Cimarex Energy Company
Cottonwood Draw 22 Federal Com #1
Delineation Report and Work Plan

Eddy County, New Mexico

August 21, 2013

Prepared for:

Cimarex Energy Company
600 North Marienfeld, Suite 600
Midland, Texas 79701

By:

Safety & Environmental Solutions, Inc.
703 East Clinton Hobbs,
New Mexico 88240 (575)
397-0510

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I. Company Contacts

Representative	Company	Telephone	E-mail
Terry Ainsworth	Cimarex Energy Co.	575-390-1388	tainsworth@cimarex.com
Bob Allen	SESI	575-397-0510	ballen@sesi-nm.com
David Boyer	SESI	575-390-7067	dgboyer@sesi-nm.com

II. Background

Safety and Environmental Solutions, Inc. (SESI) was engaged by Cimarex Energy to perform site assessment of a release area at the Cottonwood Draw 22 Federal Com #1. The release from the wellhead occurred on July 7, 2011 and consisted of an estimated volume of 20 barrels of produced water, one barrel of oil and one barrel of condensate. The production site is located in the southeast ¼ of Section 22 of Township 25 South, Range 26 East, Eddy County, New Mexico. The surface elevation of the production location is approximately 3,295 feet above MSL.

III. Soils

The surface soils in the area are from the Reeves Series. These soils consist of light colored, well drained, calcareous soils that are shallow to moderately deep over gypsiferous rocks. The Reeves Gypsum land complex 0-3 percent slope occurs on plains throughout the central part of the survey area. This complex is used for native pasture and wildlife habitat. The soils are not easily eroded. Good range management is needed to maintain a cover of desirable forage. Reestablishment of the native vegetation is difficult because temperatures are high and rainfall is undependable.

IV. Surface and Ground Water

Surface water is not present in the area and in general groundwater is hard to locate and, in places, is of poor quality. According to data provided by the New Mexico Office of State Engineer's online database, the closest water well to the Cottonwood Draw site is in the NW/4 NW/4 of Section 22 at a distance of just under one mile with a depth to water of 118 feet measured in 1967. The surface elevation at this location is approximately 3,375 feet with the result that groundwater in this well is at an elevation of about 3,257 feet above MSL. If the water table was flat and groundwater continuous, water would be expected to be present at a depth of 38 feet below the production location.

Typically the groundwater gradient is not flat and follows the surface or topographic gradient which would mean it would be at a depth greater than 38 feet. The topographic map shows a well identified as the "Bailey Well" south of the location at a distance of 0.3 miles. This well is located adjacent to the dry Cottonwood Draw drainage. There is no readily available information on this well including depth to water. However the surface elevation of the well is at 3,245 feet, 50 feet lower than the Cottonwood production site. The well is not flowing artesian water therefore water is lower than the surface elevation. The difference between the surface elevation at the Cottonwood production site and the water well is 50 feet so water at the Cottonwood site is at a minimum depth of 50 feet. As the groundwater surface is sloping to follow the surface gradient, depth to groundwater is more likely to be in the 80 to 100 foot range at the Cottonwood production location.

V. Work Performed

Cimarex Energy requested that Safety and Environmental Solutions, Inc. (SESI) perform on-site chloride delineation at the location. On September 23 and again on October 18, 2011, SESI met Backhoe Services Inc. on site to excavate exploratory trenches at the location of the reported release, test field samples for chloride and submit samples to the analytical laboratory for chloride verification.

Three test trenches in the release area were dug on October 18 (CTT-1, CTT-2, CTT-3); previously two trenches (TT-1 and TT-2) adjacent to the release area were dug on September 23. Trenches were dug to 4 feet or bedrock if less than four feet. The locations of the test trenches are shown on the attached figure. Samples were taken at depths of 2 feet and 4 feet (if necessary) and tested in the field for the approximate concentration of chlorides. If the upper sample was less than 250 ppm it was sent to the laboratory for confirmation analysis. If the sample was greater than 250 ppm the deeper sample was tested.

Samples obtained from the test trenches were properly preserved and transported under *chain of custody to Cardinal Laboratories in Hobbs, New Mexico and analyzed for* Chlorides (EPA Method SM4500Cl-B). The results of the laboratory analyses are shown in the below table.

Sample ID	Sample Date	Sample Distance and Direction from well	Sample Depth (feet below land surface)	Chlorides (mg/kg)	418.1 TPH (mg/kg)
TT-1, SP-1	09/23/11	94 ft. SE	2 ft.	48.0	280
TT-2, SP-2	09/23/11	116 ft. SSE	2 ft.	64.0	368
CTT-1	10/18/11	52 ft. ESE	2 ft.	16.0	<100
CTT-2	10/18/11	48 ft. SSW, shallow depression	2 ft.	2,360	<100
CTT-2	10/18/11	48 ft. SSW, shallow depression	3' 7" (bedrock)	800	<100
CTT-3	10/18/11	104 ft. SE	2 ft.	160	<100

The only location where elevated chloride concentrations were found is a shallow depression in the pad at a distance of approximately 48 feet south-southwest of the well head. The analysis of the 2 foot sample from this location (CTT-2) resulted in a chloride concentration of 2,360 mg/Kg. The next deeper sample was taken at 3 feet 7 inches depth which was the top of the bedrock. The chloride concentration at this depth was 800 mg/Kg. Deeper excavation was not possible without breaking through bedrock which is not desirable for initial delineation as it would provide a pathway for downward chloride migration.

On March 22, 2012, Mr. Sergio Contreras, SESI representative, arrived at the Cottonwood Draw 22 Federal Com #1 at 0845 for field chloride testing on the surface of the location pad, as requested by Bureau of Land Management (BLM) representative Ms. Terry Gregston, in her email dated February 28, 2012. A 50 ft. grid was mapped and chloride field testing was conducted onsite to delineate chlorides on the location pad. As stipulated by Ms. Gregston, all samples less than 250 ppm chlorides were to be properly preserved and transported to Cardinal Labs for confirmation. Ms. Gregston was not

onsite for the sampling procedure, but was notified 48 hrs prior to sampling by Mr. Contreras; he was directed to sample without a BLM witness. The weather was 90 degrees with clear skies 5-10 mph winds. Mr. Contreras contacted Ms. Gregston via cell to advise her that SESI had started sampling on location on March 22, 2012.

On March 23, 2012, Mr. Contreras, SESI supervisor, was onsite at 0800 to complete surface chloride testing on the location pad. The weather was 80 degrees with the wind blowing 5-10 mph with clear skies.

A total of 28 surface samples were obtained from the location pad. As a result of the field chloride testing Surface Sample # 12 was the only sample less than 250 ppm and was properly preserved and transported to Cardinal Labs for confirmation as presented in the table below.

Date	Time	Surface Sample	Field Results Chlorides (ppm)	Analytical Results Chlorides (mg/kg)
03/22/12	0948	SS #1	>25,340	-
03/22/12	1007	SS #2	16,444	-
03/22/12	1025	SS #3	22,484	-
03/22/12	1039	SS #4	4,188	-
03/22/12	1105	SS #5	25,340	-
03/22/12	1124	SS #6	1,260	-
03/22/12	1140	SS #7	1,880	-
03/22/12	1208	SS #8	688	-
03/22/12	1225	SS #9	8,660	-
03/22/12	1237	SS #10	688	-
03/22/12	1253	SS #11	388	-
03/22/12	1312	SS #12	184	192
03/22/12	1328	SS #13	1,344	-
03/22/12	1345	SS #14	9,432	-
03/22/12	1358	SS #15	3,020	-
03/22/12	1401	SS #16	312	-
03/22/12	1420	SS #17	6,752	-
03/22/12	1435	SS #18	1,640	-
03/22/12	1514	SS #19	4,908	-
03/22/12	1527	SS #20	2,004	-
03/22/12	1544	SS #21	1,752	-
03/23/12	0834	SS #22	1,016	-
03/23/12	0845	SS #23	2,144	-
03/23/12	0907	SS #24	3,864	-
03/23/12	0916	SS #25	5,752	-
03/23/12	0930	SS #26	5,752	-
03/23/12	0945	SS #27	7,328	-
03/23/12	1010	SS #28	12,340	-

The results of the sampling reported above indicate almost the entire location pad currently exhibits elevated levels of chlorides.

On May 22-23, 2012, SESI was onsite Backhoe Services install test trenches at sites where the surface sampling has indicated chloride concentrations at or near 5,000 ppm. The 13 sites are highlighted in red in the table above. Ms. Gregston (BLM) was also onsite to look over test trenches and field test results.

A total of 13 test trenches were installed to depths ranging from 1 ft to 6 ft The field test were conducted on the samples and only samples field tested at or under 250 ppm were properly packaged and transported under chain of custody to a third party laboratory for analysis.

Date	Surface Sample	Field Results Chlorides (ppm)	Analytical Results Chlorides (mg/kg)
5/22/12	TT-1 6' bgs	184	176
5/23/12	TT-2 2' bgs	<132	48.0
5/23/12	TT-3 2' bgs	212	288
5/22/12	TT-4 2' bgs	102	80.0
5/22/12	TT-5 2' bgs	102	96.0
5/23/12	TT-9 2' bgs	<132	<16.0
5/23/12	TT-14 2' bgs	<132	32.0
5/23/12	TT-17 1' bgs	<132	<16.0
5/23/12	TT-19 2' bgs	<132	80.0
5/22/12	TT-25 2' bgs	<132	32.0
5/22/12	TT-26 1' bgs	244	256
5/22/12	TT-27 3' bgs	160	128
5/22/12	TT-28 4' bgs	184	160

March 28, 2013 SESI representative was on site to map excavation and retrieve soil samples from bottom of excavation to test for chloride levels. The samples were retrieved, properly packaged and transported under chain of custody to Cardinal Laboratories in Hobbs, New Mexico for analysis for Chlorides, (EPA Method SM4500Cl-B).

The results of the analysis are as follows:

Date	Surface Sample	Analytical Results Chlorides (mg/kg)
3/28/20123	BGS – 1	4320
3/28/20123	BGS – 2	5680
3/28/20123	BGS – 3	1220
3/28/20123	BGS – 4	3600
3/28/20123	BGS – 5	76800
3/28/20123	BGS – 6	1890
3/28/20123	BGS – 7	144
3/28/20123	BGS – 8	672
3/28/20123	BGS – 9	27600
3/28/20123	BGS – 10	2960
3/28/20123	BGS – 11	3480
3/28/20123	BGS – 12	224
3/28/20123	BGS – 13	384

The analysis from the previously installed test trenches indicated the contamination had not migrated past a depth of 1-2 ft., with the exception of TT-1, TT-27, TT-28 which were at depths of 3-6 ft.

Mr. Jim Amos with the Bureau of Land Management and Mr. Mike Bratcher with the NMOCD requested Cimarex install (4) boreholes in the area of the location where surface samples #2, 5 and 9 had been taken previously to determine the vertical extent of contamination in that area. In addition, the area north of location will be sampled to determine the extent of contamination.

July 30. 2013, David Boyer along with Scarborough Drilling Inc. began drilling using a Midway 1500. The boreholes were installed using air rotary method. A total of four boreholes were drilled.

Boreholes #1, # 3, #4 were advanced to a depth of 15 ft. Borehole #2 was advanced to a depth of 10ft. Sampling was retrieved using a jam-tube core with teeth. The samples were retrieved, properly packaged and transported under chain of custody to Cardinal Laboratories in Hobbs, New Mexico for analysis for Chlorides, (EPA Method SM4500Cl-B).

The results of the analysis are as follows:

Sample Date 07/30/2013	Sample ID	Cl- (mg/kg)
Lab ID:		
H301814-01	BH – 1, 15'	16.0
H301814-02	BH – 2, 5'	272
H301814-03	BH – 2, 10'	704
H301814-04	BH – 3, 15'	64.0
H301814-05	BH – 4, 15'	16.0
EPA Methods:		
Chlorides:	SM4500 Cl-B	

Boring Logs are found in Appendix C.

VI. Action Plan

This site is an active tank battery. Cimarex would like to backfill the existing excavation and downsize the location to about 10 feet outside the deadmen. Any excess material that is not highly contaminated will be used for road repair in the area. Any highly contaminated soil will be transported to an NMOCD approved disposal facility.

The area north of the location will be delineated for vertical and horizontal extent of chloride contamination. After the delineation of this area an appropriate workplan will be file.

VII. Figures & Appendices

Figure 1 – Vicinity Map
Figure 2 – Site Plan: Location of Chloride Samples
Appendix A – Analytical Results
Appendix B – Site Photographs
Appendix C – Logs of Boring

Figure 1
Vicinity Map

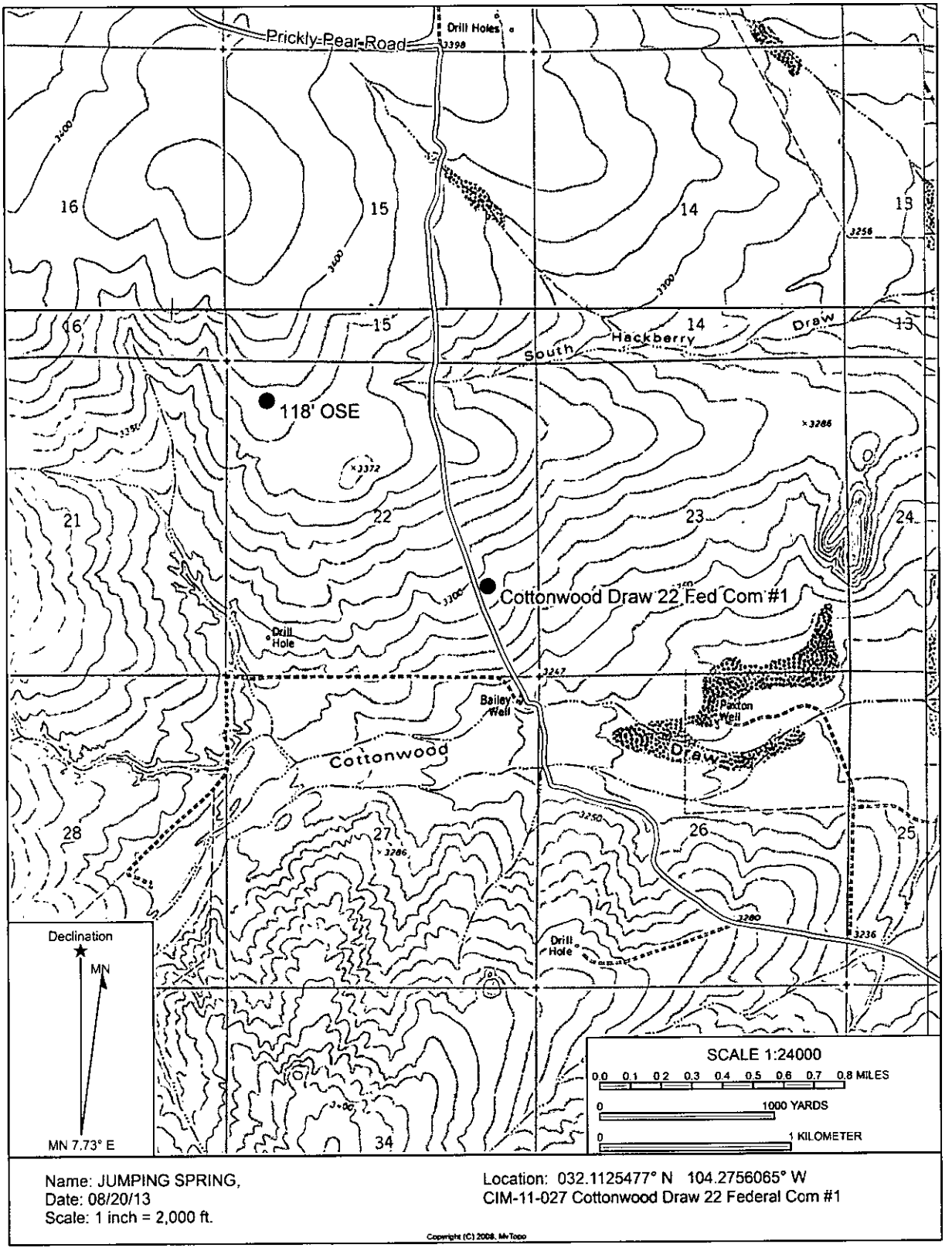
Prickly-Pear-Road
Drill Holes
3398
16
15
14
13
South
Hackberry
Draw
118' OSE
3372
3286
21
22
23
24
Cottonwood Draw 22 Fed Com #1
Drill Hole
3267
Bailey Well
Paxton Well
Draw
Cottonwood
28
27
26
25
3250
3280
3236
Drill Hole
34
Declination
MN
MN 7.73° E
SCALE 1:24000
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 MILES
0 1000 YARDS
0 1 KILOMETER
Name: JUMPING SPRING,
Date: 08/20/13
Scale: 1 inch = 2,000 ft.
Location: 032.1125477° N 104.2756065° W
CIM-11-027 Cottonwood Draw 22 Federal Com #1
Copyright (C) 2008, MyTopo

Figure 2
Site Plan


BH-2
Well Head
BH-3
BH-1
BH-4
Google earth
Imagery Date: 1/22/2013

Figure 3
Logs of Boring

Safety & Environmental Solutions, Inc.

LOG OF BORING BH-1

(Page 1 of 1)

Cimarex Energy Company
Cottonwood Draw 22 Federal Com #1
SE/4, Sec 22, T-25-S, R-26-E
Eddy County, New Mexico
N32.111431°, W104.274404°

Date/Time Started	: 07/30/13, 1000	Drilled By	: Scarborough Drilling, Inc.
Date/Time Completed	: 07/30/13,1045	Sampling Method	: Jam-tube core w/teeth
Hole Diameter	: 5-1/2 in.	Logged By	: David Boyer, P.G., SESI
Drilling Method	: Air Rotary		
Drilling Equipment	*: Midway 1500*		

Sample Method:
SS Split Spoon (18" or 24")
RC Rock Coring
CT Air Cuttings
NR No recovery

Depth in Feet	Sample Method	USCS	GRAPHIC	DESCRIPTION	Lab No.	Chlorides (mg/Kg)
0–2				0-2 ft. Approximately 2 ft. of cover material removed at this borehole		
2–7	RC	GY		6-7 ft. GYPSUM, light gray to white, with crystals, cuttings white, no H/C staining or odor		
7–12	RC	GY		11-12 ft. GYPSUM, light gray to white, with crystals, cuttings white, no H/C staining or odor		
12–17	RC	GY		16-17 ft. GYPSUM, light gray to white, with crystals, cuttings white, no H/C staining or odor	H301814-01	16.0

Notes:
Core take at base of sample interval.
Backfill to surface with ~4 bags bentonite, hydrated.

Z:\Company Files\Cimarex Energy\2011\CIM-11-027 Cottonwood Draw 22 Fed Com 1\Borehole Drilling\BH-1.bor

Safety & Environmental Solutions, Inc.

LOG OF BORING BH-2

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Cimarex Energy Company
Cottonwood Draw 22 Federal Com #1
SE/4, Sec 22, T-25-S, R-26-E
Eddy County, New Mexico
N32.111556°, W104.274434°

Date/Time Started	: 07/30/13, 1100	Drilled By	: Scarborough Drilling, Inc.
Date/Time Completed	: 07/30/13,1125	Sampling Method	: Jam-tube core w/teeth
Hole Diameter	: 5-1/2 in.	Logged By	: David Boyer, P.G., SESI
Drilling Method	: Air Rotary		
Drilling Equipment	: Midway 1500		

Sample Method:
SS Split Spoon (18" or 24")
RC Rock Coring
CT Air Cuttings
NR No recovery

Depth in Feet	Sample Method	USCS	GRAPHIC	DESCRIPTION	Lab No.	Chlorides (mg/Kg)
0–1				0-2 ft. Approximately 2 ft. of cover material removed at this borehole		
2–6	RC	ML				
6–7				6-7 ft. SANDY SILT, some clay, light brown, dry, no H/C staining or odor	H301814-02	272
7–11	RC	CL/ML				
11–12				11-12 ft. SILTY CLAY/CLAYEY SILT, with some rock, brown, H2O saturated, no H/C staining or odor. Water believed to be rainwater* ponding on clay in lined well reserve pit. Drilling stopped to avoid penetrating liner.	H301814-03	704
12–15						

Notes:
Core take at base of sample interval.
Backfill to surface with ~3 bags bentonite, hydrated.
* Groundwater estimated to be between 80-100 ft. below surface at this location.

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Safety & Environmental Solutions, Inc.

LOG OF BORING BH-3

(Page 1 of 1)

Cimarex Energy Company
Cottonwood Draw 22 Federal Com #1
SE/4, Sec 22, T-25-S, R-26-E
Eddy County, New Mexico
N32.111472°, W104.274250°

Date/Time Started	: 07/30/13, 1140	Drilled By	: Scarborough Drilling, Inc.
Date/Time Completed	: 07/30/13, 1220	Sampling Method	: Jam-tube core w/teeth
Hole Diameter	: 5-1/2 in.	Logged By	: David Boyer, P.G., SESI
Drilling Method	: Air Rotary		
Drilling Equipment	: Midway 1500		

Sample Method:
SS Split Spoon (18" or 24")
RC Rock Coring
CT Air Cuttings
NR No recovery

Depth in Feet	Sample Method	USCS	GRAPHIC	DESCRIPTION	Lab No.	Chlorides (mg/Kg)
0–5	RC	CA/LS		4-5 ft. CALICHE or LIMESTONE rock, light gray, no H/C staining or odor		
5–10	RC	GY		9-10 ft. GYPSUM, hard, light gray to white, crystals, no H/C staining or odor		
10–15	RC	GY		14-15 ft. GYPSUM, hard, light gray to white, crystals, no H/C staining or odor	H301814-04	64.0

Notes:
Core take at base of sample interval.
Backfill to surface with ~4 bags bentonite, hydrated.

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Safety & Environmental Solutions, Inc.

LOG OF BORING BH-4

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Cimarex Energy Company
Cottonwood Draw 22 Federal Com #1
SE/4, Sec 22, T-25-S, R-26-E
Eddy County, New Mexico
N32.111316°, W104.274024°

Date/Time Started	: 07/30/13, 1230	Drilled By	: Scarborough Drilling, Inc.
Date/Time Completed	: 07/30/13, 1320	Sampling Method	: Jam-tube core w/teeth
Hole Diameter	: 5-1/2 in.	Logged By	: David Boyer, P.G., SES(
Drilling Method	: Air Rotary		
Drilling Equipment	: Midway 1500		

Sample Method:
SS Split Spoon (18" or 24")
RC Rock Coring
CT Air Cuttings
NR No recovery

Depth in Feet	Sample Method	USCS	GRAPHIC	DESCRIPTION	Lab No.	Chlorides (mg/Kg)
0-5	RC	GY/CA		4-5 ft. GYPSUM(?) rock with some Caliche and CLAY, brown and gray, no H/C staining or odor		
5-10	RC	GY		9-10 ft. GYPSUM, hard, light gray to white, some crystals, no H/C staining or odor		
10-15	RC	GY		14-15 ft. GYPSUM, hard, white (creme color), no H/C staining or odor	H301814-04	64.0

Notes:
Core take at base of sample interval.
Backfill to surface with ~4 bags bentonite, hydrated.

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Appendix A
Analytical Results

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

August 05, 2013

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: COTTONWOOD DRAW 22 FED COM #001

Enclosed are the results of analyses for samples received by the laboratory on 08/01/13 17:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	08/01/2013	Sampling Date:	07/30/2013
Reported:	08/05/2013	Sampling Type:	Soil
Project Name:	COTTONWOOD DRAW 22 FED COM #00	Sampling Condition:	** (See Notes)
Project Number:	CIM-11-027	Sample Received By:	Jodi Henson
Project Location:	CARLSBAD, NEW MEXICO		

Sample ID: BH-1, 15' (H301814-01)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	08/02/2013	ND	400	100	400	3.92	

Sample ID: BH-2, 5' (H301814-02)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**272**	16.0	08/02/2013	ND	400	100	400	3.92	

Sample ID: BH-2, 10' (H301814-03)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**704**	16.0	08/02/2013	ND	400	100	400	3.92	

Sample ID: BH-3, 15' (H301814-04)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	08/02/2013	ND	400	100	400	3.92	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	08/01/2013	Sampling Date:	07/30/2013
Reported:	08/05/2013	Sampling Type:	Soil
Project Name:	COTTONWOOD DRAW 22 FED COM #00	Sampling Condition:	** (See Notes)
Project Number:	CIM-11-027	Sample Received By:	Jodi Henson
Project Location:	CARLSBAD, NEW MEXICO		

Sample ID: BH-4, 15' (H301814-05)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	08/02/2013	ND	400	100	400	3.92	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240
(505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 1 of 1

Company Name:	Safety & Environmental Solutions, Inc.	BILL TO	
Project Manager:	Bob Allen	P.O. #:	
Address:	703 East Clinton	Company:	Same
City:	Hobbs State: NM Zip: 88240	Attn:	Vicki
Phone #:	575-397-0510 Fax #: 575-393-4388	Address:	
Project #:	11M-11-027 Project Owner: Mewbourne	City:	
Project Name:	Cottonwood Draw 22 Fed Com #1	State: Zip:	
Project Location:	S. Carlsbad	Phone #:	
Sampler Name:	A Boyd	Fax #:	

ANALYSIS REQUEST: Chlorides

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE	ICE/COOL	OTHER:	SAMPLING DATE	TIME
H301814													2013	
1	BH-1, 15'	G	1			X					X		7/30	1045
2	BH-2, 5'													1115
3	BH-2, 10'													1125
4	BH-2, 15'													1220
5	BH-3, 15'	G	1			X					X		7/30	1320

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished:	Date: 8/1/13	Received By:	Phone Result:	☐ Yes	☒ No
	Time: 7:00	Jodi Henson	Fax Result:	☐ Yes	☒ No
Relinquished By:	Date:	Received By:	REMARKS:		
	Time:				

Delivered By: (Circle One) Sampler - UPS - Bus - Other:

Temp. 20°C

Sample Condition: Cool ☐ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials) GH

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

#54

CARDINAL Laboratories

PHONE (575) 393-2326 * 101 E. MARLAND * HOBBS, NM 88240

April 05, 2013

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: COTTONWOOD DRAW 22 FED COM #001

Enclosed are the results of analyses for samples received by the laboratory on 04/02/13 9:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	04/02/2013	Sampling Date:	03/28/2013
Reported:	04/05/2013	Sampling Type:	Soil
Project Name:	COTTONWOOD DRAW 22 FED COM #00	Sampling Condition:	** (See Notes)
Project Number:	CIM-11-027	Sample Received By:	Jodi Henson
Project Location:	CARLSBAD, NEW MEXICO		

Sample ID: BGS - 1 (H300774-01)

Chloride, SM4500Cl-B mg/kg Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4320	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 2 (H300774-02)

Chloride, SM4500Cl-B mg/kg Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5680	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 3 (H300774-03)

Chloride, SM4500Cl-B mg/kg Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1220	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 4 (H300774-04)

Chloride, SM4500Cl-B mg/kg Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3600	16.0	04/03/2013	ND	432	108	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	04/02/2013	Sampling Date:	03/28/2013
Reported:	04/05/2013	Sampling Type:	Soil
Project Name:	COTTONWOOD DRAW 22 FED COM #00	Sampling Condition:	** (See Notes)
Project Number:	CIM-11-027	Sample Received By:	Jodi Henson
Project Location:	CARLSBAD, NEW MEXICO		

Sample ID: BGS - 5 (H300774-05)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	76800	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 6 (H300774-06)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1890	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 7 (H300774-07)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 8 (H300774-08)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	672	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 9 (H300774-09)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	27600	16.0	04/03/2013	ND	432	108	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Analytical Results For:

Safety & Environmental Solutions
Bob Allen
703 East Clinton
Hobbs NM, 88240
Fax To: (575) 393-4388

Received:	04/02/2013	Sampling Date:	03/28/2013
Reported:	04/05/2013	Sampling Type:	Soil
Project Name:	COTTONWOOD DRAW 22 FED COM #00	Sampling Condition:	** (See Notes)
Project Number:	CIM-11-027	Sample Received By:	Jodi Henson
Project Location:	CARLSBAD, NEW MEXICO		

Sample ID: BGS - 10 (H300774-10)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2960	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 11 (H300774-11)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3480	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 12 (H300774-12)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	04/03/2013	ND	432	108	400	0.00	

Sample ID: BGS - 13 (H300774-13)

Chloride, SM4500Cl-B — mg/kg — Analyzed By: DW

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	384	16.0	04/03/2013	ND	432	108	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240
(505) 393-2326 Fax (505) 393-2476

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page ___ of ___

Company Name: Safety & Environmental Solutions, Inc.
Project Manager: Bob Allen
Address: 703 East Clinton
City: Hobbs State: NM Zip: 88240
Phone #: 575-397-0510 Fax #: 575-393-4388
Project #: Cim-11-027 Project Owner: Terry Ainsworth Cimarex
Project Name: Cotton Wood draw 22 Fed com #001
Project Location: Carlsbad, N.M
Sampler Name: Robert Parra

BILL TO
P.O. #:
Company: Same
Attn:
Address:
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	Chlorides
H300774															
1	BGS-1	G	✓			✓					✓		3-28-13	12:00	X
2	BGS-2	↓	↓			↓					↓		↓	12:05	X
3	BGS-3													12:10	X
4	BGS-4													12:15	X
5	BGS-5													12:20	X
6	BGS-6													12:25	X
7	BGS-7													12:30	X
8	BGS-8													12:35	X
9	BGS-9													12:40	X
10	BGS-10													12:45	X

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Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collections, including attorney's fees.

Sampler Relinquished: Robert Parra Date: 4-1-13 Time: 9:00 Received By: Jodi Henson
Relinquished By: Date: Time: Received By:
Delivered By: (Circle One) Sampler - UPS - Bus - Other: Temp. 10°c Sample Condition Cool: ☐ Yes ☒ No Intact: ☒ Yes ☐ No CHECKED BY: (Initials) [signature]

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:
Email:
Ballen@sesi-nm.com
Scontreras@sesi-nm.com
Rparra@sesi-nm.com

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

#26

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES
101 East Marland, Hobbs, NM 88240
(505) 393-2326 Fax (505) 393-2476

Page ___ of ___

Company Name:	Safety & Environmental Solutions, Inc.	BILL TO	
Project Manager:	Bob Allen	P.O. #:	
Address:	703 East Clinton	Company:	Same
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	575-397-0510 Fax #: 575-393-4388	Address:	
Project #:	Cim-11-027 Project Owner: Cimarex	City:	
Project Name:	Cotton wood draw "Fed com #001	State: Zip:	
Project Location:	Carlsbad N.M	Phone #:	
Sampler Name:	Robert Pena	Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING DATE	TIME	Chlorides
H300174															
11	BGS-11	G	✓			✓						✓	3-28-13	12:50	X
12	BGS-12	G	✓			✓						✓	3-28-13	12:55	X
13	BGS-13	G	✓			✓						✓	3-28-13	1:00	X

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above-stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts over 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

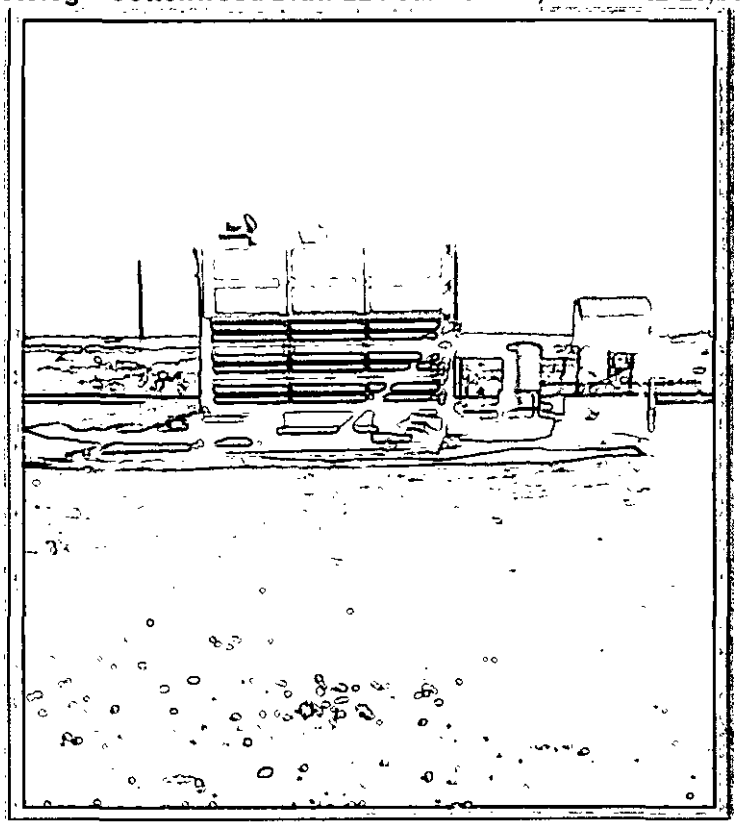
Sampler Relinquished: Robert Pena	Date: 3-28-13	Received By: Jodi Henson	Phone Result: ☐ Yes ☐ No	Add'l Phone #:	
Relinquished By:	Time: 9:00	Received By:	Fax Result: ☐ Yes ☐ No	Add'l Fax #:	
	Date:		REMARKS: Email: Ballen@sesi-nm.com Scontreras@sesi-nm.com Rpena@sesi-nm.com		
	Time:				
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Temp. 1.0°C	Sample Condition: Cool ☐ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)		

† Cardinal cannot accept verbal changes. Please fax written changes to 575-393-2476.

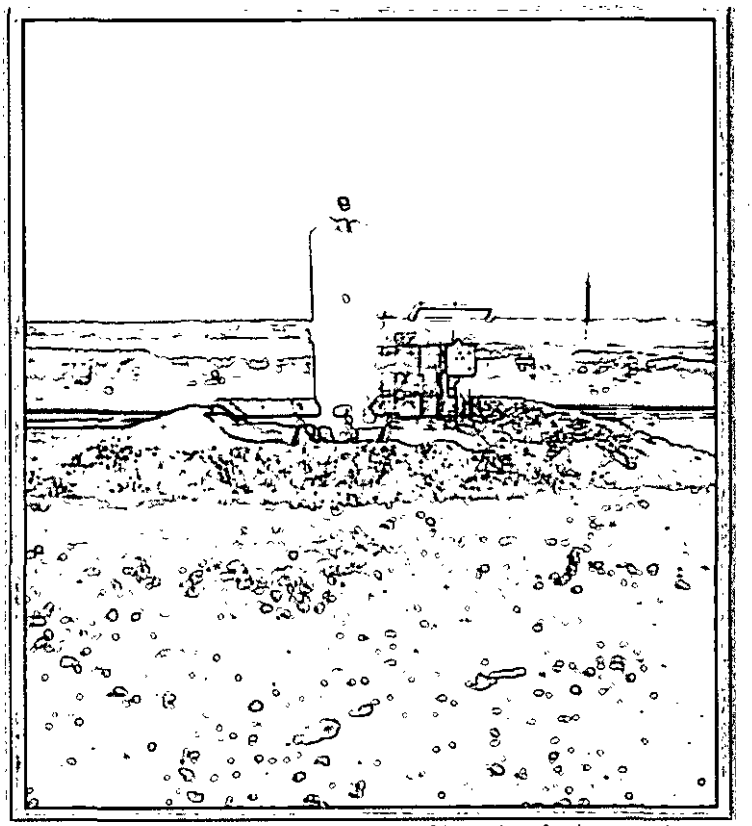
#26

Appendix B
Site Photographs

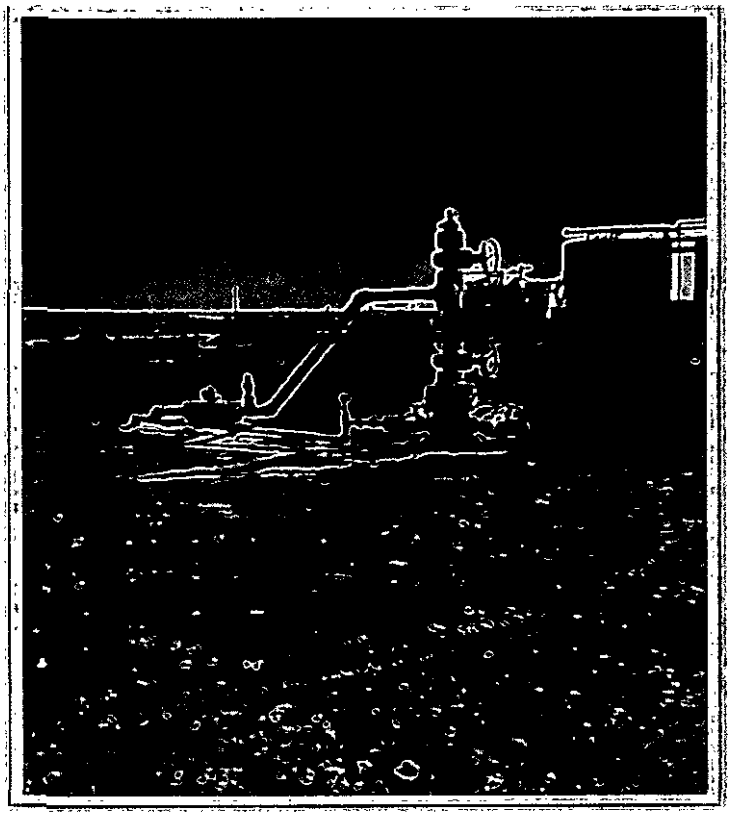
Photolog – Cottonwood Draw 22 Fed. Com #1, March 22-23,2012



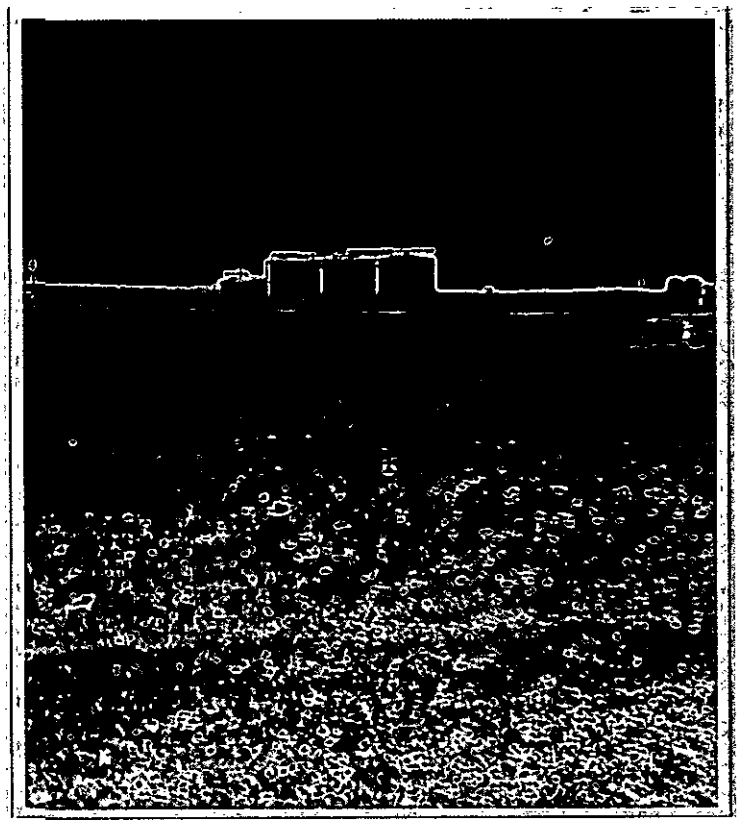
Compressor north area of location facing north



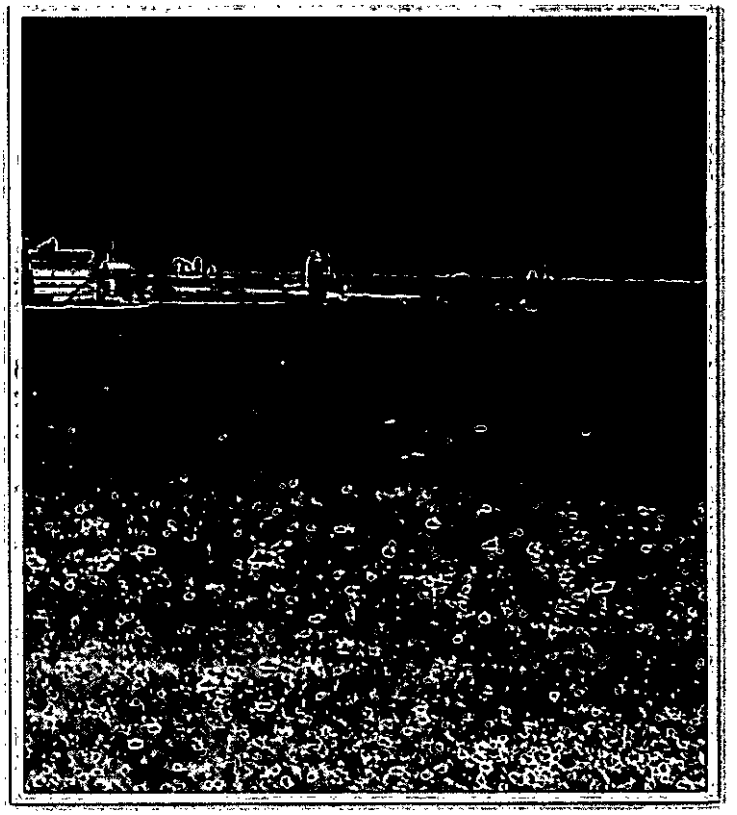
East of compressor north are of location facing north



Injection well facing northeast

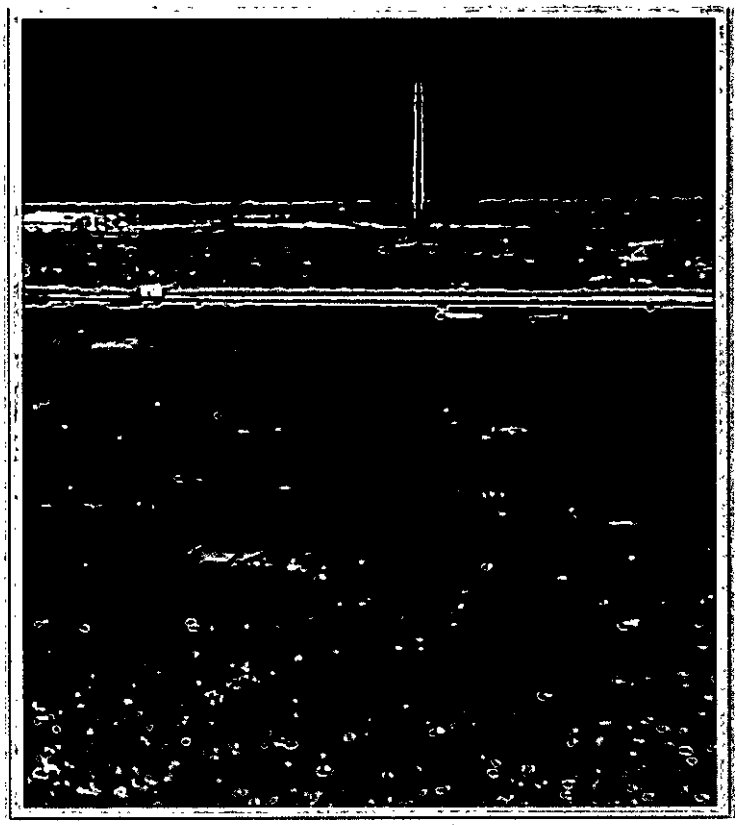


Location facing east

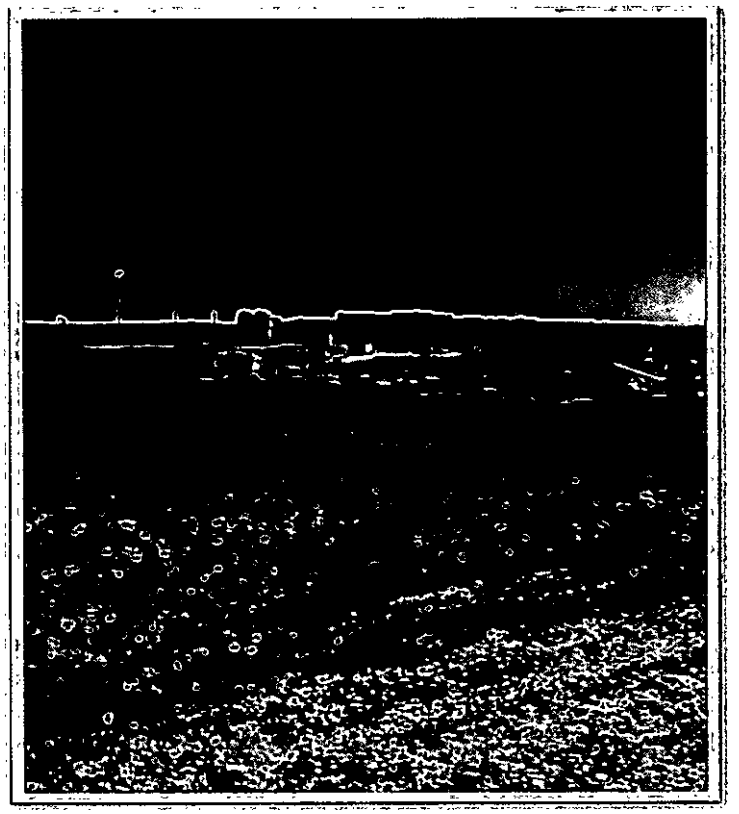


Location facing northeast

Northwest corner of location facing north



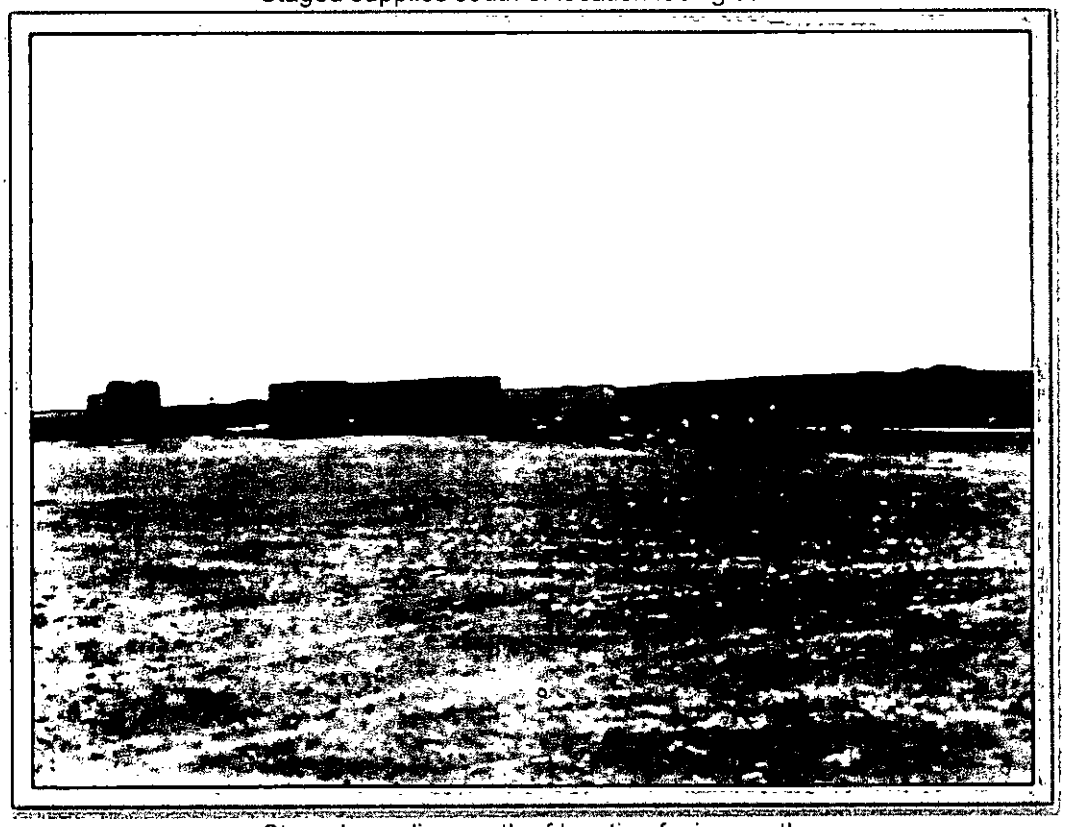
Pad west of compressor facing north



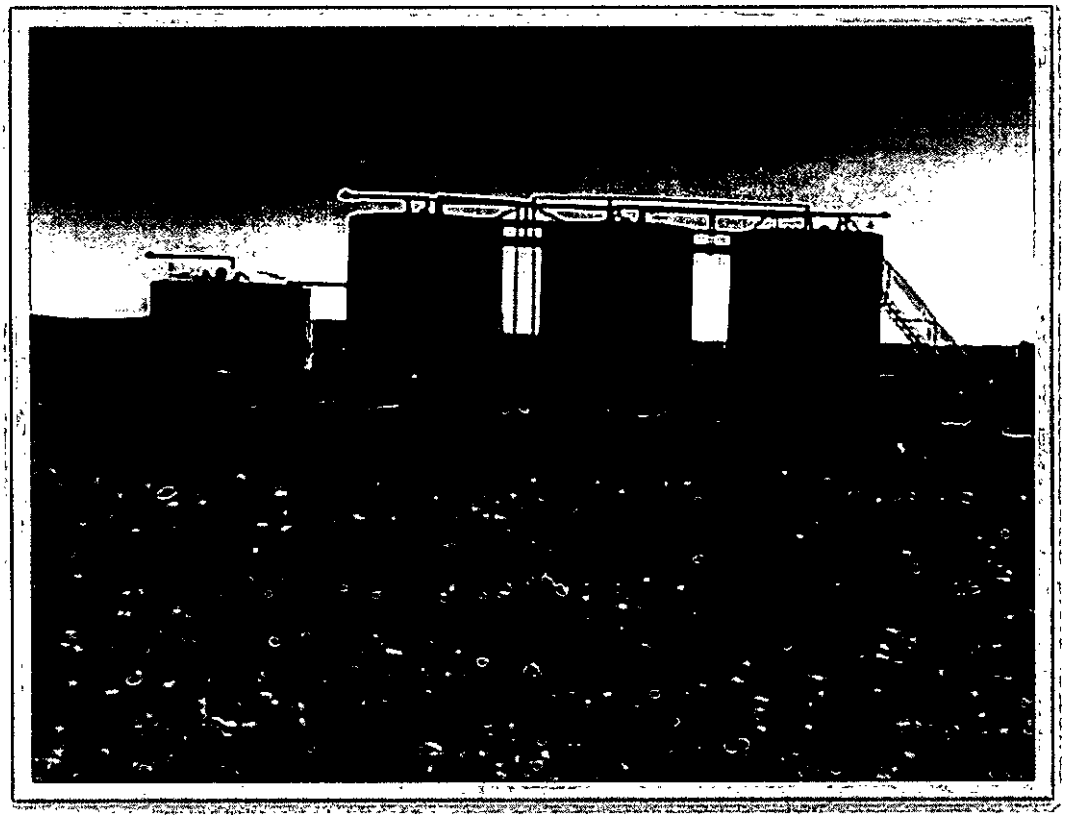
South area of location facing east

Spoils pile on liner south of tanks facing east

Staged supplies south of location facing south



Staged supplies south of location facing south



Tanks east of location facing east