AP - 104

2012 AGWMR

06 / 27 / 2012



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2013 JUL 17 P 12: 25

June 27, 2013

Mr. Glenn von Gonten Senior Hydrologist New Mexico Oil Conservation Division 1220 South Saint Francis Drive Santa Fe. New Mexico 87505

Re: Buckeye Compressor Station (Abatement Plan AP-104)
Buckeye Vacuum Field Unit (Abatement Plan AP-104)
Lovington Unit Water Plant
Lovington Paddock (Remediation Plan 1RP-272)

Dear Mr. Von Gonten,

I have recently taken over project management responsibilities from Kegan Boyer for four ongoing Chevron projects in southeastern New Mexico. These projects include groundwater monitoring/assessment/remediation at the following sites:

- Buckeye Compressor Station (Abatement Plan AP-104)
- Buckeye Vacuum Field Unit (Abatement Plan AP-104)
- Lovington Unit Water Plant
- Lovington Paddock (Remediation Plan 1RP-272)

Any future correspondence or inquiries regarding these projects can be directed to me at the above address or via e-mail at luke.welch@chevron.com.

Please find enclosed for your files copies of the following reports for the Lovington Paddock project site (Abatement Plan AP-104) and the Lovington Water Station project site (Abatement Plan AP-104):

- 2012 Annual Groundwater Monitoring Report, Lovington Paddock Groundwater Remediation Site, Section 1 – Township 17 South – Range 36 East, Lea County, NM
- 2012 Annual Groundwater Monitoring Report, Lovington Unit Water Plant, Section 1 Township 17 South Range 36 East, Lea County, NM

These reports were prepared by Conestoga-Rovers & Associates (CRA) on behalf of Chevron Environmental Management Company (CEMC) to document groundwater monitoring activities performed for CEMC during

July 16, 2013 Page 2

calendar year 2012 at the above-referenced sites. Historical groundwater monitoring data are also included in the reports.

It is my understanding that we do not have a current abatement plan number for the Lovington Water Plant. If you have any insight, please feel free to advise me on any possible future actions.

Should you have any questions regarding the content of the report, please do not hesitate to contact me by phone at 713-372-0292 or via e-mail at luke.welch@chevron.com. I look forward to working with you in the future.

Sincerely,

Luke Welch

Environmental Project Manager



www.CRAworld.com



FINAL REPORT

2012 ANNUAL GROUNDWATER ASSESSMENT AND MONITORING REPORT

Lovington Unit Water Plant Section 1, Township 17 South, Range 36 East -- Lea County, New Mexico

Prepared for: Chevron Environmental Management Company

Conestoga-Rovers & Associates

2135 South Loop, 250 West Midland, Texas 79703

June 2013 • #073016(3)

ORIGINAL

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1.0 INTRODUCTION

This annual report is a review of assessment and groundwater monitoring at the Lovington Unit Water Plant Site during 2012. Conestoga-Rovers & Associates, Inc. (CRA) prepared this report on behalf of Chevron Environmental Management Company (CEMC). Assessment data presented in this report were gathered during drilling activities which took place between February 28 and March 5, 2012. Groundwater monitoring activities referred to in this report took place during four quarterly groundwater monitoring events conducted on March 22-23, June 13-14, September 27-28, and December 19-20, 2012.

The Lovington Unit Water Plant Site is located in the northeast quarter of Section 1, Township 17 South, Range 36 East in Lea County, New Mexico. Latitudinal and longitudinal coordinates are 32°52'3.77" N and 103°18'20.39" W, respectively. The site lies on land owned by the City of Lovington, New Mexico. Chevron operates an active water injection facility on the site that is related to oil production. A map showing the general location of the site is in Figure 1.

2.0 HISTORY OF ACTIVITIES AT THE SITE

The City of Lovington requested that Chevron assess chloride concentrations in the groundwater between the Lovington Unit Water Plant and the location of a surface release from a salt water disposal pipeline operated by Rice Operating Company. That release occurred since 2000 and approximately 700 feet southeast of the Lovington Unit Water Plant Site. The potentiometric surface at that release site is downgradient with respect to that at the Lovington Water Plant. Details such as the date of the release; volume released; and volume recovered are not available.

Four monitor wells, MW-1, MW-2, MW-3 and MW-4 shown on Figure 2 were installed in January 2010 as part of the assessment. Screening of soils during drilling and analyses conducted by a laboratory indicated low chloride concentrations in soil penetrated by MW-1, MW-2 and MW-3, while higher concentrations of chlorides were present in soil penetrated by MW-4. Groundwater in all four wells was sampled in January and February 2010. Concentrations of chlorides and TDS in all samples groundwater collected from MW-1, MW-2, and MW-3 exceeded groundwater standards set by the New Mexico Water Quality Control Commission (NMWQCC). Both chlorides and total dissolved solids (TDS) in groundwater from MW-4 were below the same standards in both samples collected. Results of the investigation were reported to CEMC by Stantec in June 2010. CRA was retained by CEMC to manage monitoring activities of this site in November 2010. Quarterly monitoring was conducted similarly through 2011. Four additional monitor wells, MW-5, MW-6, MW-7 and MW-8 were installed in February and March 2012 to further assess the dissolved chloride plume. All eight monitor wells were gauged and sampled on a quarterly basis during 2012.

3.0 REGULATORY FRAMEWORK

The New Mexico Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department (NMOCD) has regulatory jurisdiction over corrective actions conducted at the Lovington Unit Water Plant Site. Corrective actions follow guidance given by the NMOCD in *Guidelines for Remediation of Leaks, Spills, and Releases (August 13, 1993)*. These guidelines require remediation of groundwater to the human health standards of the New Mexico Water Quality Control Commission (NMWQCC) set forth in New Mexico Administrative Code (NMAC) 20.6.2.3103B that are in the following table.

Analyte	NMWQCC Standard for Domestic Water Supply (mg/L)
Chloride	250
Total Dissolved Solids	1000

4.0 ADDITIONAL ASSESSMENT ACTIVITIES

Four groundwater monitoring wells, MW-5, MW-6, MW-7 and MW-8 were installed between February 28 and March 6 to further evaluate the nature and extent of the plume of elevated chlorides and total dissolved solids (TDS). Locations for these wells are shown on the attached Figure 2. Prior to mobilizing drilling equipment to the Lovington Unit Water Plant, the boring locations were marked and utility notifications were made at least 48-hours prior to mobilization. A post-hole digger was used to clear each boring location to a depth of approximately 5-feet below ground surface (bgs) or refusal. An air-rotary rig operated by White Drilling Company, a water well driller licensed State of New Mexico, advanced the proposed borings to depths between 133 and 135 feet bgs. Mud-rotary drilling methods were used below 5-feet bgs to maintain borehole stability in the sandy soil profile. Subsurface lithology data were recorded on boring logs. They are in Appendix A. Monitor wells MW-5, MW-6, MW-7, AND MW-8 were completed with the following general specifications: four-inch diameter, schedule 40 PVC casing from top of screen to surface; thirty-five feet of 4-inch, schedule 40, PVC casing with 0.020" slots below blank casing; 8/16 sand filter packs; bentonite seals above filter packs; and above-ground vaults with concrete pads. The wells were developed by bailing and pumping. Development volumes were between 135 and 215 gallons. Instrumentation (Construction) Logs and State Well Records and Logs filed at the New Mexico Office of the State Engineer are also shown in Appendix A. Drill cuttings and fluids were held in roll off boxes for transportation to disposal sites. Drilling fluids were vacuumed off drill cuttings by Nabors Well Services, LTD and disposed at a Chevron-approved facility. Drill cuttings were transported by Gandy Corporation and disposed at R360 Environmental Solutions in Hobbs, New Mexico Gandy-Marley, Inc. in Roswell, New Mexico. Documentation of transportation and disposal of wastes are shown in Appendix B. Elevations of the ground surface, pad surfaces and tops of casings at MW-5, MW-6, MW-7, and MW-8 were surveyed by West Company of Midland, Texas. Results of those surveying activities are shown in Appendix A.

5.0 GROUNDWATER MONITORING

The Lovington Unit Water Plant Site includes eight active monitor wells, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7 and MW-8. Their locations are shown on Figure 2. These eight monitor wells were gauged and sampled quarterly during 2012. Those monitoring events took place on March 22-23, June 13-14, September 27-28 and December 19-20, 2012.

5.1 FIELD METHODOLOGY

Fluid levels were measured and conductivity profiles were determined in each well before sampling activities began. Fluid levels were measured to the nearest hundredth of a foot with an electronic water level meter with a built-in conductivity sensor. Fluid levels were measured from the permanent reference point on the top of the casing in each well or from the north side of the top of the casing where no permanent reference point had been marked.

The conductivity profile of each well was determined by recording measurements of conductivity of the water column at 5-feet intervals from the top of the water column to the total depth of each well. The purging and sampling pump was set at the depth of the highest conductivity reading in each well. Purging continued until temperature, conductivity and pH were within 10 percent of previous measurements made with a multi-function meter. Samples were collected, labeled and recorded on a chain-of-custody form and placed on ice in a cooler to maintain a temperature of 40°F (4°C) or lower. Field equipment was decontaminated with AlconoxTM wash and distilled water rinse before beginning field activities and between wells. Samples of groundwater were analyzed by Xenco Laboratories in Odessa, Texas. Proper chain-of-custody documentation was maintained throughout sampling and analytical processes and analyses were completed within required holding times.

Samples collected during 2012 were analyzed for dissolved chloride according to method EPA300.0 and for total dissolved solids (TDS) by method SM2540C.

5.2 POTENTIOMETRIC SURFACE AND GRADIENT

Table 1 is a cumulative record of fluid level measurements from all monitor wells at Lovington Unit Water Plant. Elevations of tops of casings are shown in feet above mean sea level (famsl). Calculated elevations of the potentiometric surface are also shown in famsl. The range of calculated elevations of the potentiometric surface measured on March 22 was from 3727.69 (MW-8) to 3730.45 (MW-4) famsl. The map of elevations of

the potentiometric surface during that event is shown in Figure 3. It indicates that the direction of flow of groundwater at that time was east-northeast. The calculated magnitude of the gradient was 0.0032 ft./ft.

The range of elevations of the potentiometric surface measured on June 13 was from 3727.56 (MW-8) to 3730.40 (MW-4) famsl. The map of elevations of the potentiometric surface during the second monitoring event on June 13 is shown in Figure 4. This map indicates that the direction of flow of groundwater was east-northeast. The calculated magnitude of the gradient was 0.0035 ft./ft.

The range of elevations of the potentiometric surface measured on September 27 was from 3727.19 (MW-8) to 3729.88 (MW-4) famsl. The potentiometric surface on September 27 is depicted in Figure 5. This map indicates that the direction of flow of groundwater was east-northeast. The calculated magnitude of its gradient was 0.0030 ft./ft.

The range of elevations of the potentiometric surface measured on December 19 was from 3726.58 (MW-8) to 3729.11 (MW-4) famsl. The potentiometric surface on December 19 is depicted in Figure 6. This map indicates that the direction of flow of groundwater was northeast. Its calculated magnitude was 0.0031 ft./ft.

Elevations of the potentiometric surface declined in all wells between March 22 and December 19, 2012. The range of decline was 1.08 feet to 1.55 feet between March and December 2012. The average decline among those wells was 1.22 feet.

5.3 RESULTS OF ANALYSES OF DISSOLVED-PHASE CONTAMINANTS IN GROUNDWATER

Samples of groundwater were collected from wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7 and MW-8 during all four quarterly monitoring events 2012. A cumulative table of all available results of analyses of groundwater samples collected at the Lovington Unit Water Plant Site is shown in Table 2. Chemicals of Concern (COCs) are in columns across the top of the table. Appropriate standards are below names of analytes. Analytical results for monitoring events in March, April, July and December 2012 are in map form on Figures 7, 8, 9, and 10, respectively.

Trends of concentrations of chemicals of concern over time are shown in Appendix C. Copies of signed analytical reports and chains-of-custody are in Appendix D. Dissolved chloride and TDS were present in groundwater from monitor wells MW-1, MW-2, MW-3 and MW-6 in concentrations consistently above the NMWQCC standards of 250 mg/L and mg/L, respectively. The increasing trends in MW-6 may indicate

movement of groundwater from the area around MW-3 northward by pumping from the water flood supply well, which is shown on Figure 2 and subsequent figures.

Levels of dissolved chloride and TDS in MW-7 were slightly above or below NMWQCC standards. Levels of dissolved chlorides and TDS in MW-5 were below NMWQCC standards throughout 2012 except for the concentration of 1100 mg/L TDS on March 22. Levels of dissolved chloride and TDS in MW-4 and MW-8 were consistently below the NMWQCC standards during 2012.

6.0 SUMMARY OF FINDINGS

Based on activities conducted at the Lovington Unit Water Plant Site in 2012, CRA presents the following summary of findings:

- Groundwater monitoring was conducted by CRA on a quarterly basis in 2012. Monitoring events were conducted on March 22-23, June 13-14, September 27-28, and December 19-20, 2012, during which calculated gradients of the potentiometric surface were 0.0032 ft./ft., 0.0035 ft./ft., 0.0030 ft./ft., and 0.0031 ft./ft., respectively. The directions of the gradients were east-northeast during the first three monitoring events, while the direction was northeast during the fourth quarterly monitoring event.
- Elevations of the potentiometric surface declined in all wells between March 22 and December 19, 2012. The range of decline was 1.08 feet to 1.55 feet between March and December 2012. The average decline among those wells was 1.22 feet.
- Dissolved chloride and TDS were present in groundwater from monitor wells MW-1, MW-2, MW-3 and MW-6 in concentrations consistently above the NMWQCC standards of 250 mg/L and mg/L, respectively. Increasing trends of dissolved chloride and TDS in MW-6 may indicate movement of groundwater from the area around MW-3 northward by pumping from the water flood supply well.
- Levels of dissolved chloride and TDS in MW-7 were slightly above or below NMWQCC standards.
- Levels of dissolved chlorides and TDS in MW-5 were below NMWQCC standards throughout 2012 except for the concentration of 1100 mg/L TDS on March 22.
 Levels of dissolved chloride and TDS in MW-4 and MW-8 were consistently below the NMWQCC standards during 2012.

7.0 PLANNED ACTIVITIES

Quarterly gauging and sampling events were conducted in January and April 2013. Two additional quarterly monitoring events have been scheduled for July and October of this year. All eight monitor wells have been included in the quarterly monitoring plan. Monitoring will include measurements of fluid levels and collection of samples of groundwater. Dissolved chloride and total dissolved solids continue to be chemicals of concern at the Lovington Unit Water Plant Site, and samples will be analyzed for them according to analytical methods EPA300.0 and SM2540C, respectively.

Results of activities of four quarterly groundwater monitoring events at the Lovington Unit Water Plant Site during 2013 will be summarized in the annual report for submission to the NMOCD. The report will include tabulated data from gauging activities; tabulated results of chemical analyses; maps of groundwater gradients and maps of constituents of concern for each monitoring event; and recommendations to expedite the site toward closure.

All of which is Respectfully Submitted,

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CONESTOGA-ROVERS & ASSOCIATES, INC.

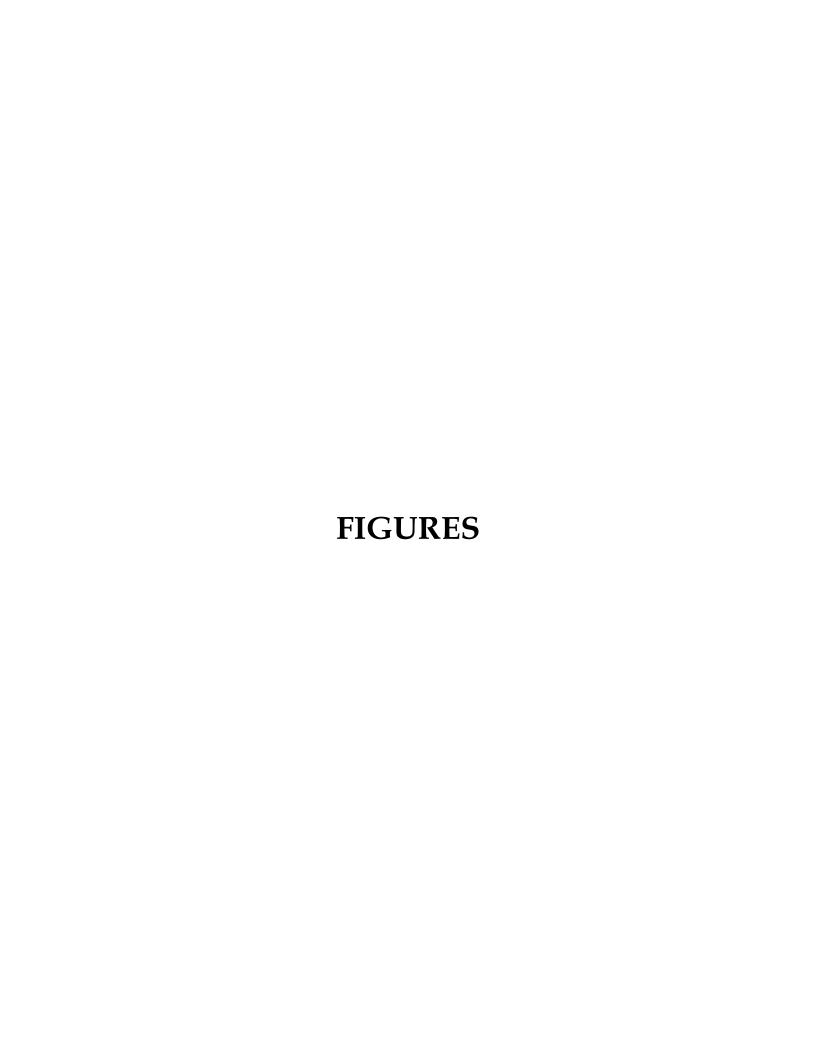
John P. Schnable

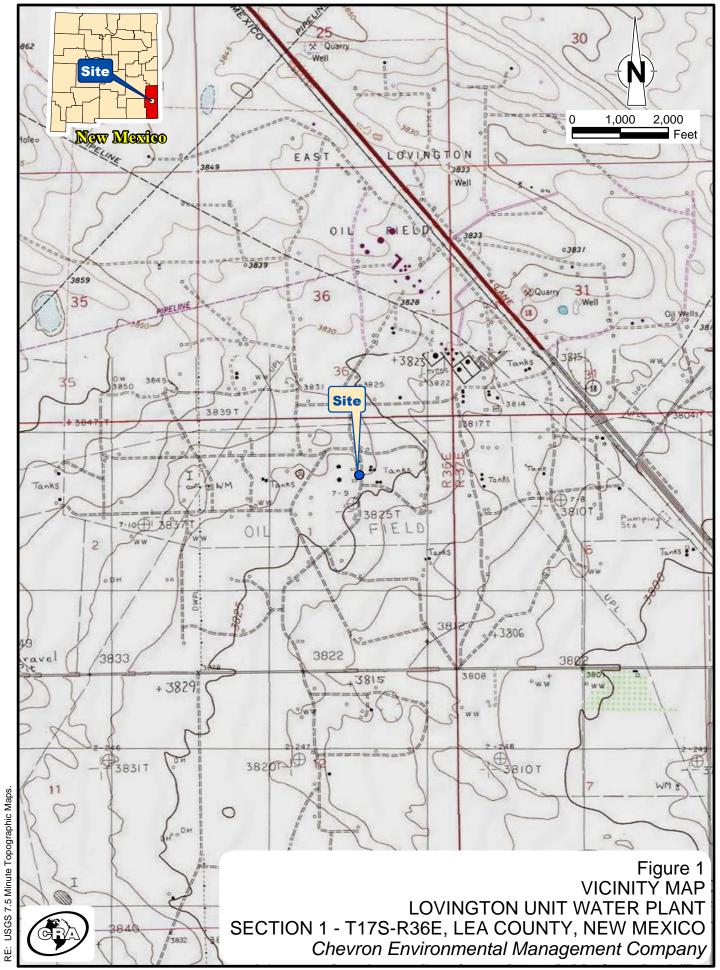
Project Manager

Thomas C. Larson

Senior Project Manager

Thomas Clayon





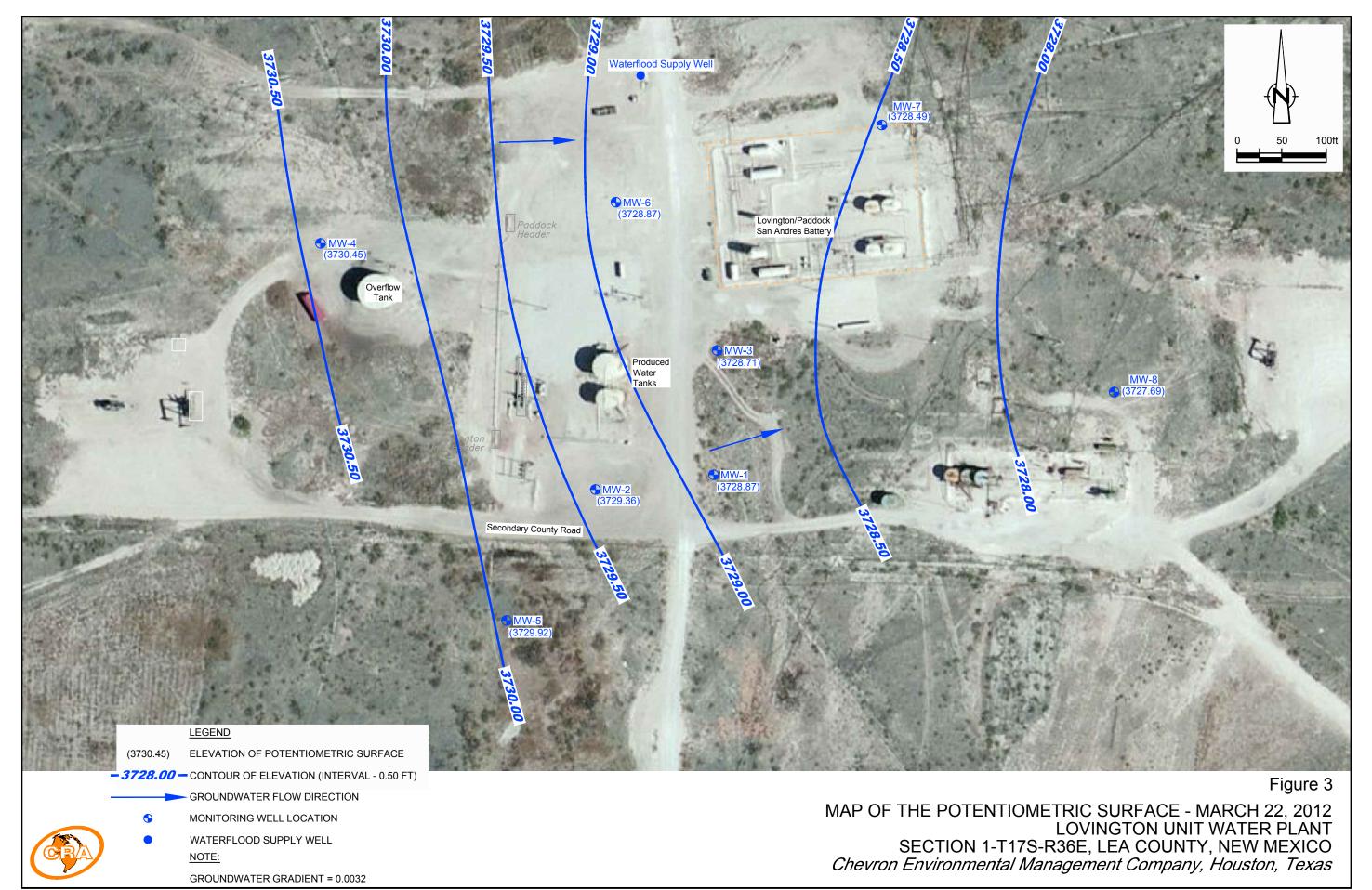


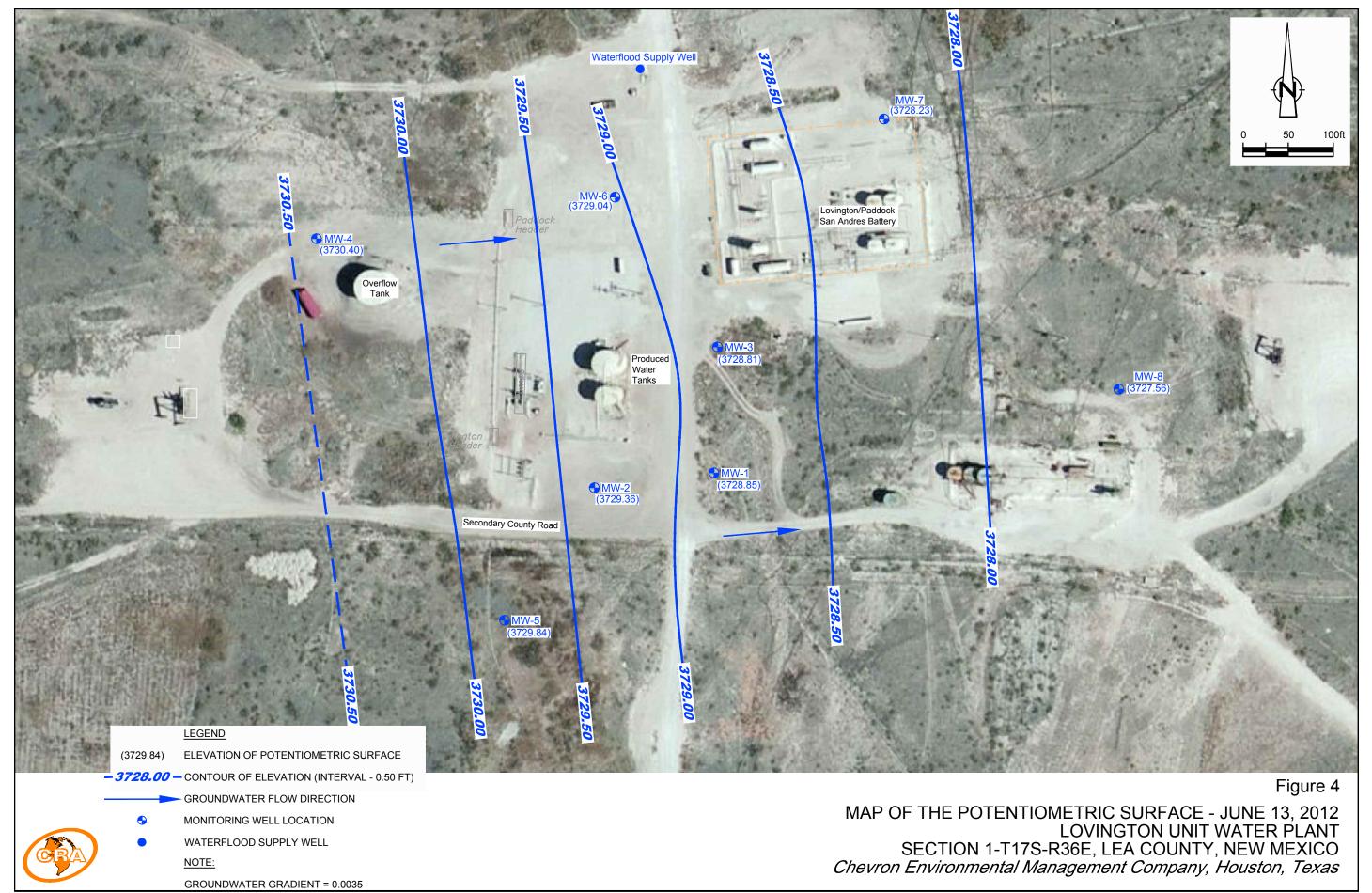
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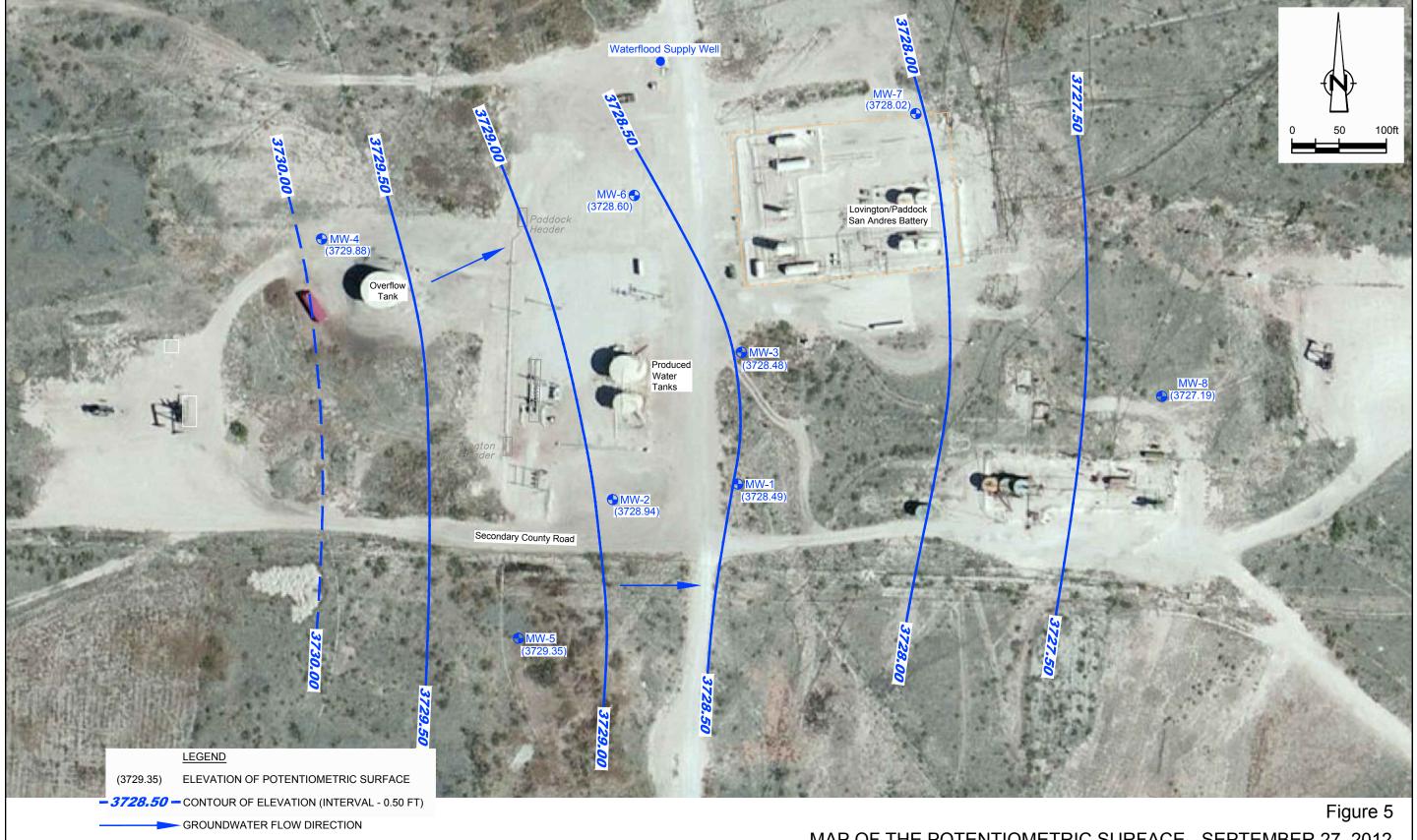
- MONITORING WELL LOCATION
- WATERFLOOD SUPPLY WELL

Figure 2

SITE DETAILS MAP LOVINGTON UNIT WATER PLANT SECTION 1-T17S-R36E, LEA COUNTY, NEW MEXICO Chevron Environmental Management Company, Houston, Texas







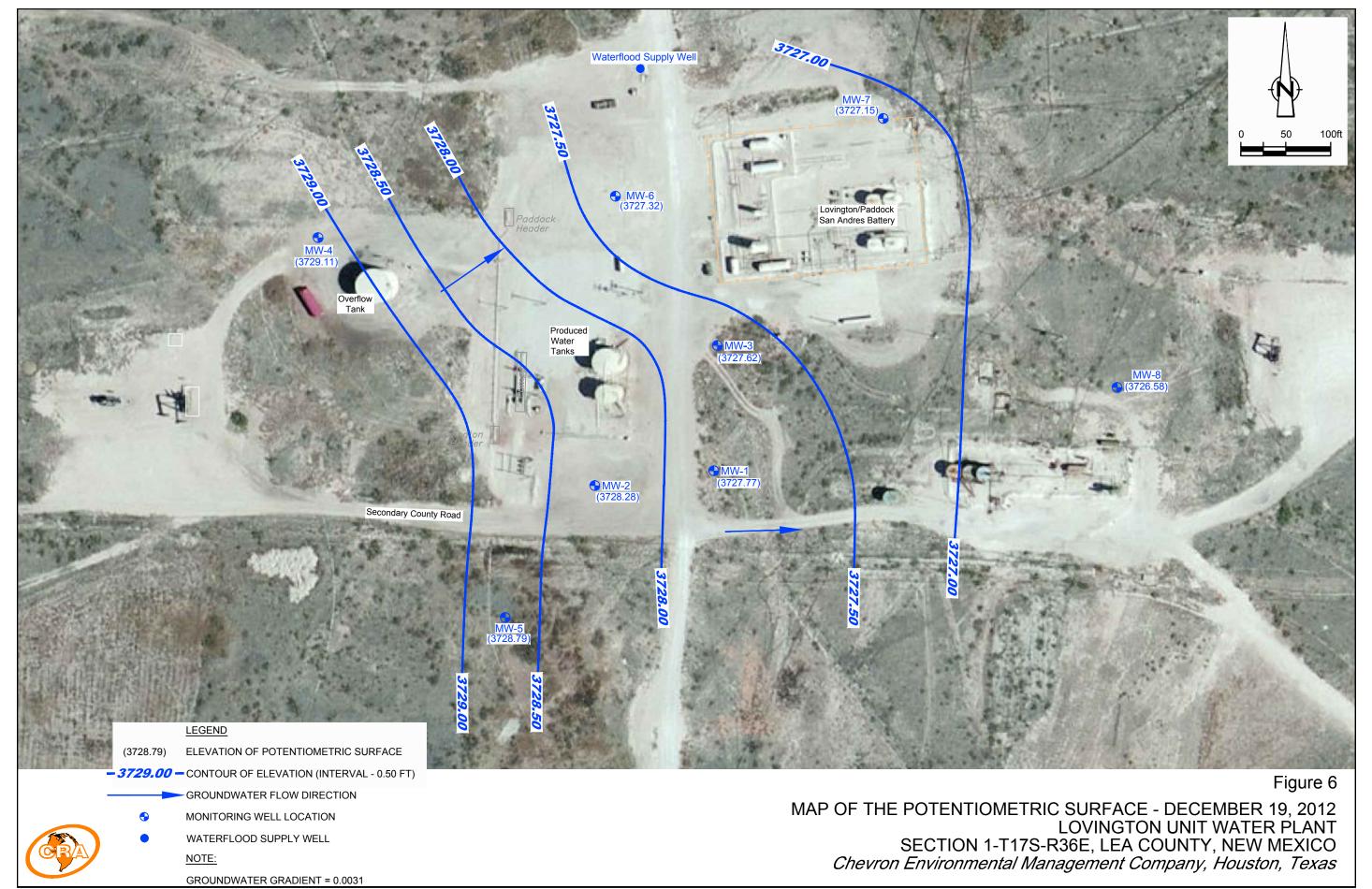
MAP OF THE POTENTIOMETRIC SURFACE - SEPTEMBER 27, 2012 LOVINGTON UNIT WATER PLANT SECTION 1-T17S-R36E, LEA COUNTY, NEW MEXICO Chevron Environmental Management Company, Houston, Texas

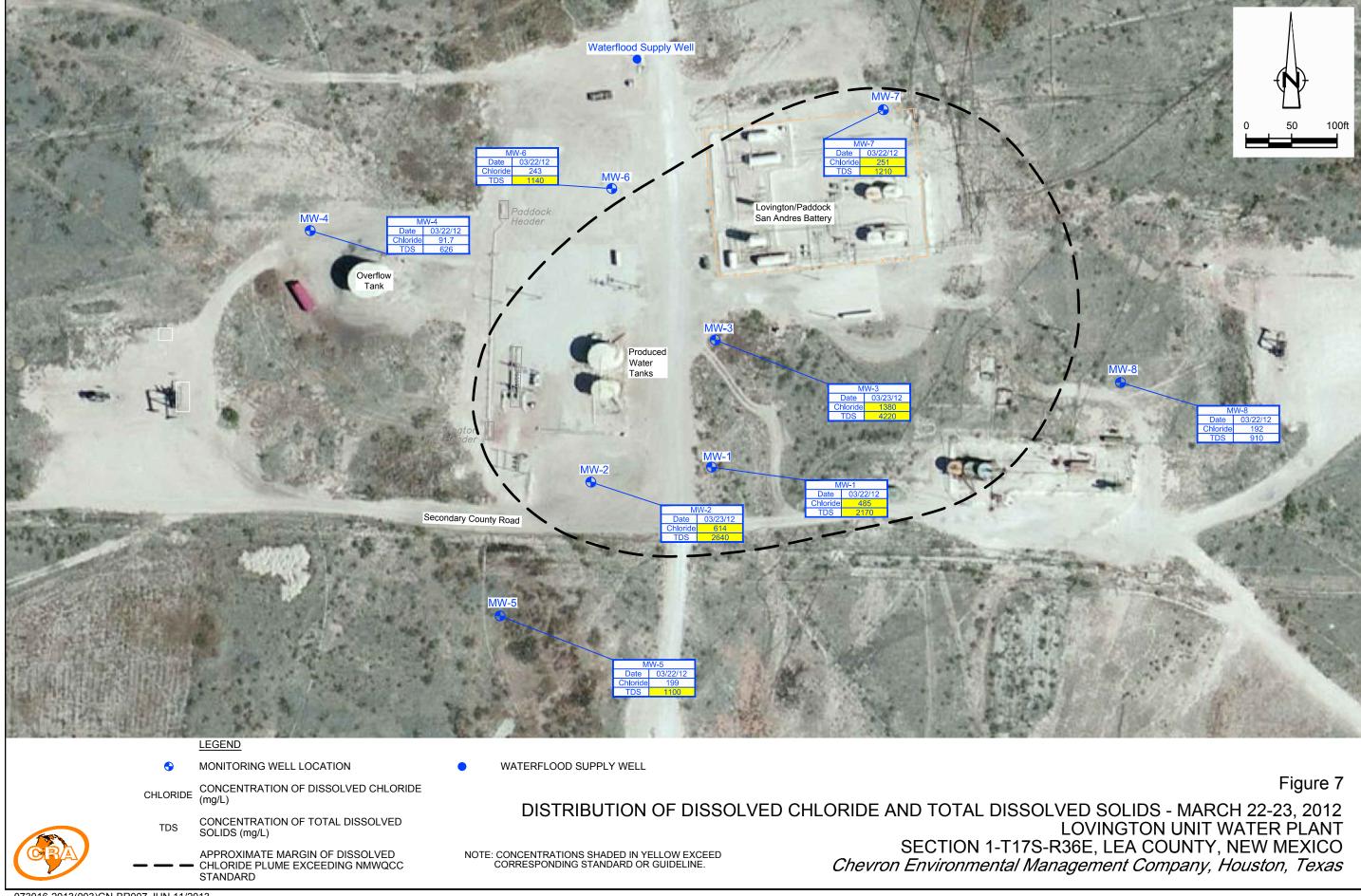


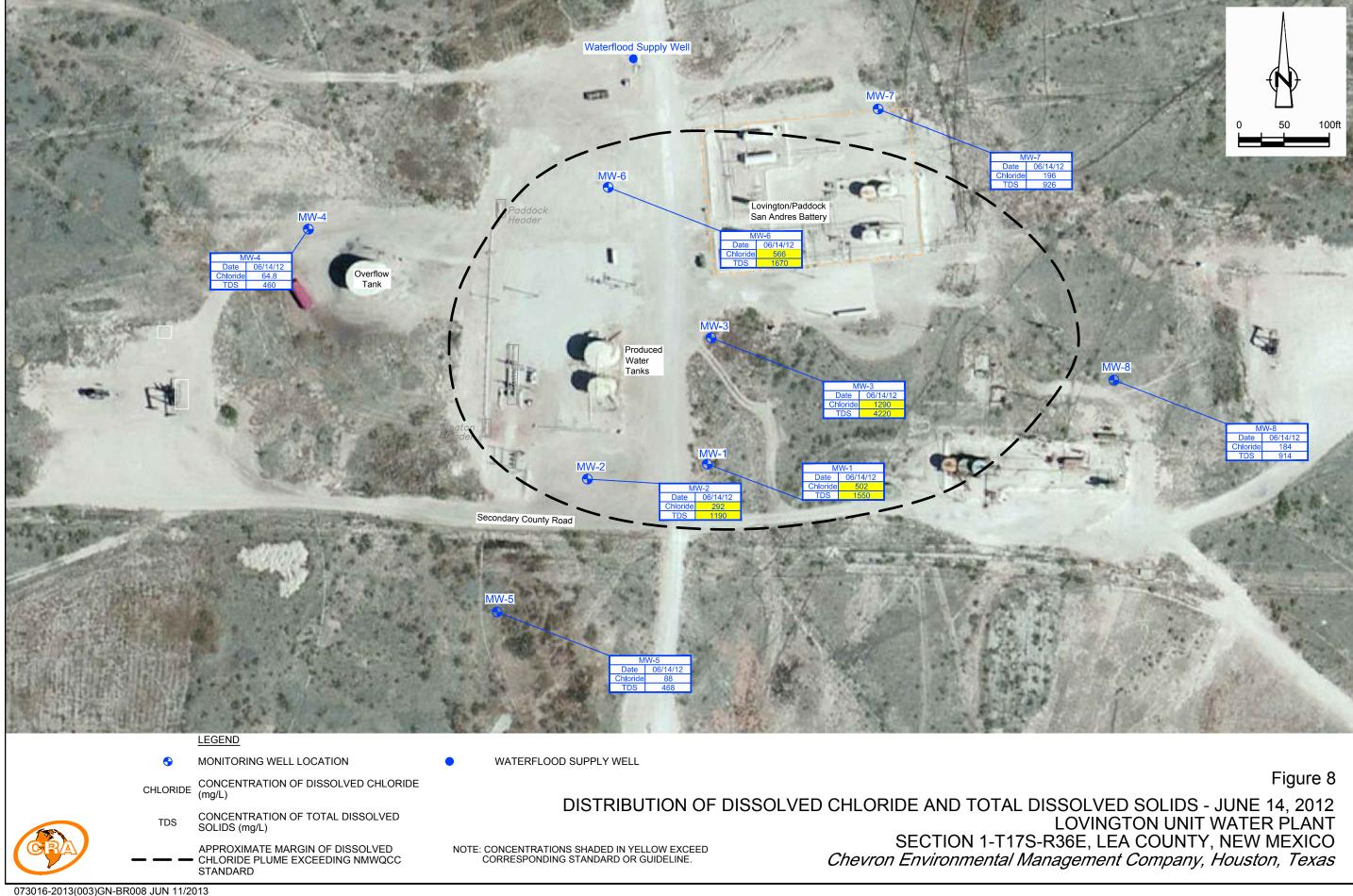
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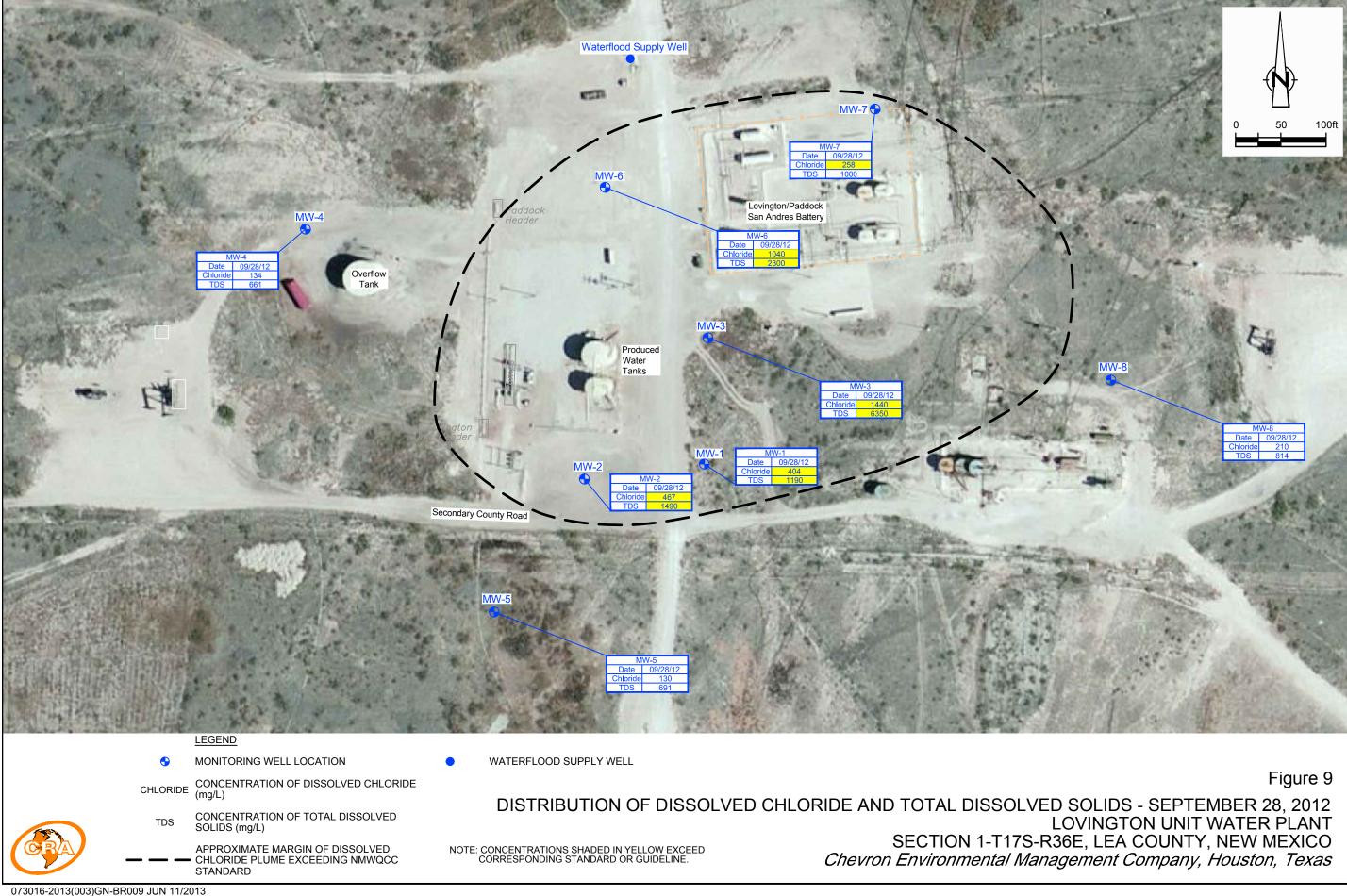
GROUNDWATER GRADIENT = 0.0030

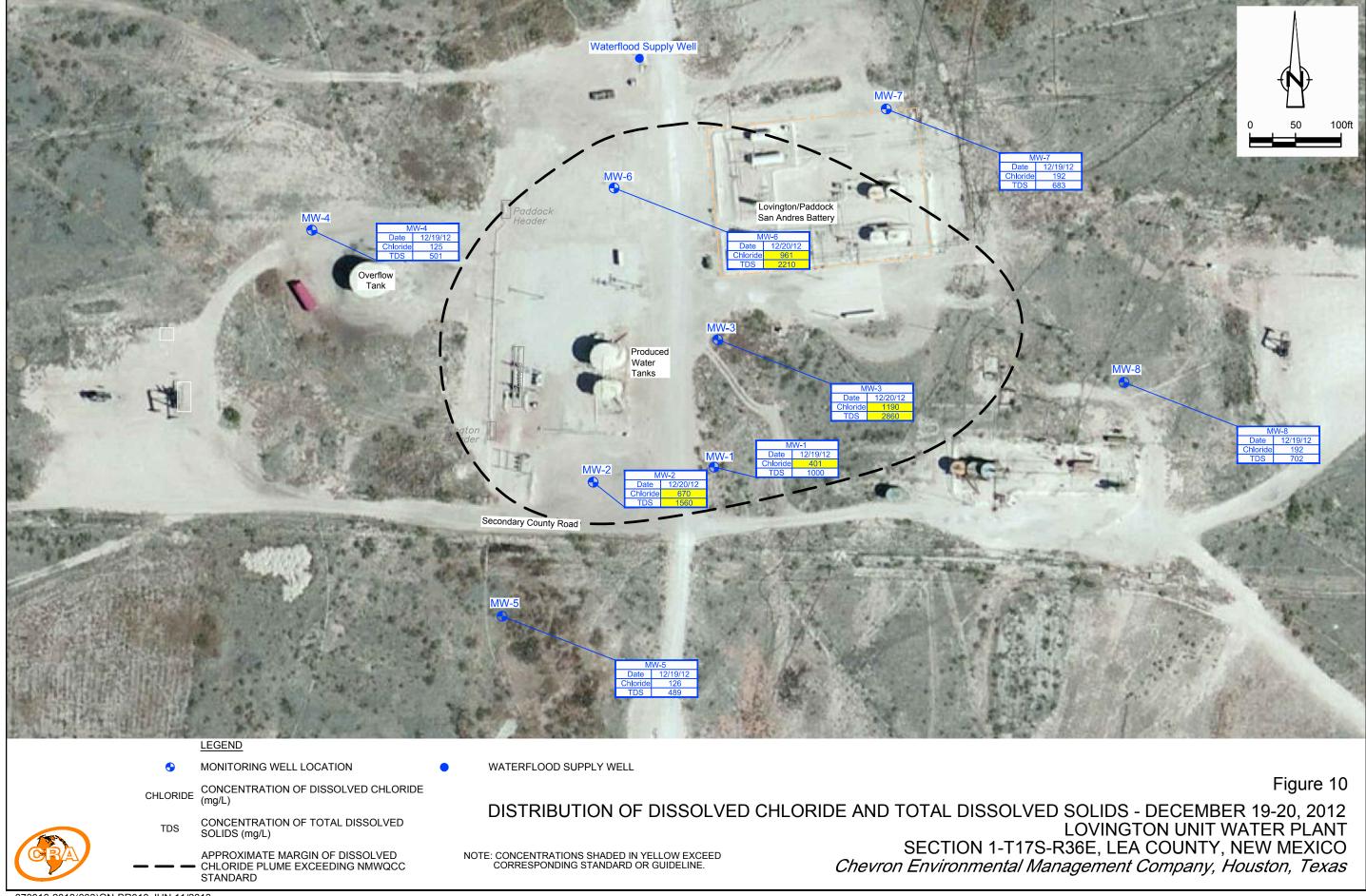
MONITORING WELL LOCATION
WATERFLOOD SUPPLY WELL











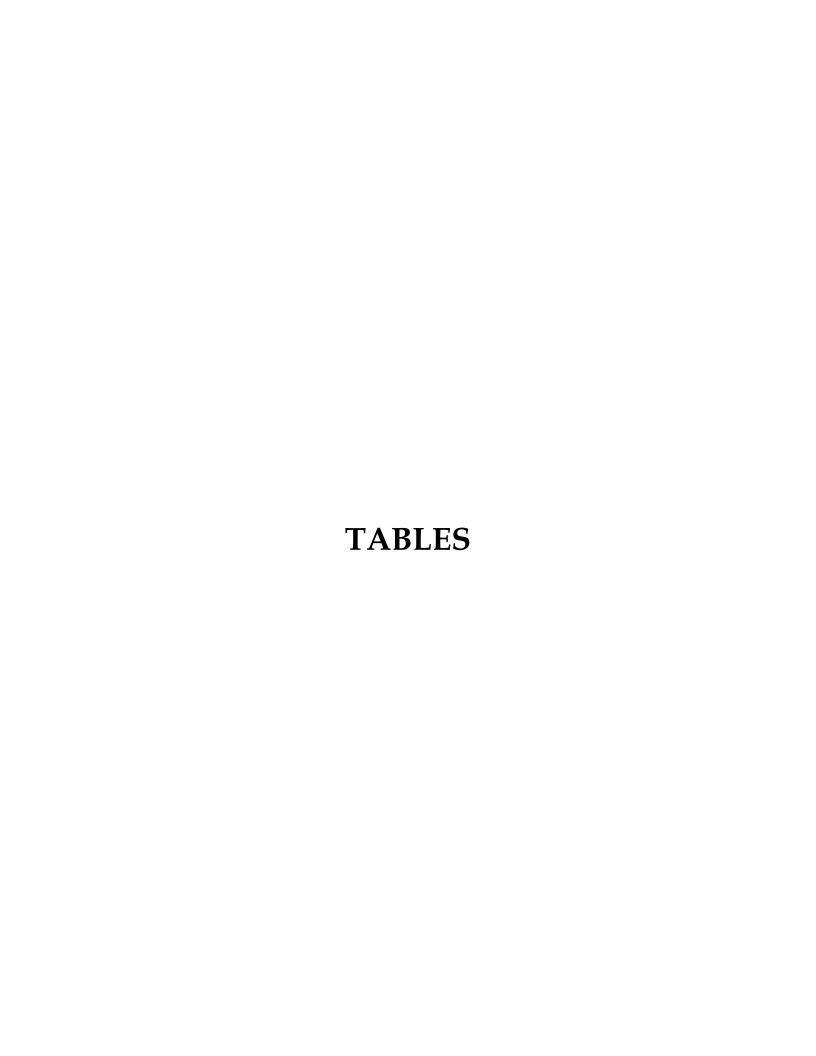


TABLE 1

CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS LOVINGTON UNIT WATER PLANT SECTION 1-T17S-R36E, LEA COUNTY, NM

				Elevation of	
	Date of	Elevation of	Depth to Water	Potentiometric	Total Depth
Well ID	Measurement	TOC	(fbtoc)	Surface (famsl)	(fbtoc)
MW-1	1/19/2010	3832.74	100.31	3732.43	
MW-1	2/25/2010	3832.74	100.41	3732.33	
MW-1	3/1/2011	3832.74	102.20	3730.54	114.8
MW-1	4/13/2011	3832.74	102.40	3730.34	114.8
MW-1	7/15/2011	3832.74	102.58	3730.16	
MW-1	12/22/2011	3832.74	102.63	3730.11	
MW-1	3/22/2012	3832.74	103.87	3728.87	
MW-1	6/13/2012	3832.74	103.89	3728.85	
MW-1	9/27/2012	3832.74	104.25	3728.49	
MW-1	12/19/2012	3832.74	104.97	3727.77	
MW-2	1/19/2010	3830.96	98.10	3732.86	
MW-2	2/25/2010	3830.96	98.17	3732.79	
MW-2	3/1/2011	3830.96	99.89	3731.07	114.42
MW-2	4/13/2011	3830.96	100.03	3730.93	114.42
MW-2	7/15/2011	3830.96	100.41	3730.55	
MW-2	12/22/2011	3830.96	100.53	3730.43	
MW-2	3/22/2012	3830.96	101.60	3729.36	
MW-2	6/13/2012	3830.96	101.60	3729.36	
MW-2	9/27/2012	3830.96	102.02	3728.94	
MW-2	12/19/2012	3830.96	102.68	3728.28	
MW-3	1/19/2010	3834.31	101.96	3732.35	
MW-3	2/25/2010	3834.31	102.10	3732.21	
MW-3	3/1/2011	3834.31	103.94	3730.37	115.2
MW-3	4/13/2011	3834.31	104.30	3730.01	114.9
MW-3	7/15/2011	3834.31	104.76	3729.55	
MW-3	12/22/2011	3834.31	104.98	3729.33	
MW-3	3/22/2012	3834.31	105.60	3728.71	
MW-3	6/13/2012	3834.31	105.50	3728.81	
MW-3	9/27/2012	3834.31	105.83	3728.48	
MW-3	12/19/2012	3834.31	106.69	3727.62	
MW-4	1/19/2010	3831.95	98.23	3733.72	
MW-4	2/25/2010	3831.95	98.28	3733.67	
MW-4	3/1/2011	3831.95	99.94	3732.01	114.52
MW-4	4/13/2011	3831.95	100.18	3731.77	114.6
MW-4	7/15/2011	3831.95	100.45	3731.50	
MW-4	12/22/2011	3831.95	100.48	3731.47	
MW-4	3/22/2012	3831.95	101.50	3730.45	
MW-4	6/13/2012	3831.95	101.55	3730.40	
MW-4	9/27/2012	3831.95	102.07	3729.88	
MW-4	12/19/2012	3831.95	102.84	3729.11	

TABLE 1

CUMULATIVE SUMMARY OF FLUID LEVEL MEASUREMENTS LOVINGTON UNIT WATER PLANT SECTION 1-T17S-R36E, LEA COUNTY, NM

Well ID	Date of Measurement	Elevation of TOC	Depth to Water (fbtoc)	Elevation of Potentiometric Surface (famsl)	Total Depth (fbtoc)
MW-5	3/22/2012	3830.07	100.15	3729.92	
MW-5	6/13/2012	3830.07	100.23	3729.84	
MW-5	9/27/2012	3830.07	100.72	3729.35	
MW-5	12/19/2012	3830.07	101.28	3728.79	
MW-6	3/22/2012	3835.60	106.73	3728.87	
MW-6	6/13/2012	3835.60	106.56	3729.04	
MW-6	9/27/2012	3835.60	107.00	3728.60	
MW-6	12/19/2012	3835.60	108.28	3727.32	
MW-7	3/22/2012	3834.46	105.97	3728.49	
MW-7	6/13/2012	3834.46	106.23	3728.23	
MW-7	9/27/2012	3834.46	106.44	3728.02	
MW-7	12/19/2012	3834.46	107.31	3727.15	
MW-8	3/22/2012	3832.40	104.71	3727.69	
MW-8	6/13/2012	3832.40	104.84	3727.56	
MW-8	9/27/2012	3832.40	105.21	3727.19	
MW-8	12/19/2012	3832.40	105.82	3726.58	

Notes:

- 1. TOC top of casing
- 2. famsl feet above mean sea level
- 3. fbtoc feet below top of casing

TABLE 2

CUMULATIVE SUMMARY OF ANALYTICAL RESULTS OF DISSOLVED CHLORIDE AND TOTAL DISSOLVED SOLIDS IN GROUNDWATER LOVINGTON UNIT WATER PLANT SECTION 1-T17S-R36E, LEA COUNTY, NM

		Depth of Sample	Chloride (mg/L by	Total Dissolved Solids (mg/L by					
Monitor Well ID	Date of Sample	(fbtoc)	USEPA 300.0)	2450C)					
			NMWQCC Standard for Drinking Water Supply						
			250	1,000					
MW-1	01/19/10		336	1080					
MW-1	02/25/10		357	1100					
MW-1	03/01/11		264	870					
MW-1	04/13/11	114.8	348	1070					
MW-1	07/15/11	114.8	271	740					
MW-1	12/22/11	114	332	1120					
MW-1	03/22/12		485	2170					
MW-1	06/14/12		502	1550					
MW-1	09/28/12		404	1190					
MW-1	12/19/12		401	1000					
MW-2	01/19/10		857	2180					
MW-2	02/25/10		901	2440					
MW-2	03/01/11		649	2390					
MW-2	04/13/11	114.42	775	2690					
MW-2	07/15/11	114.41	384	3220					
MW-2	12/22/11	114	456	1420					
MW-2	03/23/12		614	2640					
MW-2	06/14/12		292	1190					
MW-2	09/28/12		467	1490					
MW-2	12/20/12		670	1560					
MW-3	01/19/10		734	1920					
MW-3	02/25/10		763	2130					
MW-3	03/01/11		944	2670					
MW-3	04/13/11	113	1050	4180					
MW-3	07/15/11	112.76	1130	3330					
MW-3	12/22/11	110	1200	2850					
MW-3	03/23/12	110	1380	4220					
MW-3	06/14/12		1290	4220					
MW-3	09/28/12		1440	6350					
MW-3	12/20/12		1190	2860					
MW-4	01/19/10		212	622					
MW-4	02/25/10		110	586					
MW-4	03/01/11		72.6	452					
MW-4	04/13/11	105	69.8	446					
MW-4	07/15/11	110.45	65.6	366					
MW-4	12/22/11	110	66.9	526					
MW-4	03/22/12		91.7	626					
MW-4	06/14/12		64.8	460					
MW-4	09/28/12		134	661					

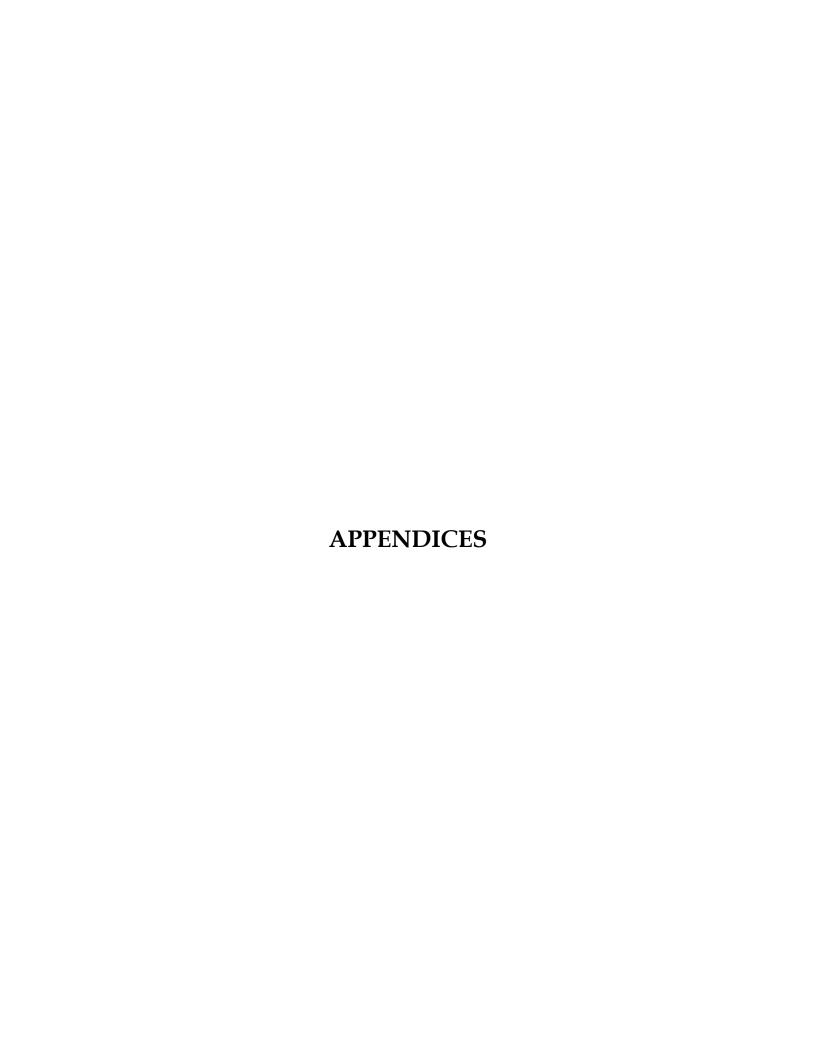
TABLE 2

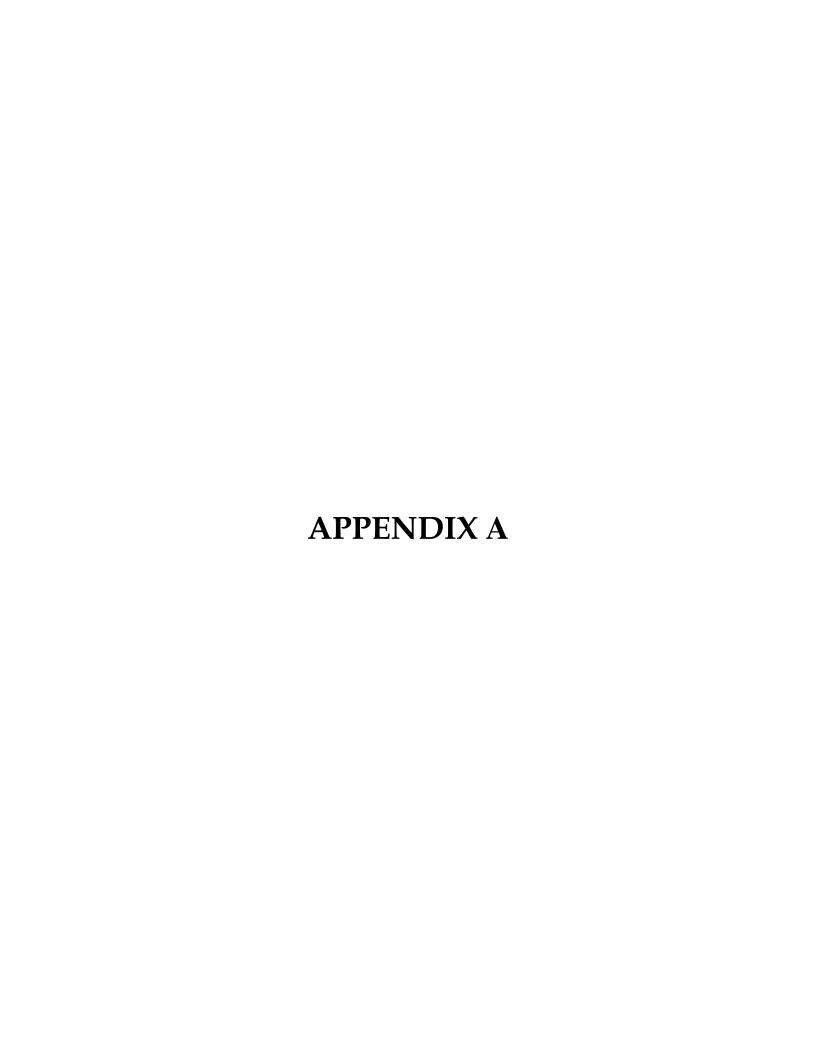
CUMULATIVE SUMMARY OF ANALYTICAL RESULTS OF DISSOLVED CHLORIDE AND TOTAL DISSOLVED SOLIDS IN GROUNDWATER LOVINGTON UNIT WATER PLANT SECTION 1-T17S-R36E, LEA COUNTY, NM

		Depth of Sample	Chloride (mg/L by	Total Dissolved Solids (mg/L by				
Monitor Well ID	Date of Sample	(fbtoc)	USEPA 300.0)	2450C)				
			NMWQCC Standard for Drinking Water Supply					
			250	1,000				
MW-4	12/19/12		125	501				
MW-5	03/22/12		199	1100				
MW-5	06/14/12		88	468				
MW-5	09/28/12		130	691				
MW-5	12/19/12		126	489				
NATAT C	02 /22 /12		243	1140				
MW-6	03/22/12							
MW-6	06/14/12		566	1670				
MW-6	09/28/12		1040	2300				
MW-6	12/20/12		961	2210				
MW-7	03/22/12		251	1210				
MW-7	06/14/12		196	926				
MW-7	09/28/12		258	1000				
MW-7	12/19/12		192	683				
MW-8	03/22/12		192	910				
MW-8	06/14/12		184	914				
MW-8	09/28/12		210	814				
MW-8	12/19/12		192	702				
Dup #1 (MW-2)	01/19/10		912	2150				
Dup #1 (WW-2) Dup-1	03/01/11		627	2400				
Dup-1 (MW-3)	04/13/11		1070	3650				
Dup-1 (MW-3) Dup-1 (MW-3)	07/15/11		1120	3480				
Dup-1 (MW-3) Dup-1 (MW-1)	12/22/11		339	1010				
Dup-1 (WW-1) Dup-1	03/23/12		1390	3100				
Dup-1 Dup-1	06/14/12		66.4	436				
Dup-1 (MW-3)	09/28/12		1430	5650				
Dup-1 (WW-5)	12/19/12		243	669				

Notes:

- 1. fbtoc feet below top of casing
- 2. NMWQCC New Mexico Water Quality Control
- 3. mg/L milligrams per liter
- 4. USEPA United States Environmnetal Protection Agency
- 5. Cells shaded yellow indicate concentrations exceeding NMWQCC Standard for Drinking Water Supply





	PROJ	JECT NAM JECT NUM NT	DRILLER	ear,	RDEN 19 bree	224	DATE DATE DRIL CRA	/TIME /TIME LING M SUPER	GNATION STARTE COMPLI ETHOD EVISOR	ETED .	ohn	1-5 9-12 12 fary	15:5 10:00 w/m	2		
	ATIGRAI VTERVAI		SAMPLE DESCRIPTION						PLE D	14040/1	LS		_	C A H N	G R	
(DEPTH:	S IN ft,	/m BGS	ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS		A M M P E	MMPE		PENETRATION RECORD SPLIT SPOON BLO (RECORD N-VALU & RECOVERIES)			OWS		S I A N M T P E L R	P / D F I	H N E A L I Z A I L	A I N S I
O M	A T	T O	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O	6"	6*	6"	6"	N	R	A L	(ppm)	гэ	Z E	
0		3"	Hand Clear		ie.											
3"		5'	Linestone . Ithm, nollowish.		cut											
			sandy hand drilling 16:10		1 1 1											
5		10	Sand - let lan, yellowish time		cut											
			en procly cemented 3-1-12 0811	4												
10		15	Sand - let ton allowish fine		cut	-										
			goorly conented 08:16													
15		20	Sand - It ton yellowish fine		cut											
			poorly cemented 08:18													
20		25	Sand- It tan, readish, fine.		cut	-										
			poorly comented 08:22													
25		30	Sand- Lt Con, reddish, fine,		cart											
			poorly cemented 08:23													
30		35	Sind-et tan reddish		cat	-										
			poorly cem but he strh@31'08:26													
35		40	Sand-Ilt tan, reddish, ofn-for		cat	- 1			\sqcup							
			soorly cemented 08:30													
40		45	Sand- Ittam, reddish, off-for		cort	_										
			poorly cerested hand otherps 08:34	/												
S	notes		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION AFTER HOURS COMPLETION DETAILS:		_	TOPSOI	L THICK	NESS _								
	AND MMENT	S	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LEI NOTES:	NGTH,	and Sami	PLE INT	ERVAL									



	PROJ	ECT NUM	STRATIGRAPHY LOG (OVERBURDEN) DELLING CONTRACTOR White Drilling DATE/TIME STARTED 2-11-12 15:5:52 DATE/TIME COMPLETED 3-1-12 10:06 DRILLER MEATHER (A.M.) 2-1-12 10:06 DRILLER MEATHER (A.M.) 2-1-12 10:06 DRILLING METHOD AIC STARTED 2-10:06 DRILLING METHOD AIC STARTED 3-1-12 10:06 DRILLING METHOD AIC STARTED 3-1-12 10
	ATIGRAI		SAMPLE DESCRIPTION SAMPLE DETAILS C A G H N R
(DEPTHS F R		m BGS	SOIL TYPE SYMBOL(S) - PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS S A RECORD A N P M L I N P E C S PENETRATION S A N P M I I V I N P E (RECORD N-VALUES P E D F C S P L T & RECOVERIES) L R I A I S
0 M	A	T O	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE E NO 6" 6" 6" 6" 8" 8 D L S Z SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).
45		50	Sandstone - It ton redship win out
			line well comented (cale) had hard
			William ORIZE LA
50		55	Can patche - 1+ Tan u Mine line unt
-2		22	well to get I can to de Cale years
			had dilli
5.5		60	There contains
20		40	Sport- let tan readish fine, and
Bec		10	swaps mod Camentia, De120
60		65	Sand - It lan, readish 15th out
100			with selt worky comented OX.000
65		10	Stand It Um reddland, of my cot
		-	sittly peorly comented 08198
70		75	sond - It tem reddish up fine cut
			silty, poorly com 19:02
75		80	sand- et tan, reddish, ups cut
			silte south Comented 09:06
80		85	Sand- It tan readish, who he cut
			selter soorly cam 109/11
9	NOTES AND COMMENTS		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER TOPSOIL THICKNESS WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:
co			NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LENGTH, AND SAMPLE INTERVAL. NOTES:



	PRO	JECT NAMED IN THE STREET N	IBER 173016 DRILLER DO ATKINS	Ori Obs	RDEN Ling	J)	DATE DATE DRIL	TIME TIME	SNATION STARTE COMPLI ETHOD VISOR	ETED _	10	PAGE -5 -5 -12 -12 -12 -12 -12	3 OF	4 52 26 24	
STR	ATIGRAI	PHIC	SAMPLE DESCRIPTION						LE D					CA	G
IN DEPTHS	TERVA		ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) - PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR.	S A M P	S A M M P E		SPLI	REC T SPC	RATION ORD ON BL N-VAL	OWS		S I A N M T P E L R	P / I F	H N E A M L I Y C S	R A I N
FR		_	GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	L	LTIH		. &	RECO	VERIES	3)		L R E V	I D	A I L S	S
O M	A T	T O	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	G D	6"	6"	6"	6"	N	R	A L	(ppm)	1 3	Z
85		90	silt- It tan reddish, with up		out	•									
90		95	Cit - Of tone addish with		cut	_				-					
10			Who sed works com 29:19		cur									\vdash	
95	_	100	Silt - It tom herdish with		cut	-									
,_			, who sed poorly com 09.72	7											
100		103	Silt It the headish with		cut	4				-					
			In ad proils cen												
105		110	Selt - et tan redshak with		car	<u>-</u>									
			who sol poorly com 69:29												
110		115	Selt - It tan reddish with		cent		-								
			the sel poorly com												
119		120	Silt- It tan reddish with winsd		Cat										
			poorly cemented											igsquare	
20		125	Selt - Et tan reddish with of		cut									\Box	
			pl, poorly comented			_								\sqcup	
125		130	sell the reachest with ofn		cut									\sqcup	
			Sol, poorly comented 45:02	n.										\sqcup	
	NOTES		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:			10PS0I	L THICK	NESS _							
	AND MOVENT	S	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	NGTH,	AND SAM	PLE INT	ERVAL								



	PROJ	JECT NAM JECT NUM NT	STRATIGRAPHY LOG (OVE DEER 0730/6 DRILLER FOR HAM S SURFACE ELEVATION WEATHER (A.M.) 3-7-12 (E.M.) (P.M.) 2-29-12 (E.M.)	RBU	RDEN	<u>7</u>	DATE DATE DRILL CRA	LING M SUPER	START COMPL ETHOD VISOR	ED	ohn	1-5 9-12	4 or 15:10:10	SZ.	
	ATIGRAI		SAMPLE DESCRIPTION		S			SAME	LE D	ETAL	LS			CA	G R
(DEPTH:	R MOISTORE CONTENT, SUPPLEMENTARY DESCRIPTORS						SPLI (REC	REC T SPO CORD I RECO	ORD ON BL N-VAL	OWS		S I M T P E L V	P / I F I D	HEMICAL SIS	A I N S I
0 M	A		NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	MPLE#	IH NO GD	6"	6"	6"	6"	N	R	Ā		P 2	Ž
130		133	Silt - Itto and died with it	<u> </u>	and	_			52.			п_	(ppm)		-
100		100	sed protection to the 10033 (10:06		ap-c					\vdash					
		 	to, justing destruction, 1,013) 10.00												
		1													
-		-		-						-					
-		-				_									
-		-													
	_														
		<u> </u>													
-		-													
		-													
	NOTES AND MMENT		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS: NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:					NESS _					<u> </u>		
			114.180				LE INTERVAL								



PROJECT NAME Lovington Unit Water Plant	WELL DESIGNATION MW-5
PROJECT NUMBER 073016	DATE COMPLETED 3/5/12
CLIENT Chevron Environmental Management Company	DRILLING METHOD Air Rotary
LOCATION NE/4-Section 1-T17S-R36E	CRA SUPERVISOR John Schnable
CAP TYPE J-Plug	MEASURE BOTTOM OF WELL (AFTER COMPLETION) ft/m (BELOW TOP OF RISER PIPE)
PROTECTIVE CASING GROUND	STICK UP = $\frac{3}{\text{ft/m}}$
BOTTOM OF SURFACE SEAL 9 ft/m	SURFACE SEAL TYPE Concrete
	BOREHOLE DIAMETER 7.875 in. in/cm
	RISER PIPE
TOP OF SEAL* AT 9 ft/m	ANNULUS BACKFILL TYPE: 3/8 Holeplug Bentonite Chips
BOTTOM OF 88 seal* at ft/m TOP OF SCREEN* AT 95 ft/m	SEAL TYPE: 3/8 Holeplug Bentonite Chips PACK TYPE:—SAND, SIZE 8/16 Filter Pack Sand —GRAVEL —NATURAL
BOTTOM OF SCREEN* AT 130 ft/m BOTTOM OF FILTER PACK AT ft/m BOTTOM OF 133 ft/m BOTTOM OF 133	BOREHOLE BACKFILL MATERIAL (IF NOT FILTER PACK) 8/16 Filter Pack Sand * NOTE: ALL DIMENSIONS ARE BELOW GROUND SURFACE (BGS)
SCREEN TYPE.	oped louvre other:
SCREEN THE.	other:
Schedule 40	4 in. in/cm SCREEN SLOT SIZE: 0.020 in.
	SER PIPE DIAMETER: 4 in. in/cm
surface casing (y/n) No material	·
	in/cm SEALANT
	p DURATION:
DESCRIPTION OF PURGED WATER: Devel	opment water very cloudy to nearly clear at end. d 75 gallons. Pumped 105 gallons.

WELL RECORD & LOG (Version 6/9/08)

PAGE 1 OF 2

TRN NUMBER



FOR OSE INTERNAL USE

FILE NUMBER

LOCATION

1-20-	POD NUMI	BER (WEL	LNU	MBER)					OSE FILE NUA	ABER(S)			
Ō	MW-5												
AT	WELL OW		1 /						PHONE (OPTIO	ONAL)			
Q	City of L	_ovingt	on/	Attn: City N	1anager								
T.I	WELL OW	NER MAIL	.ING	ADDRESS					CITY		STATE		ZIP
VEI	214 S. I	_ove S	t.						Lovington		NM	88	3260
ΛQ!				•	DEGREES		MINUTES SEC	ONDS	<u> </u>	······································			
AN	WELI LOCATI				32		52	2.00 N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SEC	COND	
₹AΙ	(FROM C	L	LATI	TUDE			····		}	UIRED: WGS 84			
GENERAL AND WELL LOCATION	(110311)		LON	GITUDE	103		18 2	22.50 W	D.11011112				
GE	DESCRIPT	ION RELA	ATINO	WELL LOCAT	ON TO STREET AL	DRES	S AND COMMON LAND	MARKS					
1.	Lovingto	on Wat	ter F	⊃lant									
		······································											····
	(2.5 AC	RE)	(10 ACRE)	(40 ACRE)		(160 ACRE)	SECTION		TOWNSHIP	NORTH	RANGE	₹ EAST
ΙΑL		4		1/4	1/4		1/4		1	17	✓ south	36	WEST
2. OPTIONAL	SUBDIVISI	ON NAME	Ξ					LOT NUM	IBER	BLOCK NUMBER		UNIT/TRA	
PT.													G
2. C	HYDROGR	APHIC SU	RVE	Y						MAP NUMBER		TRACT NU	JMBER
	LICENSE N	UMBER		NAME OF LICE	ENSED DRILLER					NAME OF WELL DE	ULLING COM	IPANY	
	WD-	1456	İ	John W. W	/hite					White Drilling	Compar	ıy, Inc.	
	DRILLING STARTED			DRILLING EN	DED DEPTH OF	СОМІ	LETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR	RST ENCOUN	TERED (FT)	
·~	2/29/2012			3/05/201	2		130.0				100.1	19	
9	2/29/2012				L					STATIC WATER LE	VEL IN COM	PLETED WEI	LL (FT)
(F)	COMPLETE	ED WELL I	IS:	ARTESIAN	DRY H	OLE	SHALLOW (UNC	ONFINED)			100.1	19	
SK			····		(T.1								
Z	DRILLING	FLUID:		AIR	✓ MUD		ADDITIVES – SP	ECIFY:					
3. DRILLING INFORMATION	DRILLING	METHOD:	:	✓ ROTARY	HAMN	IER	CABLE TOOL	ОТНЕ	R~SPECIFY:				
CICI	DEPT	H (FT)		BORE HOL	E	C	ASING	CON	NECTION	INSIDE DIA.	CASING	3 WALL	SLOT
13.	FROM	TO		DIA. (IN)		MA	TERIAL	TYPE	(CASING)	CASING (IN)	THICKN	IESS (IN)	SIZE (IN)
3.1	0.0	95.0		7 7/8		P۱	C Riser	4	4 tpi	4.0	Sch	1. 40	
	95.0	130.0	0	7 7/8		PV	C Screen	-	4 tpi	4.0	Sch	1. 40	.020
				,									
	DEPT	H (FT)	寸	THICKNES	e	Ti C	DRMATION DESCRI	PTION OF P	RINCIPAL W	ATER-REARING S	TRATA		YIELD
×	FROM	ТО	\dashv	(FT)	3	10	(INCLUDE WATER						(GPM)
EA1	100.0	130.0	$\frac{1}{2}$	30.0					an silty claye	· · · · · · · · · · · · · · · · · · ·			
ST	100.0	100.0	-	30.0			5104	n o ngin t	an only ordye	y suriu.			
NG.			+		-				***************************************				
AR			_		-					<u> </u>			
BE			-						***************************************				
LER											*		
WATER BEARING STRATA	METHOD U	ISED TO E	ESTIM	IATE YIELD OF	WATER-BEARING	STRA	TA			TOTAL ESTIMATEI	WELL YIEL	.D (GPM)	
4.													
1													

POD NUMBER

	TEMPE OF	e prinary.	SUBMER	RSIBLE	☐ JET	☐ NO PUMP – WELL NOT EQUIPPED		·	
JMP	TYPE O	PUMP:	TURBIN	Е	☐ CYLINDER	☐ OTHER – SPECIFY:			<u> </u>
SEAL AND PUMP	ANNI	II AD	DEPTH FROM	TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METH PLACE	
AL	SEAL	AND	130.0	88.0	7 7/8"	Brady 8/16 Sand	15 sacks	Hand	l Mix
5. SI	GRAVE	L PACK	88.0	10.0	7 7/8"	Bentonite Pellets	17 sacks	Hand	
			10.0	0.0	7 7/8"	Cement	2.278	Hand	l Mix
	DEPT FROM	H (FT) TO	THICK (FI		ì	COLOR AND TYPE OF MATERIAL ENCOUNTS JDE WATER-BEARING CAVITIES OR FRACTU		WA' BEAR	
	0.0	1.5	1.	5		Brown clayey sand.		☐ YES	☑ NO
	1.5	18.0	16.	e		Caliche w/limestone.		☐ YES	☑ NO
	18.0	31.0	13	.0		Light brown silty sand w/calliche.		☐ YES	☑ NO
	31.0	50.5	19.	.5		Tan & light brown sand/sandstone	-	☐ YES	☑ NO
ן ד	50.5	53.5	3.	0		Brown silty sandstone/sand.		☐ YES	✓ NO
GEOLOGIC LOG OF WELL	53.5	98.0	44.	.5		Brown silty sandstone/sand.		☐ YES	☑ NO
OF	98.0	130.0	32	.0		Brown & light tan silty clayey sand	•	☑ YES	□NO
500	-							☐ YES	□ NO
l Sic l								☐ YES	□NO
000								☐ YES	☐ NO
GEO								☐ YES	□NO
6.0								☐ YES	□ NO
								☐ YES	□NO
								☐ YES	□NO
								☐ YES	□NO
								☐ YES	□NO
								☐ YES	□ NO
			ATTACH	ADDITION	AL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL		
		* * *	METHOD:	BAILE	R □ PUMP	☐ AIR LIFT ☐ OTHER – SPECIFY:			
L INFO	WELL	TEST				ATA COLLECTED DURING WELL TESTING, I		ME, END TI	МЕ,
NA)	ADDITION	IAI STATEN	IENTS OR EXPL						
ADDITIONAL	ADDITION	MUSIATEN	ENTS OR EXIL	ANATIONS.					
ggy									
ું જી									
TEST &									
7.7									
	THE IIN	DERSIGNI	ED HEBERY (PRIFIEST	THAT TO THE RE	ST OF HIS OR HER KNOWLEDGE AND BELIE	F. THE FOREGOING IS	S A TRUE A	ND
URE	CORREC	T RECOR	D OF THE AB	OVE DESCI	RIBED HOLE AND	O THAT HE OR SHE WILL FILE THIS WELL RE ON OF WELL DRILLING:	CORD WITH THE STA	TE ENGIN	EER AND
VAT	THE PER	WITHOL	DER WITHIN	ZYDAYJA	FIER COMPLETE				
SIGNATURE		•			er,	3/22/2012			
8.			SIQNATUR	E OF DRILI	.ER	DATE			
L									

FOR OSE INTERNAL USE		WELL RECORD & LOG (Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

432-230-4310

	PRO		THER 073/016 EMC Softwarfton, MM WRATHER (A.M.) Clear light (P.M.)	RBU		1)	DATE DATE DRILL CRA	TIME TIME LING M SUPER		ETED _	2-2 tor	1-6 9-12 9-12	1	8	
IN	TIGRAI TERVA	LS	SAMPLE DESCRIPTION ORDER OF DESCRIPTORS:		S				PLE D		LS	S I		C A H N E A	G R A
(DEPTHS F R	IN ft	/m BGS	SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S A M P L E	M M P E L T		SPLI (RE	REC T SPO CORD	ORD ON BL N-VALI VERIES	OWS		A N M T P E L R	P / I F D F	M L I Y C S	I N S
R O M	A T	T	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O G D	6"	6"	6"	6"	N	R	E V A L	(ppm)	A I L S	Z E
0		4"	Clear by hard of post digger		cut	-							(ррш)		
4"		5	Cimentone - let tom yellowish.		cont										
			hard driller, midsitte, sandstone												
.5		in	Sent well Comented (cale)		cut	2									
		10	fire med verywell cemented (cale)		cou										
10		15	Sandstone . It tow, reddish fine-		cut	4									
			med, well conented (cole)												
15		20	Sandstone - It tim, reddigh, #-for-		cut						-				
20		25	medica, well comented (cole)	-		-			H		-				
20		20	and an more come too		cul						-				
25		30	Song there - Ot tem reddish for		cut	-									
			med gr, poorly comented												
30		35	Sand sandston - Of tan reddish		cost										
			for medge strucks well consited												
			pardelilling												
		<u> </u>				<u> </u>									
	NOTES AND MMENT	g.	DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS: NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE	O JACINGON,			L THICK	NESS _							
	marril I	.5	NOTES:	**************************************	170118 G C (1-17) (1701)										



			STRATIGRAPHY LOG (OVE	_		1)					23.	PAGE	<u>Z</u> or	4	
	PROJ CLIK LOCA	NT			lling		DATE	/TIME	STARTE COMPLE ETHOD	D	2-29	-6 2-12 1-12 Hary			
	YE/4	1-5e					2.0000	SUPER				Show	able		
	ATIGRAI		SAMPLE DESCRIPTION			_		SAMI	LE D	ETAI	LS			C A H N	G R
(DEPTHS	TERVAI IN ft,		ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S A M P L	S M M P E L T I H		SPLI (RE	REC T SPO CORD	RATION ORD ON BLA N-VALU VERIES	JES		S N M T P R L V	P / D F	E A M L I Y C S A I	A I N S I
O M	A T	T	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O	6"	6"	6"	6"	N	R	A L	(ppm)	LS	Ž
35		40	Sund Gard stone - Of Tan reddich		11								(22)		
			in-medar streets well comente	1	cur										
			The said of the sa												
40		315	Sand sandstone - It tan reddish		Cirt	_									
10		7.7	line - medar stocked well comented		- M										
45		50	God- of the addish linear		cut	-									
			works une tol												
50		55	End - It too reddist line as		Cui	/									
			roots comented 11:20												
55		60	Sand - It tan suldish tine on		Cut	4									
			poorly comental 11:22												
100		65	Sand- Of ten reddish, fire of		ent	4									
			poorly comented 19126												
65		70	Sand - It. tom, reddish, fine of.		cut	-									
			poorly Cem 11/29												
70		75	Sand' et ten reddish fine gr.		cut										
-			poorly comented 11:31												
75		80	Sand - lt tan, reddish ofn fine g	2.	cut										
			poorly cemented 11:33												
	Nome		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:			TOPSOL	l Thick	(NESS _							
1	NOTES AND MAKENT	S	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	NGTH,	AND SAM	SAMPLE INTERVAL.									



			STRATIGRAPHY LOG (OVE	RBU	JRDEI	V)						PAGE	<u> </u>	4	
	PROJ	ECT NAM	TE Covington Water Plant DRILLING CONTRACTOR White				HOLE	DESIG	INATION	/	201	1-6			
	PROJ	ECT NU	BER O DRILLER OO HALIN		-				STARTE		7-2	9-12	10:	56	
			SURFACE ELEVATION_	7-9					COMPLI			2.15	12:	-	
	LOCA	TION	E/4-Sect-71B-R36E WRATHER (A.M.) Clear, bree	coy					ETHOD . VISOR			stary	nabi		
		142	SAMPLE DESCRIPTION	_			STATE		PLE D				2,7-1.07	C A	G
	ATIGRAF VTERVAL		ORDER OF DESCRIPTORS:		S	f			RATION		<u> </u>	S I		H N	R
(DEPTHS			SOIL TYPE SYMBOL(S) - PRIMARY COMPONENT(S). (NATURE OF DEPOSIT).	S A	A M M			REC	ORD			A Ñ M T	P /	E A M L I Y	A
F			SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR,	M P	PE		(RE	CORD	ON BLA	JES		P E L R	DF	CSI	N
R			MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	L	IH		&	RECO	VERIES	5)		EV	D	A I L S	S I
M	A T	T O	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O G D	6"	8"	6"	6*	N	R	A L	(ppm)		Z E
80		85	sand - let tan reddish vfn-fn		Cut	-									
			gr, poorly cemental 11:37												
85		90	Smill sandstone - lt tan, reldin	C.	cut	-									
			poorly comented, of n-fngs 11:39												
90		95	Silt - It tan raddish workned		cut	+									
			poorly comented 11:42												
95		100	Silt- let ton reddish, wyrand		Cert	-									
			poorly cemented somehd strb 11:47												
100		105	Alt - lite tan, reddish vin sol		cat										
			poorly comented, some streets												
			well cer (cale) 11.50			,									
103		110	Silt - Tein reddish, uf vfn sd,		cut										
			poorly cemented												
110		115	Silt-It tan, reddish, uf ifn		cuit										
			set, poorly comented 11:55												
115	Č.	120	Silt I lt tan reddish, wif vin		cut										
1			Id poorly consisted 11:57			,									
120		125	Silt-let ton, reddish, a ofned		al										
			poorly comented 12101												
			DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER _			TOPSOIL	THICK	NESS _							
			WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS												
	NOTES		COMPLETION DETAILS:				-				-				
co	AND MMENT	S	NOTE: FOR EACH SPLIT-SPOON SAMPLE, RECORD BLOW COUNTS, N-VALUE, SAMPLE RECOVERY LE NOTES:	NGTH,	AND SAM	PLE INT	ERVAL.								



	PROJ	Gen Carlot Hills	HER 0735/6 Plant EM SURFACE ELEVATION WEATHER (A.M.) (P.M.) (P.M.)	rin	RDEN	1)	DATE DATE DRILL CRA	/TIME /TIME LING M SUPER	COMPLI ETHOD VISOR _	ETED_	2-2 -10,	PAGE 1-6 19-12 129-12 140 14	w/r	08 nud	
IN	ATIGRAI ITERVAI 3 IN ft,		SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S M P L	S M M P E L T I H N O	216	SPLI (REC &	PENETI REC T SPO CORD I RECO	ON BL N-VALI VERIES	ows ues s)	Me	S I A N M T P E L R	P / I F I D	C H A L Y S I S	G R I N S I Z
М	Î	Ô	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	#	G D	6"	6"	6"	6"	N	R	A L	(ppm)		Ē
130		130	Selt-let tan, reddish, uf ofner poorly cemented 12:04 Selt-let ten, reddish, ul van sel		cut										
			poorly comented TD 135 12:08												
\vdash												 			
ļ						-			-					-	
_		-			-	_					_				
-		 			-	-	-				-	-			
		-			ļ	-		-			_				
		-										-		-	
		-		-							_	_			
		-		-			-	-	_			\vdash			
		-			-							\vdash			
		-			-			_	_		\vdash	\vdash			-
					-							-			
	notes		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER TOPSOIL THICKNESS WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:												
co	AND MUENT	3	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LEP NOTES:	NGTH,	and sam	IPLE INTERVAL									



Lovington Unit Water Plant	MW-6
PROJECT NAME Lovington Unit Water Plant	WELL DESIGNATION MW-6
PROJECT NUMBER 073016	DATE COMPLETED 3/5/12
CLIENT Chevron Environmental Management Company	DRILLING METHOD Air Rotary
LOCATION NE/4-Section 1-T17S-R36E	CRA SUPERVISOR John Schnable
	MINACHIDE DOMINON OF WITH
181	MEASURE BOTTOM OF WELL (AFTER COMPLETION) ft/m (BELOW TOP OF RISER PIPE)
CAP TYPE J-Plug	(2000) 300 30 300 30,
PROTECTIVE CASING	₽
	$STICK UP = \frac{3}{ft/m}$
GROUND	
BOTTOM OF SURFACE SEAL 30 ft/m	SURFACE SEAL TYPE Cement
	BOREHOLE DIAMETER 7.875 in. in/cm
	RISER PIPE Sch. 40 PVC, 4 in. Diameter
TOP OF	ANNULUS BACKFILL TYPE:
SEAL* AT 30 ft/m	
	SEAL TYPE: 3/8 Holeplug Bentonite Chips
BOTTOM OF 88 seal* AT 88	
TOP OF SCREEN* AT 95 ft/m	PACK TYPE:-SAND, SIZE 8/16 Filter Pack Sand -GRAVEL
	-NATURAL
BOTTOM OF SCREEN* AT 130 ft/m	BOREHOLE BACKFILL MATERIAL (IF NOT FILTER PACK)8/16 Filter Pack Sand
BOTTOM OF FILTER PACK AT 135 ft/m	* NOTE:
I MILIN TROK AT TO/ III	ALL DIMENSIONS ARE BELOW GROUND SURFACE (BGS)
BOTTOM OF HOLE* AT ft/m	
SCREEN TYPE: continuous slot wire wre	apped louvre other:
SCREEN MATERIAL: Stainless steel 🗹 pvc	other:
SCREEN LENGTH: 35 ft. ft/m SCREEN DIAMETER:	4 in. in/cm SCREEN SLOT SIZE: 0.020 in. lowest 5 ft. 0.010 in. slot
	RISER PIPE DIAMETER: 4 in. in/cm
SURFACE CASING (Y/N) NO MATERIAL	DEPTH ft/m
	in/cm SEALANT
DEVELOPMENT: METHOD: Bailer and submersible pun	np duration:
DESCRIPTION OF PURGED WATER: Deve	elopment water very cloudy to moderately cloudy at end velopment. Bailed gallons. Pumped 65 gallons.
200010 00/002\CN \\/\0.00 APP 20/2009 (SP 15) PEVISION 6	

FOR OSE INTERNAL USE

FILE NUMBER

LOCATION

ION	POD NUMI	BER (WEL	L NU	MBER)					OSE FILE NUM	1BER(S)						
OCATI	well ow City of I			Attn: City N	/lanager				PHONE (OPTIO	ONAL)						
GENERAL AND WELL LOCATION	WELL OW 214 S. I			ADDRESS					CITY Lovington		STATE NM	88	zip 260			
ND	WELI	L			DEGREES	MINUTES	SECOND	S								
VL A	LOCATI	ON	LAT	ITUDE	32	52	6.6	80 N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SEC	COND				
ER.	(FROM C	GPS)	LON	GITUDE	103	18	21.0	00 W	* DATUM REC	QUIRED: WGS 84						
1. GE	DESCRIPT Lovingto				ON TO STREET ADDRE	SS AND COMMON	LANDMAR	KS								
	(2.5 AC)	RE)	. ((10 ACRE)	(40 ACRE)	(160 ACRE)) S	ECTION	·	TOWNSHIP	NORTH	RANGE	✓ EAST			
[AL	1	/4		1/4	1/4	1/4			1	17	✓ south	36	WEST			
OPTIONAL	SUBDIVISI	ON NAMI	Е				L	OT NUM	IBER	BLOCK NUMBER		UNIT/TRA	G G			
2, C	HYDROGR	APHIC SU	JRVE	Υ		:				MAP NUMBER		TRACT NU	MBER			
	LICENSE N				ENSED DRILLER						NAME OF WELL DRILLING COMPANY					
		-1456		John W. W						White Drilling		•				
Z	DRILLING STARTED 2/28/2012			3/05/201		PLETED WELL (FT) 130.0) E	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR	106.6					
DRILLING INFORMATION	COMPLET	ED WELL	IS:	ARTESIAN	DRY HOLE	✓ SHALLOW	V (UNCONF	(NED)		STATIC WATER LEVEL IN COMPLETED 106.67						
FOF	DRILLING	FLUID:		☐ AIR	✓ MUD	ADDITIVE	ES – SPECIF	Y:								
VG II	DRILLING	METHOD);	✓ ROTARY	HAMMER	CABLETO	OOL [OTHE	R – SPECIFY:				·			
RILLD	DEPT FROM	H (FT) TO		BORE HOL DIA, (IN)		CASING ATERIAL			NECTION (CASING)	INSIDE DIA. CASING (IN)		O WALL IESS (IN)	SLOT SIZE (IN)			
3. D	0.0	95.0	5	7 7/8	P'	VC Riser			4 tpi	4.0	Sch	ı. 40				
	95.0	130.	.0	7 7/8	PV	C Screen		4	4 tpi	4.0	Sch	1. 40	.020			
											ļ					
													THE .			
_		H (FT)		THICKNES	S F					ATER-BEARING S			YIELD (GPM)			
KAT.	FROM 105.0	TO	\rightarrow	(FT) 17.0		(INCLUDE WA			rown sand.	R FRACTURE ZON			(GFWI)			
ST	122.0	122. 125.		3.0					Istone light t	an						
SNI	125.0	135.	$\overline{}$	5.0		····			and/sandsto							
EAR	,2010			0.0					******		100					
R B			\dashv								· · · · · · · · · · · · · · · · · · ·					
4. WATER BEARING STRATA	МЕТНОО (JSED TO I	ESTIN	MATE YIELD OF	WATER-BEARING STRA	ATA				TOTAL ESTIMATEE	WELL YIEI	.D (GPM)				

POD NUMBER

WELL RECORD & LOG (Version 6/9/08)

PAGE 1 OF 2

TRN NUMBER

	TVDE O	E DI IX 4D.	☐ SUBMER	RSIBLE	☐ JET	☐ NO PUMP – WELL NOT EQUIPPED					
JMIP	TYPE O	r PUMP:	TURBINI	E	CYLINDER	☐ OTHER – SPECIFY:			<u> </u>		
SEAL AND PUMP	ANNU	II AD	DEPTH FROM	TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHO PLACE			
AL.	SEAL	AND	135.0	88.0	7 7/8"	Brady 8/16 Sand	19 sacks	Hand	l Mix		
5. SI	GRAVE	L PACK	88.0	30.0	7 7/8"	Bentonite Pellets	14 sacks	Hand			
			30.0	0.0	7 7/8"	Cement	6.834	Hand	l Mix		
	DEPTI FROM	H (FT) TO	THICK (FT		Į.	COLOR AND TYPE OF MATERIAL ENCOUNTI JDE WATER-BEARING CAVITIES OR FRACTU		WA' 'BEAR			
·	0.0	1.0	1.0			Base caliche.		☐ YES	☑ NO		
	1.0	2.0	1.0			Brown sand.		☐ YES	☑ NO		
	2.0	5.0	3.0			Limestone.		☐ YES	☑ NO		
	5.0	55.0	50.	.0		Tan sand w/caliche		☐ YES	☑ NO		
Т	55.0	122.0	67.	.0		Light brown sand.		☑ YES	□ NO		
GEOLOGIC LOG OF WELL	122.0	125.0	3.0	0		Hard sandstone light tan.		☑ YES	□ NO		
OF	125.0		☑ YES	□ NO							
907		125.0 135.0 10.0 Light tan sand/sandstone.									
EIC.											
)TO											
GEC				☐ YES	□ NO						
ý.								☐ YES	□NO		
								☐ YES	□ NO		
								☐ YES	□ NO		
								☐ YES	□ NO		
								☐ YES	NO		
								YES	□ NO		
			ATTACH	ADDITION	AL PAGES AS NE	EEDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL				
0			METHOD:	☐ BAILE	R ☐ PUMP	☐ AIR LIFT ☐ OTHER – SPECIFY:	*******				
L INFO	WELL	TEST	TEST RESU AND A TAE	LTS - ATTA BLE SHOWI	CH A COPY OF E NG DISCHARGE	NATA COLLECTED DURING WELL TESTING, I AND DRAWDOWN OVER THE TESTING PERIC	NCLUDING START TI DD.	ME, END TI	ме,		
ADDITIONAL	ADDITION	AL STATEM	IENTS OR EXPL	ANATIONS:		A STATE OF THE STA					
LLIQ											
(AD											
ST &											
7. TEST &											
,			***************************************								
TURE	CORREC	T RECOR	D OF THE AB	OVE DESCI	RIBED HOLE AND	ST OF HIS OR HER KNOWLEDGE AND BELIE O THAT HE OR SHE WILL FILE THIS WELL RE ON OF WELL DRILLING:	F, THE FOREGOING IS CORD WITH THE STA	S A TRUE A ATE ENGINI	ND EER AND		
SIGNATURE					and the second s	3/22/2012					
8.8			SIGNATUR	E OF DRILL	LER	DATE					

FOR OSE INTERNAL USE		WELL RECORD & LO	G (Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2

	PRO	NT	STRATIGRAPHY LOG (OVE BE LOVINGTON UNIT UNITARY PARTIES BER 0730/6 BURRACE BLEVATION WRATHER (A.M.) Clear, bree (P.M.)		JRDEN	Γ)	DATE DATE DRIL	/TIME /TIME LING M	STARTE COMPLI ETHOD VISOR	ETED_	3-7 3-7 2-10	PAGE 1-7 1-12 1-12 1-12 1-12 1-12 1-12 1-12	1 or 11:32 2/11:32	2	
	ATIGRAI		SAMPLE DESCRIPTION ORDER OF DESCRIPTORS:		s				LE D		LS	SI		C A H N	G R
(DEPTHS F R	IN ft	m BGS	SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S M P L	A M M P E L T I H		SPLI (RE	REC T SPC CORD	RATION ORD ON BL N-VALI VERIES	ows		A T E R V	P / D F I D	E A M L I Y C S A I L S	A I N S I
O M	A T	O	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O G D	6"	6**	6"	6"	N	R	A L	(ppm)	1 5	Z
0		3"	Mers to 3" by af post diser		art										
3"		51	Sandstone - It tan dellowish,		cut	-									
			for med ar, o well too comented		-										
			(calc) 09:27												
5		10	Sandstone - let tom yellowish.		cut										
			for meder well comented, hard												
			axillen 09:48												
10		15	Sand - It ten vellowish,		cut	-									
			for-medge addition poorly												
			cemented 09:50												
15		20	Spind - let tan reddish, for med		cart	ŭ									
			ar, poorly comented 1 09:52												
20		25	Sand-etter, reddish, fr-		cut	1									
			medar, most poorly com, some												=
			handdrilling strenges 10:02						19						
25		30	Sand If the reddish for medas		aut										
			poorly comented 10th 04												
30		35	- Sand . Il ton reddish for meder		cut										
			popula cemental 10:05												
	NOTES AND MMENT	rs	DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS: NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	arti - to series	NAME OF THE PERSON	ENGINE SWITE	L THICK	iness .							
			NOTES:												



			STRATIGRAPHY LOG (OVE	RBU	JRDEN	1)						PAGE	<u></u>	4	
	PRO	JECT NAM	E Lovington Water Plant DRILLING CONTRACTOR White I	Dri	ling		HOL	DESIG	GNATIO	7	16	1-7		,	
	PRO	JECT NUL	HER CIGOTO DRILLER DO MILLER					To the second	START		3.5	-12	79:2	-	
	CLIE	NT_C	SURFACE ELEVATION OVERACTOR AM WEATHER (AM.) Clear, Wes	~					COMPL		3.0	2-12	11:3	2	
	LOCA	ATION	15/4- Sect - 7/75-R36E WRATHER (A.M.) Clear, bre	et				LING M SUPER	ETHOD		ohn	She	nho	na	
			SAMPLE DESCRIPTION				25.55		LE D			0.447	000	C A	G
I	ATIGRA NTERVA	LS	ORDER OF DESCRIPTORS:		S				RATION		1	SI	ľ	HN	R
(DEPTH	S IN ft	/m BGS	SOIL TYPE SYMBOL(S) - PRIMARY COMPONENT(S), (NATURE OF DEPOSIT),	S A	A M M			REC	URD			A N	P /	E A M L	A I
F			SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	M P	PE		(RE	CORD	ON BL N-VAL	UES		M T P E L R	D F	E A M L I Y C S A I	N S
R O	A	T	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE	L E	I H	0"	6"	6"			_	E V A	Ď	A I L S	I Z
M -35	T	0	SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	#	G D	6"	6	•	6"	N	R	L	(ppm)		E
2		40	sand - et lan, vadush, finge		aut			-							
12		1100	poorly comented 10:07												
40		45	Sand - El tan, reddlish, 10:25		cut		_								
11-	-		In gr, poorly comented					_							
45		50	sound - If tan, redush, for men		cut										
			gr, poorly cemented 10:09												
50		55	Hand - It ton, reduch, fine gr.		cut										
			poorly comented 10:3	5											
55		60	Sand It Tan redden finish	ć	cal	-									
-		2.5	poorly conested 10195												
46		65	Sand - et tan reddish, finech,		out	-									
			poorly comented 10:47											\square	
45		10	Strud let Tan, reddish, fine on		cut	*									
			growly can												
70		75	Sand of tan reddish, freeze		cut	-									
			poorly comented 10:47												
75		80	Sound - Of tan readish, fineer		cuil	_									
			poorly remented, hard streets	2											
			well comented 10:52												
			DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER			TOPSOI	L THICK	NESS _							
			WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:												
	NOTES AND			10 (September 1990)	COLUMN SECURIT	a Maranes (Mar									
CC	MMENT	22	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	NGTH,	AND SAM	PLE INT	ERVAL								
			· ·										_		



	PROJ	NT	STRATIGRAPHY LOG (OVE BE COVING ON THAT OF DRILLING CONTRACTOR WHITE DRILLER DRILLER DO ATTENDED SURFACE ELEVATION WRATHER (AM.) (P.M.)	rill		1)	DATE DATE DRIL	/TIME	GNATION STARTI COMPLI ETHOD	ETED	3-2	1-7 -12 2-12 Hary	1153	4 2 2 2	
			SAMPLE DESCRIPTION				UNA	W-216-2006	PLE D					C A	G
IN	TIGRAF TERVAI IN ft,		ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) - PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S A M P	S A M M P E L T		SPL (RE	PENET REC T SPO CORD	RATION	OWS		S I A N M T P E L R	P / I F	H N E A M L I Y C S	R A I N
R O M	A	T	MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	L E	I H N O G D	6"	6"	8"	6"	N	R	E V A L	D I (ppm)	A I L S	I Z E
0		20	Sound - let to meddich line	TT.	e -						13155		(ррш)		ъ
00		00	or goods consited 10:57		ans		-						-		
9		an	City of the adding what		cut	- 1		-		_					
00		70	and acount to		ear				Н				-		
90		95	City left the control which		cut	-,								\vdash	
10		13	ster - er com, realism, wy office		cert			<u> </u>			<u> </u>				
95		100	Cost pl +		- +	-					-		-		
75	_	100	suce - la con, reacusa, wy ofn sa		cut				-	-	-				
100		165	· portly comented		- 7		-		\vdash		-		-		
100		710	Seet of tan, readlish; of ofned		cut		_	_					-		
		111	poorly comented		4	_		-	-	-	-	-			
105		110	set es lan, readish, with		cat			-			-		-		
V			Sa poorly comented		-		-	_	-				-		
110		11.5	Set - St Can, readish, w/ ofn	_	Cerl		-	-	-				-	_	-
		-	ad, prorty canentil			£-	-			_					<u> </u>
1/5		120	self-let tem, reddish, w/ofn		ant										
		**	sa poory ceneral			2					-			-	
120		100	set-etton, redeller w/ vfn		cut		-	-			-		-		<u> </u>
			ed, prody cemented		-				_		-				-
						Topos	7.00	, , , , , , , , , , , , , , , , , , ,		į.					
1	NOTES		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:			10PS0I	L THICK	NESS _							
	AND MMENT	S	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	ngth,	AND SAM	PLE IN	ERVAL.								



	PRO	JECT NAM JECT NUM NT ATION	BER 073016 PENT DRILLER BOHTKINS	de	RDEN	1)	DATE DATE DRIL	TIME TIME	STARTE COMPLI ETHOD VISOR	ETED_	7/10 3-2 15/10	PAGE 1-12 2-12 Hary School	4 OF 09:2 11:3: 11:3: 14:4:	4 2 2 14	
STR	ATIGRAI	PHIC	SAMPLE DESCRIPTION					SAME	LE D	ETAI	LS			C A	G-
DEPTHS F R	NTERVAL S IN ft,	LS /m BGS	SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S A M P L	SAM M PET IH		SPLI (RE	REC T SPO CORD	RATION ORD ON BL N-VALI VERIES	ows ues		NAMPLE	P / I F I D	H N E A L I C S I C A I S	R A I N S I
0 M	A	O	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O G D	6"	6*	6"	6"	N	R	A L	(ppm)		Z E
125		138	Sell . It the reddist we of a		cut	-							(PP-2)		
12		100	od - el con perasso, Wife		cut										
			the, protecy community 150 133							•					
	NOTES AND MMENT	'S	DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS: NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LEINOTES:		Spring Sagerer			NESS _							



PROJECT NAME Lovington Unit Water P	well designation MW-7
PROJECT NUMBER 073016	DATE COMPLETED 3/5/12
CLIENT Chevron Environmental Management C	ompany DRILLING METHOD Air Rotary
LOCATION NE/4-Section 1-T17S-R36E	CRA SUPERVISOR John Schnable
CAP TYPE J-Plug	MEASURE BOTTOM OF WELL (AFTER COMPLETION) ft/m (BELOW TOP OF RISER PIPE)
PROTECTIVE CASING	STICK UP = $\frac{3}{\text{ft/m}}$
GROUND BOTTOM OF SURFACE SEAL 13 ft/m	SURFACE SEAL TYPE Cement
	BOREHOLE DIAMETER 7.875 in. in/em
TOP OF SEAL* AT <u>13</u> ft/m	RISER PIPE ANNULUS BACKFILL TYPE:
SEAL* AT 13 ft/m	3/9 Halanius Pontanita China
BOTTOM OF 89 SEAL* AT 89 ft/m	SEAL TYPE: 3/8 Holeplug Bentonite Chips PACK TYPE:-SAND, SIZE 8/16 Filter Pack Sand
TOP OF SCREEN* AT 95 ft/m	PACK TYPE:-SAND, SIZE OF TOT INCEST BOTH OF THE PACK SHIP
BOTTOM OF SCREEN* AT 132 ft/m	BOREHOLE BACKFILL MATERIAL (IF NOT FILTER PACK)8/16 Filter Pack Sand
BOTTOM OF FILTER PACK AT ft/m	* NOTE: ALL DIMENSIONS ARE BELOW GROUND SURFACE (BGS)
HOLE* AT 133 ft/m	DEED'S GROOND BONFACE (BGB)
SCREEN TYPE: 🗹 continuous slot	wire wrapped louvre other:
SCREEN MATERIAL:	☑ pvc □ other:
SCREEN LENGTH: 35 ft. ft/m SCREEN	N DIAMETER: 4 in. in/cm SCREEN SLOT SIZE: 0.020 in.
RISER PIPE MATERIAL: Schedule 40PVC	RISER PIPE DIAMETER: 4 in. in/cm
SURFACE CASING (Y/N) No	MATERIAL DEPTH ft/m
1	DIAMETER in/cm SEALANT
	mersible pump DURATION:
DESCRIPTION OF PURGED	WATER: Development water clear at end. Bailed 75 gallons. Pumped 60 gallons.
200010 00(002)CN WA040 APP 20/2009 (CP 15)	DEVICION S

FILE NUMBER

LOCATION

	POD NUM	BER (WE	LL NUMI	BER)				OSE FILE NU	MBER(S)							
<u>N</u>	MW-7								•							
CAT	WELL OW							PHONE (OPTI	ONAL)							
Š				ttn: City N	Manager											
TT	WELL OW			DDRESS				CITY		STATE	0.5	ZIP				
WE	214 S.	Love S	ot.					Lovington	<u> </u>	NM	88	3260				
2	WEL	L			DEGREES	MINUTES SI	ECONDS	T								
/T/	LOCAT	ION	LATIT	JDE	32	52	7.50 _N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SEC	COND					
ER.	(FROM (JPS)	LONGE	TUDE	103	18	17.50 W	* DATUM RE	QUIRED: WGS 84							
GENERAL AND WELL LOCATION	DESCRIPT	TION REL	ATING V	WELL LOCAT	ON TO STREET ADDRE	SS AND COMMON LAI	NDMARKS			-						
1. (Lovingt	on Wa	iter Pl	ant												
	(0.5.1.0)	nn) [1000			F		I							
,	(2.5 AC	·	(10	ACRE)	(40 ACRE)	(160 ACRE)	SECTION		TOWNSHIP	NORTH	RANGE	✓ EAST				
NAI	SUBDIVIS	/4		1/4	1/4	1/4		1	36	WEST						
LIO	20001112	ION NAM	E				LOT NUM	ивек	BLOCK NUMBER		UNIT/TRA	G				
2. OPTIONAL	HYDROGR	APHICS	LIRVEY		· · · ·				MAP NUMBER		TRACT N					
7									10000000			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,				
	LICENSE N	II IMBER		IANTE OF LICE	ENSED DRILLER		NAME OF WELL DE	W I DIG 001	(0.13.52)							
		-1456		ohn W. W			White Drilling									
	DRILLING			RILLING ENI		PLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR							
7		/2012	1	3/05/201		132.0	Bolazilo	EE BEI III (I I)								
[O]			L						PLETED WEI	L (FT)						
DRILLING INFORMATION	COMPLET	ED WELL	ıs: [ARTESIAN	DRY HOLE	SHALLOW (U	NCONFINED)		106.05							
VFO.	DRILLING	FLUID:		AIR	✓ MUD	ADDITIVES –	SPECIFY:									
NG II	DRILLING	METHOL): [✓ ROTARY	HAMMER	CABLE TOOL	Отн	ER – SPECIFY:								
CLE	DEPT	H (FT)		BORE HOL	Е	CASING	CON	NECTION	INSIDE DIA.	CASING	3 WALL	SLOT				
DRU	FROM	ТО		DIA. (IN)	М	ATERIAL	TYPE	(CASING)	CASING (IN)	THICKN	IESS (IN)	SIZE (IN)				
સ	0.0	97.0	0	7 7/8	P	VC Riser		4 tpi	4.0	Sch	. 40					
	97.0	132.	.0	7 7/8	PV	C Screen		4 tpi	4.0	Sch	1. 40	.020				
										1						
						·····										
	DEPT	H(FT)		THICKNES	S F	ORMATION DESCI						YIELD (GPM)				
AT.A	FROM	TO		(FT)		(INCLUDE WAT	ER-BEARING	ARING CAVITIES OR FRACTURE ZONES)								
TR	105.0	120.		15.0		Bro	wn sand.									
SO	120.0	135.	.0	15.0		sand/sandst	one w/light ta	an silty sand.								
E E																
BE/										** ** _{***}						
ER																
WATER BEARING STRATA	METHOD U	JSED TO	ESTIMAT	TE YIELD OF	WATER-BEARING STR	ATA			TOTAL ESTIMATES	WELL YIEL	D (GPM)					
4. V																
									<u> </u>	·						
	FOR OSI	INTER	NAL U	SE					WELL RECO	RD & LOG	(Version 6/	9/08)				

POD NUMBER

TRN NUMBER

PAGE I OF 2

_	TYPE O	Z DI MAD-	SUBMER	SIBLE	☐ JET	☐ NO PUMP – WELL NOT EQUIPPED			
JMP	TIFEO	· FOWIF.	☐ TURBINI	Е	CYLINDER	☐ OTHER – SPECIFY:			
SEAL AND PUMP	43350	II AD	DEPTH FROM	TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHO PLACE	,
AL.	ANNU SEAL		132.0	90.0	7 7/8"	Brady 8/16 Sand	17 sacks	Hand	Mix
5. SE	GRAVE	L PACK	90.0	10.0	7 7/8"	Bentonite Pellets	17 sacks	Hand	Mix
47			10.0	0.0	7 7/8"	Cement	2.278	Hand	Mix
	DEPTI FROM	H (FT)	THICK (FT			COLOR AND TYPE OF MATERIAL ENCOUNTS JDE WATER-BEARING CAVITIES OR FRACTU		WA'I BEAR	
					(31,42	Caliche.		YES	☑ NO
	0.0 15.0	15.0 30.0	15. 15.			Brown sand w/limestone & caliche		☐ YES	☑ NO
	30.0	54.0	24.	-		Tan & brown sandstone.		☐ YES	☑ NO
	54.0	120.0	66.			Brown sand.		☑ YES	□NO
,	120.0	132.0	12.		R	rown sand/sandstone w/light tan silty	sand.	✓ YES	□NO
ELI	120.0	102.0	12			Town ballarballable wilght tall only		☐ YES	 □ NO
)F W								☐ YES	NO
00								☐ YES	□NO
CL			<u></u>					☐ YES	NO
OGI				☐ YES	□ NO				
GEOLOGIC LOG OF WELL					:			☐ YES	□ NO
6.6								☐ YES	□ NO
								☐ YES	□NO
						1.1 2.1 2.11. 2.1	Calemar .	☐ YES	□NO
ļ								☐ YES	□ №
								☐ YES	□NO
								☐ YES	□NO
		L	ATTACH	ADDITION	AL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL	<u> </u>	·
			METHOD:	BAILE	R □ PUMP	☐ AIR LIFT ☐ OTHER – SPECIFY:	ALL THE CONTROL OF TH		
INFO	WELL	TEST	TEST RESU	LTS - ATTA	CH A COPY OF D	ATA COLLECTED DURING WELL TESTING, I	NCLUDING START TI	ME, END TI	ME,
			AND A TAB	LE SHOWII	NG DISCHARGE A	AND DRAWDOWN OVER THE TESTING PERIC	DD.		
ADDITIONAL	ADDITION	IAL STATEN	IENTS OR EXPL	ANATIONS:					
000									
`&									
7. TEST &									
7.									
	THE UN	DERSIGNI	ED HEREBY O	CERTIFIES 1	ТНАТ, ТО ТНЕ ВЕ	ST OF HIS OR HER KNOWLEDGE AND BELIE	F, THE FOREGOING IS	S A TRUE A	ND
SIGNATURE	CORREC	TRECOR	D OF THE AB	OVE DESCI	RIBED HOLE AND	OTHAT HE OR SHE WILL FILE THIS WELL RE ON OF WELL DRILLING:	CORD WITH THE STA	TE ENGINE	ER AND
NAT						3/22/2012			
		·····							
86			SIGNATUR	E OF DRIL	.ER	DATE			
			***************************************		A A THINK I				

FOR OSE INTERNAL USE	4.70	WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 2 OF 2

	PROJ CLJEJ	TECT NAMI	STRATIGRAPHY LOG (OVE DRILLING CONTRACTOR MILES DRILLING CONTRACTOR MILES DRILLING CONTRACTOR MILES SURFACE ELEVATION WEATHER (A.M.) (P.M.) Man but	RBU	RDEN	1)	DATE DATE DRIL	DESIGNATIONS TIME TIME LING M SUPER	STARTI COMPLI ETHOD	ETED _	16.	ST.	or 3/1/12 3/1/12 14/12 14/12	mird	•
STR	ATIGRAI	PHIC	SAMPLE DESCRIPTION	0				SAMP	LE D	ETAI	ಷ			C A	G R
(DEPTHS	TERVAI S IN ft,	s /m BGS	ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S M P L	S A M M P E I H		SPLI (RE	PENETI REC T SPO CORD I RECO	ORD ON BL N-VAL	OWS		S I M T P E L V	P / I F I D	HEMICAL	A I N S I
O M	A T	T	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O G D	6"	6"	6"	6"	N	R	Ā	(ppm)	гэ	Z
0		5	15 - It tam hard micretic		rest								(FF-/		
			fixed .												
5		10	Sand - It ton roddied fine - med		cut										
			Middle 1503	-											
10		15	Simil It tom reddish fine med		at										
			wiable 1507												
15		20.	Sond It tow reddish who sine		cut										
			miable 15:08												
20		25	Sand Of tan reddish win med		cut							İ			
			- priable												
25		30	Sand - let tom reddish who fine		cut										
			moderal consisted 15:18												
30		35	Sand - It tom reddish van-fine		cut										
			1/5:20												
35		40	Sand - lt tan reddish who - fine		cut										
			mod calc cem 15:23												
40		45	Sand - let tan reddish, vfn-fin	e	cut	-									
			mod call cement												
	NOTES AND MOVENT		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS: NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	A MA			L THICK	NESS _							



	PROJ	NT_C	WEATHER (AM.) (P.M.) Clear, bree	rilli		1)	DATE DATE DRILL CRA	SUPER	STARTE COMPLI ETHOD VISOR _	D ETED An	613 60	1-8	2 of	mud	/
IN	ATIGRAF ITERVAL	S	SAMPLE DESCRIPTION ORDER OF DESCRIPTORS:		S			SAMP			<u> </u>	S I		C A H N E A	G R
(DEPTHS F R	IN ft,	/m BGS	SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	S M P L	M M P E L T		SPLI (RE	RECO T SPO CORD I RECO	ORD ON BLO I—VALU	OWS JES		A N M T P E L R	P / D F I	M L I Y C S A I L S	A I N S
0 M	A	T	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	I H N O G D	6"	6"	6"	6"	N	R	E V A L	D (ppm)	LS	Z E
45	: ³	50	Sandstone = 1+ ton reddish ofn.	4	ant								(FP111)		
			well cem (cale) hard 15:32												
50		55	Smelston - et nom von - en		cnt										
			well conented (alex hard 15:35	-											
55		60	Sand - It tan reddish UT-100		cut	-									
			aportariam / 15:40												
100		65	Sand - It too reddish of fine		cut										
			poorly Cem 15:44												
65		70	Send- It tem reddish silt-for		cut										
			poorly cemented 15:46												
70		75	Sand- let ton reddish vin		cut	4									
			silter poorly cemented 15:50												
75		80	Sand It tak, reddish, vin		cut	a 1 =									
			silty poorly cemented 15:53												
80		85	Eund - let tern, repellish of fine		ent	-									
			silty, poorly comented												
85		90	Spord - It tran reddish who		car	4									
			silty pronty commented												
ì	NOTES AND		DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:					NESS _							
co	MMENT	S	NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:	NGTH,	AND SAM	PLE INT	ERVAL					•			



	PROJ	ECT NUL	STRATIGRAPHY LOG (OVE DRILLING CONTRACTOR White of DRILLING CONTRACTOR White of DRILLER DO HATCH SURFACE ELEVATION WEATHER (A.M.) (P.M.) Clean, bree	Drill	RDEN	1)	DATE DATE DRIL	E DESIGNATION OF THE PROPERTY	START COMPI	ETED_	3-1-	1-8	3 or	t mud	<i>'</i>
STRA'	TIGRAF	PHIC	SAMPLE DESCRIPTION					SAME	LE I	ETAL	LS			C A	G
	TERVAL	S	ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) — PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS	SAMPLE	SA M M PET LT		SPLI (RE	PENET REC T SPC CORD : RECC	ORD ON BI N-VAL	OWS		S I A N T P E L V	P / I F D I	HELYSIS	R A I N
O M	A	T	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	E #	N O	6"	6*	6"	8"	N	R	E V A L	(ppm)	LS	Z E
90		95	Silt - It ton reddish with	ıτ	cut							п_	(Ppitt)		
		1	who al soorly con		con										
95		100	Silt - It ton reddich with who		cart										
			and soonly carented 16:04												
100		105	Selt - It tand reddish with wife		cut	-									
			ad poorly comented 16:12												
105		110	Siltstone - lt tom reddish.		cut										
			with ofn sel well com (call) hard												
pro-		1/5	16:14												
110		115	Silt- It from readish with		cut										
			upon sed, poorly comented 16:17												
115		120	Silt - let tom, reddish, with		cut]		
			trace of sel, poorly comented												
			16:19												
120		125	Selt - It tow, reddish, with		cat										
			wfor sod poorly cemented 16:22												
125		130	silt - bt tar readish, with		cut										
			up sol, provily comented 16:27												
			'/'												
			DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS:			TOPSOIL	LTHICK	NESS _							
5000A	OTES AND MENT	S	NOTE: FOR EACH SPLIT-SPOON SAMPLE, RECORD BLOW COUNTS, N-VALUE, SAMPLE RECOVERY LE NOTES:	NGTH,	AND SAM	PLE INT	ERVAL								



	Chillian	TION	STRATIGRAPHY LOG (OVE E Lovington Unit Whater Propriiting Contractor White D DRILLER DO ATKINS SURFACE ELEVATION WRATHER (A.M.) [P.M.) Clear bree	Dri	IRDEN	1)	DRIL CRA	LING M SUPER	ETHOD VISOR	An	60	PAGE 1-8 -12 12 /12 12/24	w	mud	
	ATIGRAF TERVAL IN ft/	S	SAMPLE DESCRIPTION ORDER OF DESCRIPTORS: SOIL TYPE SYMBOL(S) - PRIMARY COMPONENT(S), (NATURE OF DEPOSIT), SECONDARY COMPONENTS, RELATIVE DENSITY/CONSISTENCY, GRAIN SIZE/PLASTICITY, GRADATION/STRUCTURE, COLOUR, MOISTURE CONTENT, SUPPLEMENTARY DESCRIPTORS NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE	S A MP L E	SA M M PE LT IH		SPLI (RE	PENET REC T SPO CORD	RATION ORD ON BI N-VAL VERIES	ows ues	LS	S I A N M T P E L R E V	P / I F I D	C H A L Y S I S L S	G R A I N S I Z
М	Ť	0	NOTE: PLASTICITY DETERMINATION REQUIRES THE ADDITION OF MOISTURE IF THE SAMPLE IS TOO DRY TO ROLL (INDICATE IF MOISTURE WAS ADDED OR NOT).	#	G D	6"	6**	6"	6"	N	R	A L	(ppm)		É
130		135	Self - It ton reddish w/ upn al,		cut										
				_											
															_
	NOTES AND MMENTS	4	DEPTH OF BOREHOLE CAVING DEPTH OF FIRST GROUNDWATER ENCOUNTER WATER LEVEL IN OPEN BOREHOLE ON COMPLETION, AFTER HOURS COMPLETION DETAILS: NOTE: FOR EACH SPLIT—SPOON SAMPLE, RECORD BLOW COUNTS, N—VALUE, SAMPLE RECOVERY LE NOTES:			2000 0 12-0 100-0	TOTAL PROPERTY AND	NESS _							



PROJECT NAME Lovington Unit Water Plant	WELL DESIGNATION MW-8
PROJECT NUMBER 073016	DATE COMPLETED 3/5/12
CLIENT Chevron Environmental Management Company	DRILLING METHOD Air Rotary
LOCATION NE/4-Section 1-T17S-R36E	CRA SUPERVISOR John Schnable
CAP TYPE J-Plug	MEASURE BOTTOM OF WELL (AFTER COMPLETION) ft/m (BELOW TOP OF RISER PIPE)
PROTECTIVE CASING GROUND	STICK UP = $\frac{3}{\text{ft/m}}$
BOTTOM OF SURFACE SEAL 13 ft/m	SURFACE SEAL TYPE Cement
	BOREHOLE DIAMETER 7.875 in. in/em
	RISER PIPE
TOP OF	ANNULUS BACKFILL TYPE:
SEAL* AT 13 ft/m	7//////
ROTTOM OF	SEAL TYPE: 3/8 Holeplug Bentonite Chips
BOTTOM OF 90 SEAL* AT 90 ft/m TOP OF	PACK TYPE:-SAND, SIZE 8/16 Filter Pack Sand
TOP OF SCREEN* AT 97 ft/m	-GRAVEL -NATURAL
	-NATOKAL
BOTTOM OF SCREEN* AT 132 ft/m	
	BOREHOLE BACKFILL MATERIAL (IF NOT FILTER PACK) 8/16 Filter Pack Sand
BOTTOM OF FILTER PACK AT 135 ft/m	* NOTE: ALL DIMENSIONS ARE
BOTTOM OF 135 ft/m	BELOW GROUND SURFACE (BGS)
HOLE* AT It/M	
SCREEN TYPE:	wrapped louvre other:
SCREEN MATERIAL: stainless steel pvc	other:
SCREEN LENGTH: 35 ft. ft/m SCREEN DIAMETER	R: 4 in. in/cm SCREEN SLOT SIZE: 0.020 in.
RISER PIPE MATERIAL: PVC	RISER PIPE DIAMETER: PVC in/cm
SURFACE CASING (Y/N) No MATERIAL _	DEPTH ft/m
DIAMETER_	in/cm SEALANT
DEVELOPMENT: METHOD: Bailer and submersible p	ump duration:
DESCRIPTION OF PURGED WATER: Ba	uiled 110 gallons. Pumped 105 gallons.

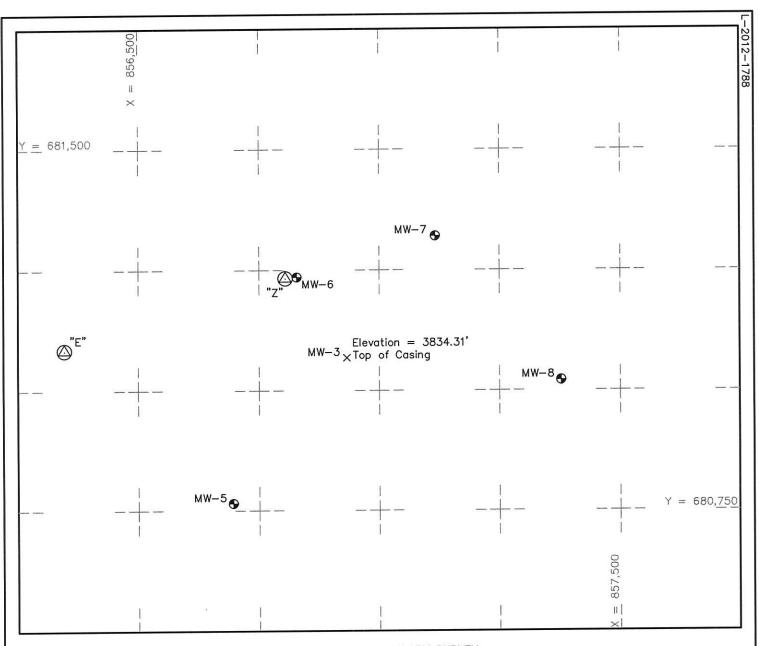


_	1	BER (WELI	L NUMBER)				OSE FILE NUI	MBER(S)			
<u>S</u>	MW-8										
ΑT	WELL OW	NER NAME	E(S)				PHONE (OPTI	ONAL)			
Q	City of I	_ovingto	on/Attn: City N	/lanager							
ŢŢ	WELL OW	NER MAIL	ING ADDRESS		· · ·		CITY		STATE		ZIP
GENERAL AND WELL LOCATION	214 S.	Love St	t.				Lovington	ı	NM	88	3260
9	WEL	,		DEGREES	MINUTES S	ECONDS	1				
LA.	LOCAT		LATITUDE	32	52	4.50 N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SEC	COND	
ERA	(FROM	GPS)	LONGITUDE	103	18	14.50 W	* DATUM RE	QUIRED: WGS 84			
EN	DESCRIPT			ON TO STREET ADDRES			<u> </u>				
1. (er Plant							•	
	(2.5 AC	NOV 1	(10.1000)	(40,100,00	(160 + 6777)	anomov.				T = :-:==	
<u>ں</u>		/4	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	1	TOWNSHIP 17	NORTH	range 36	✓ EAST
NA		ON NAME	1/4	1/4	1/4	LOT NUM		BLOCK NUMBER	✓ south	UNIT/TRA	WEST CT
OPTIONAL						307				G.V.	G
2.0	HYDROGR	APHIC SUI	RVEY					MAP NUMBER		TRACT NU	JMBER
	LICENSE N			ENSED DRILLER				NAME OF WELL DE			
		-1456	John W. W					White Drilling	,		
	DRILLING		DRILLING ENI	1	PLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FIR			
N N	3/02	/2012	3/05/201	2	132.0				104.7		
DRILLING INFORMATION	COMPLET	ED WELL I	s: Artesian	DRY HOLE	SHALLOW (U	INCONFINED)		STATIC WATER LE	vel in com 104.7		LL (FT)
FOF	DRILLING	FLUID:	AIR	✓ MUD	ADDITIVES -	SPECIFY:		h			
(CI)	DRILLING	METHOD:	✓ ROTARY	HAMMER	CABLETOOL	. Потне	R - SPECIFY:				
T.	DEPT	H (FT)	BORE HOL	E (CASING	CON	NECTION	INSIDE DIA.	CASING	WALL	SLOT
DRII	FROM	ТО	DIA. (IN)	M	ATERIAL		(CASING)	CASING (IN)		IESS (IN)	SIZE (IN)
3.	0.0	97.0	7 7/8		/C Riser		4 tpi	4.0	Sch	ı. 40	
	97.0	132.0	7 7/8	PV	C Screen		4 tpi	4.0	Sch	. 40	.020
	····										
-		H (FT)	THICKNES	S FO				ATER-BEARING S			YIELD
WATER BEARING STRATA	FROM	TO	(FT)		(INCLUDE WAT			R FRACTURE ZON	IES)		(GPM)
STF	100.0	120.0		-			silty sand.				
NG	120.0	135.0	15.0		Browi	n silty sand v	Wcalicne &	sandstone.			
4RI									**		
BE.								- 10 M	Ar a s		
ER									<u> </u>		
VAT	METHOD (JSED TO ES	STIMATE YIELD OF	WATER-BEARING STRA	TA			TOTAL ESTIMATEE	WELL YIEL	D (GPM)	
۷.											
					w. ·				· · · · · · · · · · · · · · · · · · ·		

FOR OSE INTERNAL USE		WELL RECORD & LOG	
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION			PAGE 1 OF 2

			SUBMER	RSIBLE	JET	☐ NO PUMP – WELL NOT EQUIPPED			
MP	TYPE OI	F PUMP:	TURBINI		CYLINDER	☐ OTHER – SPECIFY:			
SEAL AND PUMP	4.5.11		DEPTH FROM	H (FT)	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHO PLACE	
AL.	ANNU SEAL		135.0	89.0	7 7/8"	Brady 8/16 Sand	17 sacks	Hand	l Mix
5. SE	GRAVE	L PACK	89.0	10.0	7 7/8"	Bentonite Pellets	17 sacks	Hand	l Mix
\ '\cdot'			10.0	0.0	7 7/8"	Cement	2.2780	Hand	l Mix
	DEPT	1	THICK (F)			COLOR AND TYPE OF MATERIAL ENCOUNTS JDE WATER-BEARING CAVITIES OR FRACTU		WA [*] BEAR	
	FROM	TO			(ITCE			YES	☑ NO
	0.0	15.0 35.0	15. 20	·		Caliche. Brown sand w/caliche		YES	☑ NO
	15.0					Caliche & limestone.		YES	☑ NO
	35.0	55.0	20					✓ YES	□ NO
	55.0	120.0	65			Brown silty sand.		V YES	□ NO
ELL	120.0	135.0	15	.0		Brown silty sand w/caliche & sandsto	orie.	☐ YES	□ NO
GEOLOGIC LOG OF WELL								☐ YES	□ NO
0.5						A CONTRACTOR OF THE CONTRACTOR		☐ YES	□NO
3				····				 	
5					-			YES	□ NO
OTC						· · · · · · · · · · · · · · · · · · ·		YES	□ NO
ĞE								YES	□ NO
ڼ								YES	□NO
								YES	□ NO
								☐ YES	□NO
								☐ YES	□ио
								☐ YES	□NO
					:			YES	☐ NO
			ATTACH	ADDITION	AL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL		
			METHOD:	BAILE	R PUMP	☐ AIR LIFT ☐ OTHER – SPECIFY:			-
L INFO	WELL	TEST				ATA COLLECTED DURING WELL TESTING, I		ME, END TI	ME,
NA A	ADDITION	JAL STATEN	MENTS OR EXPL	ANATIONS:					
ADDITIONA	ADDITION	. LE BITTIE	1151115 011 2711 2						
Q.									
જ									
TEST									
7.									
	THEIM	DERSION	EU HEBEBA (PERTIFIES T	THAT TO THE RE	ST OF HIS OR HER KNOWLEDGE AND BELIE	F. THE FOREGOING I	S A TRUE A	ND
JRE	CORREC	T RECOR	D OF THE AB	OVE DESCI	RIBED HOLE ANI) THAT HE OR SHE WILL FILE THIS WELL RE	CORD WITH THE STA	ATE ENGINI	EER AND
ATT	THE PER	MIT HOL	DER WITHIN	70 DAYS A	FTER COMPLETI	ON OF WELL DRILLING:			
SIGNATURE		<			r.	3/22/2012			
∞i ∞i			SICNATUR	E OF DRILI	LER	DATE	4444		

FOR OSE INTERNAL USE		WELL RECORD & LOG (Version 6/9/08)	
FILE NUMBER	POD NUMBER	TRN NUMBER	
LOCATION		PAGE 2 OF 2	



THIS IS NOT A BOUNDARY SURVEY
Apparent property corners and property lines, if shown, are for information only.

		GEODETIC PO	OSITIONS		STATE PLANE	COORDINATES		ELEVATION	
DESCRIPTION		NORTH AMERICAN D			NAD '83 - New Mexic	o East Zone (US Ft.)			
DESCRIPTION	Latitude (D.M.S.)	Longitude (D.M.S.)	Latitude (D.D.)	Longitude (D.D.)	Northing (Y)	Easting (X)	Top of Casing	Concrete Pad	Natural Ground
MW-3	32°52'04.99" N	103°18'19.68" W	32.86805	-103.30547	681,068.06	856,932.44	3,834.31		
MW-5	32°52'02.02" N	103°18'22.49" W	32.86723	-103.30625	680,765.21	856,696.09	3,830.07	3,827.28	3,826.8
MW-6	32°52'06.65" N	103°18'20.99" W	32.86851	-103.30583	681,234.07	856,818.68	3,835.60	3,833.08	3,832.6
MW-7	32°52'07.48" N	103°18'17.49" W	32.86874	-103.30486	681,320.73	857,116.82	3,834.46	3,831.80	3,831.5
MW-8	32°52'04.49" N	103°18'14.47" W	32.86791	-103.30402	681,021.26	857,377.12	3,832.40	3,830.08	3,829.6
"7"	32°52'06.64" N	103°18'21.05" W	32.86851	-103.30585	681,233.43	856,813.91			3,832.7
"E"	32°52'05.20" N	103°18'26.55" W	32.86811	-103.30738	681,083.30	856,346.12			3,830.4

Date Surveyed: November 6, 2012

Weather: Warm & Breezy

NOTE:

- Plane Coordinates shown hereon are Transverse Mercator Grid and Conform to the "New Mexico Coordinate System", New Mexico East Zone, North American Datum of 1983.
- Elevations shown hereon are relative to the Top of Casing of MW-3. Elevation = 3834.31 feet as per information provided by representatives of Conestoga— Rovers & Associates.
- 3) Geodetic Coordinates shown hereon references the North American Datum of 1983, (GRS '80). Reference Stations — "ODESSA" — CORS (DL2764), "PORTALES AP" — NM2005 CORS ARP (DH3849) and "ROSWELL"— CORS (DG6517).

I HEREBY CERTIFY THAT THIS PLAT WAS MADE FROM NOTES TAKEN IN THE FIELD IN A BONA FIDE SURVEY MADE UNDER MY SUPERVISION.

MACON McDONALD NEW MEX

NEW MEXICO P.L.S. No. 12185

1218

WEST COMPANY of Midland, Inc.

110 W. LOUISIANA, STE. 110 MIDLAND TEXAS, 79701 (432) 687-0865 - (432) 687-0868 FAX

LEGEND

Denotes Monitor Well

Denotes Static GPS Control Station

× - Denotes Project Benchmark



CONESTOGA-ROVERS & ASSOCIATES

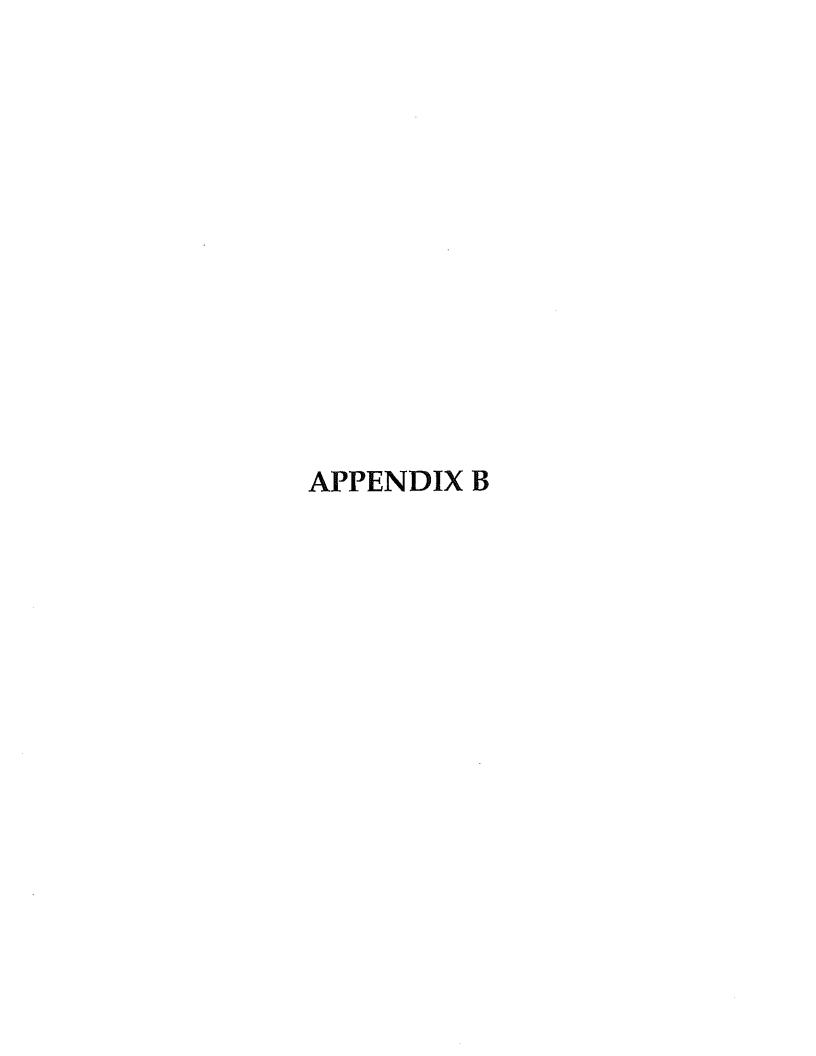
Topographic Survey of

FOUR MONITOR WELLS

Located in and around the Lovington Water Plant Section 1, T-17S, R-36-E, N.M.P.M. Lea, New Mexico

Drawn By: SJA	Date: November 13, 2012
Scale: 1" = 200'	Field Book: 566 / 30-32
Revision Date:	Quadrangle: Humble City
W.O. No: 2012-1788	Dwg. No.: L-2012-1788

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PLEASE REMIT TO: P.O. BOX 973510, DALLAS, TX 75397-3510

TRUCK FIELD REPORT

WAYBILL WORK TICKET

Production Services: Vacuum Trucks • Pump Trucks • Transport Truck	ks • Winch Trucks • Mud Tanks • Frac Tanks • Fluid Sales	W.H.P. C	330 • LPSC 7171	Regulated 🗆	Non-Regulated 🗆
Truck-No. 94-0400	Tank No. 93-0654	Day of Week: Then	V.	Date:	3-22-12
Customer CRA	Address				
Order No.	RRC# John Scha	able	F	eld	
From Lease/Well # Lavingfor Water Re	duf Miles N S E W of	Town lainage	, Cou	inty le	4
To Lease/Well #	Miles N S E W of	Town	, Cou	inty	
TARIFF# ITEM# COL	TRUCK# TIME: START:	END:		UNIT PRICE	AMOUNT
Starting Time 130 AM	TRUCK		2.5	92.00	<i>33</i> 0.00
Arrived Pt. AM Of Origin PM	TRUCK .	BBLS.			
Load & Left AM	TRUCK	BBLS.			
Arrived AM Destination PM					
Started Unloading AM PM	EXTRA MAN				
Released AM PM	50 LB.	100 LB. SA	CKS KCL		
Quitting Time 4	FRESH WATER		BBLS.		
Mileage Out 1077.7 In 107108	WEIGHTED FLUIDS		BBLS.		
Miles Hauled TM= YZ	WASTE DISPOSAL Na.b	1013 40	BBLS.	, 85	34.00
Rate Per 100 #	WASTE DISPOSAL		HRS.		
Weight Ly 70	SALT WATER DISPOSAL		BBLS.		
Chgble. Waiting Hrs. $0 = 2$	MUD	*	BBLS.		
Surcharges	FRAC TANKS NO.		BBLS.		x
TOTAL HOURS 2-5	SET CHARGE MIN.	DAYS			
TANK MEASUREMENT	TRANSPORTATION CHA	RGE HRS. MILES			
	EXTRA DAYS	**************************************			
Begin End Inches Of Oil	1,2	****			
SWD Loc.			2 8		
SWD Ticket # RRC #		3	T.		
Top Gauge Bottom Gauge			7.		,
Date Set:	Date Picked Up:		Subtótal		264.00
			Tax		17.99
Well Description: ☐ Oil ☐ G	Gas Misc		Total		281.99
Remarks: \$1.	oct oft ploff b	w 20141	42	106	
Remarks: Skimmed water	BOY BY GOLDING				
WITH MY INITIALS, I CONFIRM THAT THE TIME SHOWN IN TH	HE	1:			
"HOURS" COLUMN, ACCURATELY REFLECTS MY COMPENSATE	Hours Initials	·美国新闻中的1978年1987		14(0):12	
With Doyler	Tours muons	Applient	(a) = 3.		100
Driver G Swamper	23		Tee W		V - N
		*ACCIDENT F	EPORT MUST	BE ATTACHED	WHEN NOT SIGNED
CUSTOMER AGREES to pay Nabors Well Services Lts shall, within 20 days after receipt of Invoice, notify the withhold until settlement of dispute, but payment of uncerverse side of this document. In the absence of a sep AUTHORIZED TO ENTER INTO THIS AGREEMEN REVERSE SIDE OF THIS DOCUMENT (WHICH IN SERVICES). Pricing and extensions, if shown above.	.d. (the "Company") on a net 30 day basis from le Company of the item(s) disputed, specifyin disputed portion of invoice shall be made with parate written confract, <u>CUSTOMER REPRE</u> :	ig the reason(s) therefor; is out delay. All payments she SENTATIVE REPRESENT	payment of all be made S AND WA	the disputed at the addre	item(s) may be ss shown on the HAT HE/SHE IS
AUTHORIZED TO ENTER INTO THIS AGREEMEN REVERSE SIDE OF THIS DOCUMENT (WHICH IN	IT ON BEHALF OF CUSTOMER AND ACC NCLUDES INDEMNITY LANGUAGE THAT	ALLOCATES RISKS RE	LATED TO	THE ABOV	E DESCRIBED
SERVICES). Pricing and extensions, if shown above.	are subject to verification and correction at ti	ine of invoicing.		1	
x () mls	<u> </u>	CUSTOMER R	EDRESENTATI	VF	
NABORS WELL SERVICES LTD. REPRESENTA NABO457 (01/11) 8082 • GMG Services, Inc. • 713.460.8		OUSTOMEN N	EL HEGENTALI		

	MONTARANDOUS	Generator ID Number	2. Page 1 of	3 Emergency Response	164	ļ	acking Number	0012	2038
111	1400 Smith	oddess by Mageman 19 St 1002	-	Generator's Site Address Louington 6 miles Louington	s (il different l Vn, t L L L N M	Han mailing address Louingto	Plant Plant		
	6 Transporter 2 Company Name 7 Transporter 2 Company Name	91002 272 9200 AHL M		-)	U.S. EPA ID N			
	8 Designated Facility Name and S	ile Address Occovery Inchway 88040 88040				U.S. EPAID A			
	Facility's Phone. 5 15 -			10. Conta	ainers Type	11. Total Quantity	12. Unit Wt./Vol.		
GENERATOR -	Now Dot	regulated mater 11 cuttings)	Los	1	cm	KyARds			
SEN J	2								
	3.				,				
	4. 13. Special Handling Instructions a	nd Additional Information							
	10. Special Palkaing menucino a	ilo Podriloji pri Triopi iganovi							
	14. GENERATOR'S/OFFEROR'S	CERTIFICATION: I hereby declare that the	te contents of this consignment :	are fully and accurately de-	scribed above	by the proper shi	poing name, an	d are classified, p	ackaged,
	marked and labeled/placarded, Generalor's/Offeror's Printed/Typed	and are in all respects in proper condition	n for transport according to apple Sig	cable international and natignature	tional government	nental regulations.		Month 0	lay Year
NT'L -	15 International Shipments Transporter Signature (for exports	Import to U.S	□ Export from		ntry/exit				
TRANSPORTER	16 Transporter acknowledgment of Transporter 1 Printed/Typed Name DA: Transporter 2 Printed/Typed Name	Do Jare		gnature gnature	D	Jack	2	3 2	Day Year S O
Ĕ. ♠	17. Discrepancy								
	17a. Discrepancy Indication Space	L_I Quantity	☐ Type	Manifest Reference	Number:	Partial Rej		Full	Rejection
ACILITY	17b. Alternate Facility (or Generate) (1)				U.S. EPA ID I	Number		
DESIGNATED FACILITY	Facility's Phone: 17c. Signature of Atternate Facility	(or Generator)						Month C	Jay Year
DESI				· ·					
*	18. Designated Facility Owner or C Printed/Typed Name	perator: Certification of receipt of materia		pt as noted in Item 17a gnature				M onth C	ay Year

Gaudy Lickel 1 10754 4 10268 Gaudy Maday Tickel 1 11449

WASTE MANIFEST NA	3. Emergency Response Phone	4. Waste Tracking Number	0012039
5 Generator's Name and Mailine Ardress AA	432 940 2184 Generator's Site Address (if different th	ian mailing address)	30±2000
5 Generator's Name and Malling Address Management Co. Chevian Environmental Management Co. 1400 Smith St Houston TX 17002	Generator's Site Address (if different the	uter PhinI	
1 1 ?	5 miles south Louinston, rim	of Laundon, A	/m
Generator's Phone: 0133729201 Attn Most Hudson	mn, notonical	28360	
O Transporter I Company Name	K * 362)	U.S. EPA ID Number	
Gardy Carlo Carlo TRUC	n + 367)	U.S. EPA ID Number	
7, Tumoporter & Sorrigary Harris		· · · · · · · · · · · · · · · · · · ·	
Designated Facility Name and Site Address		U.S. EPA (D Number	
Controllillecovery Inc. 6601 West Carlstood Highway Holds, NM 88260 Facility's Phone: 525-887-8504		LN 166	1
Hobbs, NM 80260		- NO 16.0	
Facility's Phone: 525 - 887 - \$504	10. Containers	19 Tarel Comment	
9 Waste Shipping Name and Description	No. Type	11. Total 12 Unit Quartity Wi./Vol.	
TE I N LOCAL DE LA COLI			
Non Dot Regulated Waster (dr.11 cultings)	1 cm	20 yes	1
E Carill (uttings)			
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13 Special Handling Instructions and Additional Information			
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13 Special Handling Instructions and Additional Information			
	ro fully and accurately does it.	by the proper eluperary	l are described sealons
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment a marked and labeled/placarded, and are in all respects in proper condition for transport according to applic	re fully and accurately described above able international and national governm	by the proper shipping name, and rental regulations	
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment a marked and labeled/placarded, and are in all respects in proper condition for transport according to applic Generator's/Offeror's Printed/Typed Name Sig	re fully and accurately described above able international and national governm nature	by the proper shipping name, and regulations	Month ay Year
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14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment at marked and labeled/placarded, and are in all respects in proper condition for transport according to applic Generator's/Offeror's Printed/Typed Name 15 International Shipments	able international and national governmentature U.S. Port of entry/exit: Date leaving U.S.: nature Residue	Partiel Rejection	Month Day Year Month Day Year Month Day Year Full Rejection
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment at marked and labeled/placarded, and are in all respects in proper condition for transport according to applic Generator's/Offeror's Printed/Typed Name 15 International Shipments	able international and national governmentature U.S. Port of entry/exit: Date leaving U.S.: nature Residue	Partiel Rejection	Month Day Year 3 21 12 Month Day Year 3 33 1 2 Month Day Year
14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment at marked and labeled/placarded, and are in all respects in proper condition for transport according to applic Generator's/Offeror's Printed/Typed Name Signature (for exports only)	able international and national governmentature U.S. Port of entry/exit: Date leaving U.S.: nature Residue	Partiel Rejection	Month Day Year 3 21 2 Month Day Year 3 33 7 3 Month Day Year
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Halfway Facility 4507 W. Carlsbad Hwy Hobbs, New Mexico 88240



Phone: (575) 393-1079 Fax: (575) 393-3615 WWW.R360ES.COM

PERMIAN BASIN REGION

Bill To: Company/Generator: CHEVRON Well: WATER PLANT Rig: Trucking: GARDY CORPORATION Po: Date: 3/23/2012 Driver: Date: 3/23/	***************************************	**************************************	·	_CTRONA > Xonidianatoristi cas	community of the same and a summarise community of the same and the sa		
Company Man: DESIREE CHRENSHAW Rig: Trucking: GANDY CORPORATION PO: Date: 3/33/2012 Driver: DAVID Date: 3/33/2012 3rd Party Ticket: 0012038 Company Man: DESIREE CHRENSHAW Rig: Type GE GANDY CORPORATION PO: Date: 3/32/2012 3rd Party Ticket: 0012038 Company Man: Description Driver: DAVID Driver: DAVID Vehicle: 362 Company Man: David Man: Description Driver: DAVID Type GE GANDY Corporation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: X RCRA Exempt: Oil Field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. RCRA Non-Exempt: Oil Field wastes which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24 or listed hazardous waste as defined in 40 CFR, part 261, subpart D, a amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items) MSDS Information RCRA Hazardous Waste Analysis Process Knowledge Other (Provide description above) Drive: DAVID WATER PLANT Rig: DAVID Vehicle: 362 Description Description Description Description Description Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's July Service of RCRA) and the US Environmental Protection Agency's J	CARCING SINCASA SCHOOL COMPANY AND THE SAME IN S		No.		(1) (4) (4)		ः भव्येत्र अ वैक्ष ्यः *-
Company Man: DESIREE CHRENSHAW Trucking: GANDY CORPORATION PO: Date: 3/23/2012 Driver: DAVID Date: 3/23/2012 Driver: DAVID Type CL Product Oli Field was Company of the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: X RCRA Exampt: Oil Field wastes which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24 or listed hazardous waste as defined in 40 CFR, part 261, subpart D, a amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items) MSDS Information RCRA Hazardous Waste Analysis Process Knowledge Other (Provide description above)						r unit	
Trucking: GANDY CORPORATION Date: 3/23/2012 Driver: DAVID Vehicle: 362 Commission Typo gill					WATER PLANT		
Date: 3/23/2012 3rd Parry Ticket: 0012038 Comments Comments Ougnity Area Description Description Description Description Description Description Description Wash Out 1.00 each 16 Level to the reby certify that according to the Resource Conservation and Recovery Act (RCRA) and the US Environmental Protection Agency's July 1988 regulatory determination, the above described waste is: X RCRA Exempt: Oil Field wastes generated from oil and gas exploration and production operations and are not mixed with non-exempt waste. RCRA Non-Exempt: Oil field waste which is non-hazardous that does not exceed the minimum standards for waste hazardous by characteristics established in RCRA regulations, 40 CFR 261.21-261.24 or listed hazardous waste as defined in 40 CFR, part 261, subpart D, a amended. The following documentation is attached to demonstrate the above-described waste is non-hazardous. (Check the appropriate items) MSDS InformationRCRA Hazardous Waste AnalysisProcess KnowledgeOther (Provide description above) Drive FeetInches							
Type Product DRILL CUTTING 20.00 yards 50/51 Wash Out 1.00 each 16 Type Record Type The Product DRILL CUTTING 20.00 yards 50/51 Wash Out 1.00 each 16 Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product Type The Product	~		ION		- 47 177		
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	iside House is	Constitution of the second			75		377
	Feet	Inches	De	PAW/DDI C Dani-			DC 8. UT

Free Water Total Received

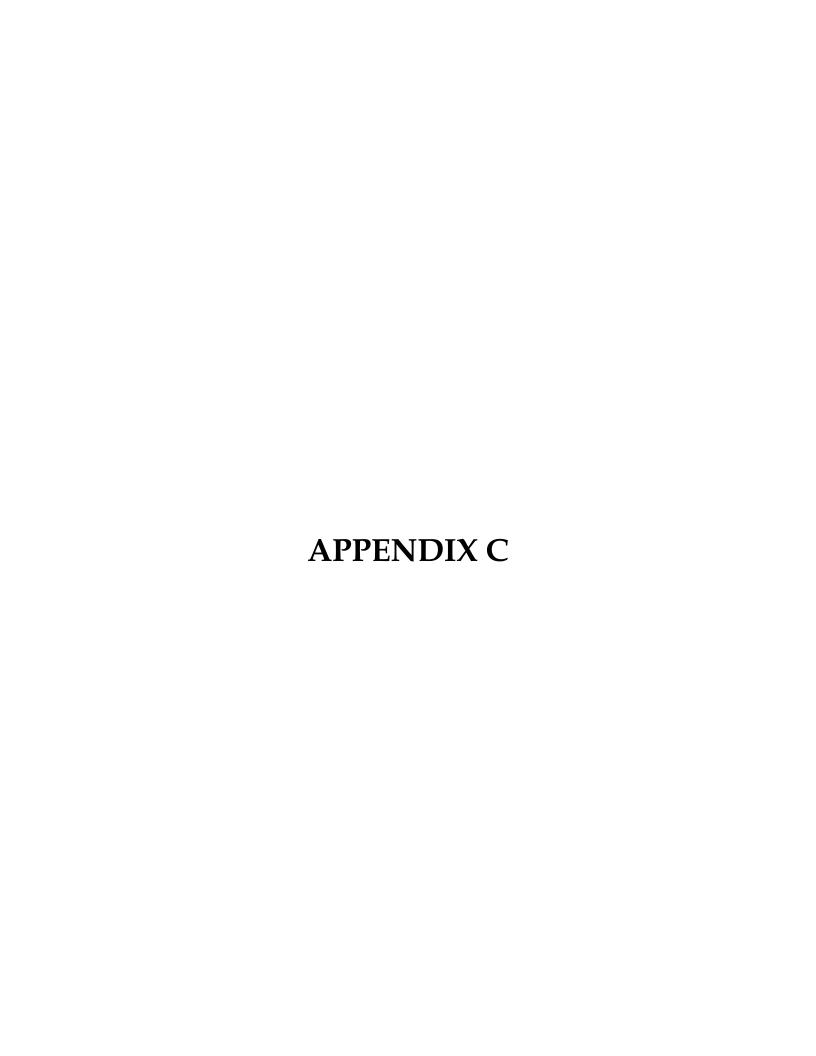
2nd Guage Received waste tracking man for \$ 00 12039

See I rolled

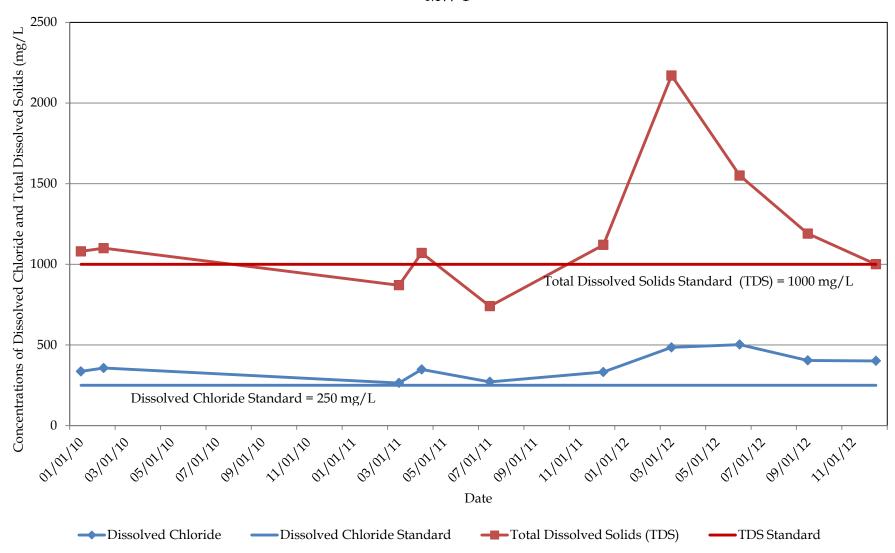
GANDY-MARLEY, INC. P.O. Box 1658

No 11449

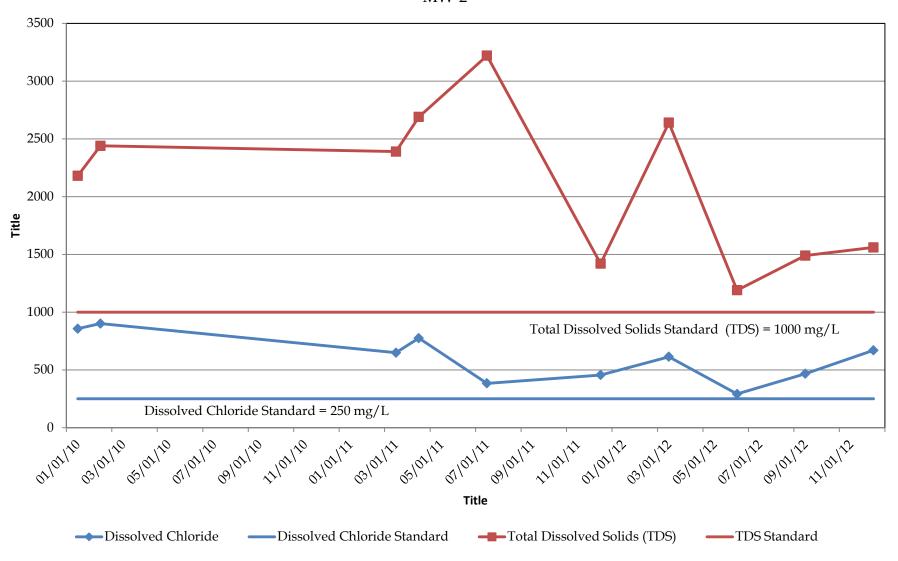
Roswell, NM 68202 NO. 11445 (575) 347-0434 Fax (575) 347-0435					
LEASE OPERATOR/SHIPPER/COMPANY: WILLIA SALITAGE					
LEASE NAME: C'herron Enviro mental / Louington Unit water plant.					
TRANSPORTER COMPANY: (TIME: AMPM					
DATE: 3-74-12 VEHICLE NO.: 26 (DRIVER NO.:					
CHARGE TO:					
TYPE OF MATERIAL					
OCD					
[] Other Material: [] Contaminated soil [] C-117 No.: 10769					
Description:					
80x 5861					
VOLUME OF MATERIAL []: YARDS ZO : CELL#: []					
AS A CONDITION TO GANDY-MARLEY, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HEREWITH IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. §6901, et seq., THE NM HEALTH AND SAF, CODE, §361.001, et seq. AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED CONTAMINATED SOILS AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.					
ALSO AS A CONDITION TO GANDY-MARLEY, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, TRANSPORTER REPRESENTS AND WARRANTS THAT ONLY THE MATERIAL DELIVERED BY OPERATOR/SHIPPER TO TRANSPORTER IS NOW DELIVERED BY TRANSPORTER TO GANDY-MARLEY, INC.'S FACILITY FOR DISPOSAL.					
THIS WILL CERTIFY that the above Transporter loaded the material represented by this Transporter Statement at the above described location, and that it was tendered by the above described shipper. This will certify that no additional materials were added to this load, and that the material was delivered without incident. **PRIVER:					
FACILITY REPRESENTATIVE:					
White-GMI Canary-Shipper Pink-GMI Gold-Transporter					

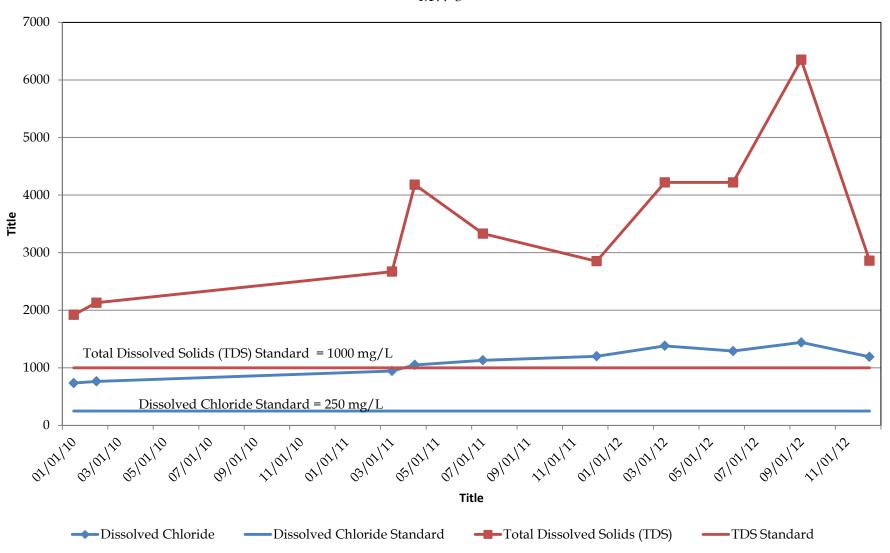


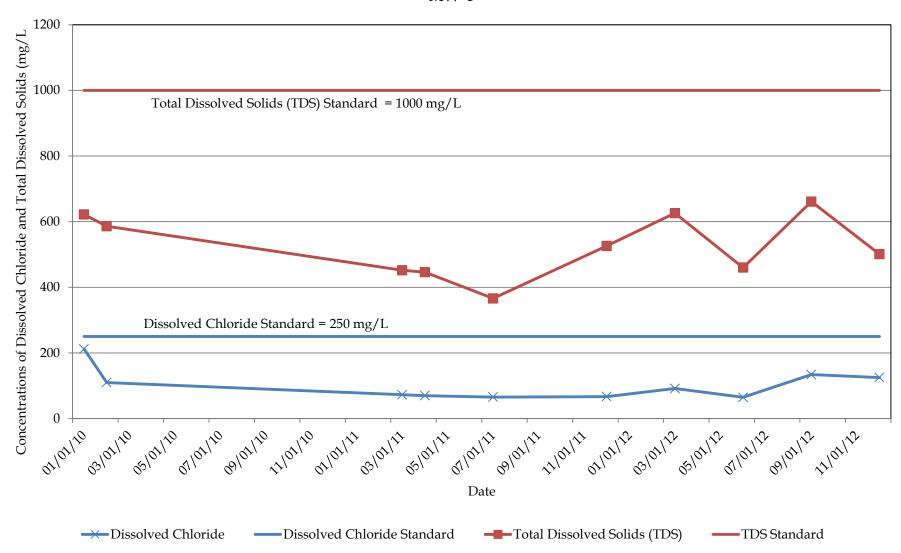
Chevron Environmental Management Company Lovington Unit Water Plant Section 1-T17S-R36E, Lea County, NM Dissolved Chloride and Total Dissolved Solids in Groundwater MW-1

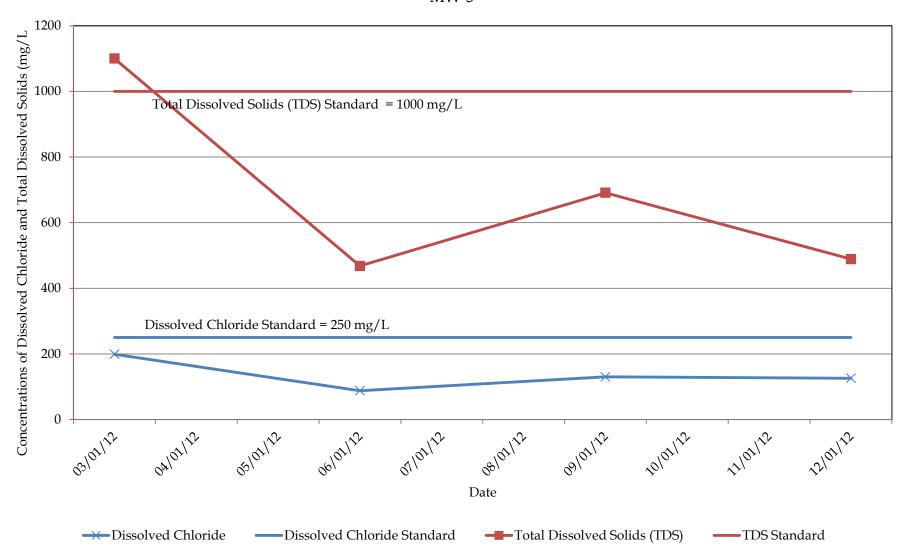


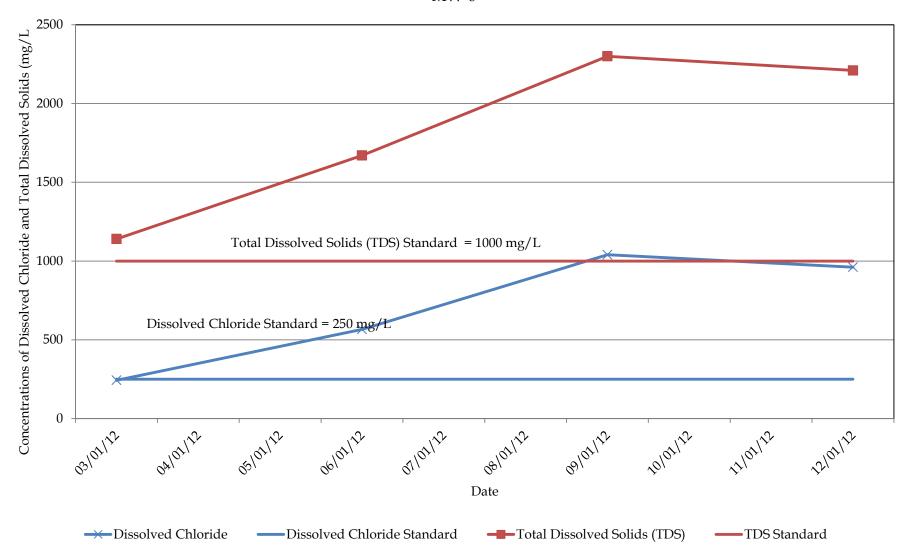
Chevron Environmental Management Company Lovington Unit Water Plant Section 1-T17S-R36E, Lea County, NM Dissolved Chloride and Total Dissolved Solids in Groundwater MW-2

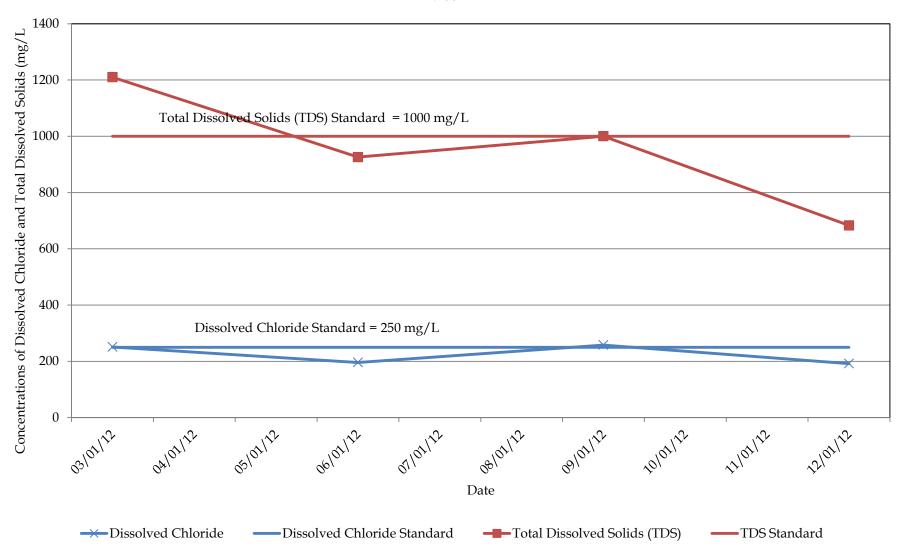


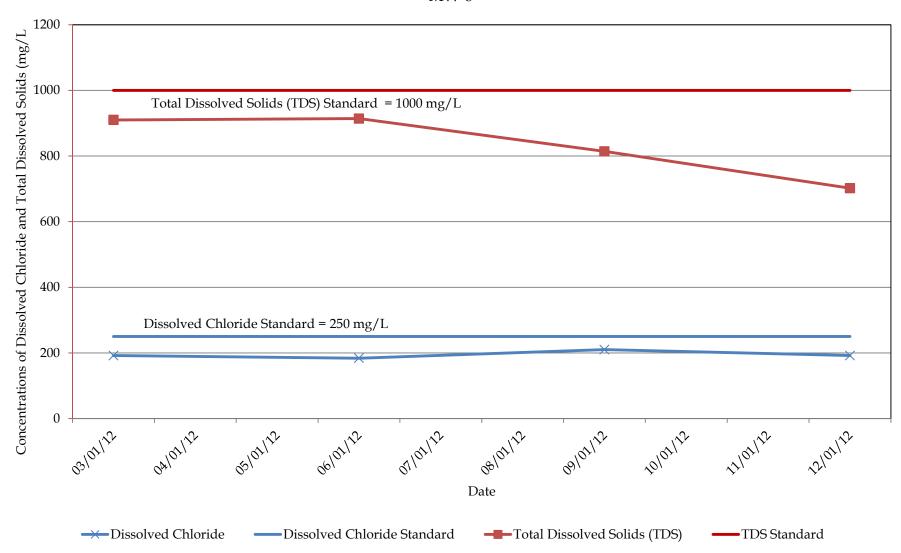














Analytical Report 439430

for Conestoga Rovers & Associates

Project Manager: John Schnable
Lovington Water Unit
073016
02-APR-12

Collected By: Client



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12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85) Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)
Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)
Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)
Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)





02-APR-12

Project Manager: John Schnable Conestoga Rovers & Associates 2135 S Loop 250 W Midland, TX 79703

Reference: XENCO Report No: 439430

Lovington Water Unit Project Address:

John Schnable:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 439430. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 439430 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron II

Odessa Laboratory Manager

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Sample Cross Reference 439430



Conestoga Rovers & Associates, Midland, TX

Lovington Water Unit

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-6	W	03-22-12 13:35		439430-001
MW-8	W	03-22-12 14:30		439430-002
MW-3	W	03-23-12 10:45		439430-003
MW-2	W	03-23-12 10:19		439430-004
MW-4	W	03-22-12 14:57		439430-005
MW-7	W	03-22-12 14:10		439430-006
MW-1	W	03-22-12 15:55		439430-007
MW-5	W	03-22-12 12:10		439430-008
Dup-1	W	03-23-12 00:00		439430-009



CASE NARRATIVE

Client Name: Conestoga Rovers & Associates

Project Name: Lovington Water Unit



Project ID: 073016 Report Date: 02-APR-12 Work Order Number: 439430 Date Received: 03/26/2012

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non nonformances and comments:

Batch: LBA-884570 Inorganic Anions by EPA 300/300.1

E300

Batch 884570, Chloride recovered below QC limits in the Matrix Spike. Samples affected are: 439430-008, -009, -002, -007, -004, -005, -001, -003, -006. The Laboratory Control Sample for Chloride is within laboratory Control Limits

Page 4 of 12 Final 1.000



Project Location:

Project Id: 073016

Contact: John Schnable

Certificate of Analysis Summary 439430

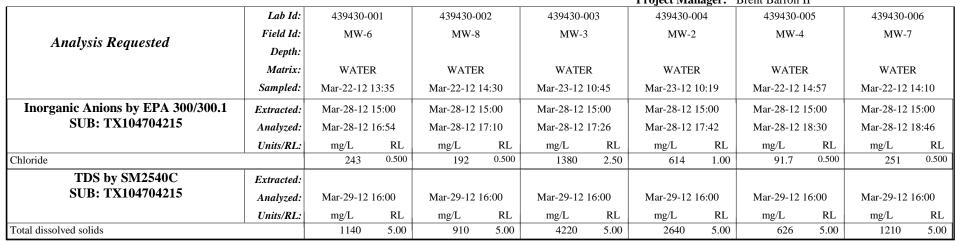
Conestoga Rovers & Associates, Midland, TX



Date Received in Lab: Mon Mar-26-12 04:21 pm

Report Date: 02-APR-12

Project Manager: Brent Barron II



This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

John



Project Location:

Total dissolved solids

Certificate of Analysis Summary 439430

Conestoga Rovers & Associates, Midland, TX



Project Id: 073016

Contact: John Schnable

Project Name: Lovington Water Unit

Report Date: 02-APR-12

Date Received in Lab: Mon Mar-26-12 04:21 pm

Project Manager: Brent Barron II Lab Id: 439430-007 439430-008 439430-009 Field Id: MW-1 MW-5 Dup-1 Analysis Requested Depth: Matrix: WATER WATER WATER Sampled: Mar-22-12 15:55 Mar-22-12 12:10 Mar-23-12 00:00 **Inorganic Anions by EPA 300/300.1** Extracted: Mar-28-12 15:00 Mar-28-12 15:00 Mar-28-12 15:00 SUB: TX104704215 Mar-28-12 19:02 Mar-28-12 19:19 Mar-28-12 19:51 Analyzed: Units/RL: mg/L RLmg/L RLmg/L RL 0.500 0.500 1390 2.50 Chloride 485 199 TDS by SM2540C Extracted: SUB: TX104704215 Mar-29-12 16:00 Mar-29-12 16:00 Mar-30-12 10:05 Analyzed: Units/RL: mg/L mg/L RLmg/L 2170 5.00 3100 5.00

1100

5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Flagging Criteria

- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantiation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit SDL Sample Detection Limit LOD Limit of Detection

PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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Page 7 of 12 Final 1.000

^{*} Surrogate recovered outside laboratory control limit.



BS / BSD Recoveries



Project Name: Lovington Water Unit

Work Order #: 439430

Project ID: 073016 **Date Analyzed:** 03/28/2012

Analyst: AMB **Lab Batch ID:** 884570 **Date Prepared:** 03/28/2012

Matrix: Water

Sample: 619824-1-BKS **Batch #:** 1

Units: mg/L		BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY									
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	< 0.500	50.0	48.4	97	50.0	48.1	96	1	90-110	20	

Date Analyzed: 03/29/2012 Analyst: LBA **Date Prepared:** 03/29/2012

Matrix: Water **Lab Batch ID:** 884694 **Batch #:** 1 **Sample:** 884694-1-BKS

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/L

[TDC L., CM2540C	Blank	Spike	Blank	Blank	Spike	Blank	Blk. Spk		Control	Control	
	TDS by SM2540C	Sample Result	Added	Spike	Spike	Added	Spike	Dup.	RPD	Limits	Limits	Flag
	Analytes	[A]	[B]	Result [C]	%R [D]	[E]	Duplicate Result [F]	%R [G]	%	%R	%RPD	
١	Total dissolved solids	<5.00	100	104	104	100	103	103	1	80-120	30	

Date Analyzed: 03/30/2012 Analyst: LBA **Date Prepared:** 03/30/2012

Matrix: Water **Lab Batch ID:** 884764 **Sample:** 884764-1-BKS **Batch #:** 1

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY Units: mg/L

TDS by SM2540C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Total dissolved solids	<5.00	1000	988	99	1000	996	100	1	80-120	30	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)| Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E] All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries





Work Order #: 439430

Lab Batch #: 884570

Date Prepared: 03/28/2012

Project ID: 073016

Date Analyzed: 03/28/2012

Analyst: AMB

QC- Sample ID: 439430-008 S

Batch #: Matrix: Water

Reporting Units: mg/L	MATE	MATRIX / MATRIX SPIKE RECOVERY STUDY						
Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag		
Chloride	199	50.0	209	20	80-120	X		

Project Name: Lovington Water Unit

Lab Batch #: 884570

Date Analyzed: 03/28/2012

Date Prepared: 03/28/2012

Analyst: AMB

QC- Sample ID: 439504-001 S

Batch #:

Matrix: Water

Reporting Units: mg/L MATRIX SPIKE RECOVERY STUDY							
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag	
Analytes	[A]	[B]					
Chloride	31.7	50.0	76.0	89	80-120		

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Lovington Water Unit

Work Order #: 439430

Lab Batch #: 884694 **Project ID:** 073016

 Date Analyzed:
 03/29/2012 16:00
 Date Prepared:
 03/29/2012
 Analyst: LBA

 QC- Sample ID:
 439343-003 D
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
TDS by SM2540C Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	956	950	1	30	

Lab Batch #: 884694

 Date Analyzed:
 03/29/2012 16:00
 Date Prepared:
 03/29/2012
 Analyst: LBA

 QC- Sample ID:
 439430-001 D
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE /	SAMPLE / SAMPLE DUPLICATE RECOVERY							
TDS by SM2540C	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag				
Analyte		[B]							
Total dissolved solids	1140	1180	3	30					

Lab Batch #: 884764

 Date Analyzed:
 03/30/2012 10:05
 Date Prepared:
 03/30/2012
 Analyst: LBA

 QC- Sample ID:
 439430-009 D
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE	SAMPLE / SAMPLE DUPLICATE RECOVERY							
	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag				
Analyte		[10]							
Total dissolved solids	3100	3110	0	30					

Spike Relative Difference RPD 200 * | (B-A)/(B+A) | All Results are based on MDL and validated for QC purposes. BRL - Below Reporting Limit

Analysis Request/ Environmental Services Chain of Custody

or Lancaster Laboratories use only

43943C

Sample #

COC# 217935

7,5°C 300 May 2005 Time (**9**) 380 10.0 9 Time Time ime ime emperature of samples Date Date Date Date Date T=Thiosulfate B=NaOH 0=Other Preservation Codes For Lab Use Only lingling Clam Remarks S=H.SO. N=HNO3 H-HC SCR#: Time | Received by: Time | Received by: Time | Received by: Time | Received by: 107/ **Analyses Requested Preservation Codes** Please print. Instructions on reverse side correspond with circled numbers. Date Date Date Date (2) 4 Total # of Containers 4 Other Relinquished by: Relinquished by: Relinguished by Relinquished by Matrix ☐ Potable Check if ☐ Potable X Nater X HOS Composite က Grab X P.O.#: 0730/6 SDG Complete? 3-23-12 1045 1335 3-22-12/1457 Collected 3-22-12/1430 01/51 1555 1210 323101019 Rush ž Time E-mail ž Site-specific QC (MS/MSD/Dup)? Yes (Rush TAT is subject to Lancaster Laboratories approval and surcharge.) Yes Turnaround Time Requested (TAT) (please circle): Mormal Project Name/#: Counch Ton Nator (Just PWSID #: 3-52-12 Quote #: 3-55-12 5-05-5 3-20-67 8-23-12 Acct. #: Collected Fax Name of state where samples were collected: $\ensuremath{ extstyle extstyl$ Date Phone Data Package Options (please circle if required) SHARAGE S TX TRRP-13 Rush results requested by (please circle): Fax#: MA MCP 03-23/2 Lancaster C15650 032213 032312 032312 032012 0342/2 C16650 03001B Date results are needed: Type I (validation/NJ Reg) Sample Identification Project Manager: Type III (Reduced NJ) E-mail address: mw-6 20-3 mm-2 mw. mw-8 h-ncu me-5 Type II (Tier II) DUP-1 JE. Phone #: Sampler: œ

tpon receipt (if requested)

Lancaster Laboratories, Inc., 2425 New Holland Pike, Lancaster, PA 17601 (717) 656-2300 Fax: (717) 656-6766 Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

Time | Received by:

Date

Relinquished by:

Internal COC Required? Yes / No_

Type VI (Raw Data Only)

Type IV (CLP SOW)

Final 1.000



XENCO Laboratories

Atlanta, Boca Raton, Corpus Christi, Dallas Houston, Miami, Odessa, Philadelphia Phoenix, San Antonio, Tampa Document Title: Sample Receipt Checklist

Document No.: SYS-SRC

Revision/Date: No. 01, 5/27/2010

Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

Client: CKF				
Date/Time: 3.2612 16.21				
Lab ID#: 439430				
Initials:				
Sample Receipt Chec	cklist			
1. Samples on ice?	Blue	(Water	No	
2. Shipping container in good condition?	⟨Yes⟩	No	None	
3. Custody seals intact on shipping container (cooler) and bottles?	Yes	No	N/A	
4. Chain of Custody present?	Yes	No		
5. Sample instructions complete on chain of custody?	Yes	No		
6. Any missing / extra samples?	Yes	⊂ No>		
7. Chain of custody signed when relinquished / received?	(Yes)	No		
8. Chain of custody agrees with sample label(s)?	(Yes)	No		
9. Container labels legible and intact?	(Yes)	No		
10. Sample matrix / properties agree with chain of custody?	(Yes)	No		
11. Samples in proper container / bottle?	Yes	No		
12. Samples properly preserved?	Yes	No	N/A	
13. Sample container intact?	(Yes)	No		
14. Sufficient sample amount for indicated test(s)?	Yes	No		
15. All samples received within sufficient hold time?	(Aes)	No		
16. Subcontract of sample(s)?	Yes	No	N/A	
17. VOC sample have zero head space?	Yes	No	NA	_
18. Cooler 1 No. Cooler 2 No. Cooler 3 No.	Cooler 4 N	0.	Cooler 5 No.	
lbs 3.5°c lbs °c lbs	°C lbs	°c	lbs	ိင
Nonconformance Docum	nentation			
Contact:Contacted by:		Date/Time:		
Regarding:				
Corrective Action Taken:				
Check all that apply: □Cooling process has begun shortly after sampli	ing overter-1	aut of toward	*******	
condition acceptable by NELAC 5.5.8.3.1.a	a.1.		iamie	
□ Initial and Backup Temperature confirm out of t □ Client understands and would like to proceed w		nditions		

Analytical Report 444089

for Conestoga Rovers & Associates

Project Manager: John Schnable Lovington Unit Water Plant 073016-2012.2-02 20-JUN-12

Collected By: Client



Celebrating 20 Years of commitment to excellence in Environmental Testing Services



12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135) Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX) Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)





20-JUN-12

Project Manager: John Schnable Conestoga Rovers & Associates 2135 S Loop 250 W Midland, TX 79703

Reference: XENCO Report No: 444089

Lovington Unit Water Plant Project Address: Lovington, NM

John Schnable:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 444089. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 444089 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Nicholas Straccione

Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

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Houston - Dallas - Odessa - San Antonio - Tampa - Lakeland - Atlanta - Phoenix - Oklahoma - Latin America



Sample Cross Reference 444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-6	W	06-14-12 08:45		444089-001
MW-3	W	06-14-12 09:05		444089-002
MW-1	W	06-14-12 09:25		444089-003
Dup-1	W	06-14-12 00:00		444089-004
MW-5	W	06-14-12 10:00		444089-005
MW-4	W	06-14-12 10:25		444089-006
MW-8	W	06-14-12 10:40		444089-007
MW-7	W	06-14-12 11:05		444089-008
MW-2	W	06-14-12 09:40		444089-009



CASE NARRATIVE

Client Name: Conestoga Rovers & Associates Project Name: Lovington Unit Water Plant



 Project ID:
 073016-2012.2-02
 Report Date:
 20-JUN-12

 Work Order Number:
 444089
 Date Received:
 06/15/2012

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Page 4 of 21

Final 1.000



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: **MW-6** Matrix: **Water** % Moisture:

Lab Sample Id: 444089-001 Date Collected: Jun-14-12 08:45

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 13:21

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-6566mg/L06/18/12 13:2110

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS1670mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-3 Matrix: Water % Moisture:

Lab Sample Id: 444089-002 Date Collected: Jun-14-12 09:05

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 13:56

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-61290mg/L06/18/12 13:5610

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS4220mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-1 Matrix: Water % Moisture:

Lab Sample Id: 444089-003 Date Collected: Jun-14-12 09:25

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 14:13

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-6502mg/L06/18/12 14:1310

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS1550mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: **Dup-1** Matrix: **Water** % Moisture:

Lab Sample Id: 444089-004 Date Collected: Jun-14-12 00:00

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 14:31

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-666.4mg/L06/18/12 14:3110

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS436mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-5 Matrix: Water % Moisture:

Lab Sample Id: 444089-005 Date Collected: Jun-14-12 10:00

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 14:48

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-688.0mg/L06/18/12 14:4810

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS468mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-4 Matrix: Water % Moisture:

Lab Sample Id: 444089-006 Date Collected: Jun-14-12 10:25

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 15:05

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-664.8mg/L06/18/12 15:0510

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS460mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-8 Matrix: Water % Moisture:

Lab Sample Id: 444089-007 Date Collected: Jun-14-12 10:40

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 15:58

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-6184mg/L06/18/12 15:5810

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS914mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-7 Matrix: Water % Moisture:

Lab Sample Id: 444089-008 Date Collected: Jun-14-12 11:05

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 16:15

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-6196mg/L06/18/12 16:1510

Analytical Method: TDS by SM2540C

Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS926mg/L06/19/12 08:001



444089



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id: MW-2 Matrix: Water % Moisture:

Lab Sample Id: 444089-009 Date Collected: Jun-14-12 09:40

Date Received: Jun-15-12 11:50

Analytical Method: Inorganic Anions by EPA 300/300.1 Prep Method: E300P

Seq Number: 890398 Date Prep: Jun-18-12 16:32

ParameterCas NumberResultUnitsAnalysis DateFlagDilChloride16887-00-6292mg/L06/18/12 16:3210

Analytical Method: TDS by SM2540C

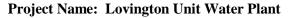
Seq Number: 890494

ParameterCas NumberResultUnitsAnalysis DateFlagDilTotal dissolved solidsTDS1190mg/L06/19/12 08:001



Certificate of Analysis Summary 444089

Conestoga Rovers & Associates, Midland, TX





Project Id: 073016-2012.2-02 Contact: John Schnable

Project Location: Lovington, NM

Date Received in Lab: Fri Jun-15-12 11:50 am

Report Date: 20-JUN-12

Project Manager: Nicholas Straccione

								1 1 0 J c c c 1 1 2 u 2							
	Lab Id:	444089-0	001	444089-0	02	444089-0	03	444089-0	04	444089-0	05	444089-0	06		
Analysis Requested	Field Id:	MW-6		MW-3		MW-1		Dup-1		MW-5		MW-4			
Anaiysis Kequesiea	Depth:														
	Matrix:	WATE	WATER		WATER		WATER		₹	WATER		WATER			
	Sampled:	Jun-14-12 (n-14-12 08:45 J		9:05	Jun-14-12 0	9:25	Jun-14-12 00:00		Jun-14-12 1	Jun-14-12 10:00		0:25		
Inorganic Anions by EPA 300/300.1	Extracted:	Jun-18-12	un-18-12 13:21 J		3:56	Jun-18-12 1	Jun-18-12 14:13 Jun-18-12 14:3		4:31	Jun-18-12 14:48		Jun-18-12 14:48 Jun		Jun-18-12 1	5:05
SUB: TX104704215	Analyzed:	Jun-18-12	13:21	Jun-18-12 13:56		Jun-18-12 14:13		Jun-18-12 14:31		Jun-18-12 14:48		Jun-18-12 15:05			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL		
Chloride		566	5.00	1290	5.00	502	5.00	66.4	5.00	88.0	5.00	64.8	5.00		
TDS by SM2540C	Extracted:														
SUB: TX104704215	Analyzed:	Jun-19-12 (08:00	Jun-19-12 0	8:00	Jun-19-12 08:00		Jun-19-12 08:00		Jun-19-12 08:00		Jun-19-12 0	8:00		
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL		
Total dissolved solids		1670	5.00	4220	5.00	1550	5.00	436	5.00	468	5.00	460	5.00		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Nicholas Straccione



Certificate of Analysis Summary 444089

Conestoga Rovers & Associates, Midland, TX



Project Id: 073016-2012.2-02 Contact: John Schnable **Project Name: Lovington Unit Water Plant**

Date Received in Lab: Fri Jun-15-12 11:50 am **Report Date:** 20-JUN-12

Project Location: Lovington, NM

Project Manager: Nicholas Straccione

								1 Toject Midnager.	Michoras Straccione	
	Lab Id:	444089-0	07	444089-0	08	444089-0	09			
Analysis Paguastad	Field Id:	MW-8	MW-8		MW-7					
Analysis Requested	Depth:									
	Matrix:	WATER		WATER		WATER				
	Sampled:	Jun-14-12 1	0:40	Jun-14-12 1	1:05	Jun-14-12 0	9:40			
Inorganic Anions by EPA 300/300.1	Extracted:	Jun-18-12 1	Jun-18-12 15:58		Jun-18-12 16:15		6:32			
SUB: TX104704215	Analyzed:	Jun-18-12 1	15:58	Jun-18-12 1	6:15	Jun-18-12 1	6:32			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL			
Chloride		184	5.00	196	5.00	292	5.00			
TDS by SM2540C	Extracted:									
SUB: TX104704215	Analyzed:	Jun-19-12 (08:00	Jun-19-12 0	8:00	Jun-19-12 08:00				
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL			
Total dissolved solids		914	5.00	926	5.00	1190	5.00			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Nicholas Straccione



Flagging Criteria

- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantitation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit SDL Sample Detection Limit LOD Limit of Detection

PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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Page 16 of 21 Final 1.000

^{*} Surrogate recovered outside laboratory control limit.



BS / BSD Recoveries



Project Name: Lovington Unit Water Plant

Work Order #: 444089

Project ID: 073016-2012.2-02

Analyst: TTE

Date Prepared: 06/18/2012

Date Analyzed: 06/18/2012

Lab Batch ID: 890398

Sample: 623410-1-BKS

Batch #: 1

Matrix: Water

United mg/I

BLANK/BLANK SPIKE/BLANK SPIKE DUPLICATE RECO	OVERY STUDY

Units: mg/L	DELICITED AND VERY STOP										
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	< 0.500	50.0	51.9	104	50.0	52.2	104	1	80-120	20	

Analyst: RKO

Date Prepared: 06/19/2012

Date Analyzed: 06/19/2012

Lab Batch ID: 890494

Sample: 890494-1-BKS

Batch #: 1

Matrix: Water

Units:	mg/L
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DI ANIZ /DI ANIZ CDIIZE	DI ANIZ CDIEZE DEIDI ICATE	DECOVEDY CTUDY
BLANK /BLANK SPIKE /	BLANK SPIKE DUPLICATE	RECOVERY STUDY

TDS by SM2540C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Total dissolved solids	<5.00	1000	1020	102	1000	1020	102	0	80-120	30	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E] All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries



Project Name: Lovington Unit Water Plant

Work Order #: 444089

Lab Batch #: 890398 **Project ID:** 073016-2012.2-02

 Date Analyzed:
 06/18/2012
 Date Prepared:
 06/18/2012
 Analyst:
 TTE

 QC- Sample ID:
 444089-001 S
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L MATRIX SPIKE RECOVERY STUDY

Reporting Omes. mg/L	MATE	CIA / WIA	I KIX 51 IKE	RECO	EKIBIO	<u> </u>
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Analytes	[A]	[B]		. ,		
Chloride	566	500	1060	99	80-120	

Lab Batch #: 890398

 Date Analyzed:
 06/18/2012
 Date Prepared:
 06/18/2012
 Analyst:
 TTE

QC- Sample ID: 444091-011 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L	MATE	RIX / MA'	TRIX SPIKE	RECOV	VERY STU	DY
Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	1430	500	1870	88	80-120	

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Lovington Unit Water Plant

Work Order #: 444089

Lab Batch #: 890494 **Project ID:** 073016-2012.2-02

 Date Analyzed:
 06/19/2012 08:00
 Date Prepared:
 06/19/2012
 Analyst: RKO

 QC- Sample ID:
 444086-001 D
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
TDS by SM2540C Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total dissolved solids	4360	4340	0	30	

Xenco Laboratories The Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST 12600 West 1-20 East Phone: 432-563-1800 Odessa, Texas 79766 Fax: 432-563-1713

Phone: 432-563-1800 Fax: 432-563-1713

	•	Project Manager:		John ?	12/ 12/	2 U S	Schnable									Proje	Project Name: Louis	77:30	्ते	4	ton Unit Water	470	12	les 1	2/4	+	ı
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		City/State/Zip:		Midland	- *	7	19701										₩	#	10	1 2	2	46	589	12			
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Q</td><td>16.</td><td></td><td>ျှိပ္ပ</td><td>· 1</td></tr><tr><th>l</th><td></td><td></td><td></td><td></td><td></td><td>1</td><td>120.84</td><td>1</td><td>*</td><td></td><td></td><td></td><td>1</td><td>1</td><td>1</td><td>1</td><td>¥ .</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>ł</td></tr></tbody></table>															



XENCO Laboratories

Atlanta, Boca Raton, Corpus Christi, Dallas Houston, Miami, Odessa, Philadelphia Phoenix, San Antonio, Tampa Document Title: Sample Receipt Checklist

Document No.: SYS-SRC

Revision/Date: No. 01, 5/27/2010

Effective Date: 6/1/2010 Page 1 of 1

Prelogin / Nonconformance Report - Sample Log-In

lient: ([1						
oate/Time: <u>⟨</u> /-	1512	11.5	<u> </u>	_				
ab ID#:	<u> 44</u>	1089						
nitials:	A	٤						
		Sa	ample Rece	ipt Checki	ist			
I. Samples on ice?					Blue	Water	No	
2. Shipping container in	good cond	tion?			Yes	No	None	
3. Custody seals intact	on shipping	container (co	oler) and bott	les?	Yes	No	(N/A)	
L. Chain of Custody pre	sent?				Peso	No		
5. Sample instructions	complete on	chain of cust	ody?		Ø€	No		
6. Any missing / extra s	amples?				Yes	No		
7. Chain of custody sign	ned when re	linquished / re	eceived?		(YES)	No		
8. Chain of custody agn	ees with sar	nple label(s)?			Tes	No		
9. Container labels legil	ole and inta	1?		• • •	Yes	No		
10. Sample matrix / pro	perties agre	e with chain o	f custody?		(Yes)	No -		
11. Samples in proper c	ontainer / b	ottle?			Yes	No		
12. Samples properly p	reserved?	·			Yes	No	N/A	<u> </u>
13. Sample container in	tact?				Yes	No		
14. Sufficient sample ar	nount for in	dicated test(s))?		Yes	No		
15. All samples receive	d within suf	ficient hold tin	ne?		(Yes)	No		
16. Subcontract of sam	ple(s)?				Yes	No	N/A	
17. VOC sample have z	ero head sp	ace?		-	. Yes	No	NA	
18. Cooler 1 No.	Cooler 2 N	lo.	Cooler 3 No.		Cooler 4 N	0.	Cooler 5 No.	
lbs ().5%	lbs	_ [bs °C				°C
:			onformanc			<u></u>		
0				e Documei	nauon			
Contact:		Contacted by	·			Date/Time:_		
Regarding:								-
								
								
Corrective Action Take	n:							
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Check all that apply:	Cooling -	rocess has be	ann chadh -	ffn+ na=-12	an comp and	af to	en feren	•
	COR	dition accepta	ble by NELAC	5.5.8.3.1.a.1.			ami e	•
	🗆 Initial and	Backup Tem	perature confi	rm out of tem	perature co	nditions		

Analytical Report 449943

for Conestoga Rovers & Associates

Project Manager: John Schnable
Lovington Unit Water Plant
073016
05-OCT-12

Collected By: Client





12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135) Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)





05-OCT-12

Project Manager: John Schnable Conestoga Rovers & Associates 2135 S Loop 250 W Midland, TX 79703

Reference: XENCO Report No: 449943

Lovington Unit Water Plant Project Address: New Mexico

John Schnable:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 449943. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 449943 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Nicholas Straccione

Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

Certified and approved by numerous States and Agencies.

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Sample Cross Reference 449943



Conestoga Rovers & Associates, Midland, TX

Lovington Unit Water Plant

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-4-092812	W	09-28-12 09:00		449943-001
MW-5-092812	W	09-28-12 09:25		449943-002
MW-8-092812	W	09-28-12 10:00		449943-003
MW-7-092812	W	09-28-12 10:40		449943-004
MW-2-092812	W	09-28-12 11:20		449943-005
MW-1-092812	W	09-28-12 11:50		449943-006
MW-6-092812	W	09-28-12 12:15		449943-007
MW-3-092812	W	09-29-12 12:50		449943-008
Dup-092812	W	09-28-12 00:00		449943-009

CASE NARRATIVE



Client Name: Conestoga Rovers & Associates Project Name: Lovington Unit Water Plant



 Project ID:
 073016
 Report Date:
 05-OCT-12

 Work Order Number:
 449943
 Date Received:
 10/01/2012

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Page 4 of 12

Final 1.000



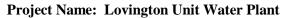
Project Id: 073016

Project Location: New Mexico

Contact: John Schnable

Certificate of Analysis Summary 449943

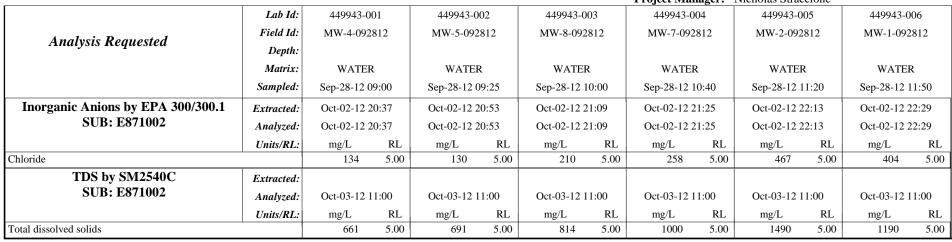
Conestoga Rovers & Associates, Midland, TX



Date Received in Lab: Mon Oct-01-12 08:38 am

Report Date: 05-OCT-12

Project Manager: Nicholas Straccione



This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - San Antonio - Atlanta - Tampa - Boca Raton - Latin America - Odessa - Corpus Christi

Worl Etr

Nicholas Straccione Project Manager



Certificate of Analysis Summary 449943

Conestoga Rovers & Associates, Midland, TX



Project Id: 073016

Project Location: New Mexico

Project Name: Lovington Unit Water Plant

Contact: John Schnable

Date Received in Lab: Mon Oct-01-12 08:38 am **Report Date:** 05-OCT-12

Project Manager: Nicholas Straccione

								110jeet manager	T TICHOTUS DE UCCIONC	
	Lab Id:	449943-0	07	449943-0	08	449943-0	09			
Analysis Requested	Field Id:	MW-6-092	812	MW-3-092	812	Dup-0928	12			
Anaiysis Kequesiea	Depth:									
	Matrix:	WATE	₹	WATER	₹	WATER	₹			
	Sampled:	Sep-28-12	12:15	Sep-29-12 1	2:50	Sep-28-12 0	00:00			
Inorganic Anions by EPA 300/300.1	Extracted:	Oct-02-12	22:46	Oct-02-12 2	3:02	Oct-02-12 2	23:18			
SUB: E871002	Analyzed:	Oct-02-12	22:46	Oct-02-12 2	3:02	Oct-02-12 2	3:18			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL			
Chloride		1040	5.00	1440	5.00	1430	5.00			
TDS by SM2540C	Extracted:									
SUB: E871002	Analyzed:	Oct-03-12	11:00	Oct-03-12 1	1:00	Oct-03-12 1	1:00			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL			
Total dissolved solids	·	2300	5.00	6350	5.00	5650	5.00			
· · · · · · · · · · · · · · · · · · ·										

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Nul Ctr



Flagging Criteria

- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantiation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit SDL Sample Detection Limit LOD Limit of Detection

PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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^{*} Surrogate recovered outside laboratory control limit.



BS / BSD Recoveries



Project Name: Lovington Unit Water Plant

Work Order #: 449943

Project ID: 073016

Analyst: TTE

Date Prepared: 10/02/2012

Date Analyzed: 10/02/2012

Lab Batch ID: 897862

Sample: 628012-1-BKS

Matrix: Water

Batch #: 1

Units: mg/L		BLAN	K/BLANK S	PIKE / B	SLANK S	PIKE DUPL	ICATE 1	RECOVE	ERY STUD	<u>Y</u>	
Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Chloride	< 0.500	50.0	50.6	101	50.0	52.2	104	3	80-120	20	

Analyst: KUG

Date Prepared: 10/03/2012

Date Analyzed: 10/03/2012

Lab Batch ID: 898022

Sample: 898022-1-BKS

Batch #: 1

Matrix: Water

Units: mg/L		BLAN	K/BLANK S	SPIKE / B	LANK S	SPIKE DUPL	ICATE 1	RECOVE	KY STUD	Y	
TDS by SM2540C	Blank Sample Result [A]		Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
Total dissolved solids	<5.00	1000	1000	100	1000	1000	100	0	80-120	30	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E] All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries



Project Name: Lovington Unit Water Plant

Work Order #: 449943

Lab Batch #: 897862 **Project ID:** 073016

 Date Analyzed:
 10/02/2012
 Date Prepared:
 10/02/2012
 Analyst: TTE

 QC- Sample ID:
 449943-009 S
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L MATRIX / MATRIX SPIKE RECOVERY STUDY **Parent** Spiked Sample Control **Inorganic Anions by EPA 300** Sample Spike Result %R Limits Flag Result Added [D] %R [C] [A] [B] **Analytes** Chloride 1430 500 1910 80-120

Lab Batch #: 897862

Date Analyzed: 10/02/2012 Date Prepared: 10/02/2012 Analyst: TTE

QC- Sample ID: 449988-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L	MATE	RIX / MA'	TRIX SPIKE	RECOV	VERY STU	DY
Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	203	500	718	103	80-120	

Matrix Spike Percent Recovery [D] = 100*(C-A)/BRelative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Lovington Unit Water Plant

Work Order #: 449943

Lab Batch #: 898022 **Project ID:** 073016

 Date Analyzed:
 10/03/2012 11:00
 Date Prepared:
 10/03/2012
 Analyst:
 KUG

 QC- Sample ID:
 449943-007 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
120 05 021220 100	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		[B]			
Total dissolved solids	2300	2300	0	30	

Lab Batch #: 898022

 Date Analyzed:
 10/03/2012 11:00
 Date Prepared:
 10/03/2012
 Analyst: KUG

 QC- Sample ID:
 450081-003 D
 Batch #:
 1
 Matrix: Water

Reporting Units: mg/L	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
225 53 53.225 100	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		[B]			
Total dissolved solids	876	874	0	30	

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Notice: Signature of this document and relinquishment of these samples constitutes a valid purchase order from client company to Xenco Laboratories and its affiliates, subcontractors and assigns under Xenco's standard terms and conditions of service unless previously negotiated under a fully executed client contract. Page 11 of 12

Matrix: Air (A), Product (P), Solid(S), Water (W), Liquid (L)

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Prelogin/Nonconformance Report- Sample Log-In

Client: Conestoga Rovers & Associates

Date/ Time Received: 10/01/2012 08:38:00 AM

Air and Metal samples Acceptable Range: Ambient

Acceptable Temperature Range: 0 - 6 degC

Temperature Measuring device used :

ork Order #: 44994	3 Tem	perature measuring device used :
	Sample Receipt Ch	ecklist Comments
#1 *Temperature of co	poler(s)?	4.5
#2 *Shipping containe	er in good condition?	Yes
#3 *Samples received	d on ice?	Yes
#4 *Custody Seals int	tact on shipping container/ cooler?	Yes
#5 Custody Seals inta	act on sample bottles?	Yes
#6 *Custody Seals Si	gned and dated?	Yes
#7 *Chain of Custody	present?	Yes
#8 Sample instruction	ns complete on Chain of Custody?	Yes
#9 Any missing/extra	samples?	No
#10 Chain of Custody	signed when relinquished/ received?	Yes
#11 Chain of Custody	agrees with sample label(s)?	Yes
#12 Container label(s) legible and intact?	Yes
#13 Sample matrix/ p	roperties agree with Chain of Custody?	Yes
#14 Samples in prope	er container/ bottle?	Yes
#15 Samples properly	y preserved?	Yes
#16 Sample containe	r(s) intact?	Yes
#17 Sufficient sample	amount for indicated test(s)?	Yes
#18 All samples recei	ived within hold time?	Yes
#19 Subcontract of sa	ample(s)?	Yes
#20 VOC samples ha	ve zero headspace (less than 1/4 inch bubble	e)? Yes
#21 <2 for all sample:	s preserved with HNO3,HCL, H2SO4?	Yes
#22 >10 for all sample	es preserved with NaAsO2+NaOH, ZnAc+Na	OH? Yes
Must be completed f	or after-hours delivery of samples prior to	placing in the refrigerator
Analyst.	PH Device/Lot#.	
Checklist	completed by:	Date:
Checklis	t reviewed by:	

Date:

Analytical Report 454599

for Conestoga Rovers & Associates

Project Manager: John Schnable
Lovington Water Plant
073016
27-DEC-12

Collected By: Client





12600 West I-20 East Odessa, Texas 79765

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0765), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002) Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054) New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610) Rhode Island (LAO00312), USDA (S-44102), DoD (L11-54)

Xenco-Atlanta (EPA Lab Code: GA00046): Florida (E87429), North Carolina (483), South Carolina (98015), Kentucky (85), DoD (L10-135) Louisiana (04176), USDA (P330-07-00105)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Lakeland: Florida (E84098)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX) Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757) Xenco Tucson (EPA Lab code: AZ000989): Arizona (AZ0758)





27-DEC-12

Project Manager: John Schnable Conestoga Rovers & Associates 2135 S Loop 250 W Midland, TX 79703

Reference: XENCO Report No(s): 454599

Lovington Water Plant Project Address: NM

John Schnable:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 454599. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 454599 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Nicholas Straccione

Project Manager

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Sample Cross Reference 454599



Conestoga Rovers & Associates, Midland, TX

Lovington Water Plant

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW4 121912	W	12-19-12 10:25		454599-001
MW5 121912	W	12-19-12 11:00		454599-002
MW8 121912	W	12-19-12 11:30		454599-003
MW7 121912	W	12-19-12 12:10		454599-004
MW1 121912	W	12-19-12 12:45		454599-005
Dup1 121912	W	12-19-12 00:00		454599-006
MW2 122012	W	12-20-12 10:15		454599-007
MW6 122012	W	12-20-12 11:00		454599-008
MW3 122012	W	12-20-12 12:00		454599-009

CASE NARRATIVE



Client Name: Conestoga Rovers & Associates

Project Name: Lovington Water Plant



 Project ID:
 073016
 Report Date:
 27-DEC-12

 Work Order Number(s):
 454599
 Date Received:
 12/20/2012

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-903523 Inorganic Anions by EPA 300/300.1

E300

Batch 903523, Chloride recovered below QC limits Samples affected are: 454599-001, -003, -006, -002, -004, -005. The Laboratory Control Sample for Chloride is within laboratory Control Limits

Page 4 of 12

Final 1.000



Project Location: NM

Certificate of Analysis Summary 454599

Conestoga Rovers & Associates, Midland, TX

Project Name: Lovington Water Plant



Contact: John Schnable

Project Id: 073016

Date Received in Lab: Thu Dec-20-12 04:52 pm

Report Date: 27-DEC-12

Project Manager: Nicholas Straccione

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	Lab Id:	454599-0	001	454599-0	02	454599-0	03	454599-0	04	454599-0	005	454599-0	06
Analusia Daguastad	Field Id:	MW4 121	912	MW5 121912		MW8 121912		MW7 121	912	MW1 121912		Dup1 1219	912
Analysis Requested	Depth:												
	Matrix:	WATE	R	WATE	≀	WATER	₹	WATE	₹	WATE	R	WATER	2
	Sampled:	Dec-19-12	10:25	Dec-19-12 1	1:00	Dec-19-12 1	1:30	Dec-19-12	12:10	Dec-19-12	12:45	Dec-19-12 (00:00
Inorganic Anions by EPA 300/300.1	Extracted:	Dec-21-12	20:09	Dec-21-12 2	20:43	Dec-21-12 2	21:00	Dec-21-12 2	21:17	Dec-21-12	21:34	Dec-21-12 2	21:51
SUB: E871002	Analyzed:	Dec-21-12	20:09	Dec-21-12 2	20:43	Dec-21-12 2	21:00	Dec-21-12 2	21:17	Dec-21-12	21:34	Dec-21-12 2	21:51
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Chloride		125	2.00	126	2.00	192	2.00	192	2.00	401	2.00	243	2.00
TDS by SM2540C	Extracted:												
SUB: E871002	Analyzed:	Dec-24-12	16:00	Dec-24-12 1	6:00	Dec-24-12 1	6:00	Dec-24-12	16:00	Dec-24-12	16:00	Dec-24-12 1	16:00
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Total dissolved solids	·	501	5.00	489	5.00	702	5.00	683	5.00	1000	5.00	669	5.00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Nicholas Straccione



Project Location: NM

Certificate of Analysis Summary 454599

Conestoga Rovers & Associates, Midland, TX



Project Id: 073016

Project Name: Lovington Water Plant Contact: John Schnable

Date Received in Lab: Thu Dec-20-12 04:52 pm

Report Date: 27-DEC-12

Project Manager: Nicholas Straccione

								i roject manager.	Nicholas Straccione	
	Lab Id:	454599-0	07	454599-0	08	454599-0	09			
Analysis Paguested	Field Id:	MW2 122	012	MW6 1220)12	MW3 1220	012			
Analysis Requested	Depth:									
	Matrix:	WATE	₹	WATER	t	WATER	₹			
	Sampled:	Dec-20-12 1	10:15	Dec-20-12 1	1:00	Dec-20-12 1	2:00			
Inorganic Anions by EPA 300/300.1	Extracted:	Dec-22-12	15:46	Dec-22-12 1	6:03	Dec-22-12 1	6:20			
SUB: E871002	Analyzed:	Dec-22-12	15:46	Dec-22-12 1	6:03	Dec-22-12 1	6:20			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL			
Chloride		670	10.0	961	10.0	1190	10.0			
TDS by SM2540C	Extracted:									
SUB: E871002	Analyzed:	Dec-24-12	16:00	Dec-24-12 1	6:00	Dec-24-12 1	6:00			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL			
Total dissolved solids		1560	5.00	2210	5.00	2860	5.00			

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

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Nicholas Straccione Project Manager



Flagging Criteria

- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- F RPD exceeded lab control limits.
- J The target analyte was positively identified below the quantiation limit and above the detection limit.
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.
- K Sample analyzed outside of recommended hold time.
- **JN** A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit SDL Sample Detection Limit LOD Limit of Detection

PQL Practical Quantitation Limit MQL Method Quantitation Limit LOQ Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

- + NELAC certification not offered for this compound.
- * (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

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^{*} Surrogate recovered outside laboratory control limit.



BS / BSD Recoveries



Project Name: Lovington Water Plant

Work Order #: 454599

Date Prepared: 12/21/2012

Project ID: 073016 **Date Analyzed:** 12/21/2012

Analyst: JOL

Date Prepared: 12/21/201.

Lab Batch ID: 903523

Sample: 631646-1-BKS **Batch #:** 1

Matrix: Water

Units: mg/L	BLAN	K/BLANK S	SPIKE / B	SLANK S	SPIKE DUPL	ICATE 1	RECOVE	ERY STUD	Y

	Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
	Analytes		[B]	[C]	[D]	[E]	Result [F]	[G]				
ſ	Chloride	<2.00	50.0	53.8	108	50.0	53.6	107	0	80-120	20	

Analyst: JOL Date Prepared: 12/22/2012

Date Analyzed: 12/22/2012

Lab Batch ID: 903583

Sample: 631677-1-BKS **Batch #:** 1

Matrix: Water

Units: mg/L

Inorganic Anions by EPA 300/300.1	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes	[23]	[B]	[C]	[D]	[E]	Result [F]	[G]	70	/ U IX	70KI D	
Chloride	< 2.00	50.0	52.0	104	50.0	52.2	104	0	80-120	20	

Analyst: KUG Date Prepared: 12/24/2012 Date Analyzed: 12/24/2012

Lab Batch ID: 903644 Sample: 903644-1-BKS Batch #: 1 Matrix: Water

Units: mg/L BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Total dissolved solids	< 5.00	1000	991	99	1000	992	99	0	80-120	30	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|Blank Spike Recovery [D] = 100*(C)/[B]Blank Spike Duplicate Recovery [G] = 100*(F)/[E]All results are based on MDL and Validated for QC Purposes



Form 3 - MS Recoveries



Project Name: Lovington Water Plant

Work Order #: 454599

Project ID: 073016 **Lab Batch #:** 903523

Date Analyzed: 12/22/2012 **Date Prepared:** 12/22/2012 Analyst: JOL **QC- Sample ID:** 454159-006 S Batch #: Matrix: Water

MATRIX / MATRIX SPIKE RECOVERY STUDY Reporting Units: mg/L

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Chloride	245	50.0	251	12	80-120	X

Lab Batch #: 903523

Date Prepared: 12/21/2012 Analyst: JOL **Date Analyzed:** 12/21/2012 **QC- Sample ID:** 454599-001 S Batch #:

Matrix: Water Reporting Units: mg/L MATRIX / MATRIX SPIKE RECOVERY STUDY

Reporting Omes. mg/E	MAII	MA / MA	I KIA SI IKE	KECO	EKI SIU	D1
Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
111111111111111111111111111111111111111						
Chloride	125	50.0	153	56	80-120	X

Lab Batch #: 903583

Date Prepared: 12/22/2012 Analyst: JOL **Date Analyzed:** 12/22/2012

QC- Sample ID: 454159-001 S Batch #: Matrix: Water MATRIX / MATRIX SPIKE RECOVERY STUDY Reporting Units: mg/I

Reporting Units: mg/L	MAIRIA / MAIRIA SPIRE RECOVERT STUDI							
Inorganic Anions by EPA 300	Parent Sample Result	Spike Added	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag		
Analytes	[A]	[B]						
Chloride	630	250	865	94	80-120			

Lab Batch #: 903583

Date Prepared: 12/22/2012 Analyst: JOL **Date Analyzed:** 12/22/2012 **QC- Sample ID:** 454669-002 S Batch #: Matrix: Water

Reporting Units: mg/L MATRIX / MATRIX SPIKE RECOVERY STUDY **Parent** Spiked Sample **Inorganic Anions by EPA 300** Control Sample Spike %R Result Limits Flag Result Added [C] [D] %R [A] [B] Analytes Chloride 507 500 991 97 80-120

Matrix Spike Percent Recovery [D] = 100*(C-A)/B Relative Percent Difference [E] = 200*(C-A)/(C+B)All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit



Sample Duplicate Recovery



Project Name: Lovington Water Plant

Work Order #: 454599

Lab Batch #: 903644 **Project ID:** 073016

 Date Analyzed:
 12/24/2012 16:00
 Date Prepared:
 12/24/2012
 Analyst: KUG

 QC- Sample ID:
 454578-003 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L	SAMPLE	SAMPLE	DUPLIC	ATE REC	OVERY
TDS by SM2540C Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
1 mary te					
Total dissolved solids	1130	1140	1	30	

Lab Batch #: 903644

 Date Analyzed:
 12/24/2012 16:00
 Date Prepared:
 12/24/2012
 Analyst: KUG

 QC- Sample ID:
 454599-006 D
 Batch #:
 1
 Matrix:
 Water

Reporting Units: mg/L	SAMPLE	/ SAMPLE	DUPLIC	ATE REC	OVERY
	Parent Sample Result [A]	Duplicate Result	RPD	Control Limits %RPD	Flag
Analyte		[B]			
Total dissolved solids	669	668	0	30	

ANALYSIS REQUEST & CHAIN OF CUSTODY RECORD

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4143 Greenbriar Drive, Stafford, TX 77477 **281-240-4200**

Matrix: Air (A), Product (P), Solid (S), Water (W), Liquid (L) Notice: Signature of this document and relinquishment of these samples constitutes a valid purchase order from client company to Xenco Laboratories and its affiliates, subcontractors and assigns under Xenco's standard terms and conditions of service unless previously negotiated under a fully executed client contract.

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Prelogin/Nonconformance Report- Sample Log-In

Client: Conestoga Rovers & Associates

Date/ Time Received: 12/20/2012 04:52:00 PM

Acceptable Temperature Range: 0 - 6 degC Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used :

ork Order #: 454	4599	ie	mperature weast	uring device used :
		Sample Receipt C	hecklist	Comments
#1 *Temperature o	of cooler(s)?			1.5
#2 *Shipping conta	ainer in good conditio	ነ?		Yes
#3 *Samples rece	ived on ice?			Yes
#4 *Custody Seals	s intact on shipping co	ntainer/ cooler?		Yes
#5 Custody Seals	intact on sample bottl	es?		Yes
#6 *Custody Seals	s Signed and dated?			Yes
#7 *Chain of Custo	ody present?			Yes
#8 Sample instruc	tions complete on Cha	ain of Custody?		Yes
#9 Any missing/ex	tra samples?			No
#10 Chain of Cust	tody signed when relin	quished/ received?		Yes
#11 Chain of Cust	tody agrees with samp	le label(s)?		Yes
#12 Container lab	el(s) legible and intact	?		Yes
#13 Sample matri:	x/ properties agree wit	h Chain of Custody?		Yes
#14 Samples in pr	roper container/ bottle	?		Yes
#15 Samples prop	erly preserved?			Yes
#16 Sample conta	niner(s) intact?			Yes
#17 Sufficient sam	nple amount for indica	ted test(s)?		Yes
#18 All samples re	eceived within hold tim	ie?		Yes
#19 Subcontract of	of sample(s)?			Yes
#20 VOC samples	s have zero headspace	e (less than 1/4 inch bub	ble)?	Yes
#21 <2 for all sam	ples preserved with H	NO3,HCL, H2SO4?		Yes
#22 >10 for all sar	mples preserved with	NaAsO2+NaOH, ZnAc+N	NaOH?	Yes
Must be complete	ed for after-hours de	livery of samples prior	to placing in the	refrigerator
Analyst:	PH Dev	vice/Lot#:		
Check	list completed by:		 	e:
Chec	klist reviewed bv:			·

Date: