MAS Operating Company
B. V. Lynch A #2
Delineation Report and Work Plan
(Revised)
Section 34, T20S,
R34E Lea County,
New Mexico

November 26, 2014

Prepared for:

MAS Operating Company
10 Desta Dr. Suit 300W
Midland, Texas 79705

By:

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

TABLE OF CONTENTS

I. Company Contacts

Representative	Company	Telephone	E-mail
Brooke Makowsky	MAS Operating	432-618-0678	bmakowskywork@gmail.com
Bob Allen	SESI	575-397-0510	ballen@sesi-nm.com

II. Background

Safety and Environmental Solutions, Inc. (SESI) was engaged by MAS Operating Company to perform site assessment of an area located in Section 34 of Township 18 South, Range 34 East, Eddy County, New Mexico. In response to a salt water spill that occurred July 15, 2014, the volume of the release was 350 bbls of which 20 bbls was recovered. The cause of the release was the bell nipple broke at the wellhead. The release migrated from the well to the lease road and traveled north to the Plains tank farm where it pooled.

III. Surface and Ground Water

No surface water is present or nearby. The nearest surface water is the Pecos River approximately 33 miles to the southwest.

The nearest groundwater of record is a windmill approximately 950 feet to the west of the site. The New Mexico Office of State Engineer lists the well in the SE/4 SW/4 SE/4, Section 34, Township 20 South, Range 34 East. The reported depth of the well was 100 feet below ground surface (BGS) but no depth to water was reported.

Checking for USGS records for this location found the well listed with four water levels reported between 1976 and 1997. These ranged from 82 to 85 feet BGS with the most recent being 82 feet BGS in 1997.

IV. Characterization

The target cleanup levels are determined using the *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). Based on the ranking criteria presented below, the applicable Recommended Remediation Action Levels (RRAL) are 10 parts per million (ppm) Benzene, 50 ppm combined benzene, toluene, ethylbenzene, and total xylenes (BTEX), and 1,000 ppm Total Petroleum Hydrocarbons (TPH).

Depth to Ground Water:			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	**X**
	>100 feet	0 points	
Wellhead Protection Area:			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	**X**
Distance to Surface Water:			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	**X**
RANKING SCORE (TOTAL POINTS)			**10**

V. Work Performed

On July 16, 2014, SESI arrived on location observed spill area, location was mapped utilizing a Trimble Juno 3D and seven (7) site photos were taken.

On May 17, 2014, SESI was onsite to determine vertical extent of contamination. SESI installed three (3) test trenches. Test Trench #1 was advanced to a depth of 1.5'. Test Trench #2 was advanced to a depth of 5'. Test Trench #3 was advanced to a depth of 5'. The shallow depths of these trenches were due to the small size of the backhoe being used for the excavation.

On July 21, 2014, SESI returned to location to continue excavation in Test Trench #2 which was advanced to a depth of 18'. Samples were taken at 0-6", 2-5', 9-10', 15' and 18.5'. All samples were properly packaged, preserved and transported to Cardinal Laboratories, Hobbs New Mexico and analyzed for Chlorides. The results of the analysis are presented in the table below:

Sample Date	Sample ID	Cl^-
7/23/2014	Test Trench #2 0-6 (H402215-01)	6480
7/23/2014	TT #2 2-5' (H402215-02)	6960
7/23/2014	TT#2 9-10' (H402215-03)	1600
7/23/2014	TT#2 15' (H402215-04)	416
7/23/2014	TT #2 18.5' (H402215-05)	368

On November 10, 2014, SESI was onsite to delineate the north area impacted by the release. The release pooled in the north area inside the Plains tank farm. Three test trenches were installed to a depth of 2' where samples were taken. All samples were properly packaged, preserved and transported to Cardinal Laboratories, Hobbs New Mexico and analyzed for Chlorides. The results of the analysis are presented in the table below:

Sample Date	Sample ID	Cl^-
11/20/2014	TT-1 2'BGS (40358801	64.0
11/20/2014	TT-2 2'BGS (H403588-02)	<16.0
11/20/2014	TT-3 2'BGS (H403588-03)	<16.0

The vertical extent of chloride contamination in the three test trenches was reached in each case.

VI. Action Plan

South Area:
Due to the results of the samples presented above for the south (wellhead) area, the spill area will be excavated to a depth of 4' and all contaminated soils will be transported to an approved NMOCD disposal facility.

The bottom of this excavation will be lined with a layer of compacted clay or caliche to prevent of migration of contaminants being left in place. The remainder of the excavation will be back filled with top soil that has been mixed with mulch and compacted.

The excavation will be slightly domed to encourage runoff to go to the sides of the excavation instead of eroding the newly excavated soil. The area will be reseeded with the appropriate BLM seed mix for restoration of site.

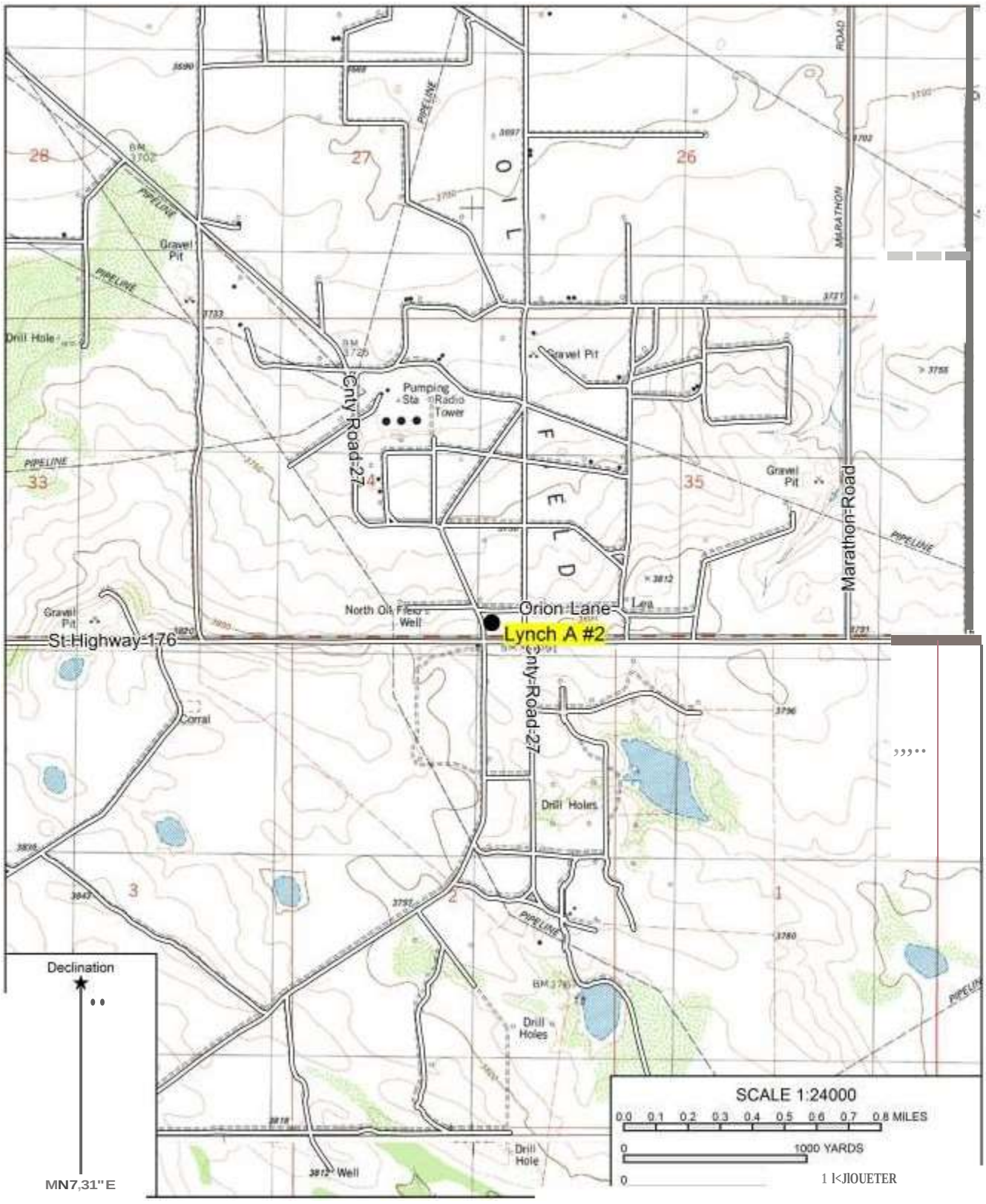
North Area:

The north area will be excavated to a depth where the concentration of chlorides is less than 1,500 ppm. The contaminated soil will be transported to an approved NMOCD facility for disposal. The excavated area will be backfilled with clean soil and returned back to natural grade. Confirmation samples will be taken from the sides and bottom of the excavation prior to backfill.

VII. Figures & Appendices

Figure 1 – Vicinity Map
Figure 2 – Site Plan
Figure 3 – Groundwater Map
Appendix A – Analytical Results
Appendix B – Site Photographs

Figure 1
Vicinity Map



Name: LEA
Date: 01131114
Scale: 1 inch = 2,000 ft.

location: 32.5243560° N, 103.5411868° W
Caption: <<type caption here.>>

Figure 2
Site Plan

PAR-14-002 MAS LYNCH A #2

PAR-14-002 MAS LYNCH A #2

PAR-14-002 MAS LYNCH A #2

Figure 3
Groundwater Map


20S34E
100
125
128
145
166
56
33
65
104
115
87
129
142
148
59
53

Appendix A
Analytical Results

CARDINAL Laboratories

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

July 24, 2014

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: LYNCH A #2

Enclosed are the results of analyses for samples received by the laboratory on 07/22/14 8:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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:	07/22/2014	Sampling Date:	07/17/2014
Reported:	07/24/2014	Sampling Type:	Soil
Project Name:	LYNCH A #2	Sampling Condition:	Cool & Intact
Project Number:	PAR-14-002	Sample Received By:	Jodi Henson
Project Location:	176		

Sample ID: TEST TRENCH #2 0-6" (H402215-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6480**	16.0	07/23/2014	ND	400	100	400	0.00	

Sample ID: TT #2 5' (H402215-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**6960**	16.0	07/23/2014	ND	400	100	400	0.00	

Sample ID: TT #2 9-10' (H402215-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1600**	16.0	07/23/2014	ND	400	100	400	0.00	

Sample ID: TT #2 15' (H402215-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**416**	16.0	07/23/2014	ND	400	100	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:	07/22/2014	Sampling Date:	07/21/2014
Reported:	07/24/2014	Sampling Type:	Soil
Project Name:	LYNCH A #2	Sampling Condition:	Cool & Intact
Project Number:	PAR-14-002	Sample Received By:	Jodi Henson
Project Location:	176		

Sample ID: TT #2 18.5' (H402215-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**368**	16.0	07/23/2014	ND	400	100	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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

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:	
Phone #:	575-397-0510 Fax #: 575-393-4388	Address:	
Project #:	PAR 14-002 Project Owner: MAS	City:	
Project Name:	LYNCH A #2	State: Zip:	
Project Location:	176	Phone #:	
Sampler Name:	SERGIO contreras	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	Chlorides
H402215															
1	TEST TRENCH #2 @ 6"	G	1			X					X		7-17-14	0900	X
2	TT #2 5'	G	1			X					X		7-17-14	1015	X
3	TT #2 9-10'	G	1			X					X		7-21-14	0850	X
4	TT #2 15'	G	1			X					X		7-21-14	1100	X
5	TT #2 18.5'	G	1			X					X		7-21-14	1135	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 analysis. 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 collection, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	
	Time:		
Relinquished By:	7/22/14 8:30	Received By: Jodi Henson	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Temp: 5.8°C	Sample Condition: Cool: Yes / Intact: Yes	CHECKED BY:

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:

† 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

November 24, 2014

Bob Allen

Safety & Environmental Solutions

703 East Clinton

Hobbs, NM 88240

RE: LYNCH A #2

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Sincerely,

Hope S. Moreno

Hope S. Moreno For 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:	11/21/2014	Sampling Date:	11/20/2014
Reported:	11/24/2014	Sampling Type:	Soil
Project Name:	LYNCH A #2	Sampling Condition:	Cool & Intact
Project Number:	PAR-14-002	Sample Received By:	Jodi Henson
Project Location:	176		

Sample ID: TT-1 2' BGS (H403588-01)

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	11/24/2014	ND	416	104	400	0.00	

Sample ID: TT-2 2' BGS (H403588-02)

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	11/24/2014	ND	416	104	400	0.00	

Sample ID: TT-3 2' BGS (H403588-03)

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	11/24/2014	ND	416	104	400	0.00	

Cardinal Laboratories

*=Accredited Analyte

Hope S. Moreno

Hope S. Moreno For Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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Cardinal Laboratories

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Hope S. Moreno

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CARDINAL LABORATORIES

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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 #:	PAR-14-002 Project Owner: Penroc Services	City:	
Project Name:	LYNCH A-#2	State: Zip:	
Project Location:	LEA COUNTY	Phone #:	
Sampler Name:	SOSA, JERRY	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV			SAMPLING	
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
H403588														
1	TT-1 2FT BGS	G	1			X					X		11/20	0915
2	TT-2 2FT BGS	G	1			X					X		11/20	0930
3	TT-3 2FT BGS	G	1			X					X		11/20	1000

ANALYSIS REQUEST

XXX CHLORIDES

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 then 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: 11/21/14	Received By:	Jodi Henson
Relinquished By:	Time: 0800	Received By:	
	Date:		
	Time:		

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS:

Delivered By: (Circle One)	Temp.	Sample Condition	CHECKED BY:
Sampler - UPS - Bus - Other:	5.4°C	Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	(Initials)

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

#54

Appendix B
Site Photographs

Well Sign

Well Head (Leak Source)

Spill Area Looking North

Spill Run Area looking Northwest

Spill Run Area looking Northwest

Spill Run Area Looking North

Spill Run Area looking West