

1R - 502

REPORTS

DATE:

10-21-11



Matthew P. Hudson
Remediation Project
Manager

Upstream Business Unit
Chevron Environmental
Management Company
1400 Smith St
Room 07062
Houston, TX 77002
Tel 713 372 9207
mudson@chevron.com

October 21, 2011

Mr. Edward Hansen
New Mexico Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

**Subject: Soil Assessment Report, Chevron Mittie Weatherly Tank Battery No. 3
Unit F, Section 17, T-21S, R-37E, Lea Co., NM**

RECEIVED OGD
2011 OCT 24 P 2:55

Dear Mr. Hansen:

Chevron has completed an initial soil assessment around the Mittie Weatherly Tank Battery No. 3, located in Section 17, T-21S, R-37E in Lea County. This assessment was conducted in response to Rice Operating Company's (ROC) BD F-17 Termination Request, (AP-47). Please find attached a summary report of this assessment.

As described in the report, no release from Chevron's tank battery, which would have resulted in the elevated chloride concentrations in the soil and groundwater reported near ROC's F-17 Junction Box and in the associated groundwater monitoring wells, was identified. Based on these findings, no additional assessment of the Chevron tank battery appears warranted at this time.

If you have questions, please contact me at 713-372-9207.

Sincerely,

Matthew P. Hudson

Enclosure



**SOIL ASSESSMENT REPORT
CHEVRON MITTIE WEATHERLY TANK BATTERY #3**

**UNIT F, SECTION 17, T-21-S, R-37-E
LEA COUNTY, NEW MEXICO**





**SOIL ASSESSMENT REPORT
CHEVRON MITTIE WEATHERLY TANK BATTERY #3**

**UNIT F, SECTION 17, T-21-S, R-37-E
LEA COUNTY, NEW MEXICO**

Prepared For:

Mr. Matt Hudson

Chevron Environmental Management Company

**Prepared by:
Conestoga-Rovers
& Associates**

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<http://www.CRAworld.com>

**OCTOBER 18, 2011
REF. NO. 076337 (2)**

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1.0 INTRODUCTION AND BACKGROUND

The Chevron Mittie Weatherly No. 3 Tank Battery is situated approximately 3 miles northwest of Eunice, New Mexico (FIGURE 1) and approximately 300 feet northwest of the F-17 Junction Box (FIGURE 2). A Termination Request for Rice Operating Company (ROC's) F-17 Junction Box BD SWD System (AP #47) dated June 24, 2011, was submitted to the New Mexico Oil Conservation Division (NMOCD) by Tetra Tech on behalf of ROC. The Termination Request contained hydrogeological information pertaining to chloride-affected soil and groundwater media in the vicinity of ROC's F-17 Junction Box location. Of note, the Tetra Tech report presented groundwater data exhibiting low chloride concentrations in MW-4, reportedly situated 'upgradient' from the subject Chevron tank battery. Another monitoring well MW-3, reportedly located 'downgradient' of the tank battery, exhibited elevated chloride concentrations in the groundwater. The ROC report submitted to the NMOCD states an "apparent groundwater impact from an upgradient source" to the junction box area which presumably could implicate the Chevron Weatherly Tank Battery No. 3 as a possible source. On September 6, 2011, Mr. Ed Hansen with the New Mexico Oil Conservation Division (NMOCD) contacted Mr. Matt Hudson with Chevron Environmental Management Company (CEMC) and provided CEMC with copy of the June 24, 2011 submittal. The communication also promulgated September 14 deadline for a response to the agency's request for CEMC's plans to assess soil conditions in the vicinity of the Chevron Mittie Weatherly No. 3 Tank Battery location. CEMC responded to the NMOCD prior to September 14 with plans to install four soil borings along the southern perimeter of the tank battery. The soil boring program was implemented on October 3, 2011 and results of the assessment are included in this Soil Assessment Report prepared by Conestoga-Rovers & Associates (CRA) on behalf of CEMC.

CRA has reviewed the Tetra Tech 2011 Termination Request correspondence and AP-47 Annual Groundwater Monitoring Reports from 2002, 2006, 2007 and 2009 obtained from NMOCD files. Four monitoring wells (MW-1,-2,-3 and -4) have been installed in this location. MW-1 (FIGURE 2) was installed in 2002 approximately 15 feet northwest of the F-17 Junction Box location. The well log (APPENDIX A) presented chloride titration data, collected in 5-foot intervals that exhibited chloride impacts from 5 feet below ground surface (bgs) to the soil/groundwater interface, situated at approximately 75 feet bgs. Chloride concentrations reported in the soil ranged from 352 parts per million (ppm) to as high as 5,197 ppm. The widespread chloride-impacted vadose zone down to the water table in MW-1 is a strong indication that the boring is situated in a source area. MW-1 chloride concentration trends in groundwater have been variable (2970 to 320 mg/L), with a more decreasing trend since 2007. The most recent concentration available is 320 mg/L in February 2011.

In 2006, monitoring wells MW-2 and MW-3 were installed southeast and northwest, respectively to MW-1. Historical chloride concentration trends, as illustrated in the June 24, 2011 ROC report, show MW-2 to have sustained relatively consistent chloride levels around 60 mg/L. MW-3 chloride concentration trends have been variable (2500 to 412 mg/L), with a more decreasing trend since 2010. The most recent concentration available is 570 mg/L in February 2011. MW-4 was installed north of the Weatherly Tank Battery No. 3 in July 2010. Chloride concentrations in groundwater from this well have been steady at 64 mg/L from three sampling events performed in 2010 – 2011.

The inferred groundwater flow direction, based on data from the Tetra Tech reports (and regional data), is toward the southeast. However, evaluation of groundwater elevation data from the reports indicate that the groundwater monitoring elevation data have not been updated and the well elevations may not have been surveyed by a professional land surveyor. The most recent groundwater gradient map reviewed, October 4, 2007, showed a difference in groundwater elevation of 0.11 feet between MW-3 and MW-1, over a distance of approximately 140 feet. This calculates to a gradient of 0.00078 feet per foot. Given this very slight measured gradient, and the potential imprecision in the measurements, actual groundwater flow direction cannot be confirmed to be consistently toward the southeast. The June 24, 2011 Termination Request submitted by ROC to the NMOCD did not contain a groundwater gradient map (esp. to include recently installed MW-4 well 'upgradient' to the Weatherly Tank Battery No. 3) demonstrating the current groundwater flow direction.

2.0 SOIL ASSESSMENT RESULTS

The objectives of the soil boring program are to evaluate subsurface conditions for the presence of elevated chloride concentrations in soils at the sampled locations adjacent to the Chevron Mittie Weatherly Tank Battery No. 3 (FIGURE 2). On October 3, 2011 CRA's drilling contractor, Harrison & Cooper (H&C), installed four soil borings at selected locations along the southern end of the Weatherly Tank Battery No. 3 as shown on FIGURE 2. The four soil borings were drilled approximately 20 feet below the ground surface (bgs). Prior to mobilizing drilling and hydrovac equipment to the location, the boring locations were marked and a utility notification made 48-hours prior to mobilization. All field work was coordinated with management personnel of the Eunice FMT. Hydro-excavation methods performed by H&C were employed as a borehole clearance method to clear each boring location prior to moving in the drill rig. An air-rotary rig, operated by a water well driller licensed in New Mexico, was utilized to advance the borings. A field scientist recorded the subsurface lithology and drilling observations on soil boring logs. General soil boring specifications include 5-inch diameter boreholes with split-spoon and/or drill cutting samples collected on 5-foot intervals.

The general lithology of the subsurface soils is described as follows: reddish-brown sands, loose to firm and dry from the ground surface to 4 to 8 feet bgs, followed by tan to buff, fine grain sand interval, interbedded with discontinuous and indurated caliche seams, dry and approximately 5 to 8 feet thick, underlain by 6 to 10 thick interval of tan to reddish-brown sands, dry with thin caliche interbeds to the total depth of 20 feet bgs.

Four soil samples were collected from each of the soil borings (SB-1,-2-3 and -4) at the following intervals: 5'-6', 9'-10', 14'-15' and 19-20'. A total of 16 samples were analyzed for chlorides using EPA Method 300.0. The soil analytical results are summarized in TABLE I. SB-1 exhibited the highest chloride impacts with concentrations ranging from 41.0 to 74.7 milligrams per kilogram (mg/kg). The remaining three soil borings exhibited minimal impacts. Certified laboratory reports are provided in APPENDIX B.

Based on the analytical results of this limited soil investigation, no release from the tank battery was identified that would have resulted in the chloride impacts in soil and groundwater in the vicinity of the F-17 Junction Box and associated monitoring wells MW-1 and MW-3.

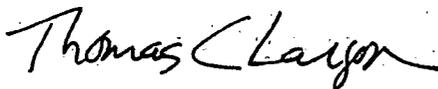
3.0 SUMMARY OF FINDINGS

This Soil Assessment Report presents a summary of historical information and data collected as part of the October 3, 2011 soil assessment in the vicinity of the Chevron Mittie Weatherly Tank Battery No. 3 location. Review of data from ROC annual groundwater monitoring reports (2002, 2006, 2007 and 2009) and a June 24, 2011 Termination Request submitted to the NMOCD have been performed by CRA on behalf of CEMC. The following is a summary of findings pertaining to these investigations.

- CEMC has responded to the NMOCD request on September 6, 2011 to provide the agency with plans to assess soil conditions in the vicinity of the Weatherly Tank Battery in a timely matter.
- Chloride-impacted soils extending from 5 feet to the water table have been documented in MW-1, situated adjacent to the F-17 Junction Box. Chloride concentrations reported in the soil ranged from 352 parts per million (ppm) to as high as 5,197 ppm. The widespread chloride-impacted vadose zone down to the water table in MW-1 is a strong indication that the boring is situated in a source area.
- Historic chloride concentrations in groundwater in MW-1 and MW-3 have been variable and currently show decreasing trends. This data could suggest that the chloride plume is mobile or dispersion (from source areas) is occurring.
- Accurate groundwater elevation data are pertinent to the evaluation of the relative position of potential 'source areas' to chloride-impacted and non-impacted monitoring wells.
- Soil assessment activities consisting of four soil borings advanced to 20 feet bgs and the collection of 16 soil samples for chloride analysis south of the Weatherly Tank Battery No. 3 were performed on October 3, 2011.
- Based on the analytical results of this limited soil assessment, no release, of sufficient magnitude to result in the chloride concentrations observed in soil and groundwater in the vicinity of F-17 and MW-1/MW-3, was identified.

Based on data summarized in this limited soil investigation report, no further assessment activities appear warranted at this time.

All of which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

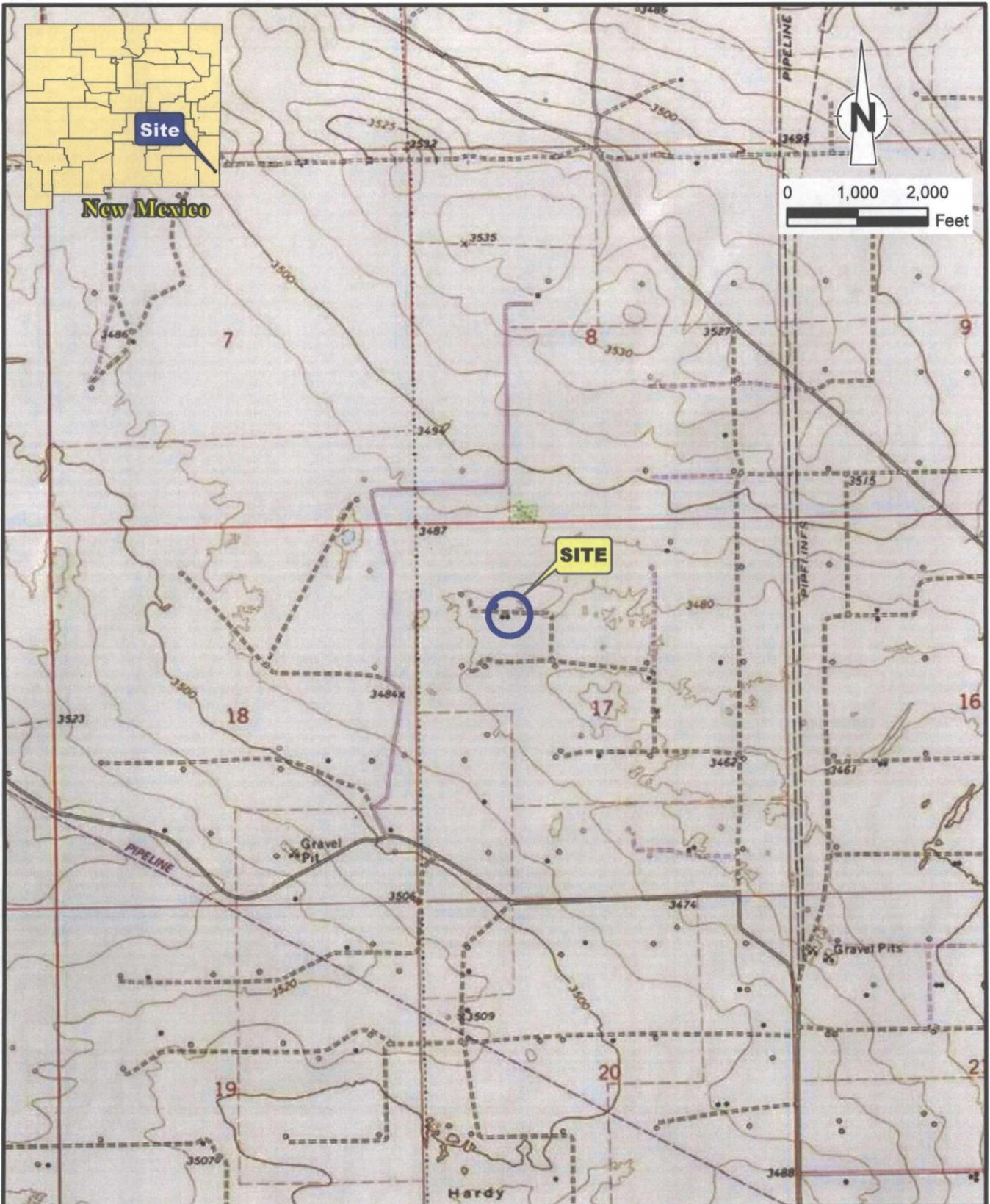


Thomas C. Larson, PG
Midland Operations Manager



James Ornelas
Senior Project Manager

FIGURES

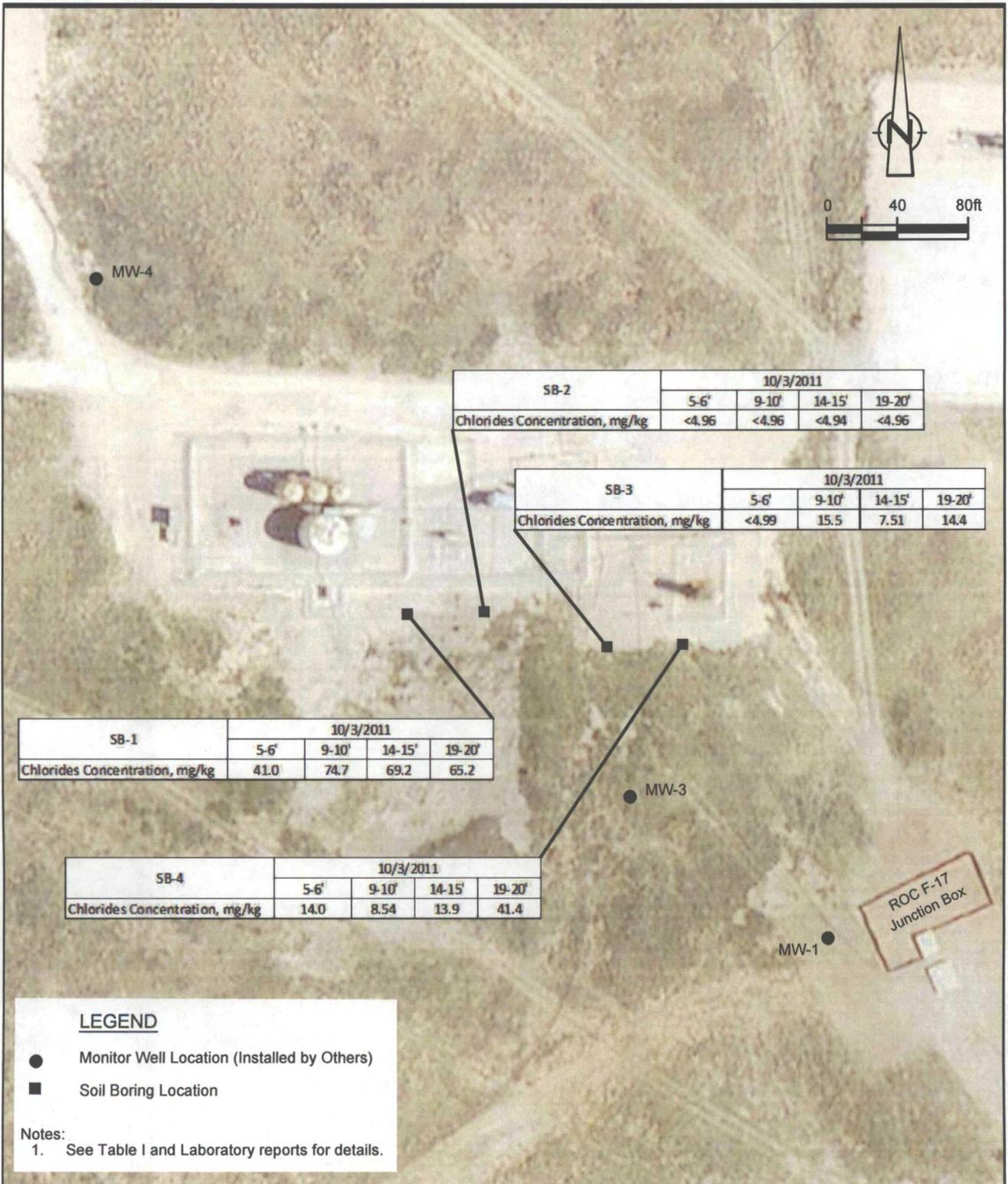


RE: USGS 7.5 Minute Topographic Maps.

figure 1
 SITE LOCATION MAP
 WEATHERLY TANK BATTERY NO. 3
 LEA COUNTY, NEW MEXICO

Chevron Environmental Management Company





RE: GIS Based Aerial Photograph

figure 2

**CHLORIDE CONCENTRATIONS IN SOILS MAP
WEATHERLY TANK BATTERY NO. 3
LEA COUNTY, NEW MEXICO**
Chevron Environmental Management Company



TABLES

TABLE I
SOIL ANALYTICAL SUMMARY
CHEVRON ENVIRONMENTAL MANAGEMENT COMPANY
WEATHERLY TANK BATTERY NO. 3
LEA COUNTY, NEW MEXICO
NMOCD Recommended Remediation Action Levels (Total Ranking Score = 10)

Sample ID	Depth (feet)	Sample Date	Chlorides (mg/kg)
NMOCD RRAL (Site Specific Ranking =10)			500 mg/kg
SB-1	5-6	10/3/11	41.0
	9-10	10/3/11	74.7
	14-15	10/3/11	69.2
	19-20	10/3/11	65.2
SB-2	5-6	10/3/11	<4.96
	9-10	10/3/11	<4.96
	14-15	10/3/11	<4.94
	19-20	10/3/11	<4.96
SB-3	5-6	10/3/11	<4.99
	9-10	10/3/11	15.5
	14-15	10/3/11	7.51
	19-20	10/3/11	14.4
SB-4	5-6	10/3/11	14.0
	9-10	10/3/11	8.54
	14-15	10/3/11	13.9
	19-20	10/3/11	41.1

Notes:

1. Chlorides analyzed by 300.0
2. Bold concentrations above lab reporting limits.
3. ND - Results where below detection limits.

APPENDICES

APPENDIX A

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE Operating Company 122 West Taylor Hobbs, New Mexico 88240 (505) 393-9174	Jct. F-17 17-T21S-R37E BD SWD System Lea County, NM	Well No. MW 1	Date Drilled: 11-18-02	Driller: Eades	Completion: Packed with: bentonite; grouted at surface.
		Well Depth: 85'	Boring Depth: 65'	Well Material: PVC	
		Casing Length: 88'	Boring Diameter: 2"	Casing Size: 2"	
		Screen Length: 20'	Drilling Method: Air Rotary	Slot Size: N/A	

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm)		REMARKS	Boring
			Cl ⁻	TPH		
0	Ground surface		Titrate	EPA 418.1		
	Top Soil					
5	Caliche	Grab	2,212		grout	
10	Tan caliche and loam chunks	Grab	492			
15	Sand	Grab	2,412			
20	Red sand	Grab	5,197			
21	Sand and Sandstone Stringers					2" P V C
25	Red Sand	Grab	3,152			
30	Tan caliche powder	Grab	4,628			
34	Sand					
35	Tan sand	Grab	2,508		bentonite	
36	Sand and Sandstone Stringers					
40	Tan Sand	Grab	352			
45	Tan Sand	Grab	2,420			
50	Reddish-brown sand	Grab	2,133			
55	Sandy Gravel	Grab	2,665			
60	Reddish-brown sand	Grab	1,905			
64	Sand and Sandstone Stringer					
65	Tan sand and Caliche	Grab	1,800			
70	Tan sand and caliche moist	Grab	1,209		screen	
75	Tan sand with rocks; moist	Grab	425			
80					water	
85	Sand and Sandstone Stringers					

APPENDIX B



14-Oct-2011

James Ornelas
Conestoga-Rovers & Associates
2135 S Loop 250 West
Midland, TX 79703

Tel: (412) 686-0086
Fax: (432) 686-0186

Re: EMC Weatherly Tank Battery #3

Work Order: 1110174

Dear James,

ALS Environmental received 16 samples on 05-Oct-2011 08:50 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 27.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Electronically approved by: Yvan K. Ty

Patricia L. Lynch
Project Manager



Certificate No: T104704231-09A-TX

ADDRESS 10450 Stancliff Rd, Suite 210 Houston, Texas 77099-4338 | PHONE (281) 530-5656 | FAX (281) 530-5887

DOV#URXS#VD#R#US#Sdu#i#k#h#OV#O#der#u#|#t#ur#s#D#F#dp#seh#B#ur#k#hw#D#p#M#g#R#p#sdq|

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Work Order: 1110174

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
1110174-01	SB-1 5'-6'	Soil		10/3/2011 12:25	10/5/2011 08:50	<input type="checkbox"/>
1110174-02	SB-1 9'-10'	Soil		10/3/2011 12:27	10/5/2011 08:50	<input type="checkbox"/>
1110174-03	SB-1 14'-15'	Soil		10/3/2011 12:29	10/5/2011 08:50	<input type="checkbox"/>
1110174-04	SB-1 19'-20'	Soil		10/3/2011 12:31	10/5/2011 08:50	<input type="checkbox"/>
1110174-05	SB-2 5'-6'	Soil		10/3/2011 12:10	10/5/2011 08:50	<input type="checkbox"/>
1110174-06	SB-2 9'-10'	Soil		10/3/2011 12:12	10/5/2011 08:50	<input type="checkbox"/>
1110174-07	SB-2 14'-15'	Soil		10/3/2011 12:14	10/5/2011 08:50	<input type="checkbox"/>
1110174-08	SB-2 19'-20'	Soil		10/3/2011 12:16	10/5/2011 08:50	<input type="checkbox"/>
1110174-09	SB-3 5'-6'	Soil		10/3/2011 11:10	10/5/2011 08:50	<input type="checkbox"/>
1110174-10	SB-3 9'-10'	Soil		10/3/2011 11:15	10/5/2011 08:50	<input type="checkbox"/>
1110174-11	SB-3 14'-15'	Soil		10/3/2011 11:18	10/5/2011 08:50	<input type="checkbox"/>
1110174-12	SB-3 19'-20'	Soil		10/3/2011 11:20	10/5/2011 08:50	<input type="checkbox"/>
1110174-13	SB-4 5'-6'	Soil		10/3/2011 11:40	10/5/2011 08:50	<input type="checkbox"/>
1110174-14	SB-4 9'-10'	Soil		10/3/2011 11:42	10/5/2011 08:50	<input type="checkbox"/>
1110174-15	SB-4 14'-15'	Soil		10/3/2011 11:44	10/5/2011 08:50	<input type="checkbox"/>
1110174-16	SB-4 19'-20'	Soil		10/3/2011 11:46	10/5/2011 08:50	<input type="checkbox"/>

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-1 5'-6'
Collection Date: 10/3/2011 12:25 PM

Work Order: 1110174
Lab ID: 1110174-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300		Prep Date: 10/10/2011	Analyst: RPM
Chloride	41.0		4.92	mg/Kg	1	10/11/2011 09:44 PM
Surr: Selenate (surr)	97.2		85-115	%REC	1	10/11/2011 09:44 PM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	13.7		0.0100	wt%	1	10/10/2011 04:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-1 9'-10'
Collection Date: 10/3/2011 12:27 PM

Work Order: 1110174
Lab ID: 1110174-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			
Chloride	74.7		4.99	mg/Kg	1	10/11/2011 10:47 PM
Surr: Selenate (surr)	99.9		85-115	%REC	1	10/11/2011 10:47 PM
MOISTURE			SW3550			
Percent Moisture	11.3		0.0100	wt%	1	10/10/2011 04:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-1 14'-15'
Collection Date: 10/3/2011 12:29 PM

Work Order: 1110174
Lab ID: 1110174-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	69.2		4.92	mg/Kg	1	10/11/2011 11:08 PM
Surr: Selenate (surr)	97.1		85-115	%REC	1	10/11/2011 11:08 PM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	8.53		0.0100	wt%	1	10/10/2011 04:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-1 19'-20'
Collection Date: 10/3/2011 12:31 PM

Work Order: 1110174
Lab ID: 1110174-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			
Chloride	65.2		4.91	mg/Kg	1	10/11/2011 11:29 PM
Surr: Selenate (surr)	96.0		85-115	%REC	1	10/11/2011 11:29 PM
MOISTURE			SW3550			
Percent Moisture	9.53		0.0100	wt%	1	10/10/2011 04:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-2 5'-6'
Collection Date: 10/3/2011 12:10 PM

Work Order: 1110174
Lab ID: 1110174-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	ND		4.96	mg/Kg	1	10/11/2011 11:50 PM
Surr: Selenate (surr)	98.3		85-115	%REC	1	10/11/2011 11:50 PM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	10.6		0.0100	wt%	1	10/10/2011 04:00 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-2 9'-10'
Collection Date: 10/3/2011 12:12 PM

Work Order: 1110174
Lab ID: 1110174-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	ND		4.96	mg/Kg	1	10/12/2011 12:12 AM
Surr: Selenate (surr)	110		85-115	%REC	1	10/12/2011 12:12 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	10.9		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-2 14'-15'
Collection Date: 10/3/2011 12:14 PM

Work Order: 1110174
Lab ID: 1110174-07
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	ND		4.94	mg/Kg	1	10/12/2011 12:33 AM
Surr: Selenate (surr)	93.8		85-115	%REC	1	10/12/2011 12:33 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	9.14		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-2 19'-20'
Collection Date: 10/3/2011 12:16 PM

Work Order: 1110174
Lab ID: 1110174-08
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	ND		4.96	mg/Kg	1	10/12/2011 12:54 AM
Surr: Selenate (surr)	94.4		85-115	%REC	1	10/12/2011 12:54 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	8.76		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-3 5'-6'
Collection Date: 10/3/2011 11:10 AM

Work Order: 1110174
Lab ID: 1110174-09
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			
Chloride	ND		4.99	mg/Kg	1	10/12/2011 01:15 AM
Surr: Selenate (surr)	96.3		85-115	%REC	1	10/12/2011 01:15 AM
MOISTURE			SW3550			
Percent Moisture	1.69		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-3 9'-10'
Collection Date: 10/3/2011 11:15 AM

Work Order: 1110174
Lab ID: 1110174-10
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	15.5		4.91	mg/Kg	1	10/12/2011 01:36 AM
Surr: Selenate (surr)	98.0		85-115	%REC	1	10/12/2011 01:36 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	6.14		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-3 14'-15'
Collection Date: 10/3/2011 11:18 AM

Work Order: 1110174
Lab ID: 1110174-11
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	7.51		4.93	mg/Kg	1	10/12/2011 01:57 AM
Surr: Selenate (surr)	97.8		85-115	%REC	1	10/12/2011 01:57 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	3.66		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-3 19'-20'
Collection Date: 10/3/2011 11:20 AM

Work Order: 1110174
Lab ID: 1110174-12
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300		Prep Date: 10/10/2011	Analyst: RPM
Chloride	14.4		4.95	mg/Kg	1	10/12/2011 03:00 AM
Surr: Selenate (surr)	98.0		85-115	%REC	1	10/12/2011 03:00 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	6.95		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-4 5'-6'
Collection Date: 10/3/2011 11:40 AM

Work Order: 1110174
Lab ID: 1110174-13
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			
Chloride	14.0		4.96	mg/Kg	1	10/12/2011 03:21 AM
Surr: Selenate (surr)	95.6		85-115	%REC	1	10/12/2011 03:21 AM
MOISTURE			SW3550			
Percent Moisture	12.7		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-4 9'-10'
Collection Date: 10/3/2011 11:42 AM

Work Order: 1110174
Lab ID: 1110174-14
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	8.54		4.98	mg/Kg	1	10/12/2011 03:43 AM
Surr: Selenate (surr)	96.9		85-115	%REC	1	10/12/2011 03:43 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	23.0		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-4 14'-15'
Collection Date: 10/3/2011 11:44 AM

Work Order: 1110174
Lab ID: 1110174-15
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300		Prep Date: 10/10/2011	Analyst: RPM
Chloride	13.9		4.92	mg/Kg	1	10/12/2011 04:04 AM
Surr: Selenate (surr)	96.3		85-115	%REC	1	10/12/2011 04:04 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	25.1		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
Project: EMC Weatherly Tank Battery #3
Sample ID: SB-4 19'-20'
Collection Date: 10/3/2011 11:46 AM

Work Order: 1110174
Lab ID: 1110174-16
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
ANIONS - EPA 300.0 (1993)			E300			Prep Date: 10/10/2011 Analyst: RPM
Chloride	41.1		4.95	mg/Kg	1	10/12/2011 04:25 AM
Surr: Selenate (surr)	96.3		85-115	%REC	1	10/12/2011 04:25 AM
MOISTURE			SW3550			Analyst: KAH
Percent Moisture	9.88		0.0100	wt%	1	10/10/2011 04:30 PM

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Environmental

Date: 14-Oct-11

Client: Conestoga-Rovers & Associates
 Work Order: 1110174
 Project: EMC Weatherly Tank Battery #3

QC BATCH REPORT

Batch ID: 56053 Instrument ID ICS3000 Method: E300

MBLK		Sample ID: WBLKS2-101011-56053				Units: mg/Kg		Analysis Date: 10/11/2011 05:11 PM			
Client ID:		Run ID: ICS3000_111011A				SeqNo: 2555715		Prep Date: 10/10/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	ND	5.0									
Surr: Selenate (surr)	48.35	1.0	50	0	96.7	85-115	0				

LCS		Sample ID: WLCSS2-101011-56053				Units: mg/Kg		Analysis Date: 10/11/2011 05:32 PM			
Client ID:		Run ID: ICS3000_111011A				SeqNo: 2555717		Prep Date: 10/10/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	193.1	5.0	200	0	96.6	90-110	0				
Surr: Selenate (surr)	50.27	1.0	50	0	101	85-115	0				

LCSD		Sample ID: WLCSDS2-101011-56053				Units: mg/Kg		Analysis Date: 10/11/2011 05:53 PM			
Client ID:		Run ID: ICS3000_111011A				SeqNo: 2555719		Prep Date: 10/10/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	194	5.0	200	0	97	90-110	193.1	0.429	20		
Surr: Selenate (surr)	50.48	1.0	50	0	101	85-115	50.27	0.417	20		

MS		Sample ID: 1110145-01AMS				Units: mg/Kg		Analysis Date: 10/11/2011 07:58 PM			
Client ID:		Run ID: ICS3000_111011A				SeqNo: 2555722		Prep Date: 10/10/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	201.5	4.9	97.88	108.4	95.1	75-125	0				
Surr: Selenate (surr)	48.07	0.98	48.94	0	98.2	80-120	0				

MS		Sample ID: 1110174-16AMS				Units: mg/Kg		Analysis Date: 10/12/2011 04:46 AM			
Client ID: SB-4 19'-20'		Run ID: ICS3000_111011A				SeqNo: 2555758		Prep Date: 10/10/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	138.2	4.9	98.85	41.09	98.3	75-125	0				
Surr: Selenate (surr)	49.17	0.99	49.43	0	99.5	80-120	0				

MSD		Sample ID: 1110145-01AMSD				Units: mg/Kg		Analysis Date: 10/11/2011 08:19 PM			
Client ID:		Run ID: ICS3000_111011A				SeqNo: 2555724		Prep Date: 10/10/2011		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Chloride	202.2	4.9	97.85	108.4	95.9	75-125	201.5	0.349	20		
Surr: Selenate (surr)	48.15	0.98	48.92	0	98.4	80-120	48.07	0.164	20		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
 Work Order: 1110174
 Project: EMC Weatherly Tank Battery #3

QC BATCH REPORT

Batch ID: 56053 Instrument ID ICS3000 Method: E300

MSD Sample ID: 1110174-16AMSD Units: mg/Kg Analysis Date: 10/12/2011 05:07 AM

Client ID: SB-4 19'-20' Run ID: ICS3000_111011A SeqNo: 2555759 Prep Date: 10/10/2011 DF: 1

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	138.6	4.9	98.77	41.09	98.7	75-125	138.2	0.249	20	
Surr: Selenate (surr)	49.21	0.99	49.39	0	99.6	80-120	49.17	0.0817	20	

The following samples were analyzed in this batch:

1110174-01A	1110174-02A	1110174-03A
1110174-04A	1110174-05A	1110174-06A
1110174-07A	1110174-08A	1110174-09A
1110174-10A	1110174-11A	1110174-12A
1110174-13A	1110174-14A	1110174-15A
1110174-16A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1110174
Project: EMC Weatherly Tank Battery #3

QC BATCH REPORT

Batch ID: **R117460** Instrument ID **Balance1** Method: **SW3550**

DUP Sample ID: **1110174-05ADUP** Units: **wt%** Analysis Date: **10/10/2011 04:00 PM**

Client ID: **SB-2 5'-6'** Run ID: **BALANCE1_111010C** SeqNo: **2554820** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	10.53	0.010	0	0	0	0-0	10.56	0.264	20	

The following samples were analyzed in this batch:

1110174-01A	1110174-02A	1110174-03A
1110174-04A	1110174-05A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
Work Order: 1110174
Project: EMC Weatherly Tank Battery #3

QC BATCH REPORT

Batch ID: **R117466** Instrument ID **Balance1** Method: **SW3550**

DUP Sample ID: **1110219-03ADUP** Units: **wt%** Analysis Date: **10/10/2011 04:30 PM**

Client ID: Run ID: **BALANCE1_111010D** SeqNo: **2554975** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Percent Moisture	1.297	0.010	0	0	0	0-0	1.365	5.08	20	

The following samples were analyzed in this batch:

1110174-06A	1110174-07A	1110174-08A
1110174-09A	1110174-10A	1110174-11A
1110174-12A	1110174-13A	1110174-14A
1110174-15A	1110174-16A	

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Conestoga-Rovers & Associates
 Project: EMC Weatherly Tank Battery #3
 WorkOrder: 1110174

**QUALIFIERS,
ACRONYMS, UNITS**

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL

<u>Acronym</u>	<u>Description</u>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<u>Units Reported</u>	<u>Description</u>
mg/Kg	Milligrams per Kilogram
wt%	



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 10450 Stanciff Rd., Suite 210
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Chain of Custody Form

1110174

CRA-MID: Conestoga-Rovers & Associates
 Project: EMC Weatherly Tank Battery #3



Customer Information

Purchase Order	Project Name	EMC Weatherly Tank Battery #3
Work Order	Project Number	076339
Company Name	Bill To Company	CRA
Send Report To	Invoice Attn	James Orndor
Address	Address	2135 Sloy 250 West
City/State/Zip	City/State/Zip	Midland TX
Phone	Phone	
Fax	Fax	
e-Mail Address	e-Mail Address	

ALS Project Manager:

Project Information	Chlorides
	TDS

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SB-1 5'-6'	10/03	1225	S	NCA	1	X	X									
2	SB-1 9'-10'		1227	S		1	X	X									
3	SB-1 14'-15'		1229	S		1	X	X									
4	SB-1 19'-20'		1231	S		1	X	X									
5	SB-2 5'-6'		1210	S		1	X	X									
6	SB-2 9'-10'		1212	S		1	X	X									
7	SB-2 14'-15'		1214	S		1	X	X									
8	SB-2 19'-20'		1216	S		1	X	X									
9	SB-3 5'-6'		1110	S		1	X	X									
10	SB-3 9'-10'		1115	S		1	X	X									

Sampler(s) Please Print & Sign

Required Turnaround Time: (Check Box) Other 5 Wk Days 2 Wk Days 24 Hour

Results Due Date:

Relinquished by: *James Orndor* Date: 10/07 Time: 1730

Relinquished by: *RB ALS* Date: 0850 Time: 0850

Relinquished by: *RB ALS* Date: 10/5/11 Time: 1115

Preservative Key: 1-HCl 2-HNO₃ 3-H₂SO₄ 4-NaOH 5-Na₂S₂O₈ 6-NaHSO₄ 7-Other 8-4°C 9-5035

QC Package: (Check One Box Below) Level II Std QC TRAP Checklist Level III Std QC TRAP Raw Date TRAP Level IV Level IV SW846/CLP Other

Notes:

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 3. The Chain of Custody is a legal document. All information must be completed accurately.



Environmental

Chain of Custody Form

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- Holland, MI +1 513 733 5336
- Salt Lake City, UT +1 801 266 7700
- Everett, WA +1 425 356 2600
- Houston, TX +1 281 530 5656
- Spring City, PA +1 610 948 4903
- Fort Collins, CO +1 970 490 1511
- Middletown, PA +1 717 944 5541
- York, PA +1 717 505 5280

Page 2 of 2
COC ID: 47554

Customer Information		Project Information		ALS Work Order # <u>11074</u>													
Purchase Order		Weatherly Tank Battery No. 3		Parameter/Method Request for Analysis													
Work Order		076337		Anions (300) Cl													
Company Name		Conestoga-Rovers & Associates		TDS													
Send Report To		James Ornelas															
Address		2135 S Loop 250 West															
City/State/Zip		Midland, TX 79703															
Phone		(432) 686-0086															
Fax		(432) 686-0186															
e-Mail Address																	
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	SB-3 14'-15'	10/03	1118	S	MCAT	1	X	X									
2	SB-3 19'-20'	10/03	1120	S		1	X	X									
3	SB-4 5'-6'	10/03	1140	S		1	X	X									
4	SB-4 9'-10'	10/03	1142	S		1	X	X									
5	SB-4 14'-15'	10/03	1147	S		1	X	X									
6	SB-4 19'-20'	10/03	1146	S		1	X	X									
7																	
8																	
9																	
10																	

ALS Project Manager: _____ ALS Work Order #: 11074

Required Turnaround Time: (Check Box) Std 10 WK Days 5 WK Days 2 WK Days Other _____

Shipment Method: _____ Results Due Date: _____

Relinquished by: [Signature] Date: 10/07 Time: 1730

Received by: _____ Date: 10/07 Time: 0850

Relinquished by: _____ Date: _____ Time: _____

Received by (Laboratory): AN ALS

Checked by (Laboratory): _____

Cooler ID: _____ Cooler Temp: _____

QC Package: (Check One Box Below) Level II Std QC Level III Std QC Level IV Std QC TRRP Check List

Preservative Key: 1-HCl, 2-HNO₃, 3-H₂SO₄, 4-NaOH, 5-Na₂S₂O₃, 6-NAHSO₄, 7-Other 8-4°C 9-5035

Notes: _____

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
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Sample Receipt Checklist

Client Name: CRA-MID

Date/Time Received: 05-Oct-11 08:50

Work Order: 1110174

Received by: RDN

Checklist completed by Raymond N Gamboa 07-Oct-11 Reviewed by:
eSignature Date eSignature Date

Matrices: Soil
Carrier name: FedEx

Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [checked] No [] Not Present []
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []
Temperature(s)/Thermometer(s): 1.1c 002
Cooler(s)/Kit(s):
Water - VOA vials have zero headspace? Yes [] No [] No VOA vials submitted [checked]
Water - pH acceptable upon receipt? Yes [] No [] N/A [checked]
pH adjusted? Yes [] No [] N/A [checked]
pH adjusted by:

Login Notes:

Client Contacted: Date Contacted: Person Contacted:
Contacted By: Regarding:

Comments:
CorrectiveAction:

110174

 ALS Environmental 10450 Stanciff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	CUSTODY SEAL		Seal Broken By: <i>RW</i>
	Date: <i>10/09</i> Time: <i>1:10</i> Name: <i>JAMES O</i> Company: <i>CRA</i>		

* This portion can be removed for recipient's records.

e *10/09/11* **875887563701**
FedEx Tracking Number

ider's *James Ornelas* Phone *432 686-0086*
 ne *CRA*

Company *CRA*

Address *2135 S Loop 250 West*
Midland State *TX* ZIP *79167*

Reference