	<0.000189	108	70 - 130

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		3	0.105	mg/L	1	0.100	<0.000238	105	70 - 130	0	20
Toluene		3	0.108	mg/L	1	0.100	<0.000181	108	70 - 130	0	20
Ethylbenzene		3	0.108	mg/L	1	0.100	<0.000247	108	70 - 130	2	20
Xylene		3	0.328	mg/L	1	0.300	<0.000189	109	70 - 130	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	0.0998	0.100	mg/L	1	0.1	100	100	70 - 130
4-Bromofluorobenzene (4-BFB)	0.103	0.103	mg/L	1	0.1	103	103	70 - 130

Matrix Spike (MS-1) Spiked Sample: 356537

QC Batch: 110056 | Date Analyzed: 2014-03-06 | Analyzed By: JR
Prep Batch: 93063 | QC Preparation: 2014-03-06 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	3020	mg/L	55.6	1390	1450	113	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	3030	mg/L	55.6	1390	1450	114	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 356537

QC Batch: 110056 | Date Analyzed: 2014-03-06 | Analyzed By: JR
Prep Batch: 93063 | QC Preparation: 2014-03-06 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	1450	mg/L	55.6	1390	77.4	99	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	1460	mg/L	55.6	1390	77.4	99	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 357168

QC Batch: 110167 | Date Analyzed: 2014-03-07 | Analyzed By: JR
Prep Batch: 93149 | QC Preparation: 2014-03-07 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	1960	mg/L	55.6	1390	429	110	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	1950	mg/L	55.6	1390	429	109	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 357168

QC Batch: 110167 | Date Analyzed: 2014-03-07 | Analyzed By: JR
Prep Batch: 93149 | QC Preparation: 2014-03-07 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	1710	mg/L	55.6	1390	207	108	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	1700	mg/L	55.6	1390	207	107	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 356462

QC Batch: 110217 | Date Analyzed: 2014-03-12 | Analyzed By: JR
Prep Batch: 93190 | QC Preparation: 2014-03-12 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	449	mg/L	11.1	278	136	112	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	449	mg/L	11.1	278	136	112	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 358042

QC Batch: 110230 | Date Analyzed: 2014-03-14 | Analyzed By: JR
Prep Batch: 93206 | QC Preparation: 2014-03-14 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	1620	mg/L	55.6	1390	220	101	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	1610	mg/L	55.6	1390	220	100	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 356497

QC Batch: 110300 | Date Analyzed: 2014-03-18 | Analyzed By: LM
Prep Batch: 93203 | QC Preparation: 2014-03-17 | Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Calcium		2	3230	mg/L	10	500	2709	104	75 - 125
Dissolved Potassium		2	762	mg/L	1	500	212.8	110	75 - 125
Dissolved Magnesium		2	1720	mg/L	10	500	1223	99	75 - 125
Dissolved Sodium	Q4	Q4	20700	mg/L	100	500	14520	1236	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Calcium		2	3180	mg/L	10	500	2709	94	75 - 125	2	20
Dissolved Potassium		2	793	mg/L	1	500	212.8	116	75 - 125	4	20
Dissolved Magnesium		2	1660	mg/L	10	500	1223	87	75 - 125	4	20
Dissolved Sodium	Q1 Q4	Q1 Q4	14000	mg/L	100	500	14520	-104	75 - 125	39	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 358016

QC Batch: 110343 | Date Analyzed: 2014-03-19 | Analyzed By: LM
Prep Batch: 93247 | QC Preparation: 2014-03-18 | Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Calcium		2	668	mg/L	1	525	64.61	115	75 - 125
Dissolved Potassium		2	584	mg/L	1	525	2.752	111	75 - 125

continued ...

matrix spikes continued ...

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Magnesium		2	613	mg/L	1	525	21.27	113	75 - 125
Dissolved Sodium		2	592	mg/L	1	525	23.07	108	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Calcium		2	665	mg/L	1	525	64.61	114	75 - 125	0	20
Dissolved Potassium		2	573	mg/L	1	525	2.752	109	75 - 125	2	20
Dissolved Magnesium		2	614	mg/L	1	525	21.27	113	75 - 125	0	20
Dissolved Sodium		2	601	mg/L	1	525	23.07	110	75 - 125	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 358612

QC Batch: 110458 | Date Analyzed: 2014-03-21 | Analyzed By: JR
Prep Batch: 93385 | QC Preparation: 2014-03-21 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	1860	mg/L	55.6	1390	419	104	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	1820	mg/L	55.6	1390	419	101	80 - 120	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 358612

QC Batch: 110458 | Date Analyzed: 2014-03-21 | Analyzed By: JR
Prep Batch: 93385 | QC Preparation: 2014-03-21 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Sulfate		1	1640	mg/L	55.6	1390	228	102	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Sulfate		1	1620	mg/L	55.6	1390	228	100	80 - 120	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 358855

QC Batch: 110708 | Date Analyzed: 2014-03-28 | Analyzed By: JR
Prep Batch: 93603 | QC Preparation: 2014-03-28 | Prepared By: JR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	1650	mg/L	55.6	1390	235	102	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	1650	mg/L	55.6	1390	235	102	80 - 120	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Calibration Standards

Standard (CCV-1)

QC Batch: 109973 | Date Analyzed: 2014-03-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.104	104	80 - 120	2014-03-09
Toluene		3	mg/L	0.100	0.109	109	80 - 120	2014-03-09
Ethylbenzene		3	mg/L	0.100	0.105	105	80 - 120	2014-03-09
Xylene		3	mg/L	0.300	0.320	107	80 - 120	2014-03-09

Standard (CCV-2)

QC Batch: 109973 | Date Analyzed: 2014-03-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.113	113	80 - 120	2014-03-09
Toluene		3	mg/L	0.100	0.113	113	80 - 120	2014-03-09
Ethylbenzene		3	mg/L	0.100	0.109	109	80 - 120	2014-03-09
Xylene		3	mg/L	0.300	0.330	110	80 - 120	2014-03-09

Standard (CCV-3)

QC Batch: 109973 | Date Analyzed: 2014-03-09 | Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.108	108	80 - 120	2014-03-09
Toluene		3	mg/L	0.100	0.108	108	80 - 120	2014-03-09
Ethylbenzene		3	mg/L	0.100	0.102	102	80 - 120	2014-03-09
Xylene		3	mg/L	0.300	0.312	104	80 - 120	2014-03-09

Standard (CCV-1)

QC Batch: 109990 Date Analyzed: 2014-03-10 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.105	105	80 - 120	2014-03-10
Toluene		3	mg/L	0.100	0.105	105	80 - 120	2014-03-10
Ethylbenzene		3	mg/L	0.100	0.102	102	80 - 120	2014-03-10
Xylene		3	mg/L	0.300	0.309	103	80 - 120	2014-03-10

Standard (CCV-2)

QC Batch: 109990 Date Analyzed: 2014-03-10 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.106	106	80 - 120	2014-03-10
Toluene		3	mg/L	0.100	0.106	106	80 - 120	2014-03-10
Ethylbenzene		3	mg/L	0.100	0.102	102	80 - 120	2014-03-10
Xylene		3	mg/L	0.300	0.310	103	80 - 120	2014-03-10

Standard (CCV-3)

QC Batch: 109990 Date Analyzed: 2014-03-10 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.104	104	80 - 120	2014-03-10
Toluene		3	mg/L	0.100	0.104	104	80 - 120	2014-03-10
Ethylbenzene		3	mg/L	0.100	0.100	100	80 - 120	2014-03-10
Xylene		3	mg/L	0.300	0.307	102	80 - 120	2014-03-10

Standard (CCV-1)

QC Batch: 110031 Date Analyzed: 2014-03-11 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.105	105	80 - 120	2014-03-11
Toluene		3	mg/L	0.100	0.108	108	80 - 120	2014-03-11
Ethylbenzene		3	mg/L	0.100	0.109	109	80 - 120	2014-03-11
Xylene		3	mg/L	0.300	0.332	111	80 - 120	2014-03-11

Standard (CCV-2)

QC Batch: 110031 Date Analyzed: 2014-03-11 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.0997	100	80 - 120	2014-03-11
Toluene		3	mg/L	0.100	0.102	102	80 - 120	2014-03-11
Ethylbenzene		3	mg/L	0.100	0.101	101	80 - 120	2014-03-11
Xylene		3	mg/L	0.300	0.306	102	80 - 120	2014-03-11

Standard (CCV-3)

QC Batch: 110031 Date Analyzed: 2014-03-11 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		3	mg/L	0.100	0.102	102	80 - 120	2014-03-11
Toluene		3	mg/L	0.100	0.104	104	80 - 120	2014-03-11
Ethylbenzene		3	mg/L	0.100	0.104	104	80 - 120	2014-03-11
Xylene		3	mg/L	0.300	0.314	105	80 - 120	2014-03-11

Standard (CCV-1)

QC Batch: 110056 Date Analyzed: 2014-03-06 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.6	98	90 - 110	2014-03-06

Standard (CCV-1)

QC Batch: 110056 Date Analyzed: 2014-03-06 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.7	99	90 - 110	2014-03-06

Standard (CCV-2)

QC Batch: 110056 Date Analyzed: 2014-03-06 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.7	99	90 - 110	2014-03-06

Standard (CCV-2)

QC Batch: 110056 Date Analyzed: 2014-03-06 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-06

Standard (CCV-3)

QC Batch: 110056 Date Analyzed: 2014-03-06 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.6	98	90 - 110	2014-03-06

Standard (CCV-3)

QC Batch: 110056 Date Analyzed: 2014-03-06 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-06

Standard (ICV-1)

QC Batch: 110113 Date Analyzed: 2014-03-04 Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		3	s.u.	7.00	6.99	100	98 - 102	2014-03-04

Standard (CCV-1)

QC Batch: 110113 Date Analyzed: 2014-03-04 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		3	s.u.	7.00	6.93	99	98 - 102	2014-03-04

Standard (ICV-1)

QC Batch: 110114 Date Analyzed: 2014-03-04 Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		3	s.u.	7.00	6.91	99	98 - 102	2014-03-04

Standard (CCV-1)

QC Batch: 110114 Date Analyzed: 2014-03-04 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		3	s.u.	7.00	7.10	101	98 - 102	2014-03-04

Standard (CCV-1)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.9	100	90 - 110	2014-03-07

Standard (CCV-1)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-07

Standard (CCV-2)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.8	99	90 - 110	2014-03-07

Standard (CCV-2)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-07

Standard (CCV-3)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.7	99	90 - 110	2014-03-07

Standard (CCV-3)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-07

Standard (CCV-4)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.9	100	90 - 110	2014-03-07

Standard (CCV-4)

QC Batch: 110167 Date Analyzed: 2014-03-07 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-07

Standard (ICV-1)

QC Batch: 110194 Date Analyzed: 2014-03-10 Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		3	mg/L as CaCo3	0.00	28.0		-	2014-03-10
Carbonate Alkalinity		3	mg/L as CaCo3	0.00	230		-	2014-03-10
Bicarbonate Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-10
Total Alkalinity		3	mg/L as CaCo3	250	258	103	90 - 110	2014-03-10

Standard (CCV-1)

QC Batch: 110194 Date Analyzed: 2014-03-10 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-10
Carbonate Alkalinity		3	mg/L as CaCo3	0.00	252		-	2014-03-10
Bicarbonate Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-10
Total Alkalinity		3	mg/L as CaCo3	250	256	102	90 - 110	2014-03-10

Standard (ICV-1)

QC Batch: 110195 Date Analyzed: 2014-03-11 Analyzed By: AR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-11
Carbonate Alkalinity		3	mg/L as CaCo3	0.00	250		-	2014-03-11
Bicarbonate Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-11
Total Alkalinity		3	mg/L as CaCo3	250	258	103	90 - 110	2014-03-11

Standard (CCV-1)

QC Batch: 110195 Date Analyzed: 2014-03-11 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Hydroxide Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-11
Carbonate Alkalinity		3	mg/L as CaCo3	0.00	252		-	2014-03-11
Bicarbonate Alkalinity		3	mg/L as CaCo3	0.00	<20.0		-	2014-03-11
Total Alkalinity		3	mg/L as CaCo3	250	253	101	90 - 110	2014-03-11

Standard (CCV-1)

QC Batch: 110217 Date Analyzed: 2014-03-12 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-12

Standard (CCV-2)

QC Batch: 110217 Date Analyzed: 2014-03-12 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-12

Standard (CCV-3)

QC Batch: 110217 Date Analyzed: 2014-03-12 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-12

Standard (CCV-1)

QC Batch: 110230 Date Analyzed: 2014-03-14 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-14

Standard (CCV-2)

QC Batch: 110230 Date Analyzed: 2014-03-14 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-14

Standard (CCV-3)

QC Batch: 110230 Date Analyzed: 2014-03-14 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.8	99	90 - 110	2014-03-14

Standard (CCV-4)

QC Batch: 110230 Date Analyzed: 2014-03-14 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-14

Standard (ICV-1)

QC Batch: 110300 Date Analyzed: 2014-03-18 Analyzed By: LM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		2	mg/L	51.0	52.3	102	90 - 110	2014-03-18
Dissolved Potassium		2	mg/L	55.0	55.9	102	90 - 110	2014-03-18
Dissolved Magnesium		2	mg/L	51.0	52.1	102	90 - 110	2014-03-18
Dissolved Sodium		2	mg/L	51.0	51.4	101	90 - 110	2014-03-18

Standard (CCV-1)

QC Batch: 110300 Date Analyzed: 2014-03-18 Analyzed By: LM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		2	mg/L	51.0	45.9	90	90 - 110	2014-03-18
Dissolved Potassium		2	mg/L	55.0	50.8	92	90 - 110	2014-03-18
Dissolved Magnesium		2	mg/L	51.0	46.6	91	90 - 110	2014-03-18
Dissolved Sodium		2	mg/L	51.0	47.6	93	90 - 110	2014-03-18

Standard (ICV-1)

QC Batch: 110343 Date Analyzed: 2014-03-19 Analyzed By: LM

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		2	mg/L	51.0	52.3	102	90 - 110	2014-03-19
Dissolved Potassium		2	mg/L	55.0	55.8	101	90 - 110	2014-03-19
Dissolved Magnesium		2	mg/L	51.0	52.4	103	90 - 110	2014-03-19
Dissolved Sodium		2	mg/L	51.0	51.7	101	90 - 110	2014-03-19

Standard (CCV-1)

QC Batch: 110343 Date Analyzed: 2014-03-19 Analyzed By: LM

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Calcium		2	mg/L	51.0	54.1	106	90 - 110	2014-03-19

continued ...

standard continued ...

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Potassium		2	mg/L	55.0	57.4	104	90 - 110	2014-03-19
Dissolved Magnesium		2	mg/L	51.0	54.4	107	90 - 110	2014-03-19
Dissolved Sodium		2	mg/L	51.0	53.3	104	90 - 110	2014-03-19

Standard (CCV-1)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.7	99	90 - 110	2014-03-21

Standard (CCV-1)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-21

Standard (CCV-2)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.7	99	90 - 110	2014-03-21

Standard (CCV-2)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-21

Standard (CCV-3)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.8	99	90 - 110	2014-03-21

Standard (CCV-3)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	24.9	100	90 - 110	2014-03-21

Standard (CCV-4)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	24.8	99	90 - 110	2014-03-21

Standard (CCV-4)

QC Batch: 110458 Date Analyzed: 2014-03-21 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Sulfate		1	mg/L	25.0	25.0	100	90 - 110	2014-03-21

Standard (CCV-1)

QC Batch: 110708 Date Analyzed: 2014-03-28 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	23.5	94	90 - 110	2014-03-28

Standard (CCV-2)

QC Batch: 110708 Date Analyzed: 2014-03-28 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	23.6	94	90 - 110	2014-03-28

Standard (CCV-3)

QC Batch: 110708 Date Analyzed: 2014-03-28 Analyzed By: JR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/L	25.0	23.6	94	90 - 110	2014-03-28

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704221-12-3	El Paso
2	NELAP	T104704219-13-9	Lubbock
3	NELAP	T104704392-13-7	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Result Comments

1 Surrogate fails due to matrix effect - confirmed by reanalysis.
2 Surrogate fails due to matrix effect - confirmed by reanalysis.

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

1403042O

Analysis Request of Chain of Custody Record

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

PAGE: 1 OF: 2

CLIENT NAME: Celero Energy
SITE MANAGER: Greg Pope
PROJECT NO.: 114-6401629
PROJECT NAME: Rock Queen #11

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS, SO4, ALK, HARDNESS				
356531	2/20/14	1555	W		X	MW-1	6		X		X		X											X				X				7
532		1545			X	MW-2																										7
533		1615			X	MW-3																										7
534		1645			X	MW-4																										7
535		1700			X	MW-5																										7
536		1605			X	MW-6																										7
537		1625			X	MW-7																										7
538		1720			X	MW-8																										7
539		1635			X	MW-9																										7
540	↓	1710	↓		X	MW-10	↓		↓		↓		↓											↓				↓				7

RELINQUISHED BY: (Signature) Date: 3/3/14 Time: 1000
RECEIVED BY: (Signature) Date: 3/4/14 Time: 1000
RELINQUISHED BY: (Signature) Date: 03/03/14 Time: 1630
RECEIVED BY: (Signature) Date: 03/05/14 Time: 1600
RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) CF/TH Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS AIRBILL #: OTHER:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE: DATE: TIME:
RECEIVED BY: (Signature)

TETRA TECH CONTACT PERSON: GREG POPE
Results by: STD
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: -0.8
REMARKS: MW-7 one VOA received unpreserved Mealand = TDS/BTEX/pH/alk

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Residual - Cations/Hardness CF - CF/SO4

140330420

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: Celero Energy

SITE MANAGER: Greg Pope

PROJECT NO.: 114-6401629

PROJECT NAME: Rock Queen #11

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS, SO4, ALK, HARDNESS
5H1	2/20/14	1735	W		X	MW-11	6		X		X		X											X				X
					X DUP	MW-12 TH																						

RELINQUISHED BY: (Signature) Date: 3/5/14 Time: 1700
RECEIVED BY: (Signature) Date: 03/03/14 Time: 1500

RELINQUISHED BY: (Signature) Date: 03/03/14 Time: 1621
RECEIVED BY: (Signature) Date: 3/4/14 Time: 16:20

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

SAMPLED BY: (Print & Initial) CF/TH Date: Time:

SAMPLE SHIPPED BY: (Circle)
FEDEX BUS
HAND DELIVERED UPS
AIRBILL #:
OTHER:

TETRA TECH CONTACT PERSON: GREG POPE

Results by: STD

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: +0.8

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

1403042O

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 2

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

CLIENT NAME: Celero Energy
SITE MANAGER: Greg Pope
PROJECT NO.: 114-6401629
PROJECT NAME: Rock Queen #11

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/508	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS, SO4, ALK, HARDNESS				
356531	2/20/14	1555	W		X	MW-1	6		X		X		X											X				X				7
532		1545			X	MW-2																										7
533		1615			X	MW-3																										7
534		1645			X	MW-4																										7
535		1700			X	MW-5																										7
536		1605			X	MW-6																										7
537		1625			X	MW-7																										7
538		1720			X	MW-8																										7
539		1635			X	MW-9																										7
540		1710			X	MW-10																										7

RELINQUISHED BY: (Signature) Date: 3/3/14 Time: 1500
RECEIVED BY: (Signature) Date: 3/4/14 Time: 1000
RELINQUISHED BY: (Signature) Date: 03/03/14 Time: 3/4/14 1620
RECEIVED BY: (Signature) Date: 03/05/14 Time: 1600
RELINQUISHED BY: (Signature) Date: 3/4/14 Time: 15:30
RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) CF/TH Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS
AIRBILL #: 15 : 2075 1243
OTHER:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) TA LUBBOCK
DATE: 3/05/14 TIME:

TETRA TECH CONTACT PERSON: GREG POPE
Results by: STD
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: -0.8 2.7/2.5
REMARKS: MW-7 one VOA received unpreserved lid Midland = TDS/BTEX/pH/alk Lubbock - Cations/Hardness SP-Ca/SO4 AT

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

14030420

Analysis Request of Chain of Custody Record

PAGE: 2 OF: 2

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: Celero Energy
SITE MANAGER: Greg Pope
PROJECT NO.: 114-6401629
PROJECT NAME: Rock Queen #11

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS, SO4, ALK, HARDNESS			
5/11	2/20/14	1735	W		X	MW-11	6		X		X		X											X				X			
					X TDH	~~MW-12~~ TH																										

8

RELINQUISHED BY: (Signature) Date: 3/5/14 Time: 1700
RECEIVED BY: (Signature) Date: 03/03/14 Time: 1500
RELINQUISHED BY: (Signature) Date: 03/03/14 Time: 1621
RECEIVED BY: (Signature) Date: 3/5/14 Time: 16:20
RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

SAMPLED BY: (Print & Initial) CF/TH Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX HAND DELIVERED BUS UPS
AIRBILL: 790 951 243
OTHER:

RECEIVING LABORATORY:
ADDRESS:
CITY: STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) TH
DATE: 3/5/14 TIME: 9:00

TETRA TECH CONTACT PERSON: GREG POPE
Results by: STD
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: -0.8 2.1/2.5
REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Cation-Anion Balance Sheet

DATE: 3/31/2014

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate-N ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
356531	2060	480	7020	121	130.00	143	8400				62700	
356532	2760	604	8200	88.6	58.00	402	14500				56200	
356533	1910	365	2210	20.2	84.00	137	7070				13800	
356534	546	355	7950	314	139.00	339	14400				24700	
356535	5080	1100	13500	60.9	134.00	455	36100				61000	
356536	2480	491	978	15.1	129.00	156	7880				14600	

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate-N in meq/L	Fluoride in meq/L	Bromide in meq/L	Total Cations in meq/L	Total Anions in meq/L	% Difference*
356531	102.79	39.50	305.37	3.10	2.60	2.98	236.96	0.00	0.00	0.00	450.76	242.54	30.03277486
356532	137.72	49.70	356.70	2.27	1.16	8.37	409.05	0.00	0.00	0.00	546.39	418.57	13.24591936
356533	95.31	30.04	96.14	0.52	1.68	2.85	199.44	0.00	0.00	0.00	222.00	203.98	4.230197774
356534	27.25	29.21	345.83	8.03	2.78	7.06	406.22	0.00	0.00	0.00	410.32	416.06	0.695385626
356535	253.49	90.52	587.25	1.56	2.68	9.47	1018.38	0.00	0.00	0.00	932.82	1030.53	4.97695941
356536	123.75	40.40	42.54	0.39	2.58	3.25	222.29	0.00	0.00	0.00	207.09	228.12	4.833793086

	EC/Cation	EC/Anion				
356531	45075.838	24254.126	range	0	to	0
356532	54639.3548	41857.464	range	0	to	0
356533	22199.6566	20397.704	range	0	to	0
356534	41031.547	41606.198	range	0	to	0
356535	93281.8822	103053.41	range	0	to	0
356536	20708.5648	22812.272	range	0	to	0

TDS/EC	TDS/Cat		TDS/Anion	
#DIV/0!	1.39		2.59	needs to be 0.55-0.77
#DIV/0!	1.03		1.34	needs to be 0.55-0.77
#DIV/0!	0.82		0.68	needs to be 0.55-0.77
#DIV/0!	0.60		0.59	needs to be 0.55-0.77
#DIV/0!	0.65		0.59	needs to be 0.55-0.77
#DIV/0!	0.71		0.64	needs to be 0.55-0.77

Cation-Anion Balance Sheet

DATE: 3/31/2014

Sample #	Calcium ppm	Magnesium ppm	Sodium ppm	Potassium ppm	Alkalinity ppm	Sulfate ppm	Chloride ppm	Nitrate-N ppm	Fluoride ppm	Bromide ppm	TDS ppm	EC µMHOs/cm
356537	544	99.9	113	7.86	103.00	77.4	1450				3030	
356538	4660	1680	14200	54	241.00	536	27400				54900	
356539	82.9	9.33	58	4.98	123.00	52.6	143				590	
356540	7290	2300	19000	66	92.00	684	44100				65100	
356541	54.2	8.12	72.5	11.8	183.00	65.6	80.6				529	

Sample #	Calcium in meq/L	Magnesium in meq/L	Sodium in meq/L	Potassium in meq/L	Alkalinity in meq/L	Sulfate in meq/L	Chloride in meq/L	Nitrate-N in meq/L	Fluoride in meq/L	Bromide in meq/L	Total Cations in meq/L	Total Anions in meq/L	% Difference*
356537	27.15	8.22	4.92	0.20	2.06	1.61	40.90	0.00	0.00	0.00	40.48	44.58	4.812004747
356538	232.53	138.25	617.70	1.38	4.82	11.16	772.95	0.00	0.00	0.00	989.86	788.93	11.29578633
356539	4.14	0.77	2.52	0.13	2.46	1.10	4.03	0.00	0.00	0.00	7.55	7.59	0.226478083
356540	363.77	189.27	826.50	1.69	1.84	14.24	1244.06	0.00	0.00	0.00	1381.23	1260.14	4.5841546
356541	2.70	0.67	3.15	0.30	3.66	1.37	2.27	0.00	0.00	0.00	6.83	7.30	3.334887989

	EC/Cation	EC/Anion				
356537	4048.29298	4457.5968	range	0	to	0
356538	98986.252	78893.352	range	0	to	0
356539	755.48641	758.9162	range	0	to	0
356540	138122.628	126014.188	range	0	to	0
356541	682.83688	729.9518	range	0	to	0

TDS/EC	TDS/Cat		TDS/Anion	
#DIV/0!	0.75		0.68	needs to be 0.55-0.77
#DIV/0!	0.55		0.70	needs to be 0.55-0.77
#DIV/0!	0.78		0.78	needs to be 0.55-0.77
#DIV/0!	0.47		0.52	needs to be 0.55-0.77
#DIV/0!	0.77		0.72	needs to be 0.55-0.77

APPENDIX D
SLUG TEST DATA

Data Set: H:\WinSitu Data\Celero Caprock Slug Test Data\Exported Data\RQ Tract 11 MW-7\RQTract11MW-7slu
Title: Falling-Head slug test
Date: 04/28/14
Time: 14:54:02

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero Energy
Location: RQTracc11
Test Date: 03/28/14
Test Well: MW-7slugin

AQUIFER DATA

Saturated Thickness: 19.8 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: New Well

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.517 ft
Static Water Column Height: 15.77 ft
Casing Radius: 0.083 ft
Well Radius: 0.281 ft
Well Skin Radius: 1. ft
Screen Length: 19.8 ft
Total Well Penetration Depth: 19.8 ft

No. of Observations: 59

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
60.	15.77	1860.	15.85
120.	16.29	1920.	15.85
180.	16.27	1980.	15.84
240.	16.18	2040.	15.84
300.	16.09	2100.	15.85
360.	16.04	2160.	15.85
420.	15.98	2220.	15.84
480.	15.95	2280.	15.85
540.	15.93	2340.	15.84
600.	15.92	2400.	15.85
660.	15.9	2460.	15.83
720.	15.88	2520.	15.84
780.	15.88	2580.	15.86
840.	15.87	2640.	15.85
900.	15.87	2700.	15.85
960.	15.86	2760.	15.84
1020.	15.85	2820.	15.85
1080.	15.86	2880.	15.83
1140.	15.89	2940.	15.85
1200.	15.85	3000.	15.83
1260.	15.85	3060.	15.84
1320.	15.84	3120.	15.85
1380.	15.85	3180.	15.84
1440.	15.84	3240.	15.85
1500.	15.84	3300.	15.85
1560.	15.85	3360.	15.85
1620.	15.84	3420.	15.84
1680.	15.85	3480.	15.84
1740.	15.84	3540.	15.86
1800.	15.84		

SOLUTION

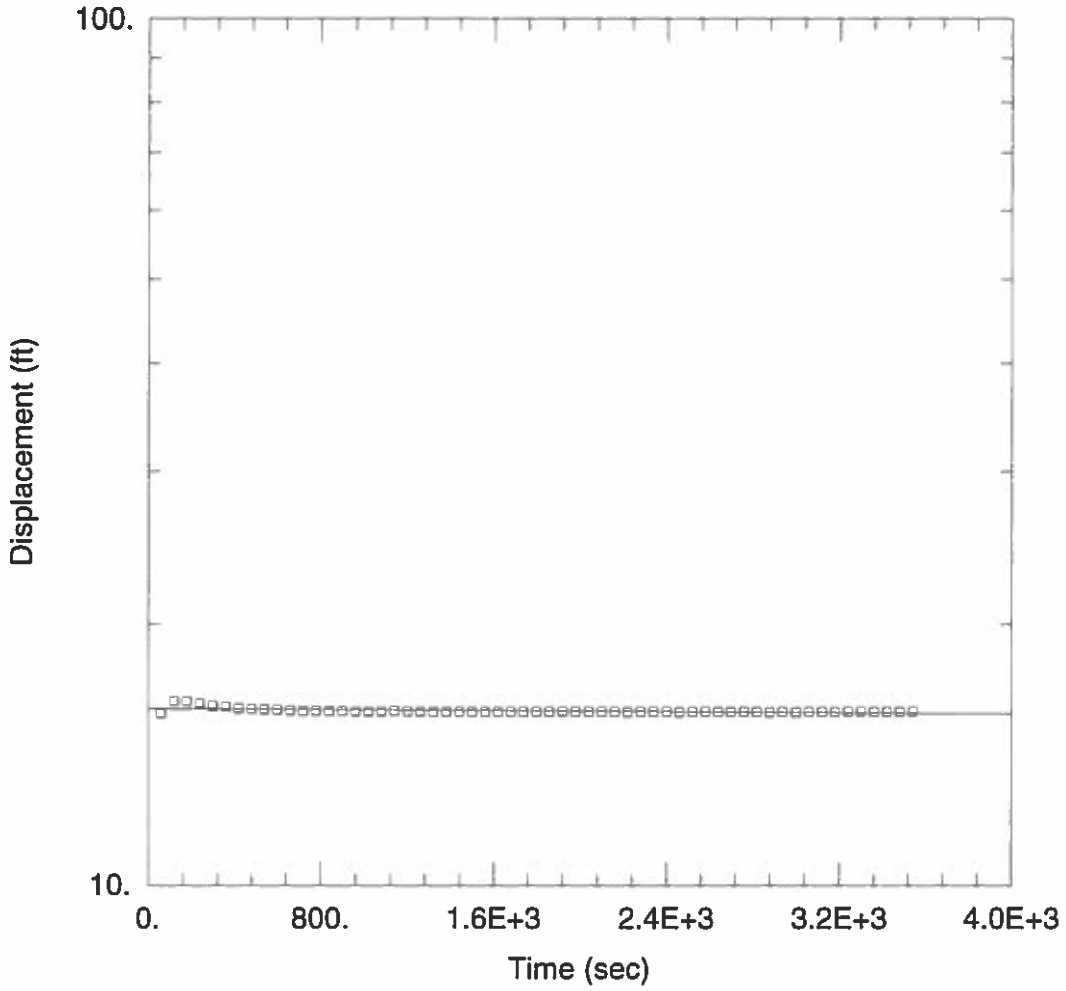
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 0.

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	2.133E-5	m/day
y0	15.98	ft

K = 2.469E-8 cm/sec
T = K*b = 0.0001287 m²/day (1.49E-5 sq. cm/sec)



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-7slugin.aqt
Date: 04/28/14 Time: 14:54:17

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero Energy
Location: RQTracc11
Test Well: MW-7slugin
Test Date: 03/28/14

AQUIFER DATA

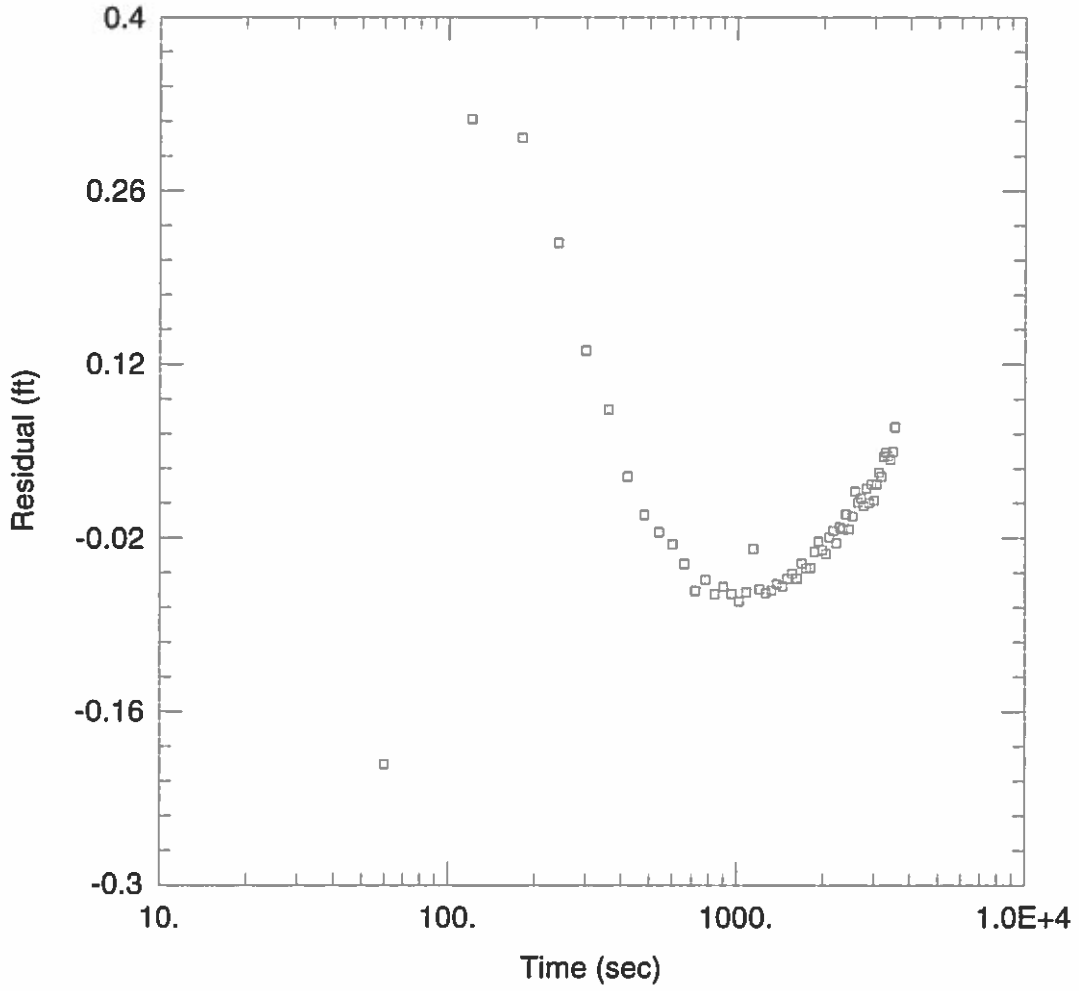
Saturated Thickness: 19.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.517 ft Static Water Column Height: 15.77 ft
Total Well Penetration Depth: 19.8 ft Screen Length: 19.8 ft
Casing Radius: 0.083 ft Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 2.133E-5 m/day y0 = 15.98 ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-7slugin.aqt
Date: 04/28/14 Time: 14:54:24

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero Energy
Location: RQTracc11
Test Well: MW-7slugin
Test Date: 03/28/14

AQUIFER DATA

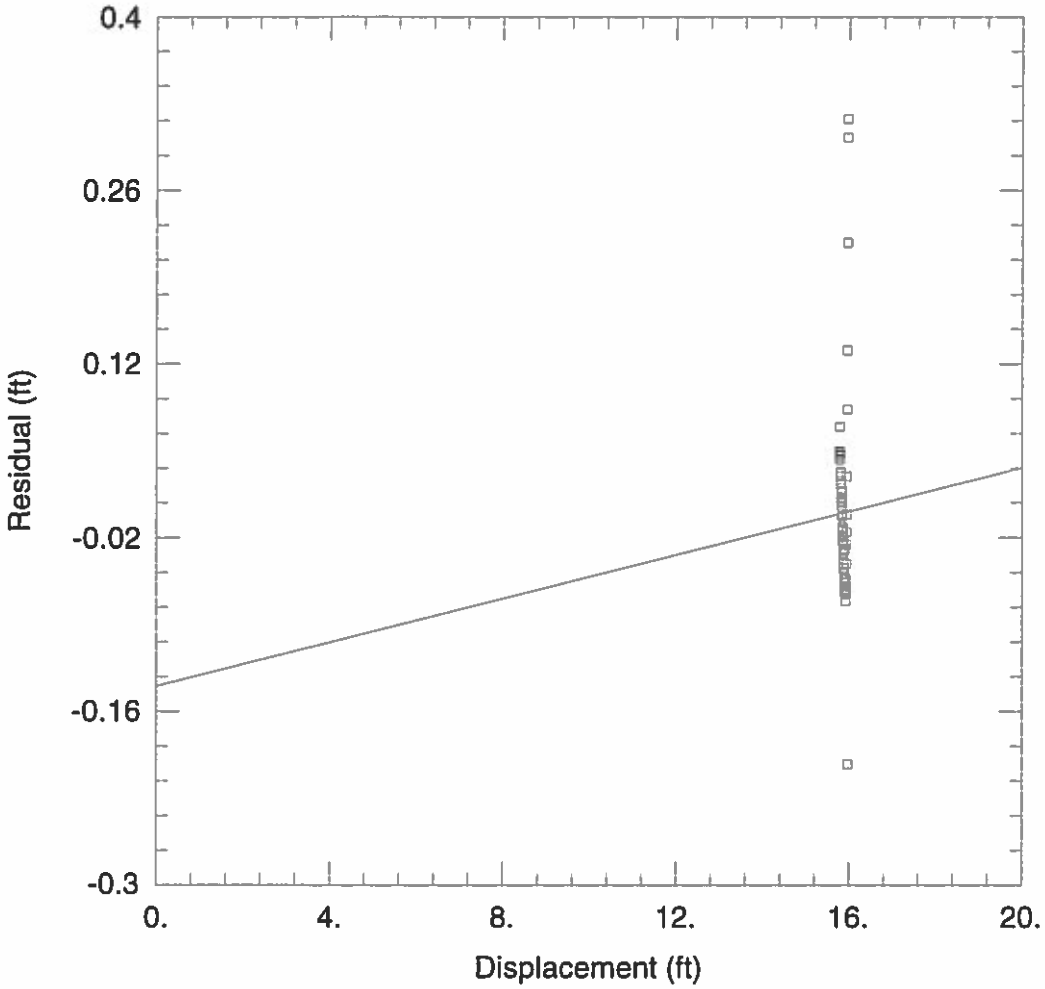
Saturated Thickness: 19.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.517 ft
Total Well Penetration Depth: 19.8 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.77 ft
Screen Length: 19.8 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-7slugin.aqt
Date: 04/28/14 Time: 14:54:31

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero Energy
Location: RQTracc11
Test Well: MW-7slugin
Test Date: 03/28/14

AQUIFER DATA

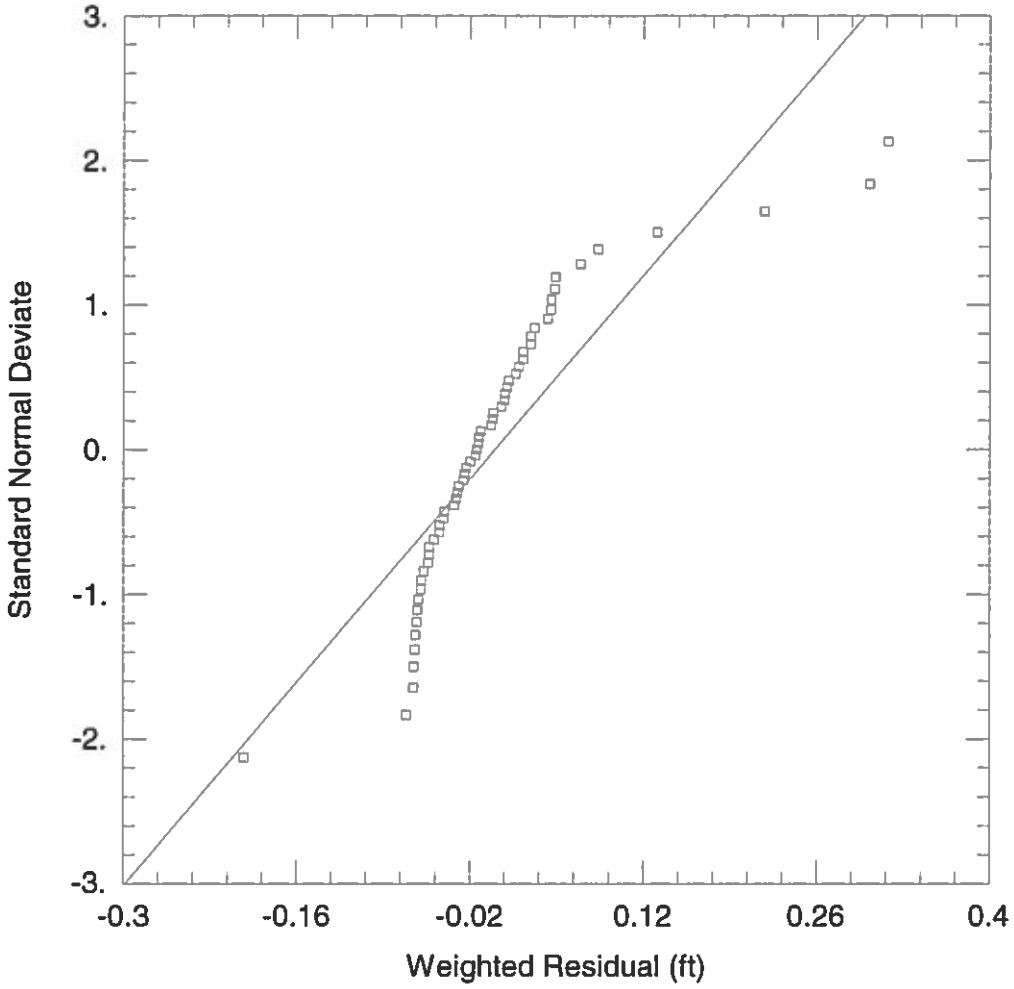
Saturated Thickness: 19.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.517 ft
Total Well Penetration Depth: 19.8 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.77 ft
Screen Length: 19.8 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-7slugin.aqt
Date: 04/28/14 Time: 14:54:38

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero Energy
Location: RQTracc11
Test Well: MW-7slugin
Test Date: 03/28/14

AQUIFER DATA

Saturated Thickness: 19.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.517 ft
Total Well Penetration Depth: 19.8 ft
Casing Radius: 0.083 ft
Static Water Column Height: 15.77 ft
Screen Length: 19.8 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft

Data Set: H:\WinSitu Data\Celero Caprock Slug Test Data\Exported Data\RQ Tract 11 MW 8\RQTract11MW-8Sl
Title: Falling-Head Slug Test
Date: 05/13/14
Time: 08:48:34

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Date: 03/28/14
Test Well: MW-8Slugin

AQUIFER DATA

Saturated Thickness: 16.55 ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: New Well

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.392 ft
Static Water Column Height: 11.29 ft
Casing Radius: 0.083 ft
Well Radius: 0.281 ft
Well Skin Radius: 1. ft
Screen Length: 16.55 ft
Total Well Penetration Depth: 16.55 ft

No. of Observations: 42

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
60.	11.28	1320.	11.3
120.	11.28	1380.	11.3
180.	11.28	1440.	11.3
240.	11.69	1500.	11.3
300.	11.39	1560.	11.31
360.	11.34	1620.	11.3
420.	11.32	1680.	11.3
480.	11.31	1740.	11.31
540.	11.31	1800.	11.3
600.	11.31	1860.	11.31
660.	11.31	1920.	11.31
720.	11.3	1980.	11.3
780.	11.29	2040.	11.31
840.	11.3	2100.	11.31
900.	11.3	2160.	11.3
960.	11.29	2220.	11.31
1020.	11.29	2280.	11.3
1080.	11.31	2340.	11.3
1140.	11.3	2400.	11.31
1200.	11.3	2460.	11.31
1260.	11.3	2520.	11.3

SOLUTION

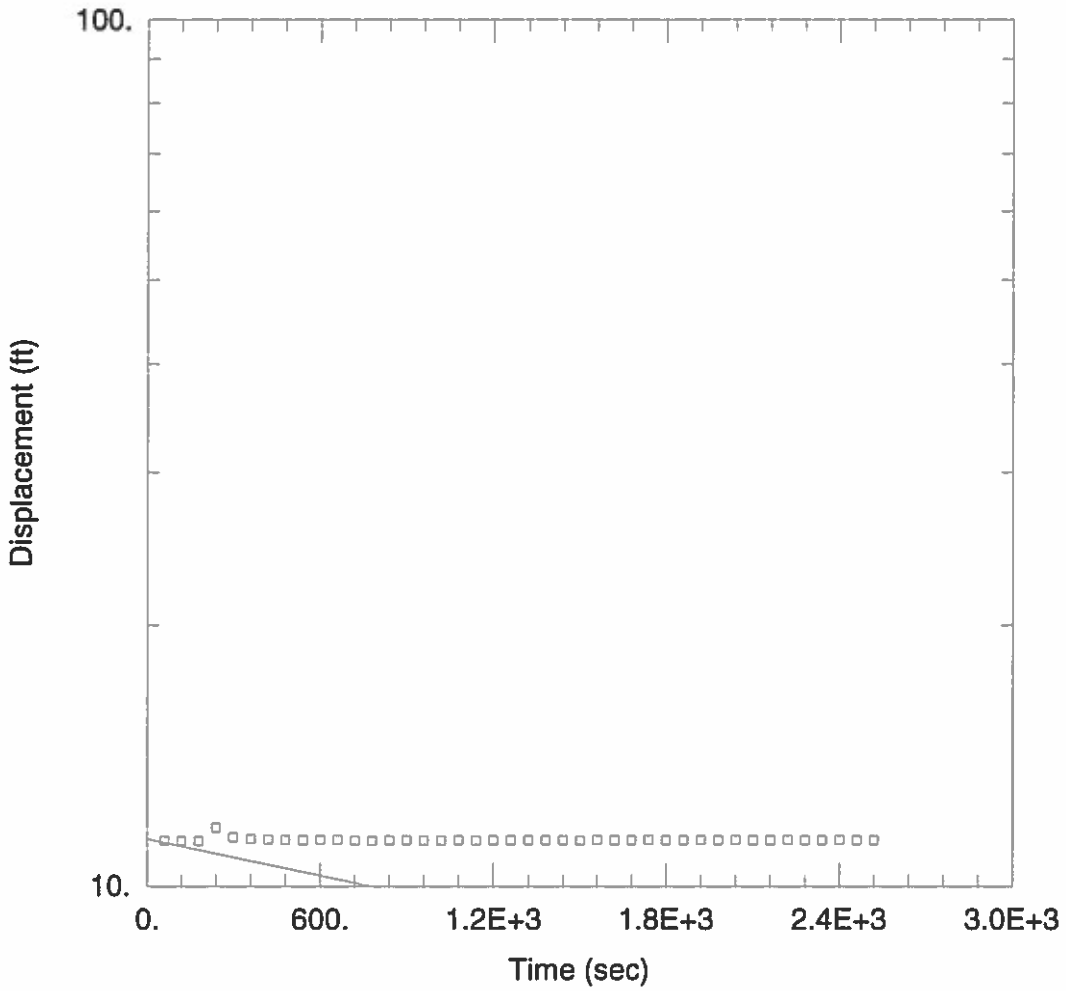
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 0.

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.002772	m/day
y0	11.34	ft

K = 3.209E-6 cm/sec
T = K*b = 0.01398 m²/day (0.001619 sq. cm/sec)



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-8Sluginaqt.aqt
Date: 05/13/14 Time: 08:49:35

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: MW-8Slugin
Test Date: 03/28/14

AQUIFER DATA

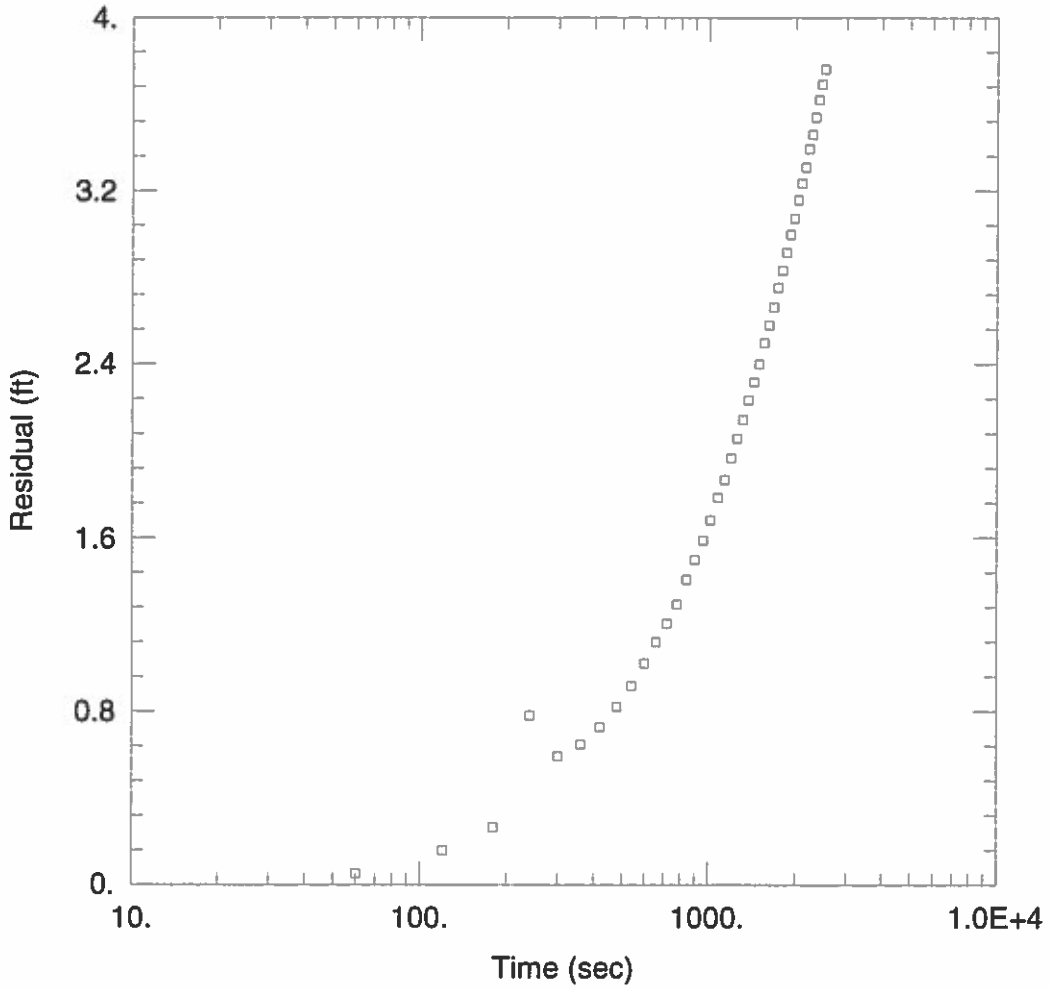
Saturated Thickness: 16.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.392 ft
Total Well Penetration Depth: 16.55 ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.29 ft
Screen Length: 16.55 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002772 m/day
y0 = 11.34 ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-8Sluginaqt.aqt
Date: 05/13/14 Time: 08:49:42

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: MW-8Slugin
Test Date: 03/28/14

AQUIFER DATA

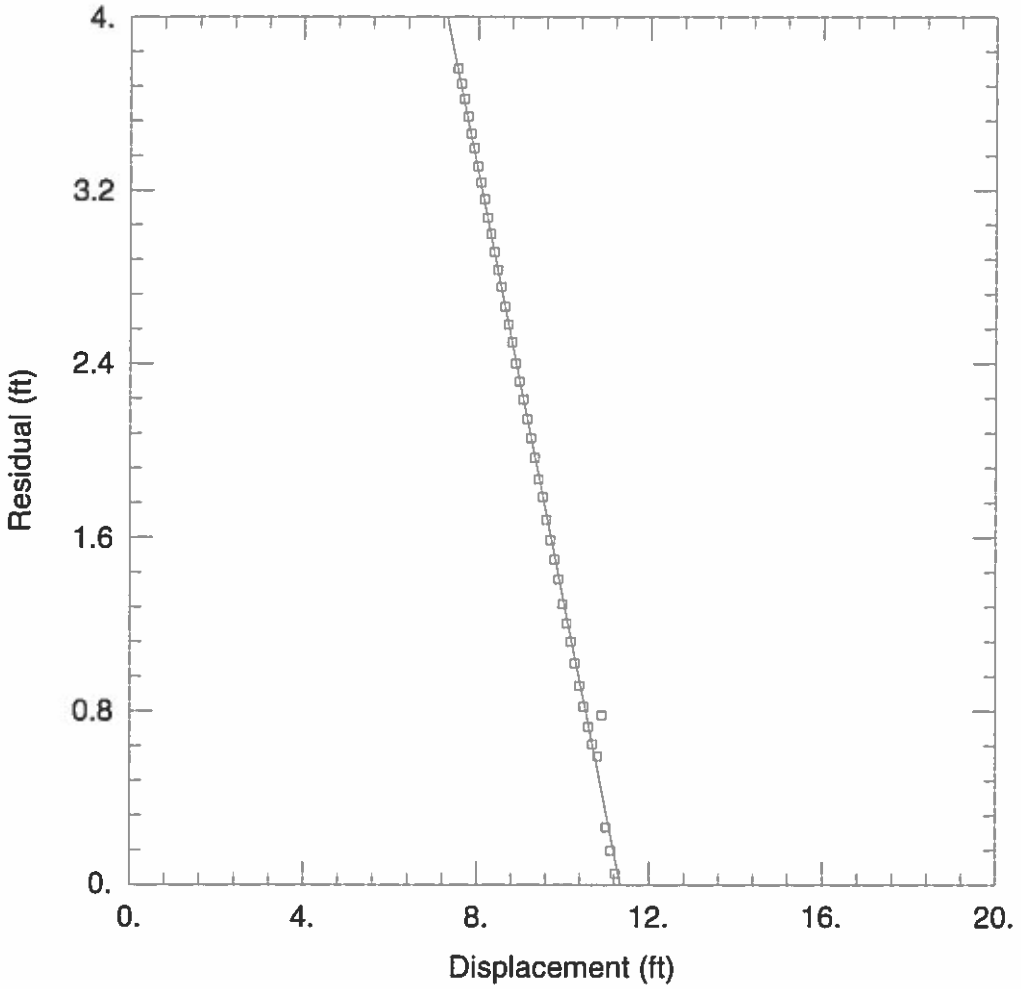
Saturated Thickness: 16.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.392 ft
Total Well Penetration Depth: 16.55 ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.29 ft
Screen Length: 16.55 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-8Sluginaqt.aqt
Date: 05/13/14 Time: 08:49:52

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: MW-8Slugin
Test Date: 03/28/14

AQUIFER DATA

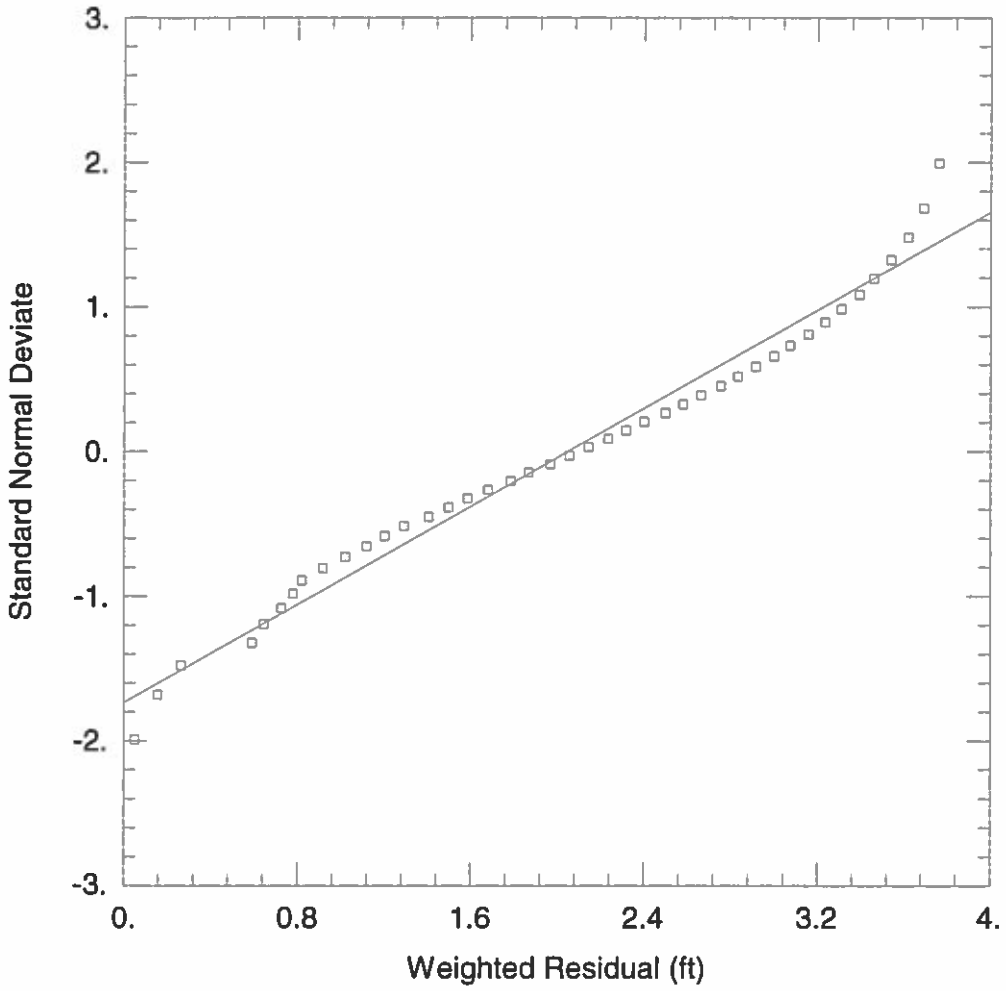
Saturated Thickness: 16.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.392 ft
Total Well Penetration Depth: 16.55 ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.29 ft
Screen Length: 16.55 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\RQTract11MW-8Sluginaqt.aqt
Date: 05/13/14 Time: 08:49:59

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: MW-8Slugin
Test Date: 03/28/14

AQUIFER DATA

Saturated Thickness: 16.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.392 ft
Total Well Penetration Depth: 16.55 ft
Casing Radius: 0.083 ft
Static Water Column Height: 11.29 ft
Screen Length: 16.55 ft
Well Radius: 0.281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft

Data Set: H:\WinSitu Data\Celero Caprock Slug Test Data\Exported Data\RQ RW-1 Tract 11\Tract11RQRW-1slu
Title: Falling-Head Slug Test
Date: 05/13/14
Time: 14:43:36

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Date: 03/25/14
Test Well: RW1Slugin

AQUIFER DATA

Saturated Thickness: 21. ft
Anisotropy Ratio (Kz/Kr): 1.

SLUG TEST WELL DATA

Test Well: New Well

X Location: 0. ft
Y Location: 0. ft

Initial Displacement: 0.414 ft
Static Water Column Height: 21. ft
Casing Radius: 0.2083 ft
Well Radius: 0.3646 ft
Well Skin Radius: 1. ft
Screen Length: 21. ft
Total Well Penetration Depth: 21. ft

No. of Observations: 68

Observation Data

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
60.	25.22	2100.	24.89
120.	25.17	2160.	24.89
180.	25.15	2220.	24.88
240.	25.13	2280.	24.89
300.	25.09	2340.	24.9
360.	25.07	2400.	24.88
420.	25.06	2460.	24.89
480.	25.04	2520.	24.88
540.	25.03	2580.	24.88
600.	25.01	2640.	24.88
660.	25.	2700.	24.87
720.	24.99	2760.	24.9
780.	24.98	2820.	24.87
840.	25.	2880.	24.89
900.	24.96	2940.	24.88
960.	24.94	3000.	24.87
1020.	24.95	3060.	24.89
1080.	24.93	3120.	24.87
1140.	24.93	3180.	24.88
1200.	24.92	3240.	24.86
1260.	24.9	3300.	24.89
1320.	24.91	3360.	24.88
1380.	24.92	3420.	24.88
1440.	24.9	3480.	24.88
1500.	24.9	3540.	24.87
1560.1	24.9	3600.	24.88
1620.2	24.89	3660.	24.88
1680.2	24.88	3720.	24.88
1740.	24.89	3780.	24.88
1800.1	24.89	3840.	24.9

Time (sec)	Displacement (ft)	Time (sec)	Displacement (ft)
1860.2	24.9	3900.	24.89
1920.	24.89	3960.	24.88
1980.1	24.88	4020.	24.89
2040.	24.88	4080.	24.87

SOLUTION

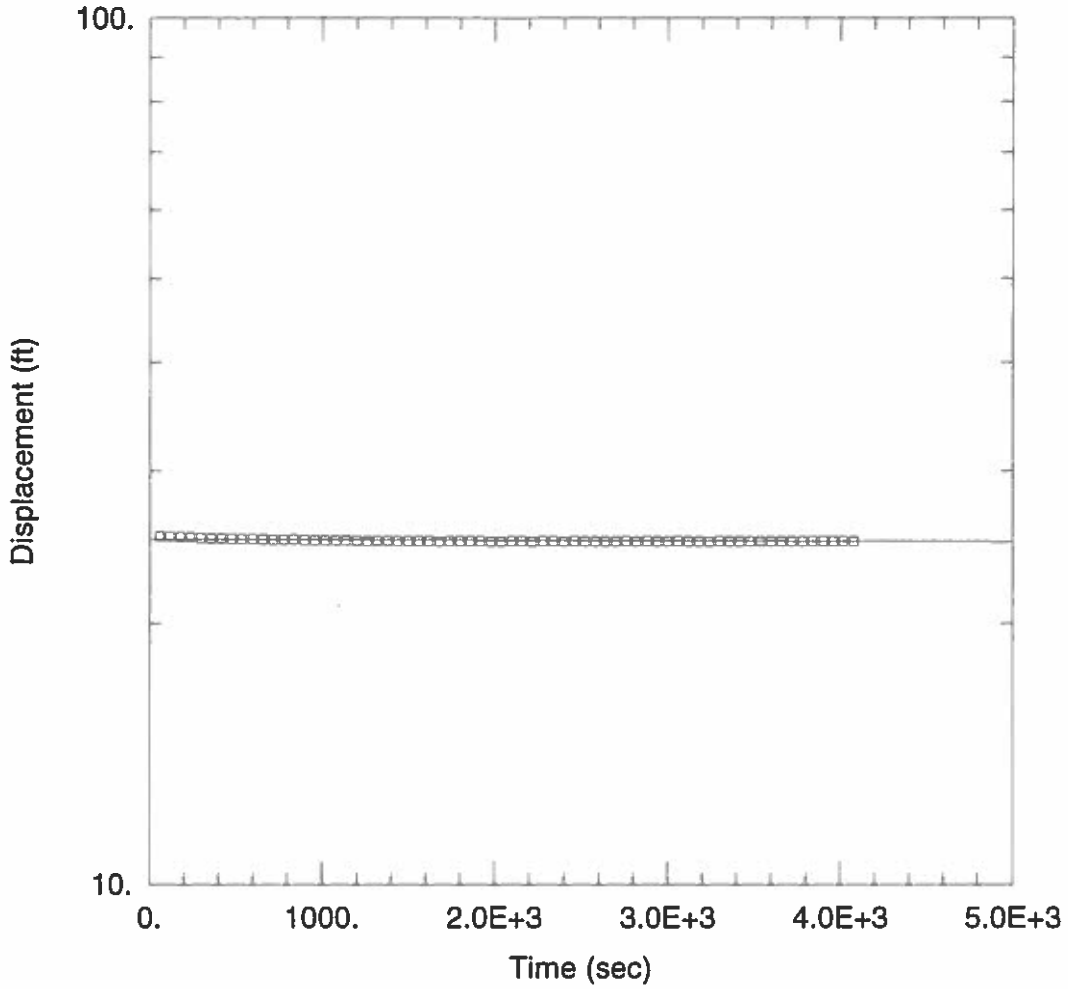
Slug Test
Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
ln(Re/rw): 0.

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
K	0.000105	m/day
y0	25.04	ft

K = 1.215E-7 cm/sec
T = K*b = 0.0006719 m²/day (7.777E-5 sq. cm/sec)



FALLING-HEAD SLUG TEST

Data Set: H:\...\Tract11RQRW-1slugin.aqt
Date: 04/28/14 Time: 11:19:59

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: RW1Slugin
Test Date: 03/25/14

AQUIFER DATA

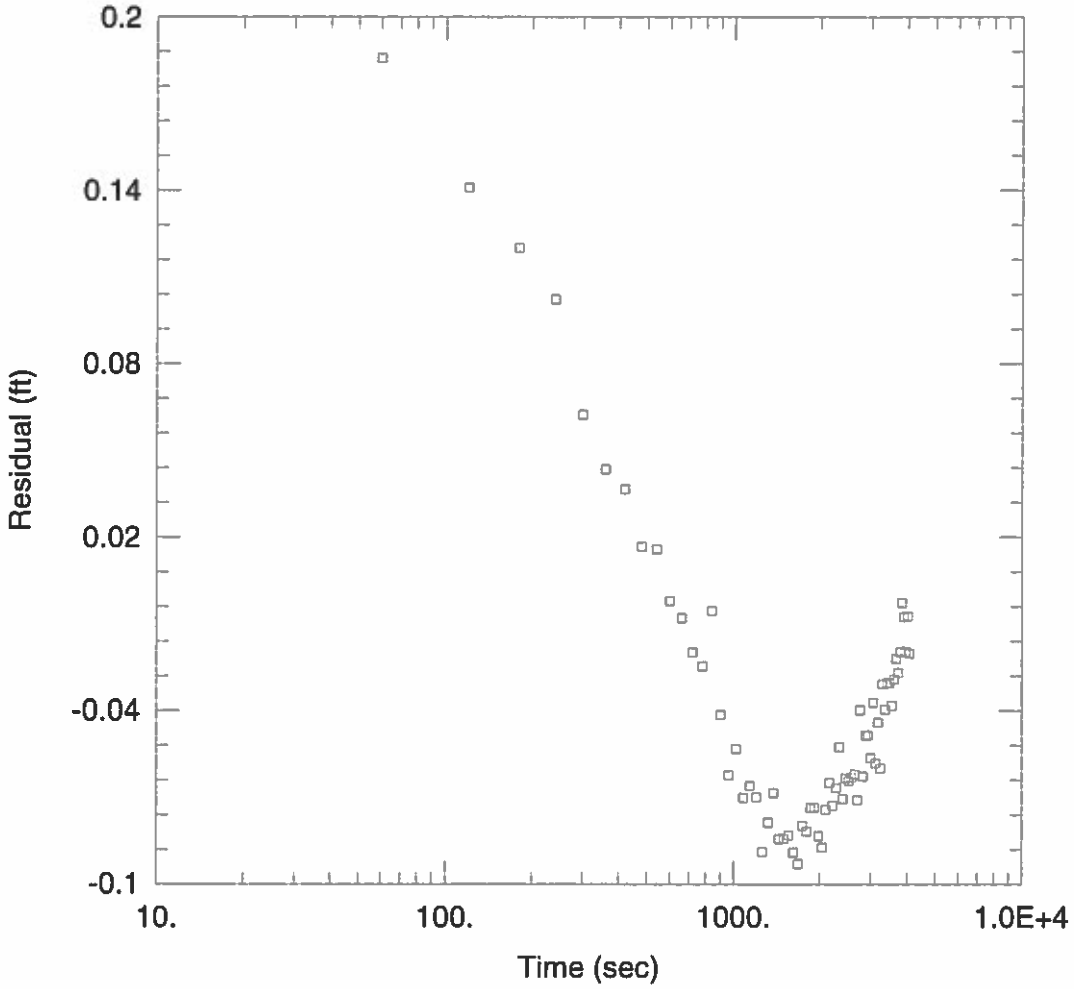
Saturated Thickness: 21. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.414 ft Static Water Column Height: 21. ft
Total Well Penetration Depth: 21. ft Screen Length: 21. ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.000105 m/day y0 = 25.04 ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\Tract11RQRW-1slugin.aqt
Date: 04/28/14 Time: 11:20:16

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: RW1Slugin
Test Date: 03/25/14

AQUIFER DATA

Saturated Thickness: 21. ft Anisotropy Ratio (Kz/Kr): 1.

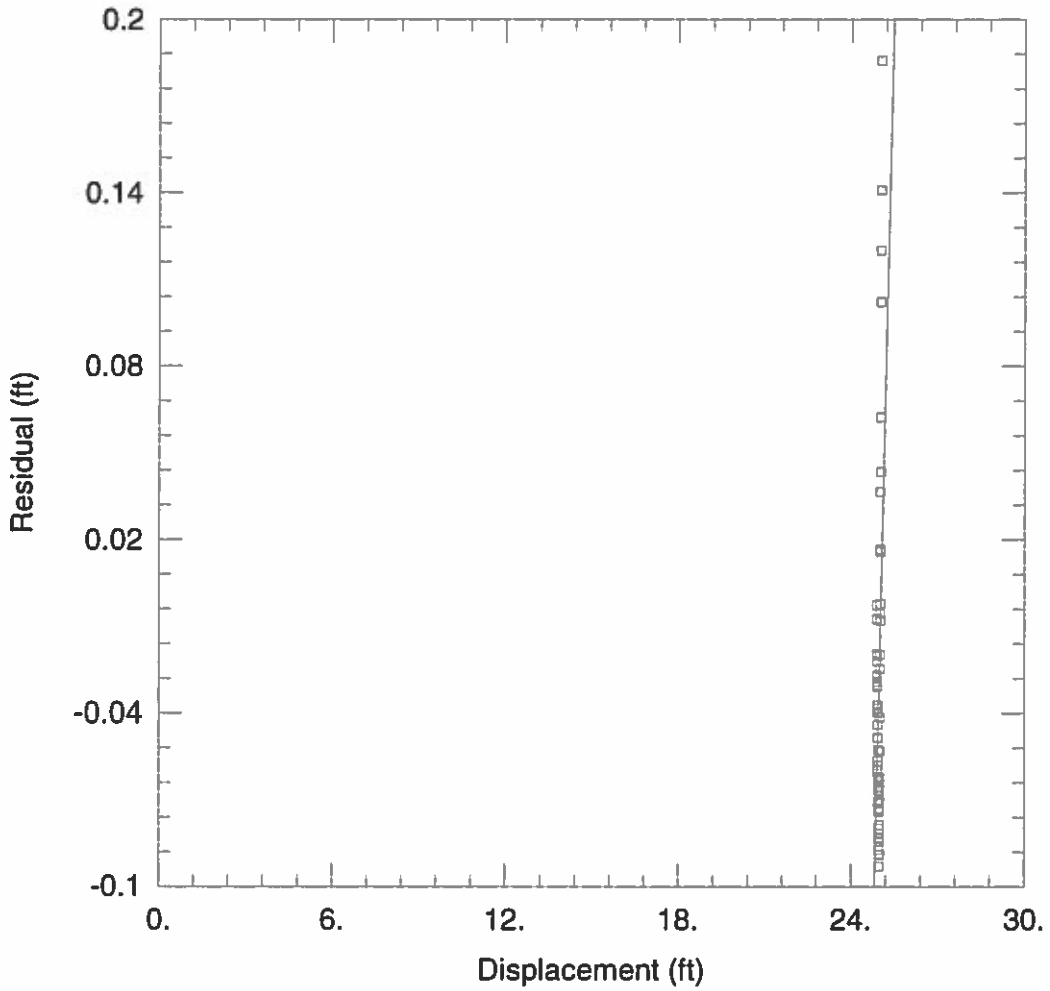
WELL DATA (New Well)

Initial Displacement: 0.414 ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.2083 ft
Static Water Column Height: 21. ft
Screen Length: 21. ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0. m/day y0 = 0. ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\Tract11RQRW-1slugin.aqt
Date: 04/28/14 Time: 11:20:27

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: RW1Slugin
Test Date: 03/25/14

AQUIFER DATA

Saturated Thickness: 21. ft Anisotropy Ratio (Kz/Kr): 1.

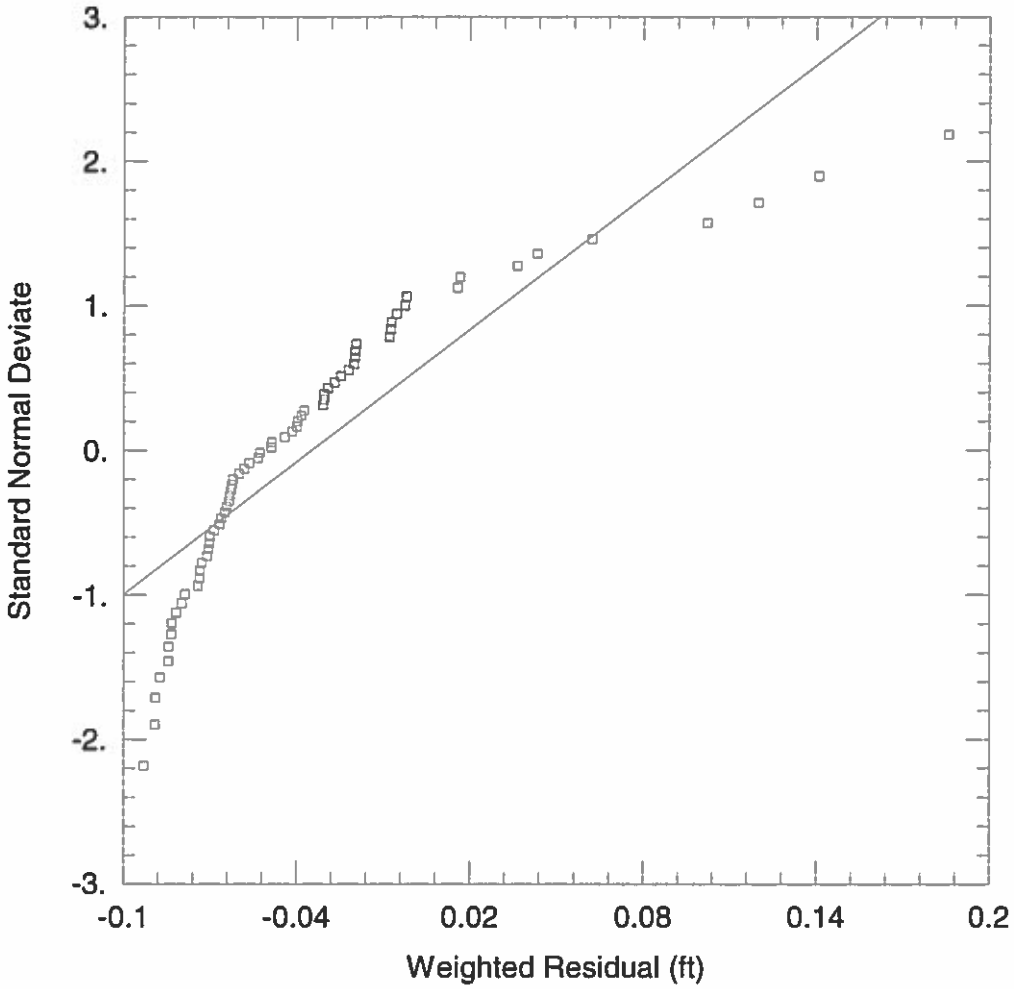
WELL DATA (New Well)

Initial Displacement: 0.414 ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.2083 ft
Static Water Column Height: 21. ft
Screen Length: 21. ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0. m/day y0 = 0. ft



FALLING-HEAD SLUG TEST

Data Set: H:\...\Tract11RQRW-1slugin.aqt
Date: 04/28/14 Time: 11:20:36

PROJECT INFORMATION

Company: Tetra Tech
Client: Celero
Project: 114-640
Location: RQTract11
Test Well: RW1Slugin
Test Date: 03/25/14

AQUIFER DATA

Saturated Thickness: 21. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (New Well)

Initial Displacement: 0.414 ft
Total Well Penetration Depth: 21. ft
Casing Radius: 0.2083 ft
Static Water Column Height: 21. ft
Screen Length: 21. ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0. m/day
y0 = 0. ft